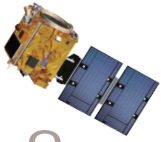
NSTC

National Science
and Technology Council



contents

Mission and History

Our Mission

In response to the ever-changing technology and the impact of complex geopolitics, Taiwan is making early preparations to face growing challenges and opportunities in a competitive world. Transformed from the Ministry of Science and Technology (MOST) into the National Science and Technology Council (NSTC), the NSTC is tasked to plan the nation's frontier S&T, promote the development of S&T, apply basic research to industrial applications, and coordinate the allocation of resources across agencies and fields. As an engine of S&T innovation, the NSTC will also carry out four missions: "Formulating Forward-looking S&T Policy," "Supporting Basic Research," "Establishing Science Parks," and "Promoting Innovation and Entrepreneurship." These four missions will reinforce Taiwan's position as a global leader in S&T research while addressing the needs of people throughout society. Most importantly, they will allow Taiwan to achieve critical milestones in innovation, inclusion, and sustainability by 2030.

MOST restructured into the NSTC in July 2022. The picture shows President Tsai Ing-wen (center left), Premier Su Tseng-chang (center right), and the first NSTC Minister Wu Tsung-tsong (second from the right) attending the NSTC's unveiling ceremony.

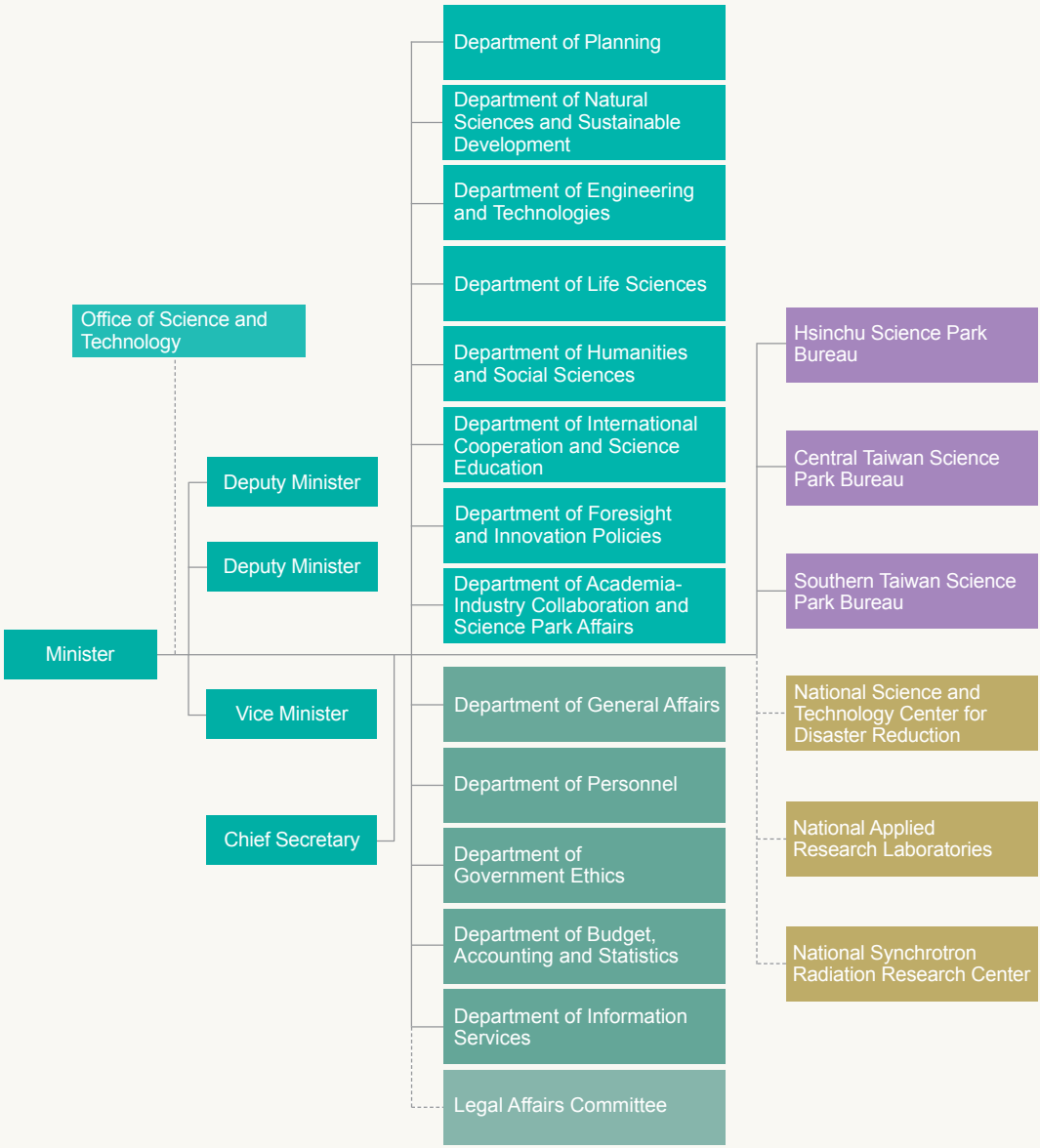
Our History

Originally established as the National Science Council (NSC), Executive Yuan on February 1, 1959, the NSTC is Taiwan's premier cross-government agency dedicated to scientific and technological development.

On March 3, 2014, the NSC reorganized into MOST. At the time, S&T innovation had already become a key driver of economic growth and national progress in an age dominated by the knowledge economy. With a new and more efficient organizational structure, MOST aimed to encourage innovation, incubate startups, and promote partnerships between academia and industry.

MOST restructured into the NSTC on July 27, 2022 to formulate more progressive S&T strategy and seize the opportunities of a changing global landscape. The Office of Science and Technology Policy, Executive Yuan became a part of the NSTC and is now called the Office of Science and Technology. Furthermore, an Executive Yuan Minister without Portfolio will now concurrently serve as the Minister of the NSTC. This new position will bring a broader perspective to Taiwan's S&T development and cross-government integration.

Organization Chart



Formulating Forward-looking S&T Policy

Taiwan's 2030 vision of "Innovation, Inclusion, and Sustainability" aims to develop people-centric S&T, meet the diverse needs of different age and ethnic groups, and build a sustainable society that features economic growth, ecological protection, and regional balance. To make this vision a reality, Taiwan launched the Digital Nation & Innovative Economic Development Program (DIGI+) and the 5+2 Innovative Industries Plan in 2016 to drive industrial transformation, stimulate the trend of innovation and entrepreneurship, and thereby boost economic growth. Not only establish a world-class ICT infrastructure throughout Taiwan and greatly add value to domestic IoT industry, these policies have also attracted large multinationals to set up R&D or innovation centers, increasing the number of digital professionals in Taiwan and strengthening the capabilities of AI, IoT, and 5G sectors in Taiwan.

