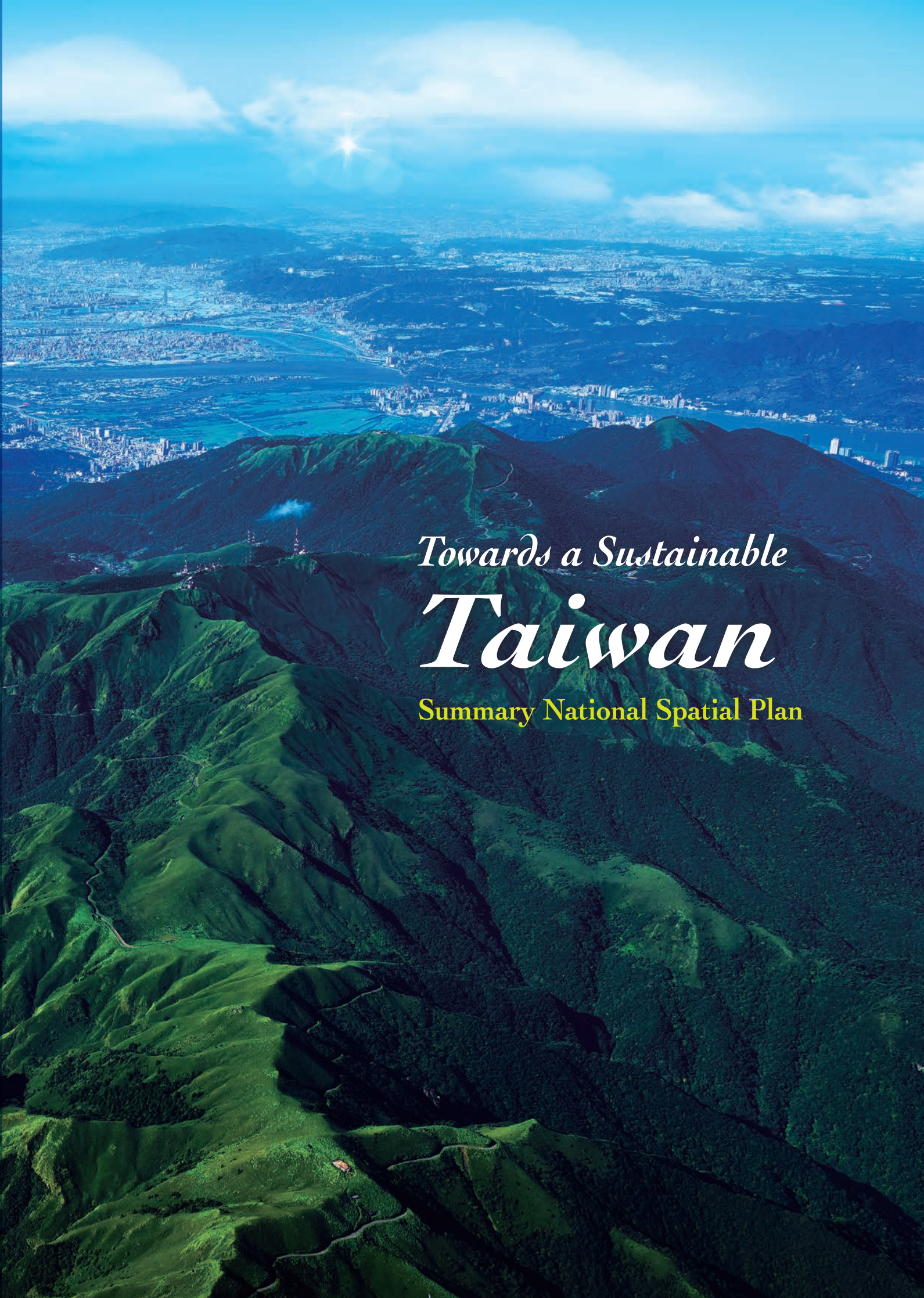
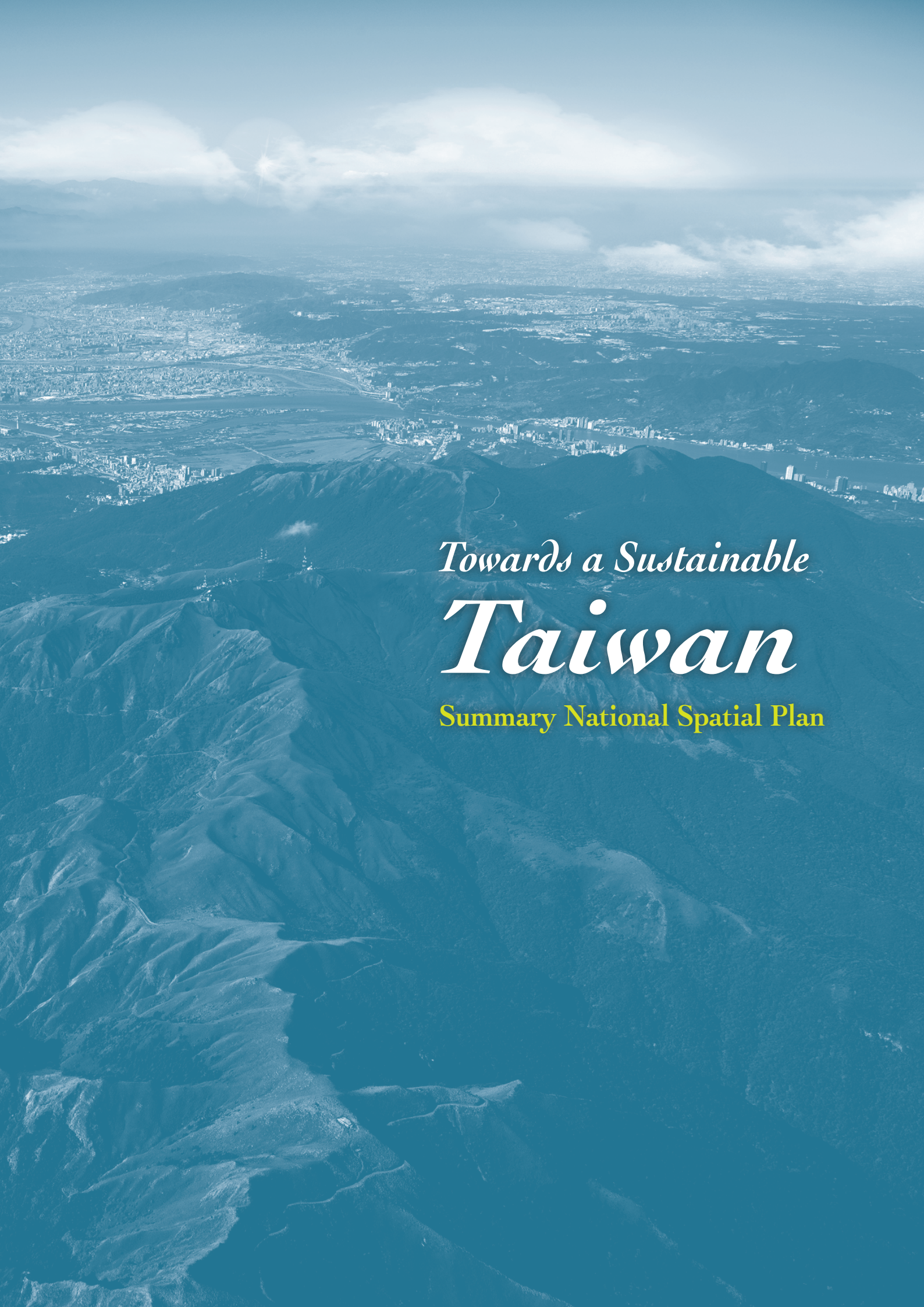


Towards a Sustainable

Taiwan

Summary National Spatial Plan



Towards a Sustainable
Taiwan
Summary National Spatial Plan

CONTENTS

Augmented reality (AR) was added to the Summary National Spatial Plan. Please download the COCOAR2 app and use it scan the cover to be linked to Regional Plan of the Nation video.

STRATEGIES | Spatial Development and Land Resilience

MANAGEMENT | Harmonious Zoning and Land Use

EPILOGUE

Understanding Our Homeland: Consensus and Will

In Taiwan, there are resource shortages, fragile geology, and frequent natural disasters. The mean annual rainfall exceeds 2,500mm, but is very uneven. Meanwhile, there are more and more major damages caused by the extreme weather. For example, the earthquake on 21st September 1999 and the flood on 8th August 2009 have made people deeply aware of the importance of balancing land conservation and development.

The government has therefore declared: "It is the most solemn commitment of the government to formulate the *Spatial Planning Act* to make our homeland safer." Internationally, the 1992 UN Framework Convention on Climate Change and the 2016 Paris Agreement urged countries to assume responsibility for reducing emissions and strengthening the resilience to climate change. Therefore, the *Spatial Planning Act* came into force on 1st May, 2016. The purpose of this Act is to cope with climate change, assure land use safety, conserve the natural environment and cultural assets, promote the reasonable allocation of resources and industries, strengthen land consolidation and management mechanisms, and restore sensitive areas and damaged land in pursuit of sustainable development.

On 30th April, 2018, the Ministry of the Interior announced the implementation of the National Spatial Plan in accordance with Article 13 of the *Spatial Planning Act*. The key points of the plan include: (1) improving environmental protection; (2) ensuring farmland preservation; (3) meeting the developmental needs; (4) strengthening spatial planning guidance; and (5) respecting indigenous cultures. From the perspective of land conservation and safety, the spatial plan must prioritise the conservation of environmentally sensitive areas such as sea area, coasts, wetlands, landscapes and cultural assets. It should construct ecological networks, regulatory guidelines and implement integrated river basin management and development based on the conditions of water resources in order to respond to climate change and strengthen the disaster tolerance and resilience of land.

Under the premise of food security, it is important to avoid the pollution and fragmentation of agricultural land and maintain the integrity of the facilities and environment required for production. For the farmland with unregistered factories, there must be adherence to the principle of classifying quickly to avoid repeated potential damage. In response to the trend of population ageing and declining birth rates, the future spatial plan will control the scale and location of urban-rural development to achieve compact development, growth management, and balance urban-rural development.

Article 17 of the *Spatial Planning Act* stipulates that during the preliminary planning phase, the spatial planning section of each department should consult with the competent authorities at the same level, and coordination should be carried out to ensure that the industry, transportation, housing, and important public facilities departments have no conflict in composing the National Spatial Plan. Importantly, the Plan shows high regard and respect for the rights of the indigenous peoples' land and cultural preservation. Without prejudice to the principle of land security, it will announce spatial district plans for the indigenous areas according to the spirit of Article 21 of *the Indigenous Peoples Basic Law* to protect their existing land use rights and traditional culture, rituals, and habits.

It is believed that understanding the homeland can make people be better informed, care, and expect more. The United Nations Sustainable Development Goals (2015) form the basis of the plan and it aims to achieve the goals through its policies. Considerable work has to be done to achieve the goals and it is expected that the people will shape the consensus, support the vision and guiding principles of land management, and carry out a new era of environmental conservation and rehabilitation, disaster prevention, and sustainable development for the future generation.

Chihshang Township, Taitung County by An-Shun HSIAO

Challenges

Current Situation and Future Development

Landslide Occurred on the Steep Slope near Suhau Highway by Ming-Ming Chen

Temperature increases, rainfall and frequent changes in season have come about as a result of climate change. This has had an impact on the provision of domestic water resources, epidemic prevention, water and energy demand, as well as the national security. Followed by the changes in the social environment, Taiwan is also facing issues such as the slowdown of population growth, ageing, low birth rates, and rural de-population.

Therefore, the National Spatial Plan, the most prescriptive statutory plan for spatial planning in Taiwan, will be the fundamental guideline for cross-sectoral coordination in the future. It proposes guidelines for reacting to development trends and major issues, as well as developing climate change adaptation strategies. It identifies suitable and unsuitable locations for development and assigns the development priority for suitable areas, guided by the compact city principle.

Photo by Randl Design

Preamble

The *Spatial Planning Act* was adopted into legislation on 1st May 2016 with the aim to respond to climate change and past land development mistakes. The legislative purpose is to "protect the natural environment and human assets, promote the rational allocation of resources and industries, strengthen the national integration management mechanism, rehabilitate environmentally sensitive areas, and pursue sustainable development of the country". Under this goal, Article 45 stipulates that the central authority should announce the implementation of the National Spatial Plan within two years after the implementation of the *Spatial Planning Act*., and this was carried out by an announcement of the plan by the Ministry of the Interior in April 2018.

The National Spatial Plan is for developing targeted, policy-oriented and holistic spatial development guidelines, for the land and sea areas under jurisdiction. It is also for establishing the functional zone and guiding the conservation and utilisation of resources. Within two years after the implementation of the *Spatial Planning Act*, the municipal and county (city) government should announce the implementation of the municipal and county (city) spatial plan, and then execute it based on functional zoning within 2 years, in order to implement the principles of the National Spatial Plan.

Figure 1. Three Episodes of the Spatial Planning

Before the passage of the *Spatial Planning Act*, the Urban Plan, National Park Plan and Regional Plan served as the domestic legal land use plans. As the National Spatial Plan takes over from 2022, the *Regional Planning Act* will then be abolished.

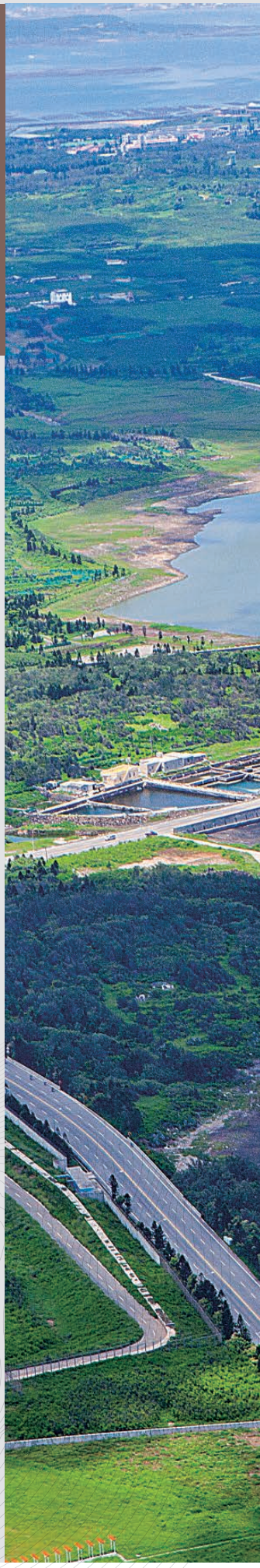
1. Diaoyutai Islands, Dongsha Islands and Macclesfield Bank all included in the area of the territorial sea baseline announced in 2009.
2. The boundary of restrict and prohibited sea area in Kinmen and in Lienchiang County is based on the announcement of the Ministry of National Defense.

Figure 2. The Range of the National Spatial Plan

Basic Information of the National Spatial Plan

- Legal basis: According to the *Spatial Planning Act*, the first paragraph of Article 4, paragraph 1 states "The central competent authority shall be responsible for the establishment, announcement, revision and enforcement of the National Spatial Plan". And the provisions of Article 11, paragraph 1, state "National Spatial Plan to be established and reviewed by the central competent authority and presented to the Executive Yuan for approval".
- Duration of the plan: 2036
- Range of the plan: the land and marine area under the jurisdiction of the ROC government

Issues and Predictions on Environmental Change



Climate Change and Impacts

There has been an upward trend of the average temperature in Taiwan for the past 100 years. According to the Intergovernmental Panel on Climate Change (IPCC), the future temperature may increase by 1.3-1.8°C by the end of the 21st century, under the medium-level emission scenario with moderate warming degree. Meanwhile the rainfall will concentrate in summer and autumn, increasing by 14-20%. Meanwhile, the sea level has been rising sharply for the past 20 years, accelerating to 3.4mm per year from 1994 to 2013.

Rising temperature and changing rainfall patterns have caused great impacts and challenges on water resources dispatch and supply. It has accelerated the spread of disease which adds to the burden of the public medical care systems. Meanwhile, floods will be more frequent, which will impact the use of hydropower, and endanger the safety and quality of life on slopeland and in low-lying areas. Furthermore, reduced (light) rainfall has increased the drought, which makes water use scheduling more difficult.

Reservoir Dried Up, Penghu County by Ming-Ming Chen.

Zhuwei Fishing Harbor, Taoyuan City by Wen-Yan CHIAU

Coasts and Sea Area

The sea territory of Taiwan covers approximately 52,000 square kilometres. However, 56.29% of the coastline is artificial due to the coastal development competition after the *Martial Law* ended in 1987. With an inappropriate development scope and purpose, as well as insufficient knowledge and management, this posed a huge threat for the environment and the security of life.

Sea level rise will bring changes in coastal topography, drainage difficulties in low-lying areas, soil salinization disasters, which can lead to land loss, coastal erosion and shoreline retreat. Thus, the land use patterns in coastal and low-lying areas must be adjusted.

Water Resources

The average rainfall in Taiwan between 1995 and 2015 was about 2,545 mm, 2.6 times the world average rainfall (973 mm). The winter and spring rainfall is obvious, but the difference between the high and low water season is not obvious in the northern region of Taiwan. Towards the south, the water season difference is more substantial, the rainfall is unevenly distributed, and the intensity changes greatly, which makes the management and deployment of water resources difficult.

Surface water is the main source of domestic water supply, accounting for 69% of the total water supply, followed by groundwater, accounting for 31%. The groundwater resources are mainly located in the Taipei Basin, Taoyuan Zhongli, Xinmiao, Taichung, Zhuoshuixi Alluvial Fan and other regions (figure 3). The utilisation of natural water resources in Taiwan is targeted at 20 billion cubic meters per year, and maximum volume is 23 billion cubic meters (see table 1). New water supply is limited

Table 1. Summary of National Water Resources Demand and Supply

National Water Resources	Total Annual Consumption (10^8M^3)				Total Annual Utilisation (10^8M^3)			
	Total	Surface Water	Ground Water	Others	Total	Agriculture Consumption	Domestic Consumption	Industrial Consumption
	177.4	122.14	55.19	0.01	177.4	130.46	30.59	16.36
	100%	69%	31%	0%	100%	74%	17%	9%

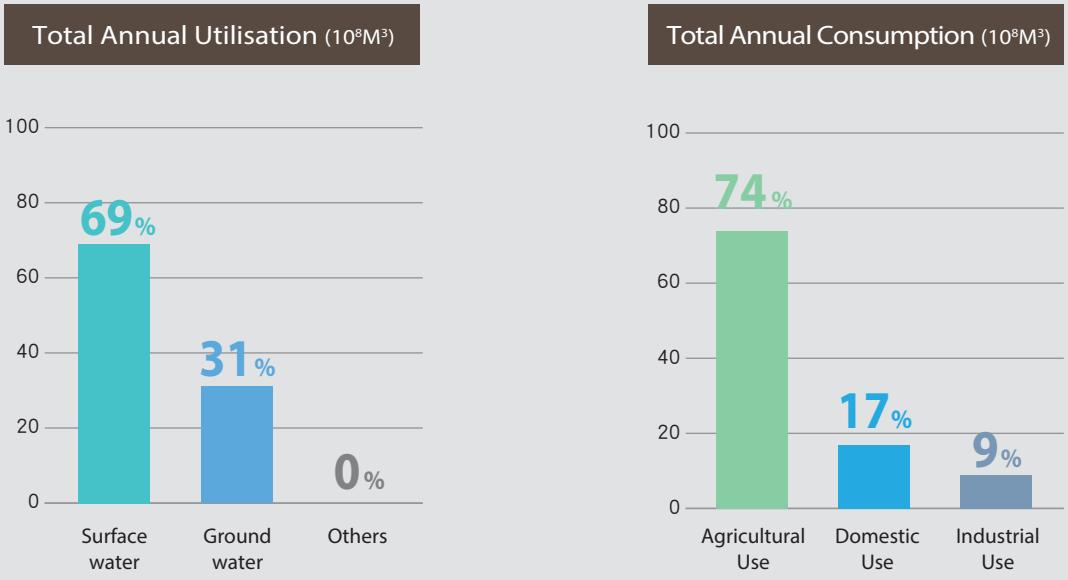


Figure 3. Annual Water Resources Demand and Supply

(Source: Water Resource Agency, Ministry of Economics, Statistic of Water Resources 2015)

because the surface water is concentrated in the flood season. If there is new demand for water in the region, in addition to improving the efficiency of existing water resources, it is also possible to invest in the establishment of water storage facilities, seawater desalination, or water recycling and utilisation.