In recent years, the post-pandemic challenges, climate change, digital transformation, and dramatic shifts in the geopolitical climate have highlighted the national strategic importance of comprehensive planning and development in science and technology. Moreover, many serious challenges now touch upon complex national and social issues. Therefore, science and technology capacity not only reflects a country's level of competitiveness but is also critical in addressing social challenges at home and abroad and ensuring national security.

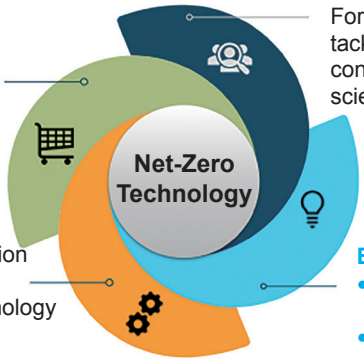
To bolster resilience and address challenges across the board, Taiwan will preemptively allocate resource in six core strategic industries and continue to play a key role in the global economy. On the cornerstone of the aforementioned initiatives for digital transformation, the government will focus on the R&D and capacity building in core strategic S&T sectors. These sectors include net-zero emissions, artificial intelligence, semiconductors and quantum, cybersecurity and advanced internet infrastructure, precision health, and space technology. In the future, Taiwan will gain prominence in global S&T thanks to the development of these strategic sectors and industries.

2050 Net-Zero

The world is now striving to reach net-zero emissions by 2050. The NSTC believes that technological innovation and scientific development are both critical to achieve this ambitious goal. Taiwan can help the international community in this effort because it is a leader in scientific innovation that invests heavily in net-zero R&D. Furthermore, by promoting economic growth, stimulating private investment, and creating more green jobs, Taiwan will facilitate an equitable transition towards net-zero emissions.

Earlier this year, the government drafted Taiwan's Pathway to Net-Zero Emissions in 2050 which focuses on four major areas: energy, industry, society, and lifestyle.

Four Major Transitions through Net-Zero Technology



Lifestyle Transition
Creating net-zero technology to achieve a green and low carbon emission lifestyle

Social Transition
Formulating strategies to tackle transition conflict and controversy based on social sciences research

Industrial Transition
- Promoting carbon reduction among enterprises by digitalized net-zero technology
- Building digitalized net-zero ecosystems

Energy Transition
- Maximizing the supply of renewable energy
- Strengthening the resilience of power systems

Driving Energy Transition

To maximize Taiwan's supply of renewable energy, this initiative will enhance the efficiency of solar cell modules, develop floating offshore wind turbine (FOWT) technology, push for hydrogen, ocean, and geothermal advanced energy technology, and strengthen the resilience of Taiwan's grid system by integrating digital technology as well as strengthening smart power dispatching, energy storage, and vehicle-to-grid capacities (V2G).

Accelerating Industrial Transition

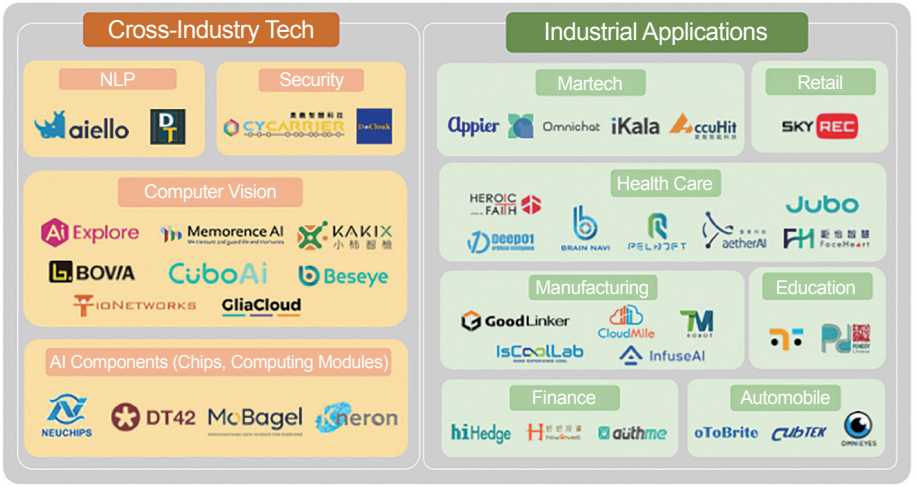
This initiative promotes carbon reduction in the private sector through digital net-zero technology, managing carbon emissions with block-chain technology, integrating related industries, promoting international collaboration, and facilitating innovation in net-zero technology to secure advantages in the future.

Facilitating Social and Lifestyle Transition

Policies are being formulated to promote social adjustment and equitable transition based on social science research while assisting the public to adopt a lifestyle of carbon reduction and net-zero emissions through optimizing consumer behavior in everyday life.

Artificial Intelligence

Supporting artificial intelligence research has become one of Taiwan's most important strategies for national economic growth. AI has already led to business innovation, scientific discoveries, improvements in health and medical care, and even stronger national security. In 2018, Taiwan launched the AI Taiwan Action Plan, which aims to develop all facets of AI to meet Taiwan's diverse array of needs. The AI Taiwan Action Plan has helped enhance computational infrastructure and AI training, establish AI research centers in four universities, and promote AI adoption in the private sector. Taiwan has already achieved its preliminary goals and will continue to develop through AI 2.0.



Taiwan's AI Startups

Source: Artificial Intelligence Foundation (AIF), AppWorks Accelerator, compiled by Market Intelligence & Consulting Institute (MIC)

AI R&D Centers

AI 1.0 subsidized four universities to set up AI innovation research centers that could cultivate industry talent throughout Taiwan. The four universities are: National Taiwan University, National Cheng Kung University, National Tsing Hua University, and National Yang Ming Chiao Tung University. These universities now focus on the development of core AI technologies, smart healthcare, smart manufacturing, and smart services. Taiwan's AI R&D Centers also provide a world-class research environment to inspire young scholars and experts to conduct further research. At these centers, researchers are focusing on AI applications as well as developing fundamental AI algorithms and theory. Between 2018 and 2021, more than 390 experts and scholars as well as 3,300 master's and PhD students participated in projects at these centers. In addition, many well-known international technology companies such as Google and Microsoft have founded R&D centers in Taiwan with the high-quality talent coming from these centers.

Computational Infrastructure Environment

The National Center for High-Performance Computing (NCHC), Quanta Computer, Taiwan Mobile, and ASUS built Taiwania 2: Taiwan's first indigenous supercomputer that can perform 9 petaFLOPS (PFLOPS, peta floating-point operations per second). In 2018, Taiwania 2 was ranked as the world's 20th most powerful supercomputer on the "Top500 List" and ranked 10th on the "Green500 List."

Building on the initial success of Taiwania 2, the NCHC, Quanta, Taiwan Mobile, and ASUS jointly launched a new service called the Taiwan Computing Cloud (TWCC), which shares half of its capacity with the private sector and has a key role in supporting AI research. TWCC has served more than 200 companies, half of which are startups, and has made significant contributions to the development of AI products and services throughout Taiwan.

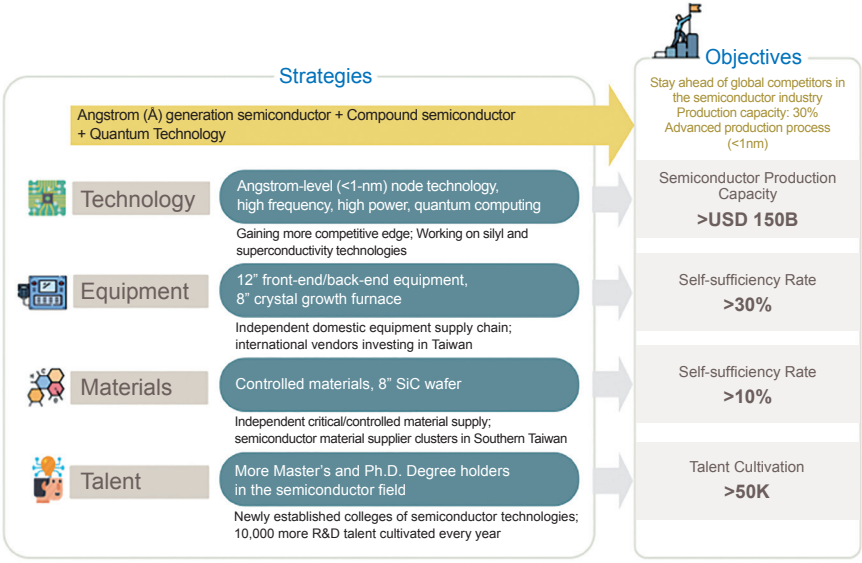
Semiconductors and Quantum

Semiconductors

Semiconductors have turned Taiwan into a major global economic force. It's essential to consolidate Taiwan's advantages and increase its capacity in supply chains and state-of-the-art semiconductor manufacturing processes. The government will work with industry and academia to develop the talent and technology required to capitalize on the latest technological trends. In addition, these efforts will help Taiwan's semiconductor industry scale to new heights by carrying out the following strategies:

Developing Equipment

- Accelerating equipment verification
- Attracting investment from international companies
- Improving the self-sufficiency rate of 12-inch silicon-based semiconductor equipment



Four focal points in Taiwan's research and development of the semiconductor industry

Developing Critical Materials

Prioritizing the R&D of restricted materials and accelerating the development of 8-inch compound semiconductor supply chains

Fostering Advanced Semiconductor Technology

- Initiating angstrom (Å) semiconductor programs for the next decade of semiconductor technology
- Developing high-frequency devices and high-power electronics for B5G/6G wireless communication systems, electric vehicles, and renewable energy applications
- Advancing quantum computing using Si-based and superconductivity technologies

Cultivating Professional Talent

Establishing additional colleges in semiconductor-related fields throughout the country to train an estimated 10,000 R&D professionals every year

Quantum

Quantum is seen as the next generation of technology that will drive major changes in fields such as cybersecurity, artificial intelligence, medical care, communications, semiconductors, and even national defense. Therefore, developed countries and leading companies are investing heavily in the "Quantum Race." Taiwan is implementing national programs that will speed up pertinent R&D and get the country prepared for an age dominated by quantum technology.

Forming the Quantum National Team

Taiwan aims to utilize its advantages in semiconductors and address future competition from commercialized quantum systems beyond 2030. Therefore, the government has organized a task force for quantum system integration. This task force will work with industry and academia to facilitate research related to quantum computing and communication. This cross-departmental task force, known as the Quantum National Team, is made up of Academia Sinica, the National Science and Technology Council, and the Ministry of Economic Affairs. The Quantum National Team will focus on quantum devices, quantum algorithms, quantum computing, and quantum communication. In addition, the Quantum National Team was established to strengthen connections between academic institutions and Taiwan's leading companies such as MediaTek and TSMC. Such collaboration will assist related industries in playing a pivotal role in developing commercial quantum technology around the world for years to come.

Cybersecurity and Advanced Internet Infrastructure

Cybersecurity

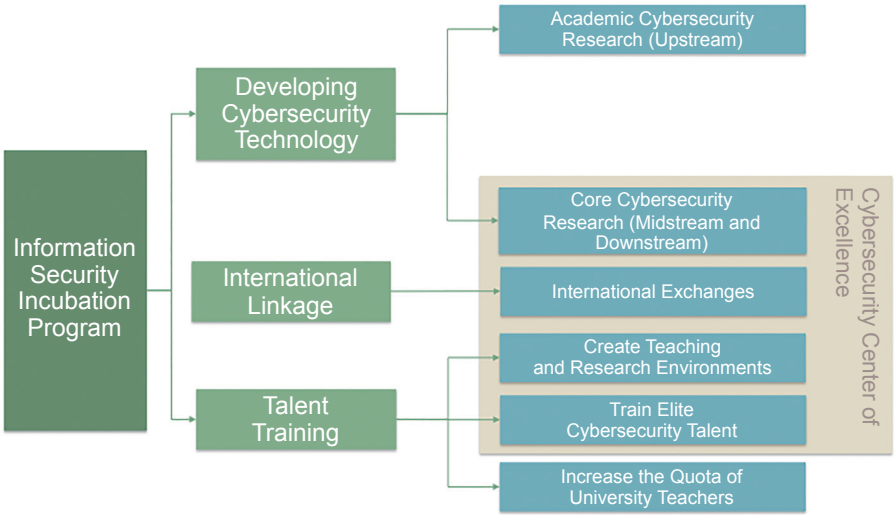
President Tsai Ing-wen recently stated that "cybersecurity is national security" because cyberattacks impact virtually every facet of life in Taiwan. Due to the constant presence of foreign cyber threats, Taiwan has an advantage in collecting attack patterns and identifying emerging viruses and malware. Under such precarious circumstances, Taiwan must focus on areas of research that bolster cybersecurity resilience and national defense. This includes security in applications, software, 5G networks, IoT, Fintech, and critical infrastructure. In addition, Taiwan is a major global supplier of ICT products. Therefore, Taiwan must also promote secure chip design, strengthen supply chain security, and enhance the performance of testing facilities.

Recruiting and Training Talent

Taiwan has initiated recruitment programs that attract international scholars from overseas. Through these programs, visiting scholars have engaged in cybersecurity research and taught cybersecurity courses. Taiwan also has a nationwide training program throughout the university system called AIS3. This program has brought together Taiwan's leading experts in cybersecurity with the next generation of budding talent.

Complete Ecosystem for Strengthening Cybersecurity Research

Taiwan will stay ahead of future threats by promoting academic cybersecurity while investing resources toward solving current cybersecurity issues. In 2021, Taiwan initiated the Cybersecurity Center of Excellence (CCoE) to solve cybersecurity's most pressing problems. The CCoE consists of three research labs, the Network Behavior Big Data Lab, the Network Threat Intelligence Lab, and the Post Quantum Cryptography Lab. The Network Behavior Big Data



Lab will collect data from online platforms and different social networks such as Facebook, Instagram, and YouTube. The lab will then utilize big data to identify fake accounts and detect abnormal activity in cyberspace. This process will effectively prevent the spread of disinformation. The Network Threat Intelligence Lab will develop artificial intelligence automation tools for cyber intrusion detection and prevention. This lab will also collect and analyze malware and computer viruses. The Post Quantum Cryptography Lab will develop tools for implementing and deploying standards initiated by the US National Institute of Standards and Technology (NIST).