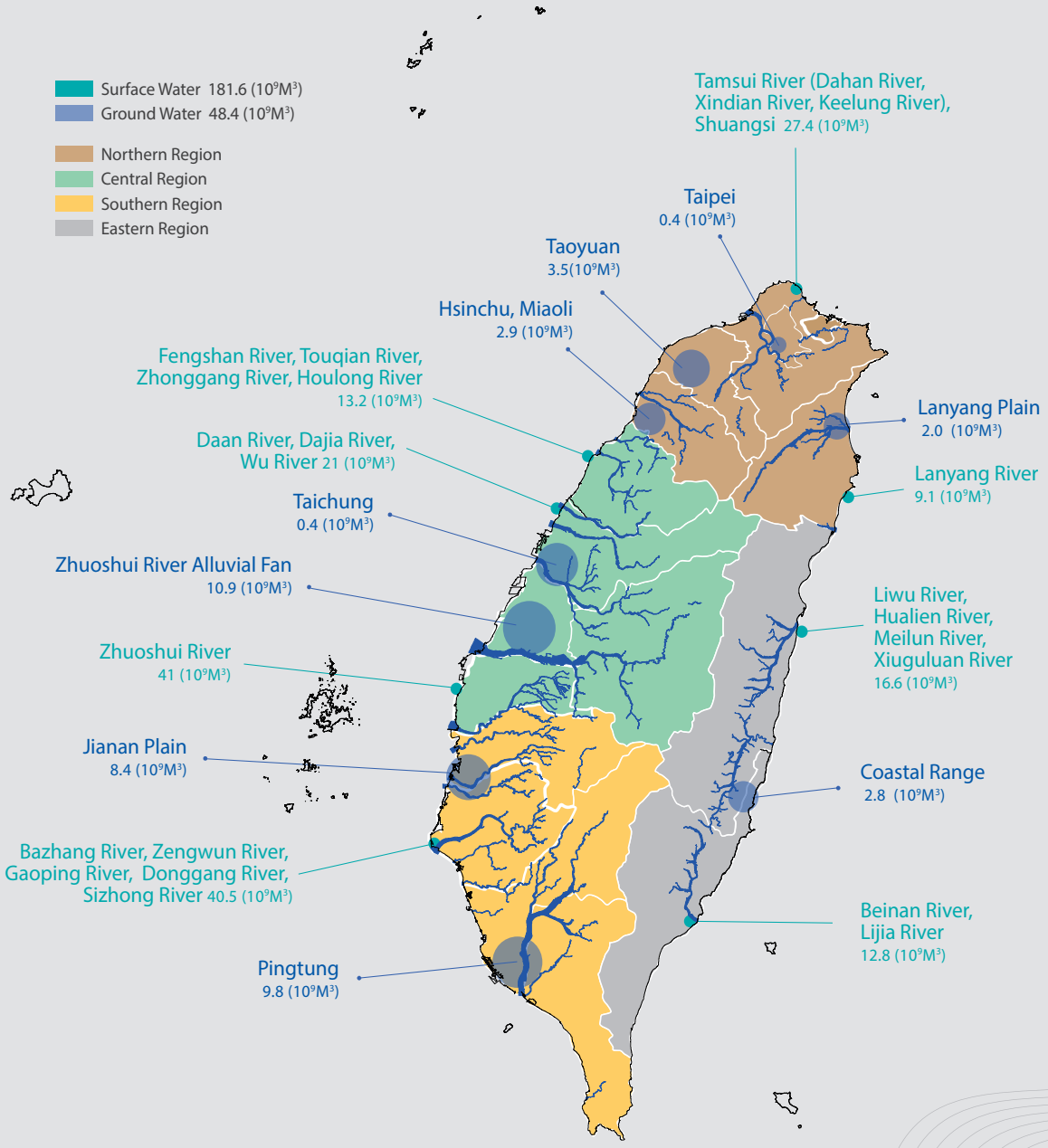


Figure 4. Limitation of Water Resources in the Four Regions of Main Island

Slope Farming, Nantou County by Wen-Yan CHIAU

Slopeland

The Slopeland area accounts for about 74% of the territory of Taiwan. It can be classified into three categories, namely for agriculture and pasture, for forest, and for conservation. The first group now consists of about 6,956 hectares, the size of which is regarded as potentially detrimental to the second and third group. This leads to challenges to keep water, especially where there is steep terrain and a fast-flowing river, the water supply could be influenced due to the high-water turbidity.

For pursuing economic growth, the available land for development in the plain has gradually become insufficient since the 1960s. Due to the Slope over-use and natural disasters, the surface soil has largely been eroded and deposits have increased in reservoirs resulting in a reduction of water storage areas and in turn flood control has been disabled, causing deposits of sediment which reduces water flow in rivers.

Issues and Predictions on Social Change

Population and Housing Supply Status

The population growth is declining, and the fertility rate is decreasing. Population outflow (de-population) is significant in some regions, leading to insufficient use of land. Thus land use development should react to these issues as soon as possible, including addressing the demand for welfare institutions and long-term care resources, as well as the adjustment of school facilities.

The total population by 2024 will reach a peak of 23.74 million people, followed by a descending growth (Figure 6).

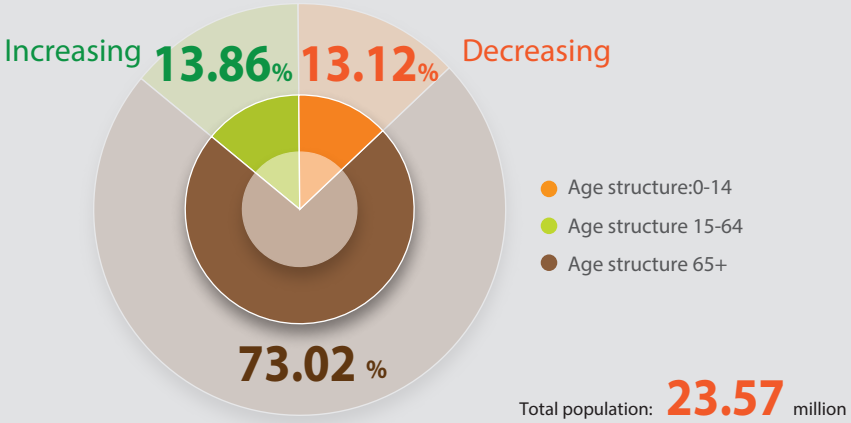


Figure 5. Population in Taiwan (by 2017)

The Taiwan housing market has come under pressure from demographic influence, scarcity of land, and fast economic growth. The growth in income caused by the rapid economic growth during the post-war period and in 1980's has increased residential demand for houses, and monetary growth has caused further investment demand for houses. The housing prices have continued to rise beyond the affordability of many, besides, the residential resources are unevenly distributed and the high vacancy rates in some major cities have significant negative effect on the change of housing prices. In terms of living quality, there are 2.94 million dwellings over 30 years of age, accounting for about 40% of the total housing stock, of which nearly 70% are concentrated in six major cities. Many of the

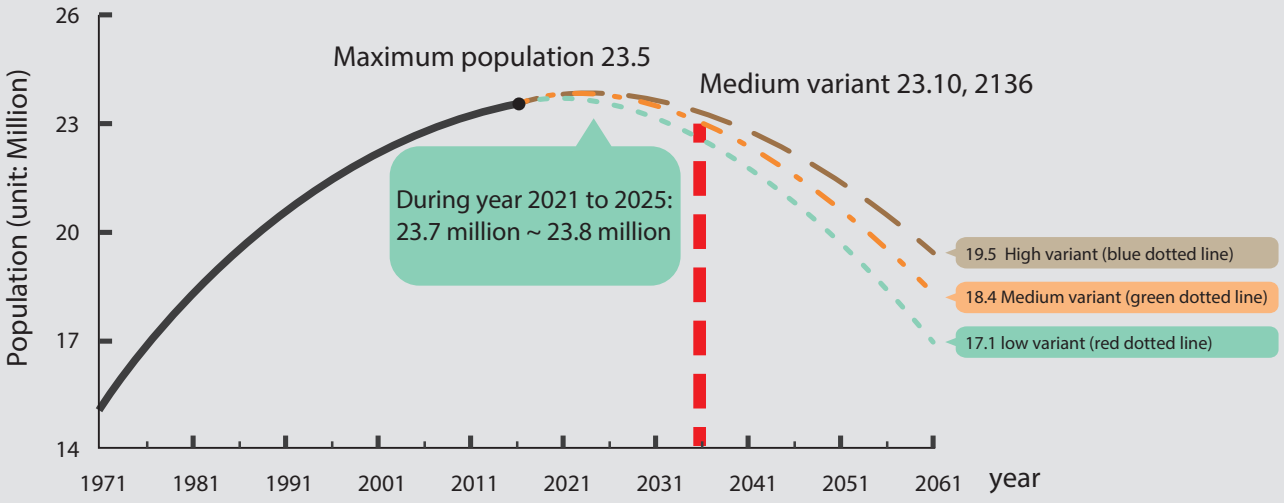


Figure 6. Trend of Population Growth (The total population in 2036, 23.1 millions, as the anticipated population in the National Spatial Plan)

(Source: National Development Council, Population Projection for the R.O.C (Taiwan) 2016-2061)

buildings are shabby and unsafe, with a lack of access for disabled or elderly people, and insufficient seismic strength to withstand the impact of earthquakes. There is a great need to enhance the dwelling quality of many people through improvement of the housing condition.

Housing demand is estimated at 11.28 million units over the plan period, based on an estimated population of 23.1 million in the goal year of the plan. Current housing supply is 12.62 million units, demonstrating that the supply of housing from both the urban areas and non-urban areas has the potential to meet the future need of the population. However, since many houses are of poor quality and poorly built, there will be a demand for new houses to replace some old ones, as well as improvement of existing ones, in addition to which, housing might be needed in areas of high demand.

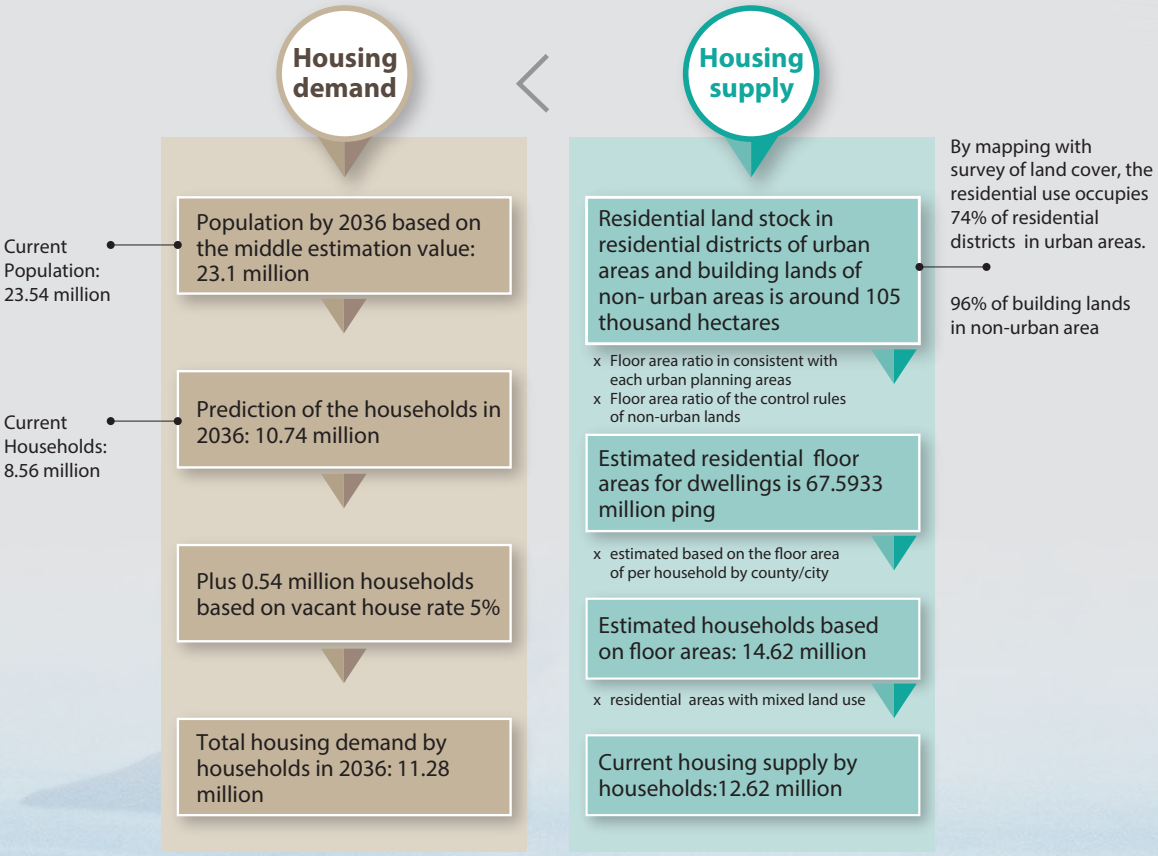


Figure 7. Housing Supply and Demand Projection

Industry

Taiwan's main industry has been transformed from agriculture to industrial and service industry. Currently as a proportion of GDP (of various industries), agriculture accounts for 1.82%, industry accounts for 35.04%, and service industry accounts for 63.14%.

Among the 62 industrial zones developed by the Industrial Bureau of the Ministry of Economic Affairs, 55 have been developed for more than 15 years, accounting for 88% of the total. However, 32 out of 55 have functioned more than 30 years, facing problems such as old facilities and insufficient living conditions.

There are approximately 39,000 unregistered factories in Taiwan. Most of the unregistered factories are in specific agricultural areas of non-urban land, where the agricultural production environment is destroyed due to the establishment of the factories and equipment.

Farmland

Agricultural areas are productive and important for domestic food self-sufficiency; thus preservation of agricultural areas is fundamental. However, the amount of agricultural land continues to decline for the last ten years, and this strongly needs attention in the plan.

Until 2015, the stock of all farmland in Taiwan was 79.8%, meaning about 20.2% of the stock of farmland has been changed to other uses (Figure 8). About two thirds of the municipalities and counties (cities) have more than 50% of the highly-complete farmland, and one third of the municipalities have more than 40% of the low-complete farmland, indicating the issue of farmland fragmentation (Figure 9).

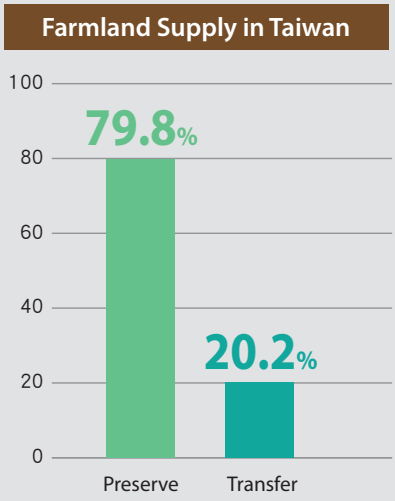


Figure 8. Farmland Supply in Taiwan

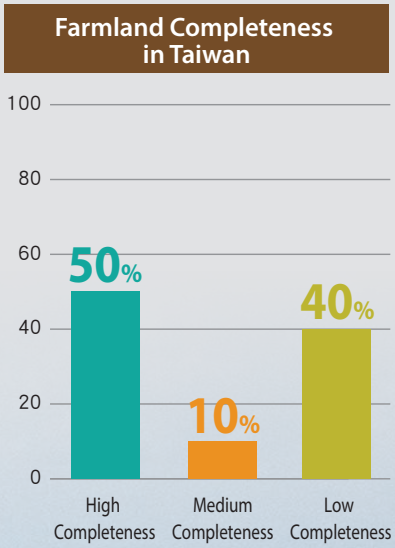


Figure 9. Farmland Completeness in Taiwan

Lanyang Plain, Yilan County by Randl Design

The zoning of non-urban area is mostly demarcated according to the current utilisation. With the transition of industrial structure, the economic output of agriculture is shrinking. In addition, the alteration of farmland in line with the national major construction, and the increase of change caused by the construction of farmhouses and illegal use (such as unregistered factories on farmland) are all seriously affecting agricultural resources and productivity.

Farmland Stock:

It refers to the area of agricultural and pastures land in special agricultural zones in the non-urban area and the general agricultural area, which is really used as agricultural production.

Farmland Completeness:

According to the land use monitoring plan in 2011, in which the completeness of agricultural land in 15 municipalities and counties (cities) is analysed. The completeness (coverage) of the farmland is divided into high (75-100%), medium (50-75%), and low (0-50%).

Luxury Farmhouses by Wen-Yan CHIAU

Smangus Village, Hsinchu County by Randl Design

Indigenous Land

The total area of indigenous reserves is 264,783 hectares, including 5,372 hectares in the city, and 259,411 hectares in non-urban areas. Among the existing indigenous reserves, only 76,318 hectares are allowed for agricultural use. More than 60% of the indigenous people work in agriculture, forestry, fishery and animal husbandry and need to work part-time to support their families. Limited by current regulations, indigenous people are unable to utilise nature resources in their traditional way, which also has an impact upon their livelihood.

Indigenous Tribal, Yilan County by Wen-Yan CHIAU

Bee Farm, New Taipei City by Yu-Yuan LU

Prospects

Sustainable National Land Development

Nenggao Mountain by Chien-Nan LIU

The National Spatial Plan uses 'safety', 'orderly' and 'harmony' as its overall goals for space development.

Safety focuses on environmental protection, strengthening land adaptation, co-ordinating watershed management, reviewing land use control, and strengthening coastal, wetland and sea area management, building a national ecological network, and further maintaining the total amount of agricultural land and constructing a sustainable environment.

Orderly guides urban-rural development, integrates spatial planning for industrial development, implements intensive development, and promotes sustainable urban-rural management. In rural areas focus will be on creating a high-quality farming environment, integrating regional cultural,

ecological and landscape resources, strengthening cultural tourism, kinetic energy and driving local economic growth with a diversified business model.

Harmony is to implement fairness and justice, and to consider specific natural, economic, cultural or other conditions to formulate specific regional plans. The land for development shall be reasonably compensated after proposed resettlement and there will be supporting plans to ensure fair opportunities for urban-rural development.

The sustainable spatial development will be executed through taking the safety as the priority, being orderly as the principle, and harmony as the goal.

Photo by Randl Design

Dapochih Wetland, Taitung County by An-Shun HSIAO

Vision for Sustainable Development

As sustainable spatial development will face challenges from the environment, economy, and society, the plan sets up its overall objective for spatial development as "safety-environmental protection for sustaining land resources", "order–economic development guides urban-rural development", and "harmony-social justice and fairness" (Figure 10).

Safety

Environmental protection for sustaining land resources

I. Enhance spatial adaptability in response to extreme weather and climate change.
II. Maintain the total amount of farmland and enhance production benefit.
III. Construct a national ecological network and enhance the management of coasts, wetlands and marine.
IV. Encourage sustainable energy and water use to achieve energy efficiency and carbon reduction.
V. Conduct land use planning and review corresponding river basin management.

Order

Economic development guides urban-rural development

I. Implement the compact development to promote sustainable urban-rural planning.
II. Integrate industrial and spatial development according to national industrial policy.
III. Increase mobility, accessibility, connectivity of transportation systems.
IV. Create and conserve high-quality farming environment to promote agricultural sustainable development.
V. Integrate regional culture and ecological landscape resources to strengthen the culture tourism development.