In January 2023, the Ministry of Digital Affairs will incorporate the CCoE into its newly established National Institute of Cybersecurity. In addition, the NSTC will launch the Taiwan Academia Cybersecurity Center (TACC). TACC will focus on advanced research topics such as fully homomorphic encryption, privacy enhancement technology, and machine learning security.

Advanced Internet Infrastructure

In response to increasing geopolitical threats, Taiwan has had to establish a self-protected network for securing critical information. The government has also set up a comprehensive networking ecosystem known as the Taiwan Advanced Network (TAN), which aims to become a critical hub in the Asia-Pacific region thanks to the following features:

- Resilient: Incorporates terrestrial fibers, submarine cables, and satellite services to support multi-vendor solutions for a more diversified 3D network.
- Open: Optimizes free market conditions and transparency by making proper adjustments to relevant regulations.
- Friendly: Features a carrier-graded and highly secure internet exchange center that is well-equipped and accessible to all participants.
- Cooperative: Benefits both public and commercial partners because TAN is ready for global and domestic Internet Service Providers (ISPs) to exchange IP traffic.

Precision Health

Taiwan has the potential to develop precision health because of its comprehensive healthcare system, established biomedical R&D and manufacturing industries, abundant medical data and world-class optoelectronics and ICT industries. The government is working on integrating cross-sector resources, developing relevant products and services, and establishing supply chains from healthcare and prevention to diagnostics and treatments. In addition to spreading the benefits of science and technology to public and private institutions, Taiwan's biomedical industry will reach new heights by cultivating business partnerships around the world. The following are several of Taiwan's major strategies in precision health:

Integrating Cross-sector Resources

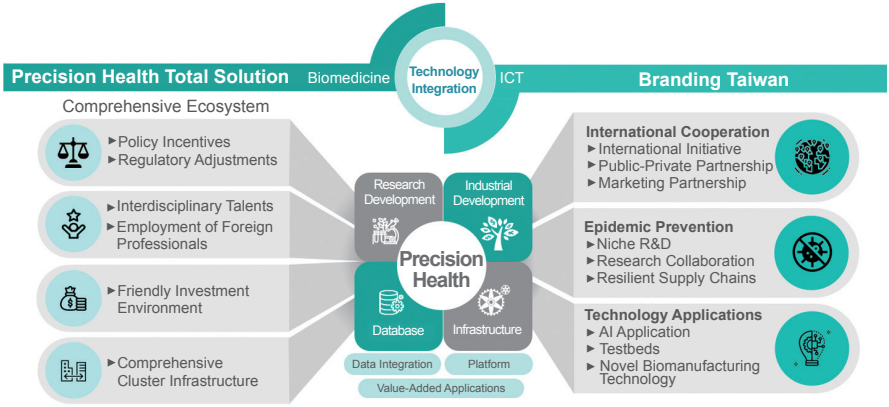
In 2020, the government launched the Taiwan Precision Health Initiative to establish the country as a global leader in precision health and emerging technology. This initiative will develop cutting-edge biomedical technology for precision health through strategies that leverage Taiwan's expertise in ICT manufacturing as well as the cross-sector integration of AI, big data, and IoT. In addition, the National Biobank Consortium and nationwide electronic medical records have been integrated to tailor treatment and diagnosis, facilitate bio-industrial clusters for innovative professional development, and conduct field trials.

Cooperating with Global Partners

Well-known businesses such as Novartis, Merck, Pfizer, and Johnson & Johnson are collaborating in Taiwan to develop international and cross-regional clinical trials for new drugs. In addition, the Taiwan-US Cancer Moonshot Project was initiated to develop cutting-edge research. This project is the first collaboration between Taiwan and the US to fight cancer using multiomics and precision oncology.

Building Information Platforms

The Taiwan Clinical Trial Consortium (TCTC) was established to share various disease-related resources and information while advancing the development of smart medicine.



Interdisciplinary Collaboration for Precision Health Initiatives

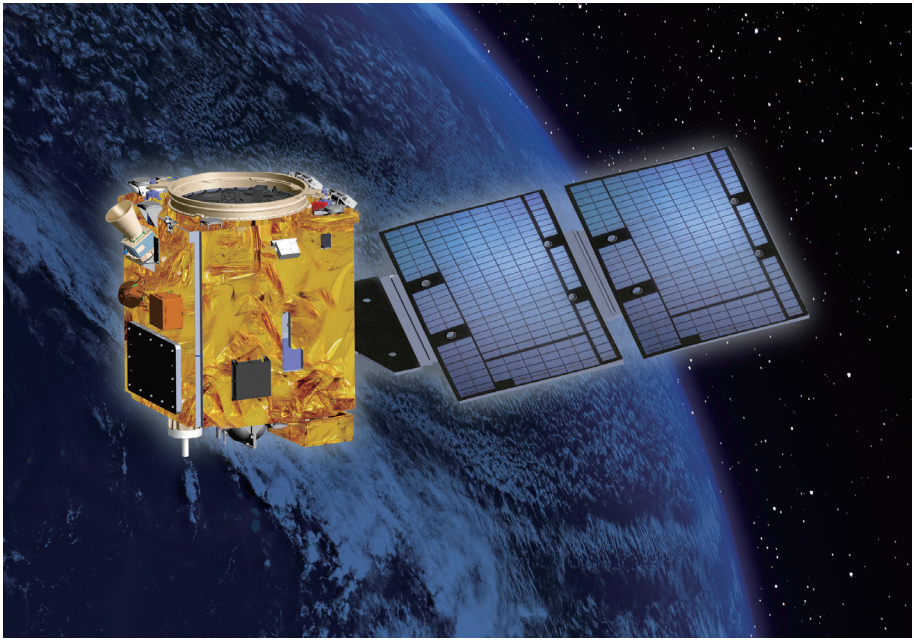
Loosening Regulations

Taiwan has been expediting R&D processes, increasing market applications, and exploring global business opportunities by amending relevant legislation and lifting restrictions on cell therapy and oncology drugs.

Space Technology

Over the past 30 years, Taiwan has established fundamental space infrastructure, which includes satellite integration and testing facilities, R&D laboratories, satellite operations and control facilities, ground stations, and satellite image processing centers. During this time, Taiwan has firmly established space technology capabilities, especially in areas such as satellite buses, high-resolution remote sensing payloads, multi-satellite operation and control systems, satellite image processing and analysis, and sounding rocket systems.

The recent explosive global development in low Earth orbit satellites has created value in emerging industries and applications associated with space technology. In the future, it is estimated that countries around the world will launch over 10,000 low Earth orbit satellites. This will create significant demand in satellite manufacturing and ground station equipment. Taiwan has indigenous capabilities in developing and manufacturing satellites and rockets. In addition, Taiwan possesses international advantages in fields such as semiconductors, precision manufacturing, and optoelectronics. The government will join forces with industry, academia, and research institutions to seize business opportunities, forge ahead into global space industrial chains, and enhance Taiwan's capacity in space technology R&D.



TRITON, Taiwan's first indigenous weather satellite, could be launched as early as the first quarter of 2023. Its mission is to conduct research on air-sea interaction and typhoon intensity prediction.

The following are Taiwan's two major policy directions in space technology:

Formulating Regulations

The Space Development Act of 2021 and the Act for the Establishment of the Taiwan Space Agency of 2022 established a complete set of legal and support systems. These two pieces of legislation have laid the legal foundation for Taiwan's space development by providing legal compliance for both the public sector and private companies.

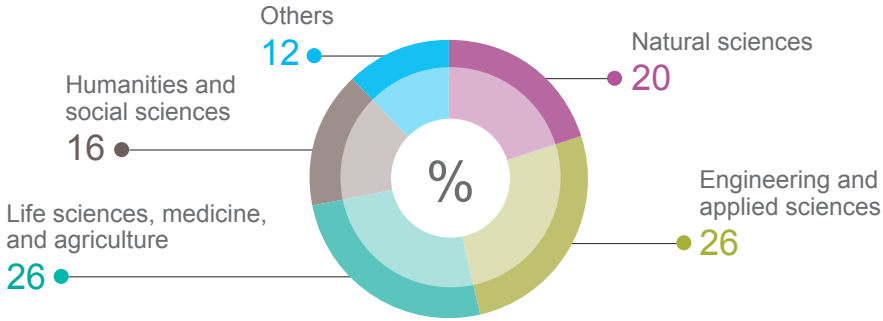
Developing Low Earth Orbit Communications Satellite

The Beyond 5G (B5G) satellite project is Taiwan's low earth orbit communications satellite program, which plans to provide broadband satellite multimedia (BSM) communications, technology support for disaster relief, and testing for communication payloads and ground communication systems that are manufactured in Taiwan.

Supporting Basic Research

To promote S&T development, the NSTC supports academic research through providing grants to educational and research institutions. Approved research projects can receive funding from the NSTC for research personnel, equipment and facilities, books and references, consumable materials, and overseas travel expenses. The NSTC also aims to strengthen the scientific and technological service ecosystem by building national-level experimental facilities, integrating shared resources, and launching core facilities platforms.

Research Grant Allocation by Field, 2021



A core platform for research and innovation

Research Focuses

Natural Sciences

- Collider Physics/Astronomy
- Quantum Technology: quantum material, quantum computer, quantum algorithm and quantum communication
- Ocean Science: cross-cutting marine and maritime research
- Intelligent Disaster Prevention
- Climate Change Knowledge Platform (TCCIP): a climate service project aiming to support adaptation policies with scientific evidence
- Satellite Science Application and Societal Demands Services: a platform for international cooperation and strategic plan

Engineering Sciences

- Angstrom Semiconductor Initiative Program
- Key Emerging Integrated Circuit Design Program
- Next-Generation Compound Semiconductor Program
- Innovation Medical Devices: Precision Diagnosis and Therapy Program
- Program for Advanced Smart and Interactive Display Technologies
- Research Program for 6G Cellular Communications
- Research Program for Key Technologies of CubeSats
- Research Program for Developing Key Technologies of Next Generation Communication Systems
- Development of Smart AQI Sensor Technology Program
- Self-Driving Subsystem Key Technology Research & Development Program
- Research Program for Developing Key Technologies of Next Generation Smart Manufacturing
- Promotion Program on Advanced Digital Twin and Intelligent Robotics of Manufacturing Integration Technology
- Development of Information Security Testing Fields for Intelligent and Semiconductor Manufacturing Program

Life Sciences

- Smart Medicine: interdisciplinary technology development with AI and clinical databases
- Precision Medicine: sustainable platforms for big data in health
- Regenerative Medicine: development of advanced regenerative medicine and evaluation platforms for novel cell therapy technology
- Pandemic Prevention Science
- The New Generation of Agriculture for Precision Health

Humanities and Social Sciences

- Encouraging social practice research and establishing academic models of humanities innovation
- Studying the needs of ethnic groups and diverse ethnic groups
- Promoting precision sports research to support athletic development

Establishing Science Parks

Features and Locations

Taiwan currently has three core science parks located in the northern, central, and southern areas. These parks form lifestyle-oriented communities that integrate R&D, production, working, living, and recreational facilities. As magnets for S&T talents and enterprises, Taiwan's science parks also serves as high-tech bases that balance regional development and

Integrated circuits
Cloud computing
Precision machinery
Advanced medical materials
Optoelectronics
Biotechnology
Communications
New medicine

Hsinchu Science Park

Integrated circuits
Optoelectronics
Precision machinery
Biotechnology
Computer Peripherals
Communications

Central Taiwan Science Park

Integrated circuits
Biotechnology
Optoelectronics
Precision machinery
Aerospace
B5G and Communication

Southern Taiwan Science Park

promote overall industrial upgrade. Each of Taiwan's three science parks focuses on different but complementary S&T sectors. As such, they form a high-tech industrial innovation corridor. Their success over the past four decades not only brought economic prosperity, but also made a name for Taiwan's high-tech industries around the globe.

Status of Development

Hsinchu Science Park

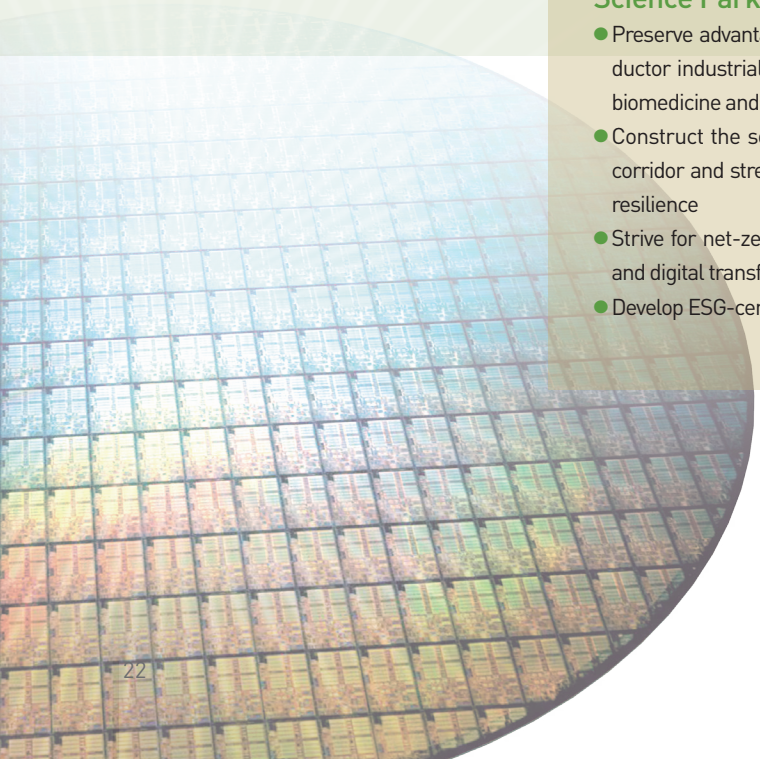
- Enhance ICT industry value chain competitiveness through software/hardware integration
- Foster biomedical clusters through developing high-end medical devices, new pharmaceuticals, and medical specialties
- Implement park renewal and create a friendly sustainable environment for the on-campus companies and staff as well as neighboring residents