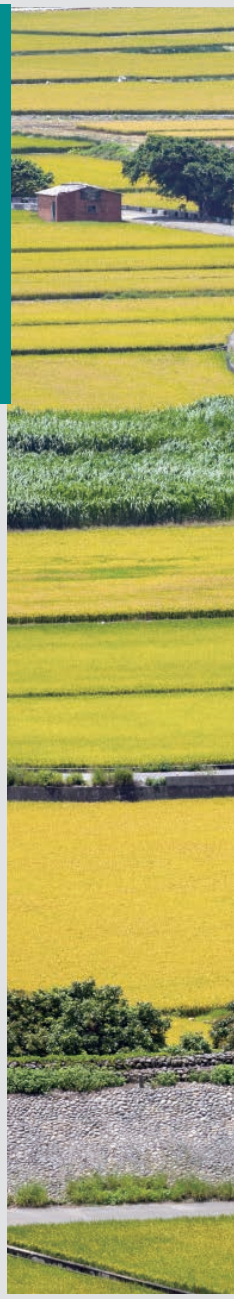
Harmony

Social justice and fairness

I. Establish a reasonable compensation mechanism to ensure fair development.
II. Formulate metropolitan area and special district planning to balance urban-rural development.

Figure 10. Visions and Objectives of the National Spatial Plan

Safety: Environmental Protection for Sustaining Land Resources



Enhance spatial adaptability in response to extreme weather and climate change

In response to the extreme rainfall, drought, and sea level rise caused by climate change and earthquakes, local governments should study different kinds of natural disaster, and propose measures for risk management, including land use planning, water supply, and drought prevention in order to enhance spatial adaptability.

Maintain the total amount of farmland and enhance production benefit

Ensuring a stable food supply is one of the important objectives regarding the national security issue faced with the threat of climate change, energy price fluctuation and other political-economic factors. Therefore, the ways to achieve the objective are not only to control the quantity of farmland but also to maintain the quality of farmland. In addition to protecting the farmland, the strategies for maintaining agricultural production, the enforcement in seizing illegal land use damaging the production purpose on farmland will be conducted.

Construct a national ecological network and enhance the management of coasts, wetlands and marine

For the fragile mountains and coastal environment, preservation areas and environmentally sensitive areas have been planned to form the Central Range Preservation Axis. For stabilising coastal areas along the shoreline, tasks such as wetland protection, sea area management, and marine resource protection have been actively promoted recently. This will also be integrated with the management for river basins, regional ecological resources, the ecosystem of agriculture in the near future, to connect the national eco-network for mountains, plains, coasts and even the sea area, and to achieve biodiversity and environmental sustainability in Taiwan.

Waipu Farmland, Taichung City by Randl Design

Encourage sustainable energy and water use to achieve energy efficiency and carbon reduction

Under the influence of climate change impacts, energy and water resources are strategic resources of great importance for a nation. In line with the relevant regulations on greenhouse gas reduction in the Paris Agreement that came into effect in 2016, the core values of Taiwan's national energy policies would be based on the balanced development in four major aspects: energy security, green economy, environmental sustainability, and social equity so as to foster the sustainable energy development. Applying renewable energy and alternative water resources to promote resource circularity have become one of the important plans to promote energy conservation and carbon emission reduction. Therefore, the planning for national land needs to integrate urban-rural development with energy and water resources development for building a safe, stable, and sustainable environment.

Taipei Water Resources District by Center for Space and Remote Sensing Research, National Central University

Conduct land use planning and review corresponding to river basin management

Each city should consider the whole river basin for making overarching water preservation, water quality protection, climate adaptation, low impact development, flood prevention, shoreline protection plans, in order to strengthen the adaptability of the river basin. In addition, it is also necessary to strengthen the land use management for the reservoir catchment areas, to reduce irregularities such as deforestation upstream, as well as water pollution and soil erosion.

Paris Agreement

In the 21st Conference of the Parties (COP21) of the United Nations Framework Convention on Climate Change (UNFCCC) held in Paris in December 2015, the parties agreed to work together to control the rise of the Earth's temperature in the future. The Paris Agreement central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius..
Unlike the Kyoto Protocol, the Paris Agreement extends the emission reduction obligations to mainland China and India. It also requires developed countries to provide climate change funds to help developing countries reduce greenhouse gas emissions and have the ability to face the consequences of global climate change. It also allows countries to demonstrate their carbon reduction determination to set the Intended Nationally Determined Contribution within a five-cycle which will be renewed at the end of each period.

Order: Economic Development Guides Urban-rural Development

Implement compact development to promote sustainable urban-rural planning

According to the prediction of household and population development, the current urban area can provide the future demands for residential development. Therefore the future development plan should give priority to the existing planning areas and non-urban developed areas. Meanwhile, the urban regeneration process, unified development in urban planning areas need to be accelerated for improving land use efficiency. The improvement in the policy-oriented facilities and communities of the housing, employment, education, and medical care needs reviewing existing public facilities land transformation as well as promoting affordable housing and the long-term care facilities for the underprivileged group. In addition, if the demand for urban-rural development land increases, to carry out the order of urban-rural development by prioritizing the use of existing development land.

Integrate industrial and spatial development according to national industrial policy

The central and local authorities demarcate industrial land by considering the industrial policy, important transportation mobility, the supply of renewable energy, local industrial development and agglomeration, and industry-academy resources. Meanwhile, the authorities need to redevelop and revitalise the industrial land as well as to renew the old industrial parks for the needs of the land market.

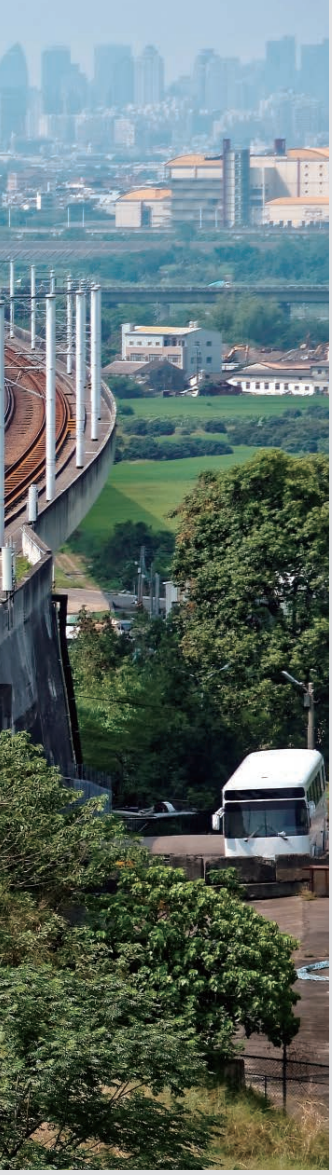
Taipei City by Randl Design

Taichung Section of the Taiwan High Speed Rail by Randl Design

Increase mobility, accessibility, connectivity of transportation systems

Under the premise of promoting compact city and mitigation, each city should collaborate and integrate their regional transport network based on public transportation, to bridge industries and international transport hubs. In response to industrial development policies and demand, each industrial park development should take into account the accessibility of public transport, renewable energy, existing local economy and potential, as well as education resources from universities and R&D institutions. This helps for integrating existing networks for industry-university collaboration, and for encouraging green production to achieve solid economic foundation and outward expansion.

In areas where no rail transport or highway systems connected, advanced transport technology should be applied in systems such as local transfer hubs, shuttle buses, automatic transportation to improve connectivity between suburban areas and metropolitan areas. For offshore islands, the emergency medical transportation and green transportation development should be strengthened to establish a safe and efficient transport network nationally.



Sun Moon Lake, Nantou County by Randl Design

Create and conserve high-quality farming environment to promote agricultural sustainable development

To increase farmers' income and agricultural output value by considering the safety of agricultural products and the maintenance of environmental sustainability, it is necessary to increase the investment in agricultural resources for creating a high-quality agricultural environment, to encourage farmers to continue production, and to coordinate with policies such as "setting up agricultural paradigm", "building agricultural safety systems" and "improving agricultural marketing capabilities".

Integrate regional culture and ecological landscape resources to strengthen the culture tourism development

For areas such as national scenic areas, forest recreation areas and national parks that promote ecological education and landscape recreation, it is necessary to integrate cultural tourism resources, museums, traditional sites, and ecological resources into tourist cities, tourist regions, and a corridor for culture tourism.

Harmony:
Social Justice and Fairness

Establish a reasonable compensation mechanism to ensure fair development

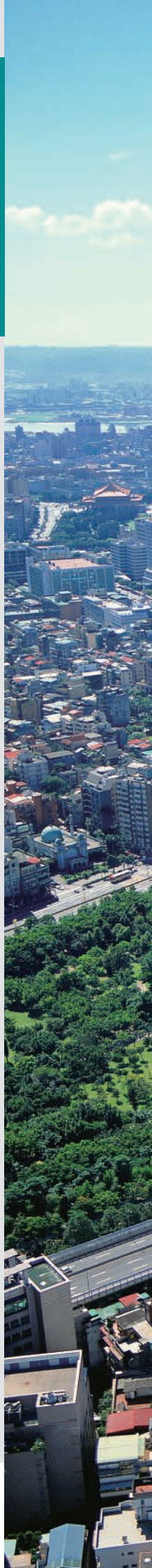
In areas where there is a clear need for ecological conservation or homeland security, in addition to the research and development of regenerative plans, it should be accompanied by resettlement and supporting plans to provide reasonable compensation for the land and buildings that are restricted for development due to emergency rehabilitative needs. The development areas should be guided by sustainable ecological principles alongside the improvement of the service level of public facilities, once the consent of residents is obtained. There needs to be assistance in resettlement, employment, schooling, as well as raising and preserving their traditional culture to ensure fair development.

Formulate metropolitan area and specific area plans to balance urban-rural development

In response to the trend of urban centralisation brought by the high-speed railway development and the upgrading of six cities, each metropolitan area should co-ordinate with each other on regional characteristics and overarching needs to develop a metropolitan area plan and strengthen regional cross-disciplinary functions in order to enhance the city's competitiveness.

For areas such as offshore islands, rural townships, indigenous lands, and river basins, special district plans should be made, by taking their identities such as special natural, economic, cultural or other conditions into consideration, to achieve the goal of preservation. The making of recovery plans should be accompanied by resettlement and supporting plans, to provide reasonable compensation for the land and buildings subject to restricted development due to emergent needs for rehabilitation. Sustainable and eco-friendly development areas should be planned, to enhance the service level of public facilities. Assistance should be provided with the permission of locals, in resettlement, employment, education, and traditional culture preservation, to ensure fair opportunities for urban-rural development.

Public Housing in Wanhua Dist, Taipei City by Chih-Hsuei WU



Daan Park Located in the Core of Taipei City by Ming-Ming Chen

Strategies

Spatial Development and Land Resilience

Estuary of the Hualien River by Ming-Ming Chen

Under the overall goal of sustainable land development, the plan is in response to the impact of climate change, as well as the spatial development issues that the current society is facing. The plan proposes strategies for land spatial development and growth management to encourage better resource distribution and enhance spatial governance and national competitiveness.

The strategies cover natural disaster conservation, ecological and resource conservation, marine conservation or development, cultural landscape conservation, national farmland protection, land development for indigenous groups as well as strategies for urban development. Spatial development should plan for future

development. Urban areas, industrial areas and development-permitted districts should be reviewed first, following which other types of lands will be developed

The planning strategy should also integrate the goals from other departments such as industry, transportation, infrastructure, social housing and welfare to inform better policies and site locations and to avoid development conflicts. Strategies on land use and management should be developing to react to issues such as natural disaster prevention, climate change adaptation and urban disaster, so as to mitigate disaster impact and to satisfy economic development needs.

Photo by Randl Design

Spatial Development Strategies

The National Spatial Plan proposes to maintain sustainable land management in response to natural disasters, ecology, sea area, cultural landscapes, agricultural land, indigenous peoples and other different aspects of conservation and management.

Natural Disaster Prevention and Control

Natural disasters such as flooding, landslide, soil liquefaction, mudflow, and tsunami will be approached simultaneously from both disaster prevention methods and mitigation approaches. The disaster prevention section conducts overall management in the river basin area, and actively prepares urban-rural infrastructure such as evacuation routes, evacuation sites and disaster prevention sites. Major public facilities should not be planned near the high-risk area of the active fault and soil liquefaction. Buildings should be strengthened through disaster-proof urban renewal and earthquake-resistant reinforcement to enhance their disaster-resistant capacity. For the mitigation approach, measures can be taken such as identifying high-risk area through building up and sharing a disaster prevention database. This serves as an important reference for both urban-rural development planning.

Ecological Conservation

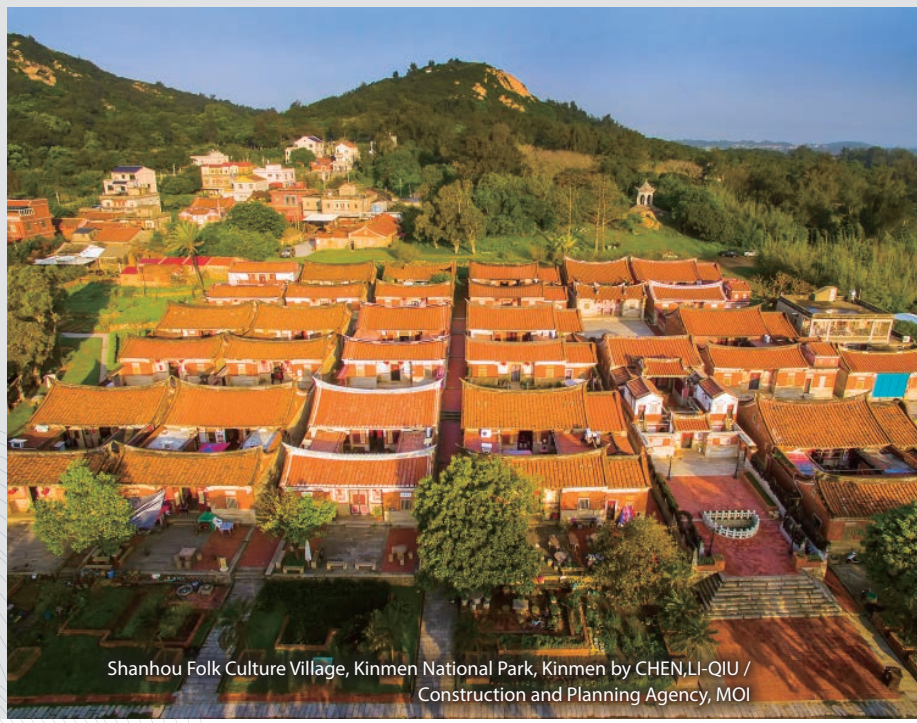
A complete ecological protection network should be composed, starting from the Central Range conservation axis, extending along the rivers, ditches, wetlands towards plains, and connecting existing national parks, natural reserves, primary forests, natural forests, security forests, and important habitats of wild animals. Areas with important ecological and environmental sensitivity should be designated as prohibited or restricted with an appropriate buffer to balance between the artificial environment and the natural environment.

Cultural Preservation

In addition to the conservation of the natural environment, the cultural landscape formed by the long-term interaction between the human and the natural environment is also an important topic in the plan. The spatial planning of the cultural landscape area, in addition to the maintenance of cultural or natural landscapes, should also consider the surrounding architectural style, street landscape, activity space, important gathering places and other places. Appropriate land use control regulations should be established for those buildings and historical sites with preservation values based on their characteristics, to encourage the integration of cultural landscapes and surrounding architectural features and activities.

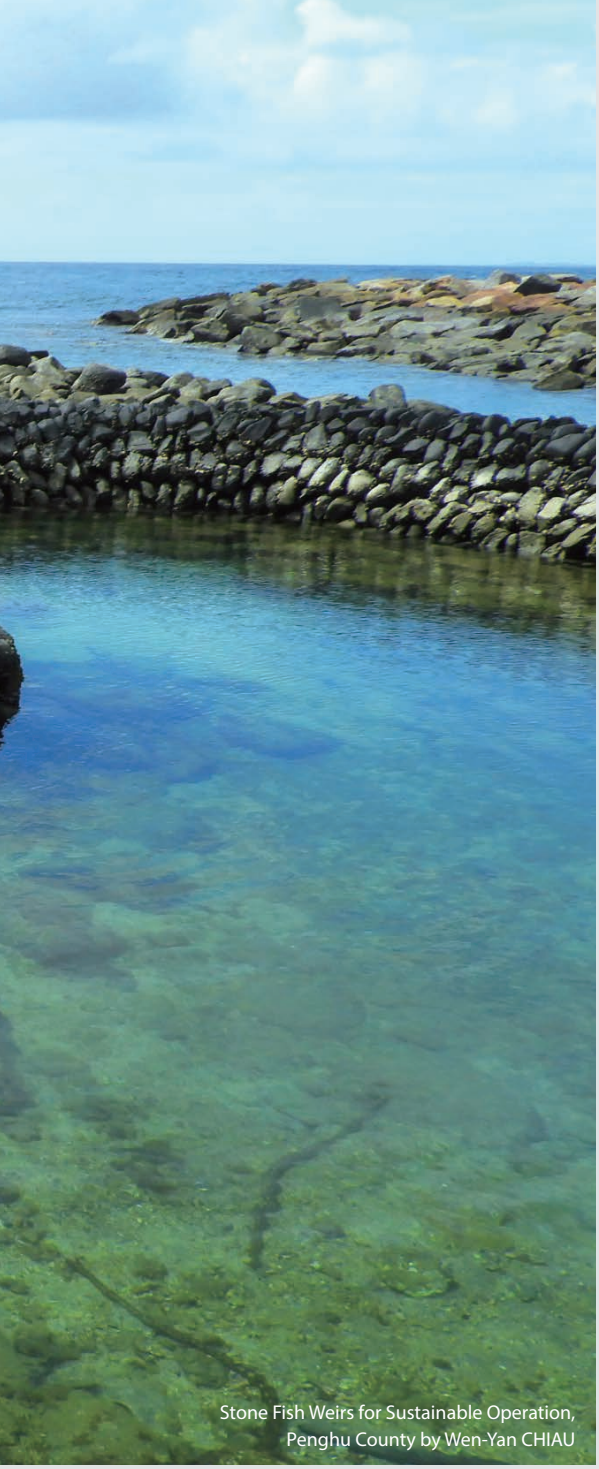
Ecological Landscape, Jianshi Township, Hsinchu County by Randl Design

Natural Disaster by Wen-Yan CHIAU



Shanhou Folk Culture Village, Kinmen National Park, Kinmen by CHEN,LI-QIU / Construction and Planning Agency, MOI

Thousand-Island Lake in the Catchment Area of the Feitsui Reservoir, New Taipei City by Randl Design



Stone Fish Weirs for Sustainable Operation, Penghu County by Wen-Yan CHIAU

Natural Resource Conservation

Environmental resource surveys should be conducted among forests, aquatic species conservation areas, artificial and protected reef areas, reservoir catchment areas, water storage areas, water-quality and water-quantity conservation districts and water-quality and water-quantity conservation districts of drinking water etc. Those areas should be classified and managed based on their characteristics. For the mining industry, apart from meeting the domestic demand, there should be reasonable planning for the total mass control and site location and ecological remediation measures should be implemented to ensure the sustainable use of resources.

Wise Use of Marine Environments

The plan states that there should be a Comprehensive investigation and continuous updating of the basic data of natural and human resources, ecosystems, and marine environment in the sea area, identifying the demand from social and economic development, energy and mineral development, public water, cultural preservation, and indigenous people's traditions. A new data base should be established with a mechanism for managing the use of sea behaviour to ensure marine ecological conservation and marine use. In addition, the monitoring system of relevant domestic institutions and academic units should be integrated to keep abreast of the energy, resources, minerals, socio-economic development and other activities in the sea area, as well as activities related to the sea surface, water bodies, seabed and subsoil, to access to all kinds of information quickly, correctly and fully obtained.