Central Taiwan Science Park

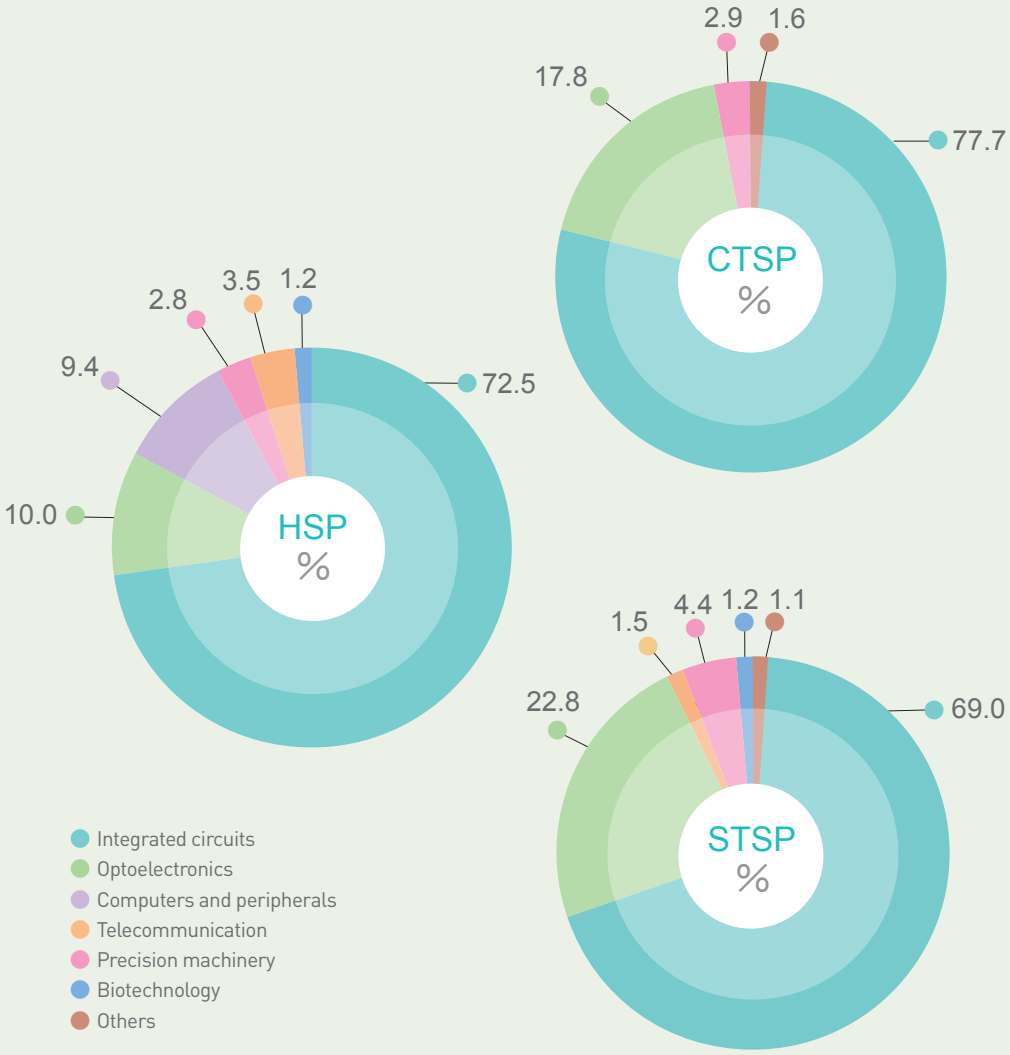
- Develop intelligent automatic system integration system and smart medical assistive technology
- Attract low-carbon, light and energy-saving industries
- Strengthen regional cooperation among the five parks in Central Taiwan, each with different focus of development

Southern Taiwan Science Park

- Preserve advantages of Taiwan's semiconductor industrial clusters while developing biomedicine and precision health clusters
- Construct the southern Taiwan high-tech corridor and strengthen regional economic resilience
- Strive for net-zero and sustainable energy and digital transformation
- Develop ESG-centric smart science parks



Share of Science Park Revenue by Industry, 2021



Note: Only shares exceeding 1% are labeled. Some percentages may not total 100% due to rounding effects.

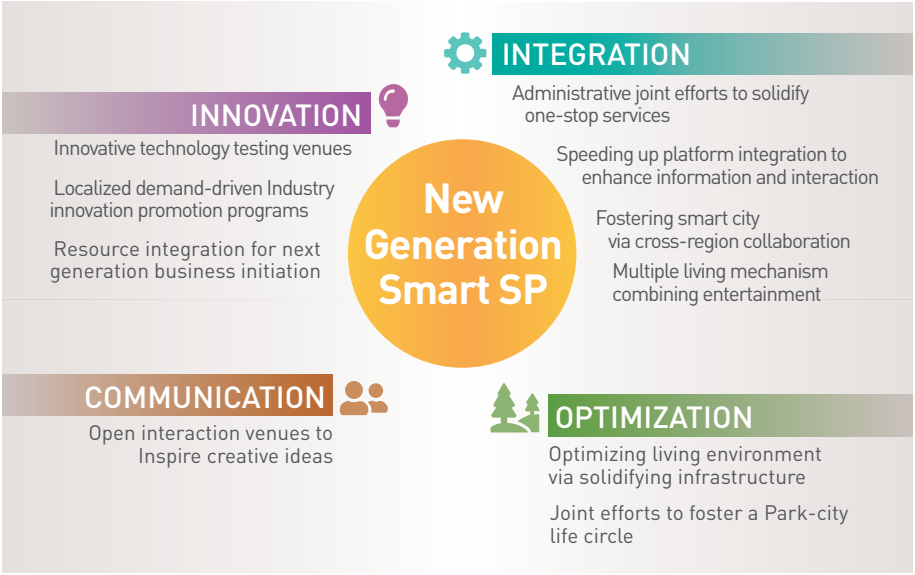
Hsinchu Biomedical Science Park

The Hsinchu Biomedical Science Park centers around knowledge, innovation, and incubation. This science park serves as Taiwan's premier biomedical science R&D hub. The park features the Biomedical Science and Product R&D Center, the Hsinchu Biomedical Science Park Incubation Center, and the NTUH Hsin-Chu Branch & Medical specialty zone. These facilities satisfy needs ranging from treatment and research to industrial development and accommodation in one location. By focusing on forming clusters and adopting a one-stop shop concept, this science park can provide space for clinical trials, business planning, innovative R&D (R&D facilities and talent), collaboration, and regulatory consulting. Among the 74 approved companies in this science park, 32 specialize in the R&D of novel pharmaceuticals.