Rice Harvest, Yilan County by Randl Design

Agricultural Land Resource Protection

Non-agricultural facilities and their use should be avoided within the agricultural production area. For those with a necessary need for facilities, the use should be compatible and should not affect the surrounding agricultural production environment. In order to guide the sustainable agriculture development, there should be investments to strengthen the important facilities of agricultural production, including the construction of irrigation facilities and protective facilities, in order to facilitate the economies of scale and centralisation, and improve the efficiency of agricultural operations.

Adaptive Urban-Rural Development

In order to effectively use land resources, save energy and improve the efficiency of public facilities, the city should be developed as a compact city, to strengthen the land use density near public transport stations and their immediate surrounding areas. Major public facilities should consider the site location of regional industries. Development of new communities and industrial parks should be reduced if there is no real population or industrial growth. The governmental resources should be integrated to handle urban regeneration and rural planning, and to transform the functions of old urban areas and rural areas. In addition, appropriate measures should be taken for areas that are not suitable for living or industrial activities.

Indigenous Land Development

The plan suggests to investigate the land use behaviours and public facility demand, and consider the environmental sensitive conditions and indigenous groups' needs to designate functional zones and land use control guidelines. If land use conflicts cannot be solved by the municipality or county (city) spatial plan, special area planning should be proposed to develop specific measures. In addition, the indigenous spatial planning should be carried out by encouraging tribal independence and bottom-up public participation.

Resilience

According to the definition of Local Governments for Sustainability (ICLEI), when resilience is applied in the national and urban areas, it refers to the capacity of a social or ecological system and its component parts to cope with hazardous shocks and stresses in a timely and efficient manner by responding, adapting, and transforming in ways that restore, maintain, and even improve its essential functions, structures, and identity while retaining the capacity for growth and change.

Compact City

According to the definitions of UNEP and UN-Habitat, a compact city includes mixed use, street design for pedestrian or public transportation, concentration of population and employment. It applies an intense urban form to effectively curb urban sprawl, protect open space in the suburbs, reduce energy consumption, and create a diverse and vibrant urban living environment for people. The main planning principles include encouraging high-density development, mixed use in the central area and prioritising the public transport development.

Paiwan Slate House by Randl Design

Growth Management Strategies

In order to cope with the changing environment, population and social economy in the future, the municipal and county (city) spatial plans should be based on the growth management strategy of the project. The growth management plan should be developed to clarify the total urban development, location and function, in order to guide the urban-rural development and use.

The Total Amount of Farmland

In order to ensure the food security in our country, the demand for agricultural land for domestic food production will be 740,000 to 810,000 hectares, with a basic daily calorie of 2,000 kcal to 2,100 kcal per person. Each municipal, county (city) government should actively maintain the quality and quantity, and state clearly its distribution area and location in their spatial plans.

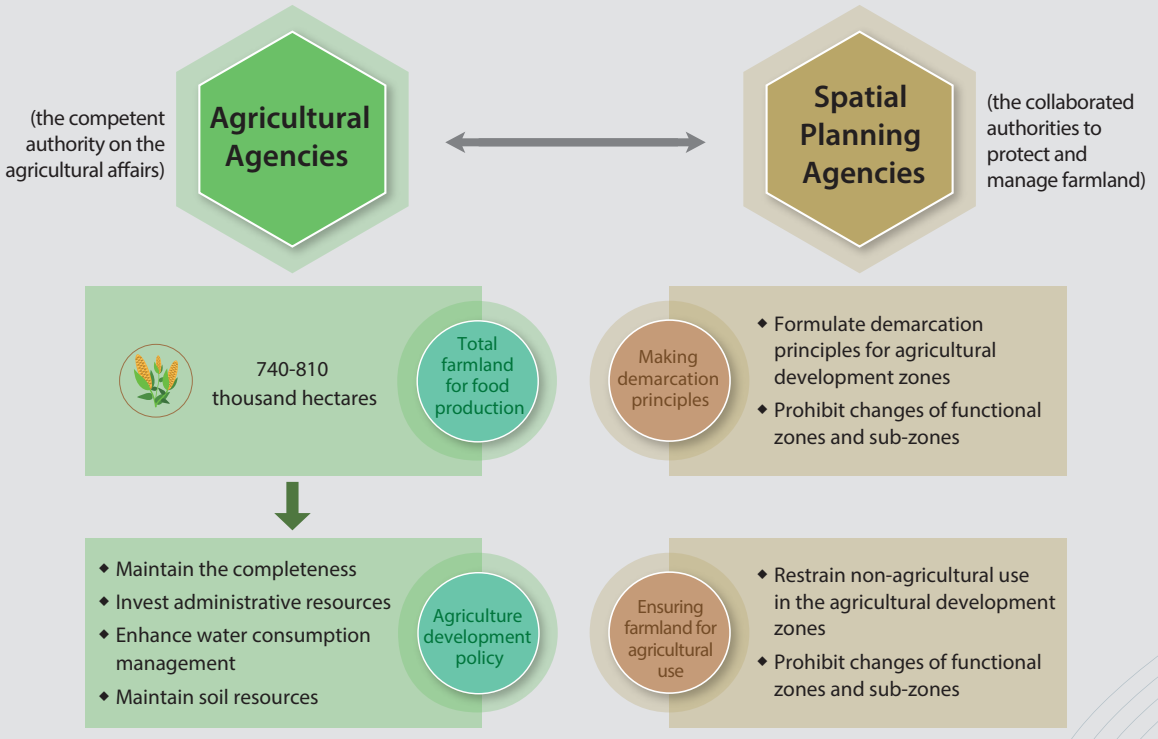


Figure 11. The Protection and Management of Farmland

Chihshang Township, Taitung County by An-Shun HSIAO

Total Amount, Location and Priorities of Urban-Rural Development

I. Total amount

The total amount of urban-rural development refers to the existing and future development areas. The existing development area is about 600,000 hectares, including existing urban areas, rural areas, industrial areas, and development permit areas that were originally designated by the *Regional Planning Act*. As for the future development area, it has to be planned after the municipal and county (city) government verify the population and industrial development assessment. Currently there is new demand for industrial areas of 3,311 hectares, and new demand for industrial parks of 1,000 hectares by 2036 (Figure 11).

Figure 12. Total Amount of Urban-Rural Development

II. Location

When a municipality or county (city) spatial plan designates a future development (expansion) area, the location should meet at least one of the following demarcated priorities and principles (see below), in addition to the following areas being avoided:

1. An area within a certain distance from public transport facilities.
2. The location of the township office where an urban plan should be drafted in accordance with the provisions of the *Urban Planning Law*.
3. The non-urban area located between urban areas within 2 km adjacency that should be integrated as an expanding urban area.
4. The area for integrated development, which is adjacent to the rural areas and the development permit areas (originally defined by the *Regional Planning Act*), or within a certain distance of the existing urban planning areas.
5. The area for increasing residential and commercial land, where the development rate of residential areas or commercial areas has reached 80%, and no release of agricultural areas (not the fifth category of agricultural development area) ; or the area that improves the level of service of necessary public facilities, in response to local population development and demographic changes.

6. The area for increasing the industrial land, where the development rate of industrial zones or industrial-related sub-districts has reached 80%, and no release of agricultural areas (not the fifth category of agricultural development area); or the area within a certain distance from the public transport nodes where the passenger transportation services or the transport system can be satisfied.

7. The expansion area of rural areas, industrial areas, and development permit areas, which was originally defined by the *Regional Planning Act*, or the area belonging to the scope of a major infrastructure plan.

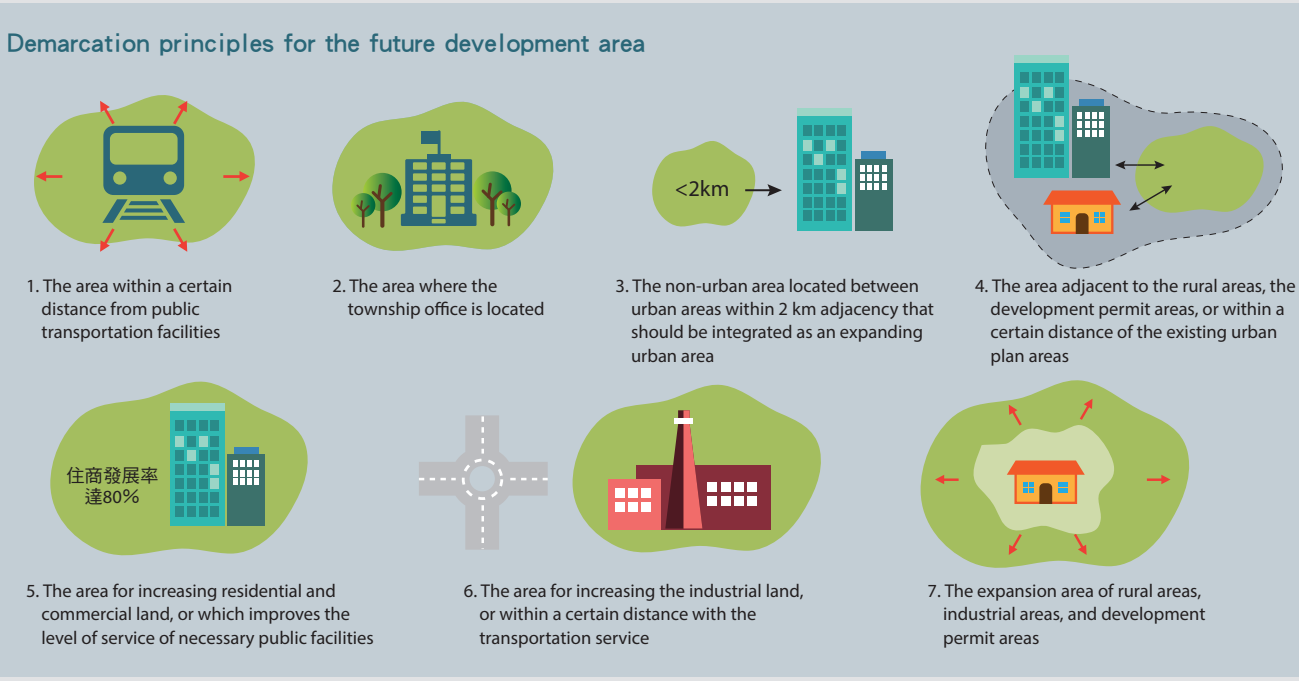


Figure 13. Location for Urban-Rural Development Growth

III. Priorities

In the future, the use for urban development area should give priority to the vacant and low-use land in existing development areas, as well as the districts for urban renewal and overall development, followed by the agricultural land within the urban area, and finally the area with specific development need within 5 years in the adjacent areas (Figure 13).

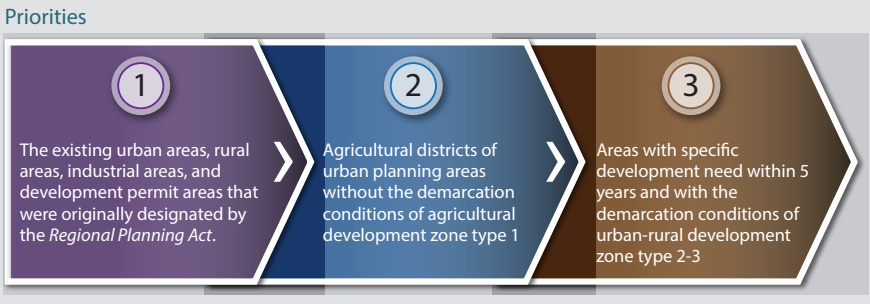


Figure 14. Priority of Urban-Rural Development

Improving the environmental quality and providing public facilities

The reasonable public facilities and service level should be assessed for the existing urban planning areas. The site and development phasing of those primary public facilities should be clarified. Liveable housing should be planned in accordance with the relevant provisions of the *Housing Law*, for improving the living quality of the existing area. Those unused public facility reserves should be reviewed and changed, while the existing public facilities should also be evaluated or transformed considering the trend of the ageing city. In addition, areas with high population and air quality below the national standard should avoid introducing high-pollution or high-energy-consuming industries such as petrochemicals and steel.

Ao-Feng Hill Park, Taichung City by Randl Design

Public Transportation in Puli Township, Nantou County by Randl Design


Wen-Xin Forest Park, Taichung City by Randl Design


Wen-Xin Forest Park, Taichung City by Randl Design

Improving economic development opportunities and social justice and fairness

Population growth will not be the goal in this strategy. There will be a review the planned population of land use plans at all levels which will verify the appropriate size and enhance the utilisation of space by not increasing housing areas. Improve water, medical care, public transportation systems, information infrastructure and other public services in the rural areas, to maintain basic living functions. The municipal or county (city) government should actively investigate and report violations and continuously monitor and track their improvement, including measuring water or power supply suspension, closure, demolition and other matters according to the law for restoration of the original condition.

Sectoral Spatial Development Strategies

Residential, industrial, transport, energy and water facilities all impact a region's spatial developmental framework. National spatial plan must take the spatial development strategies of these facilities into account in order to avoid conflict between different sectoral spatial development strategies or plans.

Industrial Sectors

I. Agriculture, Forestry, Fishing and Animal Husbandry

Progressive extension of agricultural land, promotion of irrigation and drainage canal separation, and agricultural product supply chain support, such as building regional processing and logistics facilities. Enhancing forestry water conservation, surveying manmade forests, and carrying out thinning, rearing, and disposition of materials to manufacturing countries. Promoting "ocean farms" by helping to establish fish farming zones in deep-sea areas. Encouraging the establishment of leisure farms in prioritised agricultural zones in order to promote clustering. Developing agricultural technology by building high-tech agricultural industrial clusters with R&D, value adding, and domestic and international sales capabilities.

II. Manufacturing

Reserving land for key industries and industrial clusters and establishing an industrial land reserve mechanism that fosters greater flexibility to respond to industrial changes. In the future, technology park development shall primarily take place within existing parks. If expansion is needed, priority shall be given to surrounding land.

III. Mining and Quarrying

When applying to conduct mining operations, the scope shall be limited and comply with the demarcation of functional zones. Besides sand and gravel from rivers or construction surpluses, mining zone ore, and sand and gravel that is specially designated or imported, excavation of remaining land deposits shall not exceed an area of 300 hectares per year.

IV. Tourism Industry

New tourism industry developments shall be based on market demand and supply and regional suitability for urban and rural development. Areas of low urbanisation shall be guided towards natural landscape recreational models. Areas of high urbanisation shall be guided towards high-density or facility-based recreational experiences. Tourism development in national scenic areas will continue to prioritise the environment and encourage the reduction of building new facilities.

Hwa Ya Technology Park, Taoyuan City by Hsien-Cheng YEN

The industrial structure of Taiwan has already progressed from being primarily based on agriculture to its current state of being led by industry and services. At the end of 2016, Taiwan's GDP was approximately NT$16 trillion. Services accounted for a majority of GDP, at 63.14%, followed by industry at 35.04%. Agricultural output value was lowest, at just 1.82%.

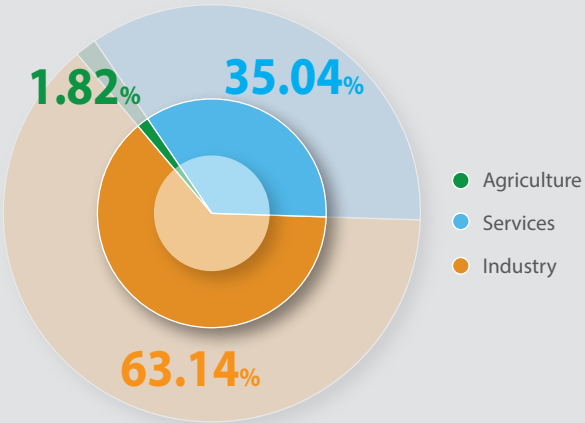


Figure 15. GDP by 2016

Transportation Sectors

From a national development perspective, there will be an examination of the distribution and location of all airports and commercial ports to integrate and strengthen rail systems and transfer services between various transportation modes. Combining smart transportation and cloud infrastructure, the gathering and distribution of real-time transit information is improved (added value). In the spirit of sustainable transport, inter-city transport on the western corridor is centred on the high-speed rail and supported by Taiwan Railways. Inter-city transport on the eastern corridor is centred on Taiwan Railways and supported by the highway network. Urban zones shall strengthen Taiwan Railways express services and integrate mass-rapid transit systems into the public transport network. Remote areas shall strengthen community shuttle buses and demand-responsive transport.

Port of Keelung's West Coast Area by Randl Design

Residential Sectors

Research is underway on amending the Housing Act to increase the ratio of disadvantaged tenants in leased social housing. The aim is to promote lease housing for sub-letting and offer incentives to property management firms and landlords to encourage them to convert existing rental properties to social housing. By 2024, it is forecast that the government will have directly built 120,000 units and leased 80,000 units for sub-letting.

Critical Infrastructure Sectors

I. Sewage System

The aim is to accelerate wastewater sewage construction projects in densely populated areas. Prioritised promotion, planning and construction shall be given to projects taking place in reservoir catchment zones. Before the construction of sewage systems is complete, on-site treatment facilities shall be built in areas near where pollution is discharged into rivers, or the wastewater shall be diverted to facilities that recycle household water. Rainwater sewers shall be prioritised in accordance with urban planning and in areas that are prone to flooding. These shall be part of a wider water management plan that includes detention basins, flood mitigation, and flood diversion.

Landfill Transformed into Green Space, Taipei City by Chih-Hsuei WU

II. Environmental Protection Facilities

On land with existing incineration plants, the inspection and life expansion of the plants will be promoted for higher efficiency, and the renovation or regeneration of incineration plants that are already operating or landfills that have not yet undergone restoration. Regulators of target businesses shall forecast the volume of major waste products and evaluate whether existing processing channels are sufficient. This data can be used when planning new waste processing facilities.

III. Long-term Care Facilities

As the ageing of the population continues to grow, long-term care is an important response. In the future idle land will be surveyed and prioritised for the construction of long-term care facilities. Simplifying administrative procedures relating to the release of idle land will accelerate the construction of community-style and dormitory-style facilities. Integrated rehabilitation buses and subsidised taxis that accommodate the handicapped shall further raise the accessibility and convenience of long-term care services.

IV. Energy Facilities

Energy facilities are to be encouraged to utilise thermal power, natural gas, solar power, wind power, and hydraulic power. Thermal energy remains the main power generating method. In the future, as equipment is replaced at existing thermal factories, there will be promotion of upgrades and expansions to fuel gas power generating equipment in response to the government's 2025 energy transformation planning. There will be a gradual promotion of terrestrial solar power plants, land-based and offshore wind farms, and shallow geothermal projects. Hydraulic power generation facilities with a low environmental impact will further diversity energy channels.

V. Water Conservancy Facilities

More flexible dispatch mechanisms will continue to increase water availability and raise water provision stability. Reinforcement of old dykes and dyke foot protection will be carried out in conjunction with river habitat and environmental works. Comprehensive water management in river basin areas is incorporated into overall land planning. Run-off distribution and outflow controls are to be considered when planning land use and development restrictions.

Wind Power Generators, Taichung City by Randl Design

Climate Change Adaptation and Disaster Prevention Strategies

Frequent natural disasters, together with land use methods on high mountains and slopes continue to raise the severity of natural disasters, posing significant challenges to the conservation of the ecological environment and the availability of water supplies. As urbanisation continues, agricultural development in the plains becomes more limited, which stimulates further development in hillside areas. Urban and rural areas, outlying islands, and industrial development zones all face the threat of extreme rain and drought. Land use strategies are urgently needed to mitigate disaster impact.

Climate Change Adaptation

Climate change in addition to man-made land uses pose different levels of impact on mountain and slope areas, plains regions, cities and marine areas. The adaptation strategies to each typology can be summarised as below:

1. High Mountains and Slopes

Enhance disaster prevention and examine underlying risks and corresponding adaptations in cities, towns and industries in mountainous regions. In indigenous communities located in high-risk regions, better monitoring of the land surface foundation and other environmental factors is needed based on local conditions.

2. Plains

Maintain agricultural resources and irrigation systems. Manage catchment zones in fragile environments. Strengthen water resource allocation mechanisms and systems.

3. Urban and Rural Communities

Urban planning and design shall focus on building compact cities that are more resilient and able to adapt to the increasing frequency of climate change and torrential rain. Public land and facilities shall be used to meet the needs of an aged society and to accommodate people who must relocate due to climate change.

4. Coasts, Offshore Islands and Sea Area

Improve the safety of coastal cities, towns and industrial zones. Adjust the usage intensity and zoning classification of coastal land in response to rising sea levels as well as the erosion and accretion of coastlines. Strengthen public services and supplies on outlying islands as well as water reserve capacity.

Urban Wetland for Disaster Risk Reduction by MONICA KUO

Disaster Prevention

Three Key Strategies: I. Strengthen the consolidation and disclosure of land disaster prevention information and warnings; II. Strengthen disaster prevention analysis and horizontal collaboration in relation to sectoral spatial policies and planning; III. Formulate and adopt land use-based disaster prevention strategies that take into account disaster strength and type. Disaster prevention strategies are divided into six categories:

1. Floods

Evaluate adjustments to the intensity of urban development. Draft response strategies for low-lying areas that are prone to flooding. Establish or review how comprehensive development plans account for disaster threats posed by extreme rain or storm surges. Require that development bases of a certain area prioritise the use of natural-style detention basins. Implement low-impact development

Erchong Floodway, New Taipei City by Randl Design

and land use review mechanisms for coastal cities. Strengthen flood prevention drainage and runoff distribution in major metropolitan areas.

2. Slopeland Disasters

Discourage land use in the ecologically sensitive western foothills and East Rift Valley alluvial fans regions. Review and amend rezoning regulations and land use permits in mountainous regions as well as new farm development and excessive cultivation. Strengthen inspections that uncover illegal and excessive land use, actively advise how to make improvements, and investigate and fine offenders, in order to restore the water conservation capacity to slope areas. Avoid adding more land zoned for building in densely populated areas that are close to hills or mountainous areas. Conduct regular risk analysis testing and manage maintenance in urban slope areas.

3. Coastal Disasters and Land Subsidence Areas

Consider rising sea levels and coastal erosion when reviewing developments in coastal regions. Propose related land use control principles. Formulate strategies to respond to rising sea levels and coastal disasters that could affect industrial, energy, and other major facilities. Plan and propose comprehensive water management and industrial adaptation strategies in regions prone to flooding. Ensure the safety of settlements and resource production areas during reviews of low-lying land in first-grade and second-grade coastal protection zones. Include tsunami response strategies in the regional disaster prevention and rescue planning for areas in Taiwan's northeast coast and southwest coastline that the historic record shows were previously affected by tsunamis.

4. Drought

Gradually raise the efficiency of water use in industrial parks. Accelerate land acquisition and rezoning required for developing diverse water sources.

5. Earthquakes

Leave open spaces on both sides of active faults and strengthen building management. Enhance land use control near active faults, in geologically sensitive zones, in slope areas, and areas with potential debris flow torrents. Prioritise refurbishment of old buildings in areas with high potential of soil liquefaction and carry out geological improvements in areas that are not yet open to building. Prioritise conservation and protection in areas at high risk of volcanic eruptions; limited development shall be permitted when necessary.

6. Urban and Rural Disasters

Include low impact urban design standards in the comprehensive urban planning reviews of areas that have high disaster risk potential. Reduce land use intensity and add better disaster prevention facilities for residential and business development in areas near industrial zones with a risk of explosion and add buffer zones to new development applications in these areas. Actively designate and accelerate renewal in old urban areas and provide guidance or incentives for seismic retrofitting of old buildings. Accelerate planning and preparedness of disaster prevention and refuge facilities in urban and rural areas.

Lanyang Estuary, Yilan County by Ming-Ming Chen

Management

Harmonious Zoning and Land Use

Forest located along the Southern Cross-Island Provincial Highway by Randl Design

In consideration of foreign spatial planning practices, Japan carried out land use plan by demarcating five main land areas: natural reserve areas, natural park areas, forest areas, agricultural areas, and urban areas. The United Kingdom, meanwhile, demarcated areas in need of conservation or protection as national parks and outstanding areas of natural beauty, in addition to applying strict rules about building in the countryside and around cities (protected by the green belt). In general, the land use plan on national or regional level in some countries separates land into areas that are suitable for development and areas that are not suitable for development. Simple, easily understood zones are used to regulate land use more definitely.

To strengthen the functions and to clearly categorise the positions, future spatial planning will consider the characteristics of land resources and development needs, then demarcate environmental conservation zones, marine resource zones, agricultural development zones, and urban-rural development zones. Functional zone demarcation shall be categorized based on the degree of conservation or development for establishing

land use regulations. On the four functional zone types, environmental conservation zones are demarcated to protect natural resources, marine resource zones are demarcated to regulate the needs of the use of marine, agricultural development zones are demarcated to maintain agricultural production environment, and urban-rural development zones are demarcated to promote efficient use of existing development areas and future designated development areas.

Besides functional zones, and because environmentally sensitive areas are at high risk of negative impact caused by improper development, the National Spatial Plan designates guidelines governing land use for environmentally sensitive areas. In addition, for special land such as reservoir catchment areas, coastal areas, land on outlying islands, indigenous land, or land with unregistered factories, there is a different set of principles governing land use. Overlay zoning over functional zones, environmentally sensitive areas, and special areas can be used to ensure that land use by taking into account the carrying capacity of the environment.

Photo by Randl Design

Demarcation Conditions and Land Use Guidelines for Functional Zones

Demarcation of environmental conservation zones, marine resource zones, agricultural development zones and urban-rural development zones is consistent with the characteristics of land resources to facilitate conservation, utilisation and management of the land. At the same time, in order to carry out appropriate land use control, the environmental resource conditions, current land use status, local characteristics, and development needs shall be taken into consideration when determining other necessary functional sub-zones.

Demarcation priorities of functional zones must take into account existing rights and interests protected by laws such as the *Urban Planning Law*, the *National Park Law* and related regulations. Areas originally approved for development under the *Regional Planning Act*, such as rural zones, industrial zones, and special zones that meet a designated area threshold and have the potential for urban-rural development, and other marine resource zones, shall be prioritised. Environmental conservation zones shall be prioritised from high to low on the basis of environmental sensitivity. Agricultural development zones shall be prioritised from high to low according to the conditions of agricultural production resources.

Jade Mountain, Nantou County by Randl Design

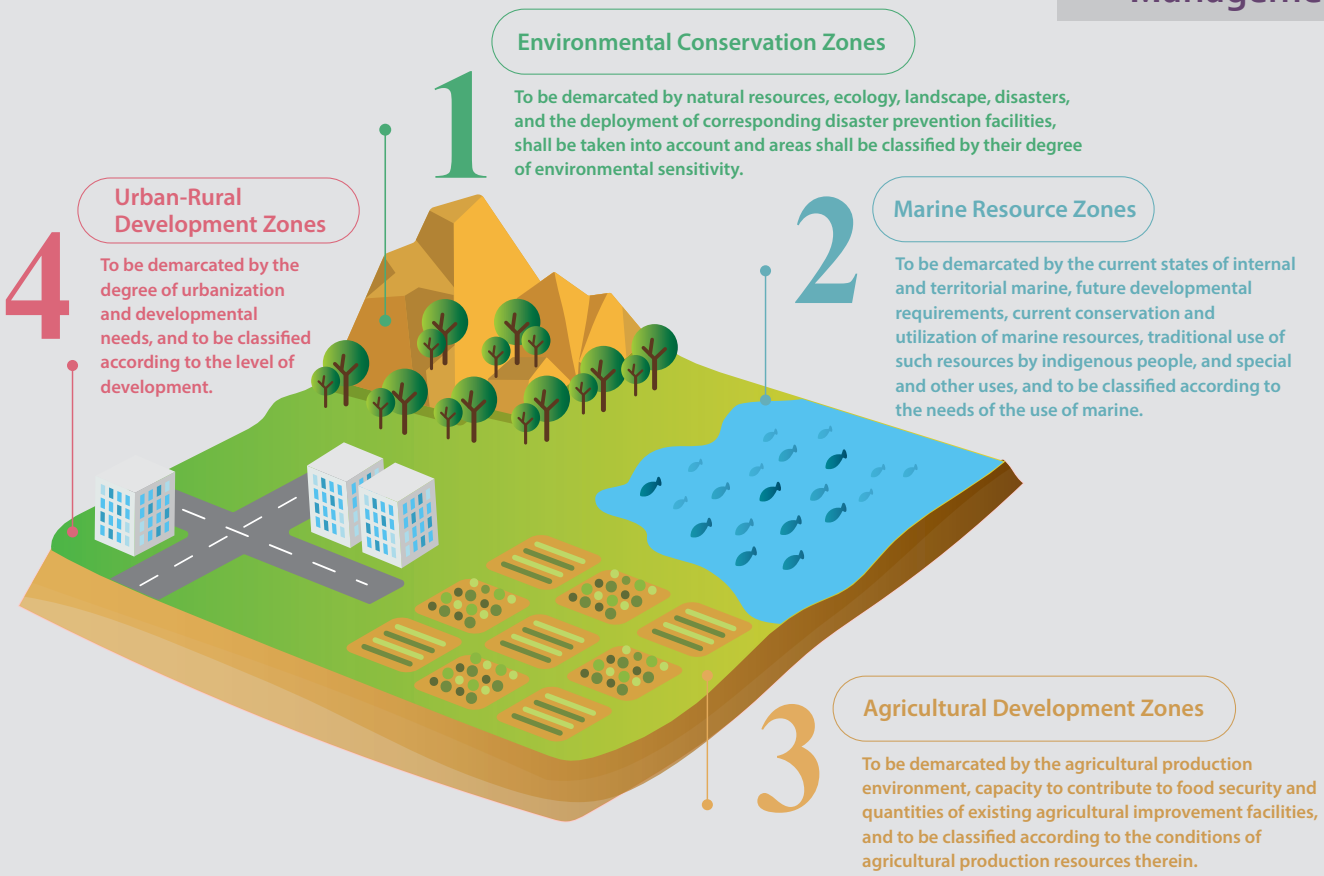


Figure 16. Demarcation Principles of Functional Zones

After announcing National Spatial Plan, the central competent authority shall be responsible for establishing regulatory measures for national land use control in accordance with the principles and guidelines used in functional zones and sub-zones, environmentally sensitive areas, and special land. Basic guidelines are as follows:

1. Differentiated land use management is based on functional zone demarcation and classification.
2. Establish land use regulations based on local conditions and in line with local control requirements.
3. Implement overlay zoning based on the demarcation principles of environmental conservation zone.
4. Implement control standards based on environmental sensitivity.
5. Establish special land use regulation in response to indigenous needs.
6. Prohibit or restrict land uses based on land restoration plans.
7. Individual changes to functional zones shall not take place in order to uphold the purpose of functional zones.
8. Protect existing legal rights and permitted land uses.
9. To support the needs of the relevant authority of specific purpose, offer legalisation guidance for specific projects.

In addition, strategic land planning in municipality or county (city) spatial plans shall be carried out based on local conditions, including local environmental resources, land cover, and future development needs, as well as new functional zone classifications and establishing special land use regulations in the area.

Environmental Conservation Zones

Of all land in the National Spatial Plan, environmental conservation zones have the most stringent restrictions on resource development and use. Management focuses on protecting existing ecologies, environments, resource sustainability, and biodiversity. Sub-zones shall be demarcated as type 1, 2, 3, or 4 based on their degree of environmental sensitivity and the presence of treasured ecologies, water resources, geological resources and landforms.

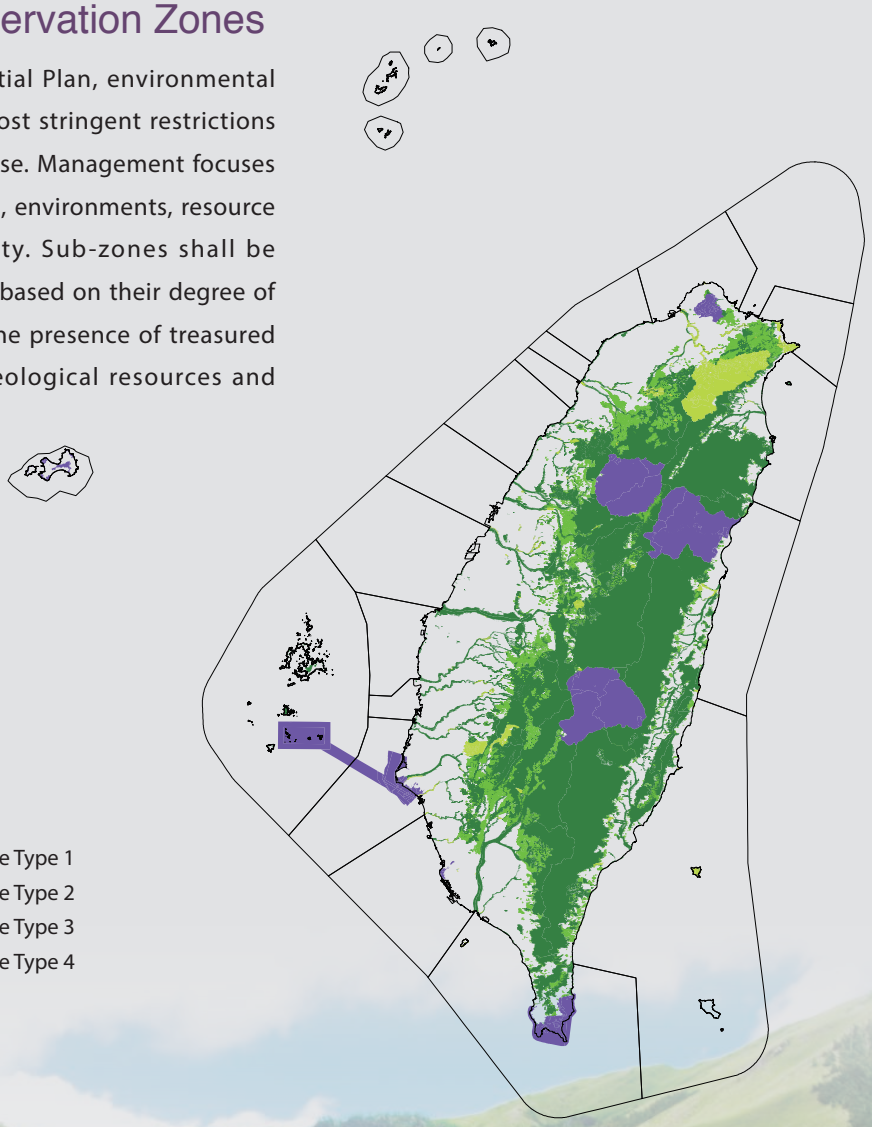
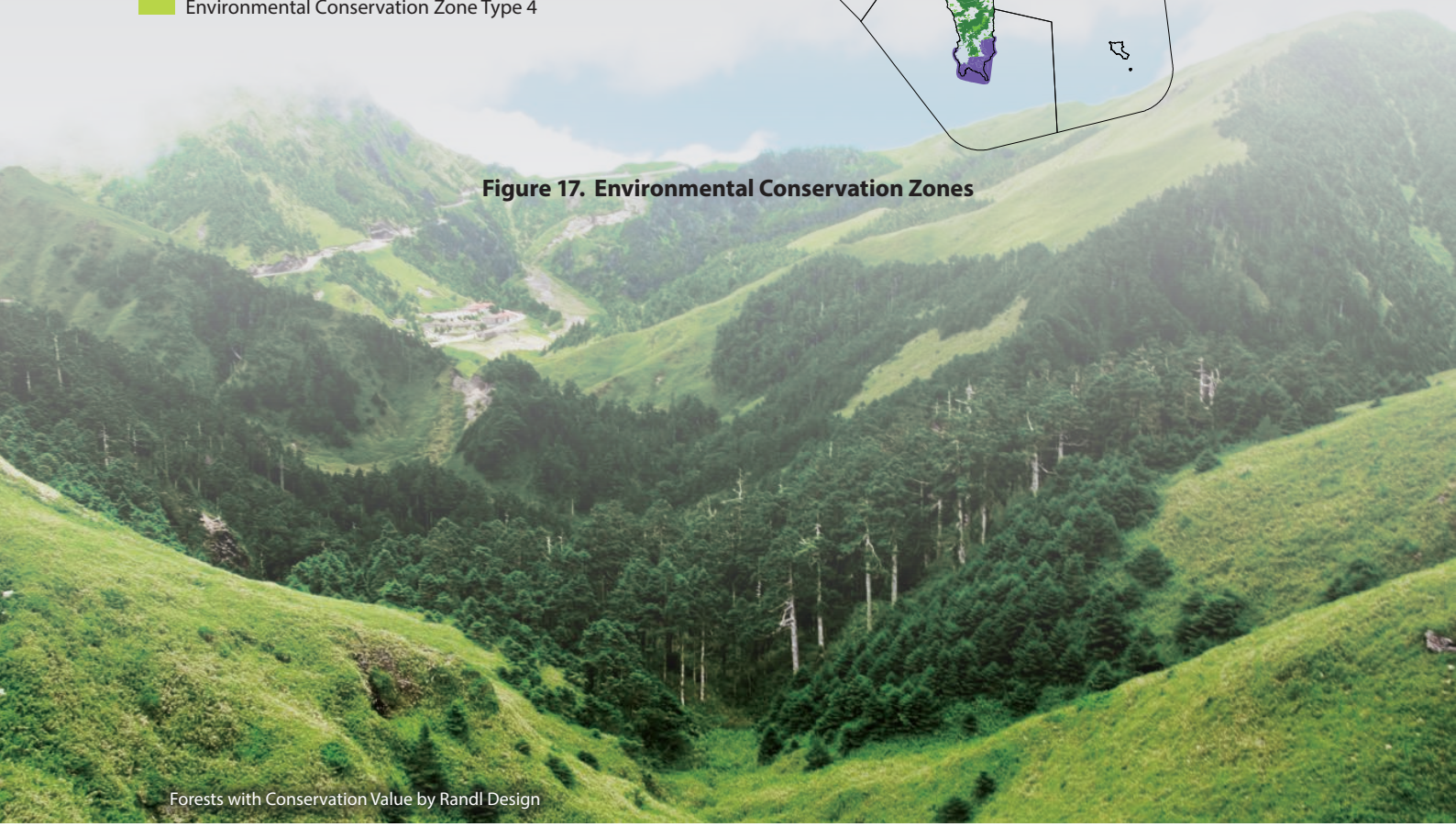


Figure 17. Environmental Conservation Zones



Forests with Conservation Value by Randl Design

I. Environmental Conservation Zone Type 1

Demarcation Conditions

Mountain range conservation zones (the Central Range, Hsuehshan Range, Alishan Range, Yushan Range, Coastal Range), river corridors, as well as key marine and river mouth wetlands that meet the following conditions shall be demarcated as environmental conservation zone type 1:

1. Natural areas with conservation value or areas with topographies, plants, or minerals that are of special value.
2. Wild animal habitats that are important, unique, or diverse and where better protection is needed for animal conservation, biodiversity maintenance, or to preserve the natural ecological balance.
3. Protected woodlands that meet the following property or properties: primary forest that has ecological and conservation value landscapes or forests that have ecological representative value.; natural lakes, streams, marshes, coastlines, or beaches designated as having particular properties; areas needed to protect forest ecological environments or preserve biodiversity; national forests or public forests that should be protected; areas needed to conserve water resources and prevent disasters.
4. To ensure water resource supply and maintain reservoir functionality, the reservoir water storage area announced by the relevant competent authorities.
5. Areas demarcated to ensure drinking water source quality and prevent illegal deforestation or land development, sand and gravel excavation, prospecting for minerals or coal, mining, or related activities that pollute water sources.
6. Areas that meet land conservation conditions; areas designated for water resource development, drainage systems that cross regional management zones, or publicly announced aqueducts.
7. Coastal areas with habitats or ecological corridors of treasured or rare animals; ecological scenic areas or natural landforms designated as having particular properties; areas with important coastal ecological systems that are demarcated for the purpose of protecting or restoring coastal resources.