New Generation Smart Science Parks

The NSTC will strive to strengthen the promotion of science park transformation. The NSTC's science parks will continue to make significant contribution to the development of Taiwan's science and technology industry and unlock the fullest potential of scientific research to add value to industrial clusters.

Future Vision

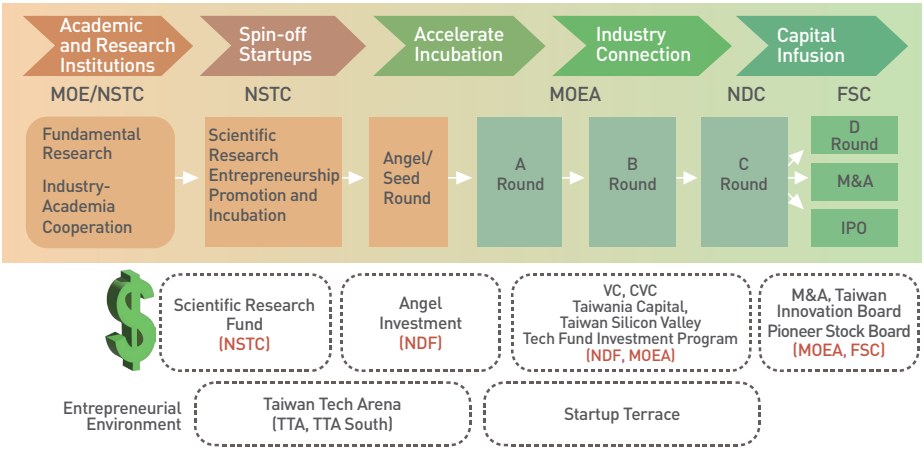


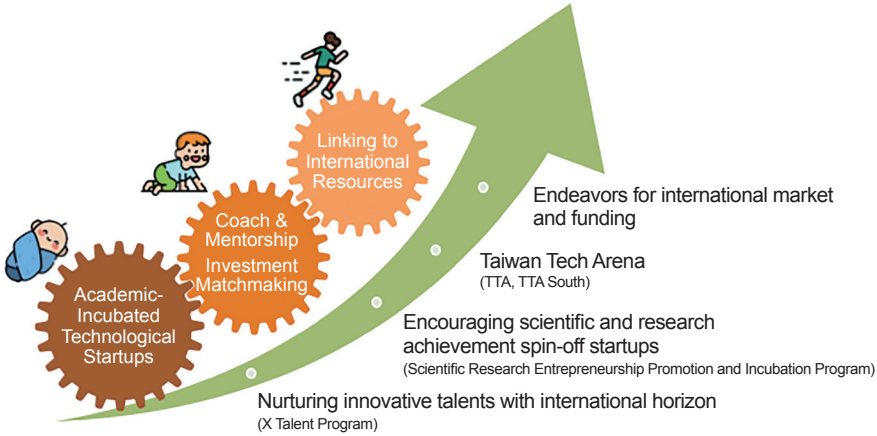
Promoting Innovation and Entrepreneurship

Positioned as an upstream component of the technological innovation ecosystem, the NSTC encourages universities and research institutions to conduct research with entrepreneurial potential and incubate their results into startups as quickly as possible. After the NSTC provides preliminary assistance, Taiwan Tech Arena (TTA) and TTA South help these startups establish connections to international markets and funding.

Integrating Startup Incubation Resources

In conjunction with the Ministry of Economic Affairs (MOEA), the National Development Council (NDC) and the Financial Supervisory Commission (FSC), the NSTC coordinates relevant government resources to provide continuous incubation to deep-tech startups based on their size. With the integration of startup incubation resources, Taiwan aims to help startups flourish and create further connections to the global startup ecosystem.





Taiwan Germination Program

This program aims to discover and commercialize Taiwanese university startups that possess outstanding academic and research results. To date, the program has discovered over 1,000 tech teams and launched over 164 startups.

Taiwan Tech Arena (TTA) and TTA South

TTA serves as Taiwan's international deep-tech startup entrance hub. Established in 2018 and located in Taipei Arena, TTA is a landmark initiative to build a vibrant startup ecosystem in Taiwan. TTA is a co-working space with more than nine accelerators that mentor more than 100 teams each year. TTA provides startups with a support program for global exhibitions by acting as a platform to drive more corporate investment and international venture capital. TTA attracts 37 TTA black card members from around the world and has fostered 621 start-ups, 270 of which are located overseas.

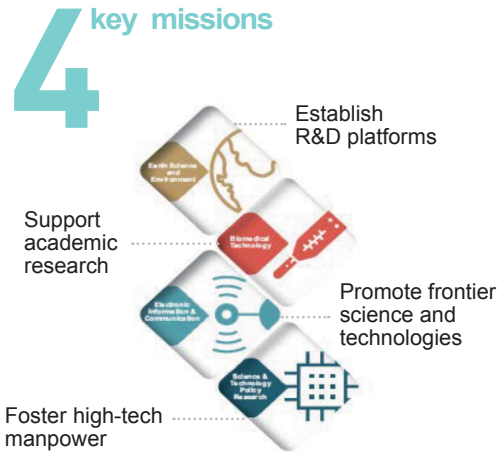
In 2021, TTA South in Tainan was established in the hope of making the domestic startup ecosystem more comprehensive by further integrating the NSTC's entrepreneurial resources in southern Taiwan. Currently, there are 44 startups and corporate residents in TTA South, which focus on five major areas: precision health, smart technology, net-zero, circular tech, and facilitating Corporate-Startup Engagement (CSE).

Foundations and Administrative Corporations

National Applied Research Laboratories

The National Applied Research Laboratories (NARLabs), established in 2003, plays an active role in implementing national science and technology policies.

Numerous large-scale research apparatuses and facilities, which include supercomputers, large seismic stations, and the ocean research vessel "LEGEND," were built by NARLabs with the needs of scientists and researchers in mind. NARLabs will continue to establish and maintain R&D platforms to support academic research and promote industrial technology.



NLAC

NCREE

NSPO

NCHC

TSRI

TIRI

STPI

TORI

Launched on June 25, 2019, the FORMOSAT-7 satellite constellation can collect more than 4,000 RO profiles daily between +/-50 degrees of north-south latitudes.