Land Use Guidelines

1. Land use prerequisites include enhancing resource conservation, protecting the environment, and preserving the original ecology, environment, or landscape. Development or construction shall be restricted or prohibited. In principle, uses that hinder conservation of targeted resources are not permitted, expect in the case of public benefit, required use, and when no alternative geographic locations are available.
2. Land use for critical infrastructure and public facilities or to safeguard natural resources, historical sites, or conservation facilities may be approved following application.
3. Land use for businesses that sell everyday goods and services to existing communities and settlements may be approved following application.
4. Land use for facilities that offer the chance to experience nature, under the precondition that they do not impact environmental protection, may be approved following application.
5. Existing legal agricultural enterprises that do not impact environmental protection or water source conservation and which have measures to prevent landslide disasters can continue with their original legal use, but they may be required to modify their operational methods or restrict their agricultural usage items.
6. On land originally permitted for construction under the *Regional Planning Act*, after the competent authority of each municipality or county (city) determines that construction projects will not hinder environmental protection, construction shall continue to be permitted. However, usage intensity or permitted usage items may be reduced. When the competent authority of each municipality or county (city) determines that construction shall not be permitted on land that was originally permitted for construction under the *Regional Planning Act*, appropriate compensation shall be awarded to the landowner.

II. Environmental Conservation Zone Type 2

Demarcation Conditions

1. Areas neighbouring mountain range conservation belts, river channels, key coastline and river mouth wetlands that meet the following conditions
   (1) National or public forest land that is being developed for forestry, experimental purposes, or forest tourism based on the conditions that the use is sustainable and does not disrupt land security.
   (2) High-elevation land subject to slope disasters due to fragile or soft topography or slope direction particularities that affect the load-bearing capacity.
   (3) Sensitive, sloped land areas surrounding rivers or creeks and that are subject to disasters due to the mixing of water and earth and the effects of gravity or the debris flow in the slope area or river path.
   (4) Sloped areas designated as enhanced conservation zones following land use restriction categorization.
   (5) Areas demarcated for water resource protection in order to maintain water quality and volume needed to ensure municipal water supplies.
2. Areas on outlying islands that are not yet designated for land use.
3. Fragmented land areas that meet the conditions in 1 above.

Land Use Guidelines

1. Sustainable operations in areas that provide water, forests, organisms, or cultural landscapes. Development or construction of a certain size or below shall be permitted as long as the projects do not exceed the carrying capacity of the environment and seek to avoid damage to important natural resources or environments.
2. Land use for general public facilities, critical infrastructure, facilities for the preservation of natural resources, and historical sites may be permitted following application.
3. Land use for businesses that sell everyday goods and services to existing communities and settlements may be permitted following application.
4. Recreational facilities of a certain size or below that are needed for experiencing ecological travel, environmental education, or natural resources may be permitted following application. Construction must be limited to needed facilities.
5. Existing legal agricultural enterprises that do not harm environmental protection principles or water resource conservation and that avoid landslide disasters can continue with their original use, but they may be required to modify their operational methods or restrict their agricultural usage items.
6. On land originally permitted for construction under the *Regional Planning Act*, after competent authorities determine that construction projects will not hinder environmental protection, construction shall continue to be permitted. However, usage intensity or permitted usage items may be reduced.

Itu Aba Island by Wen-Yan CHIAU

Shei-Pa National Park by CHEN WAN-YU / Construction and Planning Agency, MOI

III. Environmental Conservation Zone Type 3

Demarcation Conditions	Land Use Guidelines
Areas that are covered by national park plans.	Control Measures shall be subject to the *National Park Law* and related regulations.

IV. Environmental Conservation Zone Type 4

Demarcation Conditions

Protected land or land for conservation in urban planning areas that meets the following conditions:

1. Water (reservoir) specific areas, scenic specific areas on protected land or land for conservation in urban planning zones and that meets demarcation conditions of environmental conservation zone type 1.
2. Other protected land or land for conservation in urban planning areas that meets environmental conservation zone conditions and that is intended for water resource development, is a river basin governed by multiple regions, or that crosses the area of an announced aqueduct.

Land Use Guidelines

Implement in accordance with the *Urban Planning Law* and related regulations. Urban planning competent authorities shall ensure compliance with the following items:

1. Comply with land use guideline principles for environmental conservation zone type 1 areas; review the related land use control measures and zoning.
2. Land changed to non-protected or non-conservation use after review shall be demarcated as an urban-rural development zone, unless it is intended for national defence, major infrastructure, or public enterprise uses.

Estuarine Wetland by Chih-Hsuei WU

Marine Resource Zones

Managing marine resource zones is based on the sustainable use of resources and fulfilling diverse needs through usage procedures that maintain the condition of the sea area. Therefore, apart from when other laws apply to protection (conservation) zones in marine areas, the scope of spatial planning as it applies to marine resource zones primarily focuses on areas that contain or add manmade facilities and areas that control the entry or passage of people or boats or other actions. Marine resource zone utilisation shall avoid impacting the area's natural ecological environment or dynamic equilibrium. Priority of use regulations shall be based on local conditions and meet national defence, public safety, and sustainable use requirements, but first current legal uses shall be respected. Overlay of sub-zones shall be avoided, unless needed due to 3D zoning. In such cases, overlay control with carrying capacity data for each sub-zone item is needed. Considering compatibility differences, primary and secondary relations between permitted uses shall be designated and more rigorous control methods implemented.

When uses are in conflict, marine resource characteristics and usage applications shall be considered. Priority use standards shall be established, with first priority given to applications that promote natural locations, resources or environments. In multi-functional marine areas, uses that offer the greatest public wellbeing shall be prioritised and followed by compatible uses.

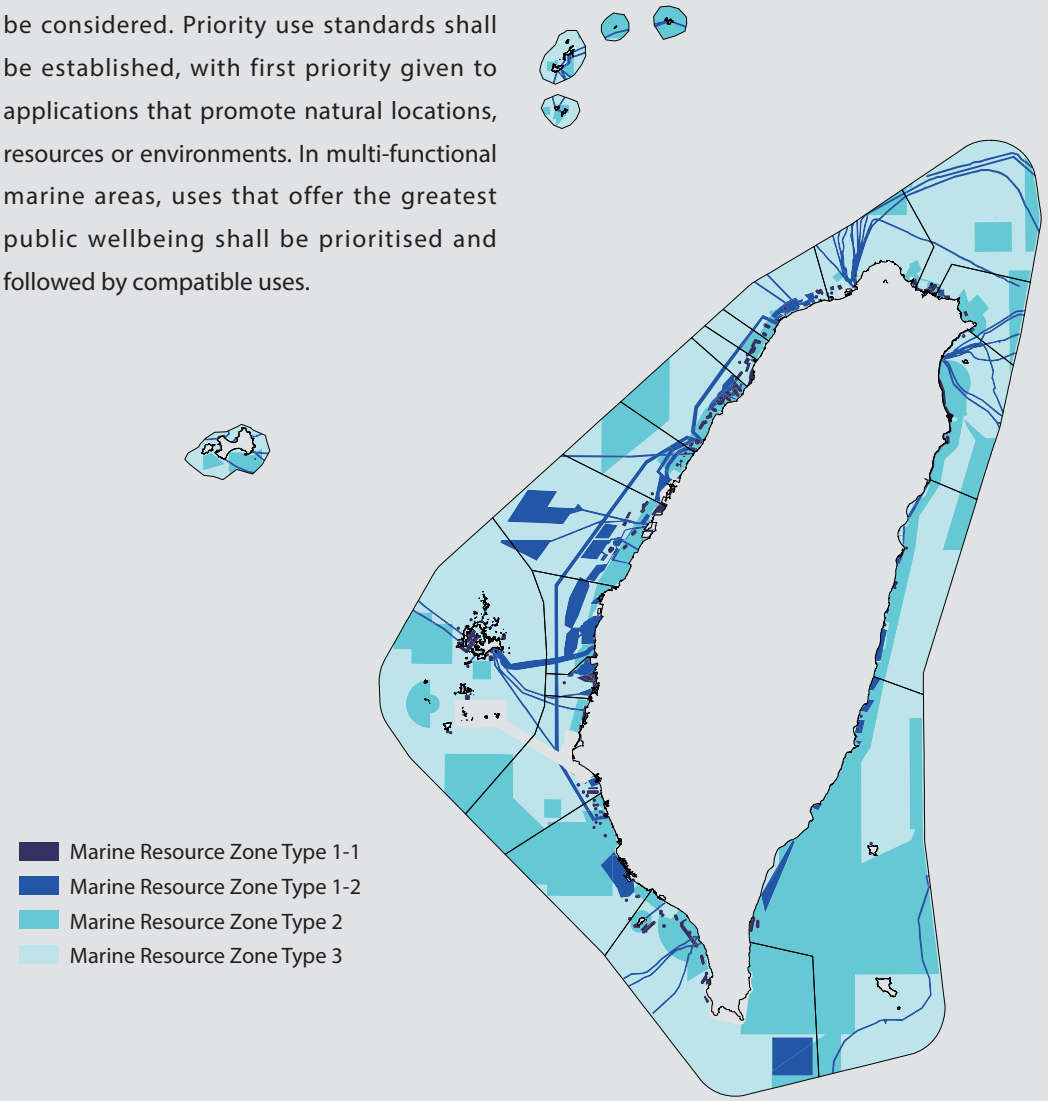


Figure 18. Marine Resource Zones

I. Marine Resource Zone Type 1-1

Demarcation Conditions

Protection (conservation, preservation) zones established by other laws in marine areas.

Land Use Guidelines

1. Land to safeguard marine ecological environments and natural and cultural resources which is handled in accordance with the land use items which do not need an application for approval" clause contained in Article 23 of the *Spatial Planning Act*.
2. To avoid damage to protected target areas, usage applications are highly restricted.
3. Fishery resource utilisation, marine tourism and recreation, port-based shipping and transport, marine science use, military affairs, and disaster protection and rescue. Marine areas and other facilities traditionally used by indigenous peoples.
4. Land use for data buoys of a particular scope or below, marine surface observation facilities and instruments, and acoustic Doppler current profilers may be permitted following application.

Whale in the Offshore of Hualien County by Randl Design

II. Marine Resource Zone Type 1-2

Demarcation Conditions

Excludability zones with man-made facilities in specific marine zones (including water surface, water body, sea bed, or subsoil) within the permitted usage area to control the entry or passage of people or boats or other actions.

Land Use Guidelines

1. New applications shall not interfere with the primary uses of existing facilities. Land use for fishery resource utilisation, non-biological resources, marine tourism and recreation, port-based shipping and transport, construction and related uses, marine science use, military affairs, and disaster protection and rescue may be permitted following application.
2. Applications for developments that could potentially cause coastline or marine disasters must include prevention policies and regular testing and monitoring.
3. To ensure safety, facilities must adopt and implement climate change adaptability, including strategies to manage sea level rises or extreme climate events.
4. To ensure navigation safety, warning equipment shall be considered during construction and operations, and navigation safety shall be reported and ensured in line with regulations.

Cage Culture, Penghu County by Randl Design

Kaohsiung Port by Randl Design

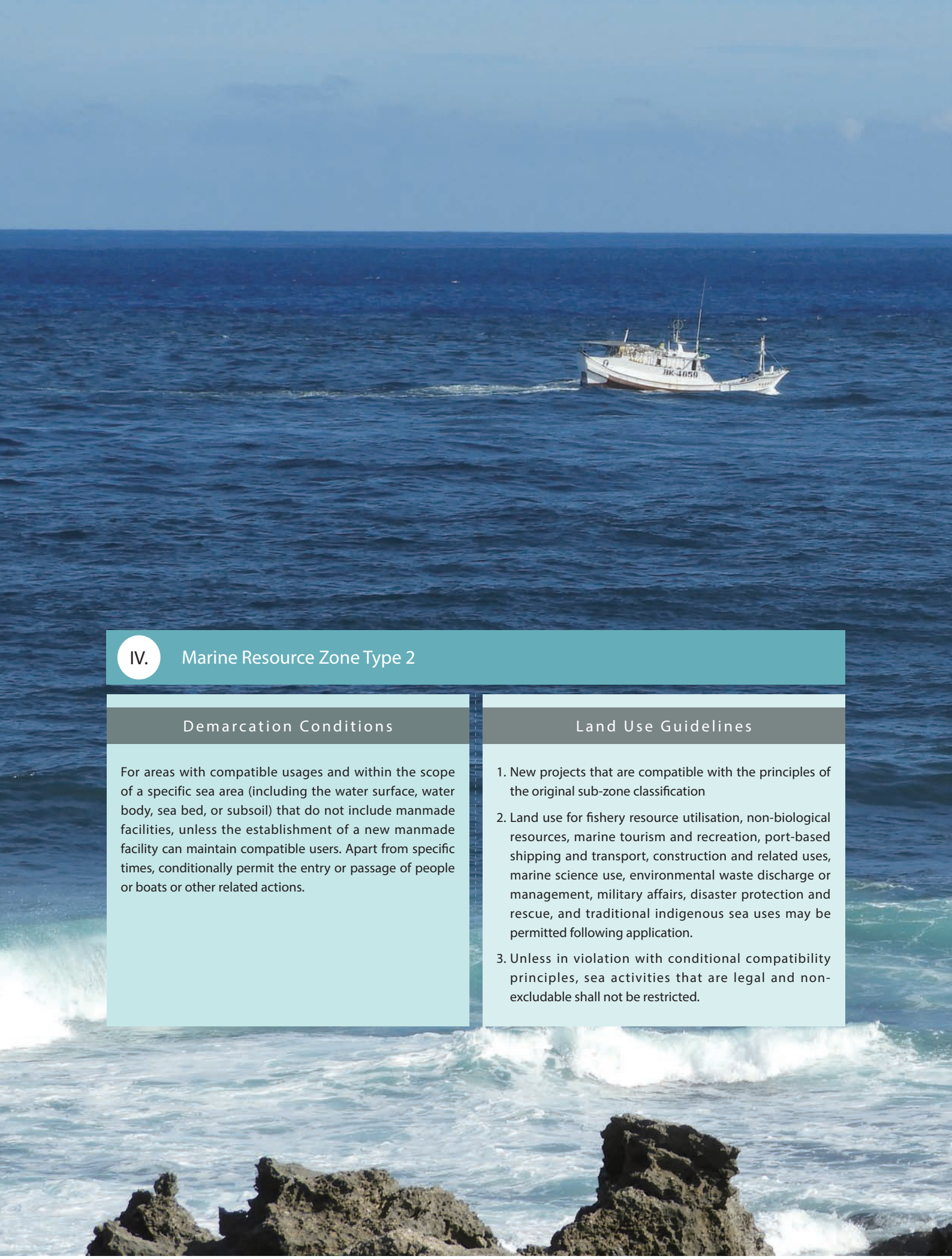
III. Marine Resource Zone Type 1-3

Demarcation Conditions

Infrastructure projects with manmade exclusion zone facilities and that are approved by the Executive Yuan or the central competent authority with related departments before special municipalities or counties (cities) approve the spatial plans. Limited to zones outside the scope of marine resource zone type 1-1 or type 1-2.

Land Use Guidelines

1. Reserve development areas for major infrastructure plans approved by the Executive Yuan or related central competent authorities. Before usage permit procedures are completed in accordance with this law, in the event that usage of the marine zone is approved under another law or regulation, use of the zone shall still be restricted according to that approval.
2. New applications are limited to previously planned infrastructure projects. After usage permit procedures are completed in accordance with this law, evaluate whether changes to a more appropriate category are needed during the next comprehensive review. Before the category is changed, restrictions shall follow the usage permit plan.
3. When the municipal or county (city) competent authority conducts a comprehensive review of city and county spatial plans, it shall examine the status of prior infrastructure planning development. If development did not take place within the allotted time frame and it is determined that project retention is not needed, a review shall be made to determine whether another suitable sub-zone classification is appropriate.



IV. Marine Resource Zone Type 2

Demarcation Conditions

For areas with compatible usages and within the scope of a specific sea area (including the water surface, water body, sea bed, or subsoil) that do not include manmade facilities, unless the establishment of a new manmade facility can maintain compatible users. Apart from specific times, conditionally permit the entry or passage of people or boats or other related actions.

Land Use Guidelines

1. New projects that are compatible with the principles of the original sub-zone classification
2. Land use for fishery resource utilisation, non-biological resources, marine tourism and recreation, port-based shipping and transport, construction and related uses, marine science use, environmental waste discharge or management, military affairs, disaster protection and rescue, and traditional indigenous sea uses may be permitted following application.
3. Unless in violation with conditional compatibility principles, sea activities that are legal and non-excludable shall not be restricted.

V. Marine Resource Zone Type 3

Demarcation Conditions

Other marine areas that are not yet planned or in use.

Land Use Guidelines

Apart from protected (conservation, reserve) zones, permit fishing, water recreational activities using non-motive equipment, and the harmless passage of boats. Other compatible uses shall also be permitted in accordance with Article 23 or 24 of the *Spatial Planning Act*.

Departing from Kenting by Wen-Yan CHIAU

Agricultural Development Zones

The demarcation principles for agricultural development zones are to safeguards the agricultural production environment, ensures food security, protects valuable agricultural land and infrastructure, and avoids fragmented development.

Non-agricultural uses in agricultural development zones are limited to national defence, major infrastructure, public enterprise uses, or compatible uses that support agricultural development needs. Planning must avoid cutting or fragmenting the area or other actions that hinder agricultural development, and projects shall not disrupt the overall agricultural production environment. Land within the scope of countryside planning or rural regeneration that is designated for lifestyle or residential purposes shall be provided to build rural lifestyle and retail services and facilities. New residential and business or industrial projects shall not be permitted.

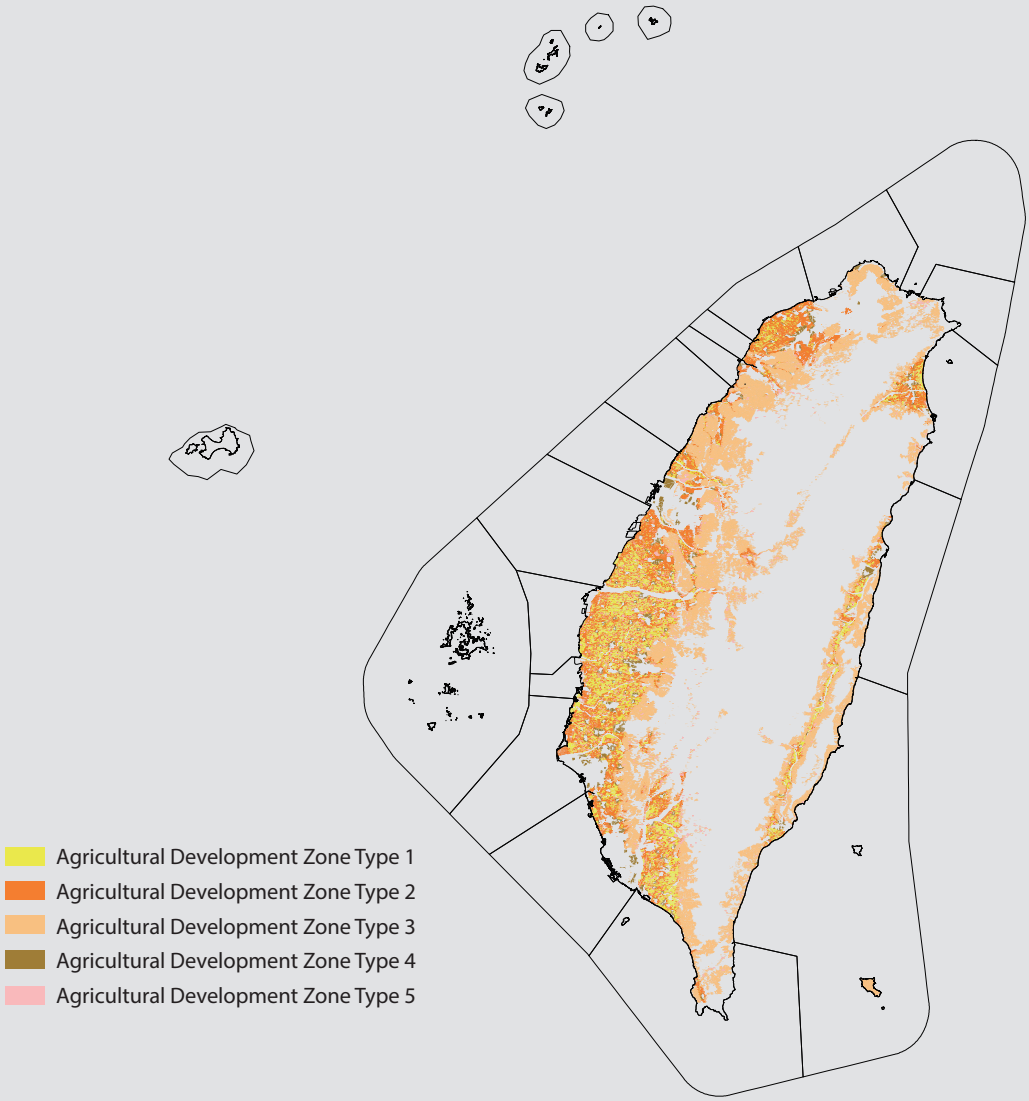


Figure 19. Agricultural Development Zones

I. Agricultural Development Zone Type 1

Demarcation Conditions

Areas with excellent agricultural production environments or where major agricultural improvements or facilities were built and that meet one of the below conditions, or areas that are 25 hectares or larger and have at least 80% agricultural production use land. Additionally, specific agricultural zones where zone review modifications take place in accordance with Revised Regional Plan of the Nation shall be designated as this type of land.

1. Areas with investments of major agricultural improvement facilities.
2. Specific areas originally demarcated under *Regional Planning Act* shall still be designated as agricultural use land.
3. Special agricultural enterprise districts, specialised agricultural production districts, group industrial districts.
4. Aquaculture production districts.
5. Land demarcated by the municipality or county (city) government based on local agricultural development needs shall be demarcated as this type.

Land Use Guidelines

1. Agricultural production and required production and marketing facilities. Reduce non-agricultural production items to safeguard the long-term preservation of agricultural land resources with high-quality production characteristics.
2. On agricultural production land, avoid mixed uses that would pierce, split or fragment the land in order to ensure full preservation and food security.
3. Where an area has excellent food production capabilities, future uses should continue to focus on agricultural land improvements and maintaining important facilities for agricultural production, including irrigation and protection facilities, in order to improve farming conditions.
4. Construction shall continue to be permitted in areas where it was originally permitted under *Regional Planning Act* after the local government and agricultural competent authorities determine that it does not disrupt the agricultural production environment. However, a reduction in usage intensity or permitted items may be needed.

Prime Agricultural land, Hualien County by Wen-Yan CHIAU

Strawberry Farm, Miaoli County by Randl Design

II. Agricultural Development Zone Type 2

Demarcation Conditions

Areas with good agricultural production environments and food security production capabilities. In order to promote a diverse range of agricultural development zones, this type was created for areas that do not meet the criteria for agricultural development zone type 1 or areas that meet these criteria but are smaller than 25 hectares or have less than 80% agricultural production use land.

Land Use Guidelines

1. Different degrees of usage control shall be based on agricultural production characteristics. Reduce non-agricultural production items.
2. This area features agricultural production and other diverse uses. Based on the various needs of agricultural development, planning can include agricultural production, agricultural technology R&D, storage and transport, processing, marketing, or other facilities.
3. Construction shall continue to be permitted in areas where it was originally permitted under *Regional Planning Act* after the local government and agricultural competent authorities determine that it does not disrupt the agricultural production environment. Besides, the reduction in usage intensity and in permitted items may be allowed.

III. Agricultural Development Zone Type 3

Demarcation Conditions

Agricultural land suited to food production and that is in a sloped area, as well as land that can be used for commercial forestry, for producing forestry products and by-products, and for related facilities. Conditions are as follows:

1. Agricultural use and slope land suitable for farming or grazing that does not contain environmental conservation zone type 1 or type 2 (required for national security or water source protection).
2. Forestry land suitable for forestry economic development and slope land suitable for farming that does not contain an environmental conservation zone.

Land Use Guidelines

1. Slope farming and commercial forestry.
2. When farming or planting commercial forests on a slope, it is important to work in harmony with the natural environment. Avoid major changes to the original terrain or large-scale levelling of the land in order to maintain the transpiration functions of surface plants and prevent slope disasters from occurring.
3. Slope farming production and necessary production storage and marketing facilities as well as required facilities for commercial forestry. Avoid approval of facilities that are not for slope farming or commercial forestry purposes. When using for the above development purposes, it is important to work in harmony with the natural environment. Avoid major changes to the original terrain or large-scale levelling of the land.
4. Construction shall continue to be permitted in areas where it was originally permitted under *Regional Planning Act* after the municipal or county (city) competent authority and agricultural competent authorities determine that it does not disrupt the agricultural production environment. However, a reduction in usage intensity or permitted items may be needed.

Hillside Tea Garden by Wen-Yan CHIAU

IV. Agricultural Development Zone Type 4

Demarcation Conditions

1. Main population centres in rural areas and rural settlements that are critical to agricultural production, lifestyles, or ecologies and are located in rural areas as designated by the *Regional Planning Act*.
2. The main population centres in rural areas and rural settlements that are critical to agricultural production, lifestyles, or ecologies and are located in indigenous areas that are rural, as defined under the scope of the *Regional Planning Act*, or on tribal settlements as designated by the competent authorities.
3. Areas within the scope of approved farming village regeneration planning zones that that were originally designated as rural areas under the *Regional Planning Act*.
4. Adheres to municipal or county (city) spatial planning and rural area comprehensive planning or farming village regeneration. After obtaining a usage permit under this law, appropriate steps shall be taken to expand the area's scope.

Land Use Guidelines

1. Rural lifestyle and related facilities.
2. Promotes sustainable development of rural communities and rural regeneration. Improves basic production conditions while protecting rural ecologies and culture and raising rural lifestyle quality and ecological system services.
3. Construction shall continue to be permitted in areas where it was originally permitted under the *Regional Planning Act* after the municipal or county (city) competent authority and agricultural competent authorities determine that it does not disrupt the agricultural production environment. However, a reduction in usage intensity or permitted items may be needed.

Villages in Fuli Township, Hualien County by An-Shun HSIAO

Prime Farmland within the Urban Planning Area by Construction and Planning Agency, MOI

V. Agricultural Development Zone Type 5

Demarcation Conditions

Areas with excellent agricultural production environments or food security production capabilities and that are not required for urban development. Must meet the criteria for agricultural development zone type 1 or be larger than 10 hectares and contain at least 80% agricultural use land.

Land Use Guidelines

Regulated under the *Urban Planning Law* and related rules and regulations. Urban planning competent authorities shall ensure compliance with the following items:

1. Review and amend land use zones or land use control regulations in accordance with land use guideline principles of agricultural development zone type 1.
2. Land that shall be changed to non-agricultural use after review shall be demarcated as an urban-rural development zone, unless it is intended for national defence, major infrastructure, or public enterprise uses.

Urban-Rural Development Zones

Urban-rural development zones are demarcated to provide a frontier that meets residential or industrial development needs, or to build facilities that improve the basic infrastructure of settlements. They raise the quality of local living environments. Their scale and position are planned in a way that supports concentrated urban development and implementation of growth management principles. They support harmonious lifestyle environments and efficient production environments while ensuring a comprehensive set of supporting public facilities.

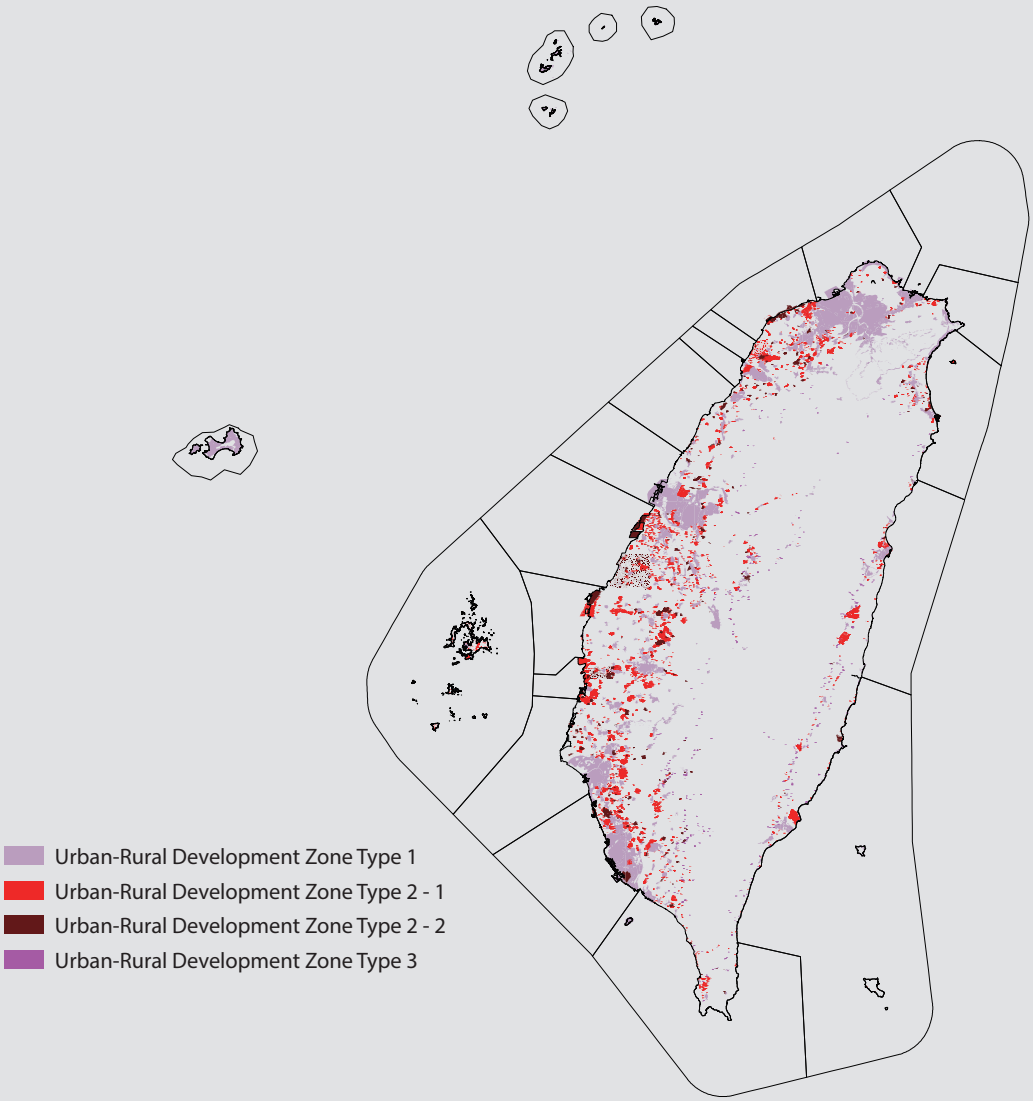


Figure 20. Urban-Rural Development Zones

Taoyuan City by Randl Design

I. Urban-Rural Development Zone Type 1

Demarcation Conditions

Urban planning land that is not within the scope of an environmental conservation zone type 4 or an agricultural development zone type 5.

Land Use Guidelines

Urban planning areas are regulated under the *Urban Planning Law* and related rules and regulations; necessary reviews are carried out following guidelines of the National Spatial Plan.

II. Urban-Rural Development Zone Type 2-1

Demarcation Conditions

1. Originally designated as industrial areas under the *Regional Planning Act*.
2. Originally designated as rural areas under the *Regional Planning Act* and meet one of the following conditions:

(1) Located within a certain proximity to an urban planning zone that has an urban development rate that meets a certain threshold.

(2) The ratio of people not engaged in farming activities reaches a certain threshold or the population density is relatively high.

(3) Meets *Urban Planning Law* standards for formulating a countryside street plan.

3. Specific zones based on the *Regional Planning Act* meet a designated area threshold and have urban-rural development characteristics.
4. Fragmented land contained within the scope of 1, 2, or 3 above.

Land Use Guidelines

1. Rural areas, industrial areas, and specific use zones that are demarcated under the *Regional Planning Act* and are provided for residential, industrial, or special activity use.
2. Priority for use of existing urban-rural development land shall go to residential and business projects. A certain degree of public facilities is required (planning of buffer areas or separation belts may be needed if in proximity to an agricultural development zone or an environmental conservation zone).
3. Existing industrial zone land shall be provided for industrial or industrial-related uses, critical infrastructure, or buffer zones.
4. Existing specific zones shall be used for business items relating to their original purpose, critical infrastructure, or buffer zones.
5. Applications for residential, business, industry, recreation, general infrastructure, critical infrastructure and historical sites.
6. Construction shall continue to be permitted in areas where it was originally permitted under the *Regional Planning Act* after the local competent authorities determine that it does not disrupt urban-rural development. However, a reduction in usage intensity or permitted items may be needed.

Ming Hua Community, Chiayi County by Randl Design

Huwei Park of the Central Taiwan Science Park by Central Taiwan Science Park Bureau

III. Urban-Rural Development Zone Type 2-2

Demarcation Conditions

1. Areas approved for development (apart from land redevelopment cases in rural farming villages and water resource facility projects in specific use zones), projects approved under the *Statute for the Encouragement of Investment*, and areas that the Executive Yuan determined do not need approval from regional planning agencies and which have urban-rural development characteristics.
2. Fragmented land originally included within the scope of 1 above.

Land Use Guidelines

1. Originally approved for development under the *Regional Planning Act*.
   (1) Implementation carried out in accordance with the approved development plan.
   (2) Changes to the original development plan shall be carried out in accordance with usage permit regulations contained within the scope of this law.
2. Initiation of undertaking planning for areas originally approved under the *Statute for the Encouragement of Investment* that industrial competent authorities determine shall not be subject to modification are to be handled in accordance with related laws and regulations issued by the industrial competent authorities.
3. In areas where the Executive Yuan originally approved projects, when the competent authority determines that initiation of undertaking planning shall not change, handle the plan in accordance with related laws and regulations issued by the competent authorities.
4. Principles for follow-up review of modified plans originally approved for development under the *Regional Planning Act* or the *Statute for the Encouragement of Investment*, or that the Executive Yuan determined do not need approval from regional planning agencies, shall be handled in accordance with the land use permit regulations contained in this act.

IV. Urban-Rural Development Zone Type 2-3

Demarcation Conditions

1. Approved infrastructure plans and their required scope or areas with urban-rural development needs must have specific planning content or feasible financial planning.
2. Growth management plans and rural comprehensive planning that adheres to municipal or county (city) spatial planning should be made to respond to residential or industrial development needs, provide or improve basic infrastructure, or improve local quality of life. When one of the following conditions is met, expand the scope of the rural or industrial area that was originally demarcated using the *Regional Planning Act*. As much as possible, match the scope of existing rural or industrial areas and avoid affecting local residential or industrial development situations.
   (1) To meet residential needs, conform as much as possible to local development trends and the population structure, as well as constructible land inside existing rural areas in local townships (towns, cities, districts) where there is no idle land or land available for regeneration.
   (2) To meet industrial needs, match the scope of local industry as much as possible. Conform to local industrial development trends and to industrial areas in local townships (towns, cities, districts) where there is no idle land or land available for regeneration.
   (3) New infrastructure or infrastructure improvements that support necessary public facilities, such as sewage treatment, tap water, power, telecommunications, parks, roads, or long-term care. Projects shall serve existing local rural areas or industrial areas.
   (4) To raise the quality of the local living environment, limit to existing rural areas where the residential density is greater than the national standard.
3. In consideration of the principle of intensive development, projects that originally obtained a development permit under the *Regional Planning Act* or that obtained a usage permit under this law shall be evaluated for increased scope size based on the following regulations:
   (1) Projects that are adjacent to development permit plans or usage permit plans, and that relevant competent authorities determine shall be subject to the same plan, and that obtain proof of consent or agreement in principle from the relevant competent authorities.
   (2) Adheres to the overall or positional guidelines of the spatial development strategies (plans) of spatial planning departments of all levels.
   (3) Adheres to spatial development and growth management strategy (plans) guidelines at all levels and avoid use of land in environmentally sensitive areas. When inclusion of this type of fragmented land cannot be avoided, after reviewing whether functional zone changes are required, use the fragmented land in accordance with usage guideline principles for environmentally sensitive areas.
4. Fragmented land contained within the scope of 1, 2, or 3 above shall be included.

Land Use Guidelines

1. Areas with specific development plans shall use the land use permit procedures in the *Urban Planning Law* or the *Spatial Planning Act* for urban-rural development.
2. Newly formulate or expand urban planning procedures in accordance with the Urban Planning Law. When the scope of usage permit procedures is completed in accordance with this law, adjust to appropriate functional zone and type during the next comprehensive review. Before functional zone changes are made, carry out in accordance with the existing urban plan or usage permit.
3. Before completing development, land use development principles are as follows:
   (1) Land use for general public facilities, critical infrastructure, or historical sites may be approved following application.
   (2) Avoid new residential, business, industrial or recreational uses, but maintain original legal uses.
   (3) Land originally designated as constructible under the *Regional Planning Act* shall continue to be designated as constructible when the municipal or county (city) competent authority determines that major construction plans and urban-rural development needs are not obstructed. However, the usage intensity or permitted usage items may be reduced.
4. Supplementary measures that accommodate functional zone requirements of major construction plans or urban-rural developments:
   (1) Municipal and county (city) spatial planning should include a comprehensive development vision. Propose spatial development concepts and identify major construction planning and related scope or urban-rural development needs. In addition, formulate municipal or county (city) growth management plans, including overall, positional, or prioritized urban-rural development planning.
   (2) Approved major construction plans shall be categorised as industrial, infrastructure, or public enterprise.
   (3) Approved urban-rural development need areas shall be in response to local population development trends and population structures. Limit to existing rural developable land in local townships (towns, cities, districts) where there is no idle or vacant land or land available for regeneration.
   (4) Major construction plans must include the following information relating to their plan content and required scope or urban-rural development need areas:
      A. Planning principles
      B. Land use, industrial activities, transportation, public infrastructure, public facilities, and other planning and development concepts.
      C. In principle, implementation periods shall not exceed the target year of municipal or county (city) spatial planning.
5. Major construction plans and their required scope or urban-rural development need areas shall be considered as having a feasible financial plan when they meet one of the following conditions:
   (1) Newly constituted or extended urban planning shall undergo financial feasibility evaluation by the local competent authority or financial competent authorities.
   (2) When a usage permit is issued for a government project, a budget must be prepared, or the relevant agency must provide a funding subsidy. Financing feasibility is required.
6. Approved infrastructure plans and their required scope or areas with urban-rural development needs shall use new or expanded urban planning as a development principle. If adopting a land use permit methodology, a clear explanation of the necessity and feasibility of the usage permit is advisable.
7. For approved infrastructure plans and their required scope or areas with urban-rural development needs, when surveys of municipal or county (city) government spatial planning uncover developments that were not carried out within their implementation period, they shall be subject to revisions that create other spatial planning zones or sub-zones.
8. When obtaining a development based on the *Regional Planning Act* or a land use permit based on the *Spatial Planning Act* and zone or sub-zone modifications are made due to an increase in scope, usage permit review shall include the original land use permit plan.