LEGEND's Large Offset Multichannel System in action

Earth Science and Environment

National Space Organization (NSPO) *

- Satellite systems engineering
- Spacecraft bus development
- Electro-optical remote sensing instruments
- Satellite control and operation
- Remote sensing image processing

National Center for Research on Earthquake Engineering (NCREE)

- Seismic testing and numerical simulation technologies
- Seismic resistant design, evaluation and retrofit technologies
- Earthquake loss estimation technologies

*The National Space Organization (NSPO), which is currently part of NARLabs, will become a standalone agency directly under the NSTC according to a bill that was passed in the Legislative Yuan in April, but has not yet taken effect.

Taiwan Ocean Research Institute (TORI)

- Marine environmental long-term observation and modeling
- Marine exploration technology and facility R&D
- Ocean information database establishment and value-added service
- Operation and service of research vessels and exploratory equipment

Electronic Information and Communication

National Center for High-performance Computing (NCHC)

- High-performance computing
- Big data computing
- AI computing cloud services
- Network and information security

Taiwan Semiconductor Research Institute (TSRI)

- Chip design tape-out procedure integration
- Pioneering device and processing technology
- Heterogeneous chip integration technology
- Material detection and analysis technology
- Chip packaging and measuring technology

Taiwan Instrument Research Institute (TIRI)

- Opto-electro-mechanical system integration
- Precision opto-mechanical technology
- Electro-optics remote sensing
- Vacuum equipment and advanced thin film technology

Science and Technology Policy Research

Science & Technology Policy Research and Information Center (STPI)

- S&T issue studies
- Patent mapping and information analysis
- Innovation ecosystem research
- Government S&T program management
- Integration S&T information services
- Innovation and entrepreneurship talent development

Biomedical Technology

National Laboratory Animal Center (NLAC)

- Genetic modification techniques
- Management of reproduction and breeding of laboratory animals
- Disease model establishment and efficacy testing
- Sterile mouse and isolation technology
- High-end medical material implant surgery and efficacy testing
- Facility management professional counselling

Aerial view of the National Synchrotron Radiation Research Center

National Synchrotron Radiation Research Center

Located in Hsinchu Science Park, the National Synchrotron Radiation Research Center (NSRRC) supports a broad range of scientific research by providing high-quality synchrotron radiation and cutting-edge synchrotron light source facilities to scientists from around the world. Synchrotron radiation, with its ability to probe materials microscopically, is a powerful tool for exploring the universe, understanding complex organic structures, discovering novel materials, developing sustainable energy, and unveiling living entities from the distant past.

Currently, NSRRC operates two light sources: the Taiwan Light Source (TLS) and the Taiwan Photon Source (TPS). In addition, NSRRC constructed and currently operates two Taiwanese hard X-ray beamlines at SPring-8 in Japan, as well as a cold neutron triple-axis spectrometer (SIKA) at ANSTO in Australia. These world-class research facilities and state-of-the-art instruments enable advanced research in basic and applied science, facilitate high-tech innovation, promote international collaboration, and support applications for the private sector.

TPS is one of the brightest synchrotron light sources in the world due to having high spatial resolution, high time resolution, and a coherent light source. There are three phases that compose its 25 beamlines. The seven beamlines of Phase I have been completed. Some of the nine Phase-II beamlines have been completed while the others are under construction. Phase-III construction commenced in 2021. TPS opens up tremendous possibilities for innovative research spanning from biomedicine to nanotechnology.

Scientists can access NSRRC's facilities to study a diverse range of subjects across various disciplines through an open proposal process. Every year, over 2,000 researchers utilize NSRRC's experimental facilities. NSRRC possesses one of the most advanced synchrotron facilities in the world and its pioneering capabilities keep Taiwan at the forefront of scientific research.

On Sep. 18, 2022, a 6.8 magnitude earthquake in Taiwan caused the Gaoliao Bridge in Hualien County to collapse.

National S&T Center for Disaster Reduction

The NSTC has effectively integrated cross-disciplinary scientific research achievements and resources on disaster risk reduction through the National Science and Technology Center for Disaster Reduction (NCDR), and incorporated them into policies and practices. Local research institutions in 22 cities and counties have participated in programs designed to enhance information exchanges among central and local governments for both disaster risk reduction and emergency preparedness. Prompt dissemination of real-time local disaster information and comprehensive early warning disaster alerts contribute to mitigate disaster risk and impact on human life and property.

In 2018, the NCDR cooperated with LINE Taiwan to launch an official NCDR account featuring the user-friendly interactive functions of LINE's instant messaging app. With the help of eye-catching illustrations, the official NCDR LINE account automatically sends useful information related to meteorology, hydrology, transportation, and safety to subscribers. The official NCDR LINE account also gives subscribers easy access to alerts related to rainfall, wind force, temperatures, reservoir water levels, air quality, ultraviolet radiation, and lightning. As of September 2022, 1.34 million people had subscribed to the official NCDR LINE account.

Operations During Emergencies

- Joining operations at the Central Emergency Operation Center by offering integrated information and timely suggestions
- Delivering common operational pictures to central and local governments through a decision support system
- Serving as the point of contact for the NSTC at the Central Emergency Operation Center
- Helping to disseminate disaster alerts issued by government agencies and the private sector through multiple information channels

Satellite Operations Control Center of NSPO

Taiwan Space Agency

The National Space Organization (NSPO) plays an essential role in executing Taiwan's national space programs as the integration center of Taiwan's space science and technology development. NSPO's main missions are implementing satellite programs, strengthening the promotion of academic research, establishing Taiwan's indigenous space technology, conducting space-related scientific research, and promoting satellite applications.

Fundamental space infrastructures were established during the first phase (1991-2006) and the second phase (2004-2018) of National Space Programs. During these two phases, Taiwan's preliminary indigenous space technology and human resources were developed. In addition, NSPO initiated three satellite programs (FORMOSAT-1, 2, and 3) and put two other satellites (FORMOSAT-5 and 7) into orbit. The third phase of Taiwan's satellite program (2019-2028) will feature TRITON, FORMOSAT-8, and Beyond 5G (B5G). TRITON, an indigenous meteorological satellite with the payload of a GNSS-R (Global Navigation Satellite System-Reflectometry) receiver, has completed all the necessary integration, function, and environmental tests. The satellite is now ready for deployment and will be launched in the beginning of 2023. FORMOSAT-8 is a pilot high-resolution optical remote sensing constellation with the legacy of FORMOSAT-5. This constellation of six satellites provides global coverage of 1 meter resolution satellite images. The Beyond 5G (B5G) is Taiwan's low earth orbit communications satellite program, which mainly plans to provide broadband satellite multimedia (BSM) communications and technology support for disaster relief.

Through the implementation of satellite programs, NSPO will utilize the strengths of local industry and academia to develop cost-effective and competitive space projects. Such efforts will continuously improve domestic space technology, spread the benefits of such innovation, bolster Taiwan's space industry supply chains, and promote global sustainable development.

NSTC 國家科學及技術委員會
National Science and Technology Council

106, Sec. 2, Heping E. Rd., Da-an Dist., Taipei City 10622, Taiwan
Tel: +886 (2) 2737 7992
https://www.nstc.gov.tw/

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