Sado Tribe Harvest Festival, Hualien County by Wen-Yan CHIAU

V. Urban-Rural Development Zone Type 3

Demarcation Conditions

The scope of indigenous land was originally based on demarcated countryside areas from the *Regional Planning Act*.

Land Use Guidelines

1. Areas for the living and related facilities of indigenous people
2. Land use shall consider the demarcation of indigenous land, which is based on the *Regulations for Demarcating Indigenous Land or Tribal Areas*.
3. Permitted uses approval for residential, business, industry, recreation, general public facilities, critical infrastructure, and historical sites
4. Current land used for construction shall continue to be designated as buildable land where it was originally permitted under the *Regional Planning Act* after the local competent authorities determine that it does not disrupt urban-rural development. Establish floor area volume control regulations that promote flexible planning of usage capacity and permitted use items.

Land Use Guidelines for Environmentally Sensitive Areas

Environmentally sensitive areas are areas of high value that are also at high risk of natural disasters or that face a high risk of environmental damage caused by improper human development activities. To prevent usage from exceeding the carrying capacity of the land, based on local characteristics the National Spatial Plan names five types of environmentally sensitive areas: disaster prone, ecological, cultural and scenic, resource rich, and other. These divisions facilitate management by competent authorities.

Types and Items of Environmentally Sensitive Areas

I. Resource Sensitive Areas

The items of this type include: drinking water source protected areas, areas within a certain distance of a water intake, tap water source protected areas, reservoir catchment areas (for household or public water use & non-household or non-public water use), reservoir storage areas, forests, hot springs, conservation areas for the breeding of marine plants or animals, mines, mine reservation areas, underground mine distribution areas, geologically sensitive areas (underground water replenishment), artificial reefs, and protected reefs.

II. Ecologically Sensitive Areas

The items of this type include: special scenic areas in national parks, ecological protection zones, natural reservations, wild animal protected areas, critical habitats of wild animals, natural protected areas, Level 1 and 2 coastal protected areas, and critical wetlands.

III. Culturally Sensitive Areas

The items of this type include: historical sites, archaeological sites, groups of buildings, historic buildings, commemorative buildings, underwater cultural heritage, historic site preservation areas in national parks, general control areas and recreational areas in national parks, and geologically sensitive zones (geological sites).

IV. Disaster Sensitive Areas

The items of this type include: open spaces on both sides of active faults, special soil and water conservation areas, streams with high potential for mudslides, slopes, river areas, flooded areas (Level 1 and 2 control areas), flood plains (Level 1 and 2 control areas), regional water discharge facilities, underground water control areas, geologically sensitive areas (active faults, areas with severe landslides, mudslides), dykes, areas prone to flooding, Level 1 and 2 coastal protection areas, and environmental restoration areas.

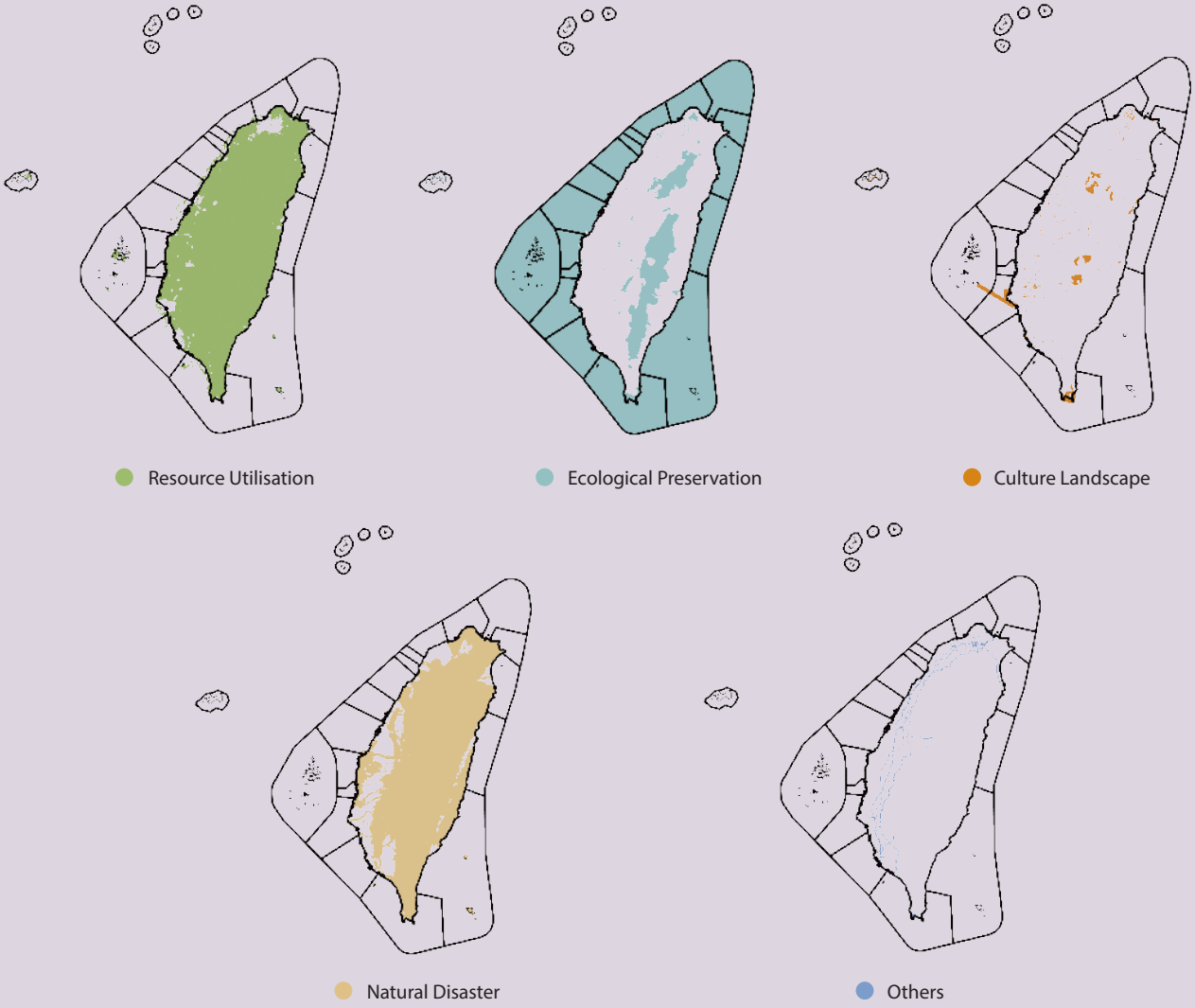


Figure 21. Environmental Sensitive Areas

V. Others

The items of this type include: areas where building is prohibited or restricted by the *Meteorological Act*, areas where building is prohibited or restricted by the *Telecommunications Act*, areas where building is prohibited or restricted or high control areas in the *Civil Aviation Act*, aviation noise control areas, prohibited or low population areas near nuclear reactor facilities, prohibited or restricted building areas near highways, prohibited or restricted building areas near mass-rapid transit facilities, coastal control areas, slope control areas, important military facility areas where construction is prohibited or restricted, fortification belts, and other areas where development or construction is restricted by law.

Land Use Guidelines

Besides complying with regulations in environmental conservation zones, marine resource zones, agricultural development zones, and urban-rural development zones, enterprises in environmentally sensitive areas shall comply with the laws of the relevant competent authorities. If amendments are made to the laws, the areas shall be handled in accordance with the amended versions.

Land Use Guidelines for Special Areas and Other Land

In response to special conservation, management and development land uses, the National Spatial Plan established land use guidelines for reservoir watershed areas, coasts, offshore islands, unregistered factories, and indigenous land.

Reservoir Watershed Areas

Agencies responsible for reservoir management shall formulate conservation management plans for reservoir catchment areas that are to be implemented by the relevant competent authorities. Developments shall be low density. Applicants must evaluate their impact on landslide disasters, water pollution, water conservation, and runoff reduction and propose response measures. They shall install rainwater and wastewater (sewage) bypasses as well as wastewater (sewage) treatment facilities, which shall treat water to acceptable standards for discharge within the catchment zone; or shall discharge the water outside of the zone. Before applicants complete usage changes or alterations, they shall deposit a protection and management fund sufficient to last a specific number of years into a designated local government account. The deposit shall be used as a guarantee of the effective operations of the above wastewater (sewage) treatment facilities and water quality monitoring facilities.

Competent authorities shall enhance land use control in accordance with reservoir catchment area conservation plans. In accordance with the Comprehensive Management Plan of River Basins, which was formulated by the Ministry of Economic Affairs, better runoff distribution and outflow control are needed as well as new ways of water governance that do not involve construction and that enhance human co-existence with water resources. Land within reservoir catchment areas shall follow low-impact development planning. Measures to enhance water conservation and reduce the risk of flooding shall include higher permeability, more detention basins and expanded green areas, as well as lower burdens on downstream rivers and discharge systems.

In response to global climate change, to reduce the impact that landslide disasters have on water catchment areas, relevant authorities shall formulate environmental restoration areas and plans. Competent authorities that oversee agriculture shall provide guidance on reasonable fertilization

Low-Impact Development (LID)

A design approach that uses urban planning, transportation construction, building management, and other urban infrastructure. In a limited space, it combines traditional water conservation facilities as a foundation together with small-scale hydrologic controls. Using infiltrating, storing, evaporating, replenishment, and filtering, it mitigates the impact of development on the urban water environment.

Catchment Area of Zengwen Resevoir, Nanhua Resevoir, and Wushantou Reservoir by Center for Space and Remote Sensing Research of National Central University

use in water catchment areas in order to prevent runoff of agricultural chemicals or fertilizers from reaching reservoirs and causing eutrophication. When urban-rural development zones and agricultural development zone type 4 are located in a water catchment area, priority shall be given to constructing storm water runoff and sewage systems to reduce the impacts of population concentration.

Yehliu Geopark, New Taipei City by Randl Design

Coasts

The objectives of coastal areas management endeavour to promote the conservation of natural resources and achieve the best use of coastal land. They safeguard people's rights to coastal land access, public transport, and the use of public waters. To achieve the greatest long-term benefits, the simultaneous pursuit of coastal resource protection, disaster prevention and development uses is needed. During development, protection and defence should be of the utmost importance when handling cases with a large environmental impact. The competent authorities promulgated the Comprehensive Management Plan of Coastal Areas on February 6th, 2017, as the primary legal source and basis for coastal area management.

Land reclamation projects rely on special approval from the Executive Yuan or approval from central competent authorities that oversee target industries named by the central government, such as telecommunications or energy. They are limited to areas that local governments designated as urban-rural development zones. To prevent agencies from reclaiming land at will, and potentially damaging the natural coastline environment in the process, the area of land used for reclamation projects is limited. Expansion is discouraged, and development projects must clearly state the formulas they use to calculate land needs.

Laomei Green Reef by Randl Design

Dongsha Island Atoll by HONG WU-HONG / Construction and Planning Agency, MOI

Offshore Islands

Sustainable development is the primary objective of outlying island construction. This includes promoting basic care for resident's living, ecological conservation, preservation of unique cultures, and balanced development of top-quality industries. On islands with no human habitation, the primary goal shall be maintaining the natural environment. This means avoiding development and construction apart from necessary climatic, navigational and defence facilities. On islands with excessive development, measures shall be taken to reduce the pace of new construction and maintain the natural environment, in accordance with the environment's carrying capacity.

Municipality or county (city) spatial planning should base developmental positioning and growth management on the special characteristics of each outlying island. Functional zone demarcation and land use control principles should be in accordance with future development needs and guide spatial development and land use.

Principles of Legalisation for Illegal Land Use

Policies that support legalisation of land use control shall adhere to the principles of safety, fairness, and reasonableness. They should seek to prevent developers from seeking to expedite land use rights by adopting a model of illegal use followed by transformation.

Safety

- Cannot harm public safety or obstruct natural scenery.
- When consulting on legalisation, the competent authorities shall ensure full compliance with regulations relating to soil and water conservation, environmental impact assessments and construction safety.

Fairness

- When providing guidance on legalisation, violations shall still be handled in accordance with the law.
- Original landform data shall be used when landform data is needed for evaluations
- Developers shall handle planning of public facilities within and outside the scope of their area in a fair and reasonable manner.

Reasonableness

- In the event that projects that do not adhere to regulations fail to preserve original landforms or appearances in accordance with the law, or do not leave required buffer zones, appropriate compensation with a corresponding functional benefit shall be provided.
- When legalisation guidance is offered on cases that require dismantling a portion of buildings and returning the land to its original state, applications for legal uses shall be handled in accordance with relevant laws.

Figure 22. Principles of Land Use Legalisation

Unregistered Factories

Municipality or country (city) governments are responsible for conducting surveys of unregistered factories in their jurisdictions. They should determine the quantity, locations, area, and industries of the factories then formulate management plans based on rank and classification.

For scattered and new factories that are not registered, corrective actions shall focus on modification, suspension of use, or demolition and returning the site to its original state. These actions are to protect the integrity of agricultural production environments and discourage the addition of more unregistered factories.

Indigenous Land

In consideration of the special lifestyle practices and needs of traditional indigenous culture, on the condition that public security is not affected, local competent authorities shall evaluate the space needed to accommodate indigenous habitation, production activities, and public facilities. Comprehensive planning for the land in and around the settlement should ensure that space is provided for living and production activities. Appropriate zoning and regulations shall guide that development and indigenous land use.

In the event that reviews and modifications of spatial plans, urban plans, or national park demarcations impose restrictions on the use of indigenous land or natural resources by indigenous peoples, the competent authorities shall make appropriate land planning adjustments or change land use principles to respect the traditional culture and land use practices of indigenous peoples.

Indigenous designated area plans should be made as individual or joint tribal proposals to the competent authorities responsible for indigenous affairs. The central government then assesses plan feasibility, and the competent authorities for indigenous affairs craft guidance mechanisms that assist with tribal land planning needs.

According to Article 21 of *The Indigenous Peoples Basic Law*, in such instances the government shall consult with indigenous peoples, tribes or indigenous people and obtain their consent in the condition of restricting the indigenous people on the utilisation of land and natural resources.

Traditional Boat of Tao People, Lanyu by Randl Design

Demarcation of Environmental Restoration Areas

Purpose

Geographic and geological factors are behind a high frequency of natural disasters in Taiwan. The impact of human activities further raises the risk to spatial environments. It is critical that we reduce the risk of natural disasters and thus lower the loss of life and property and accelerate the restoration of land to its natural state, function, value or quality. This prevents the reoccurrence of natural disasters and accelerates the sustainable development of environmental resources. National Spatial Plan begins from the perspectives of land use harmony and integration to formulate principles used to demarcate environmental restoration areas. These principles become a point of reference when local governments craft restoration recommendations, demarcate environmental protection areas, formulate related plans, and conduct related work.

Areas

According to Article 35 of the *Spatial Planning Act*, the relevant authority may demarcate the following areas as environmental restoration areas to carry out restoration works:

1. Areas with a high potential for mudslides.
2. Areas with severe landslides.
3. Areas with severe land subsidence.
4. River basins with deteriorating ecological environments or safety hazards.
5. Areas where the ecological environment has seriously deteriorated.
6. Other areas that exhibit high geological sensitivity or are likely to have a severe impact on environmental conservation.

Principles

Before demarcating environmental restoration areas, the relevant authority shall refer to the environmental restoration area recommendations or related analysis and data raised by municipality or county (city) governments in their spatial planning. After completing a comprehensive evaluation of necessity, urgency, and feasibility, environmental restoration areas shall be demarcated in accordance with relevant laws and regulatory procedures. Restoration planning shall follow.

I. Necessity

Restoration works are needed to maintain safety and stability in fragile environments where development could pose a threat to the life or property of local residents or to infrastructure in the area, and to the habitats of important species or areas that have important ecological functions or value.

II. Urgency

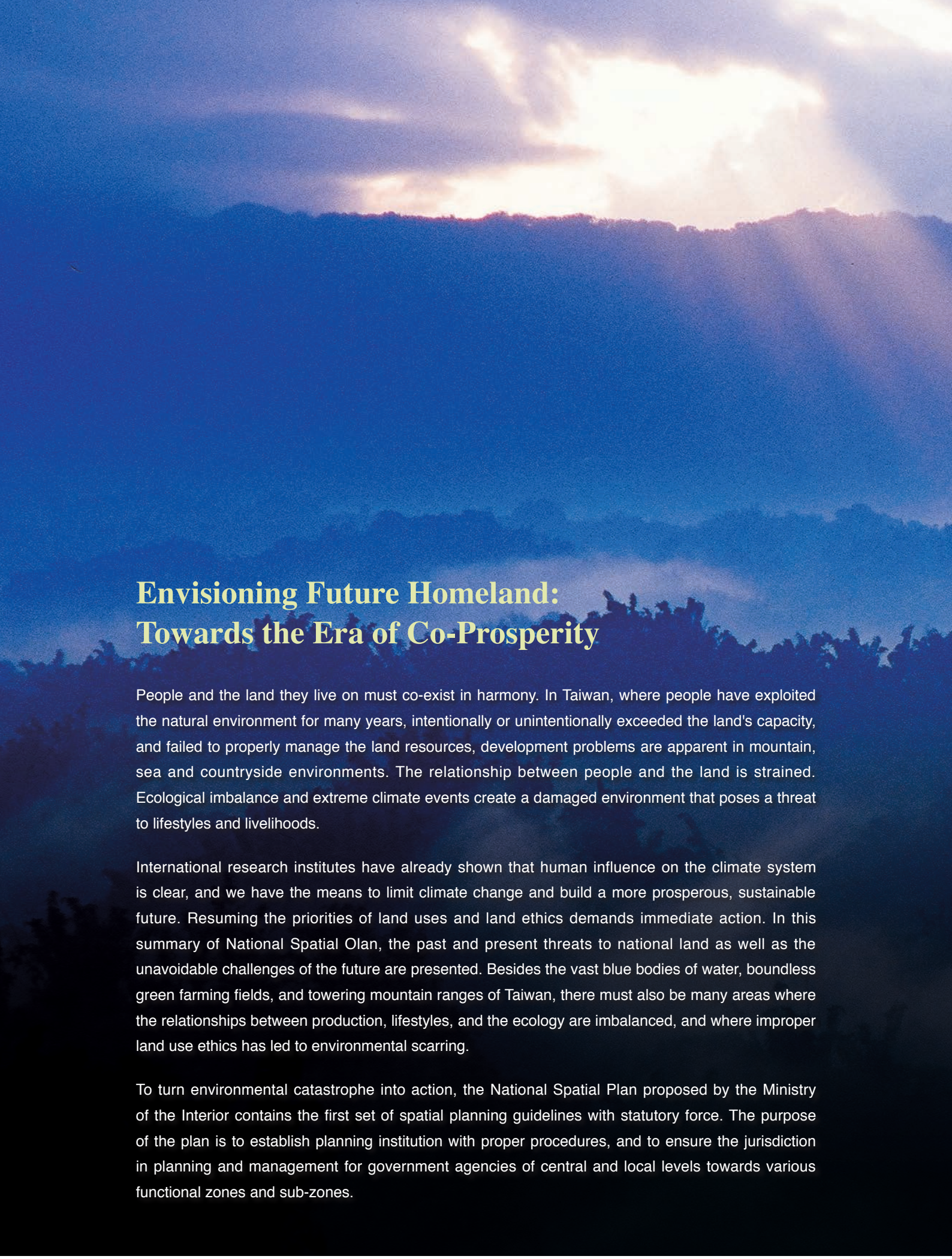
Active restoration to maintain safety and stability is required in areas that face immediate or inevitable threats, or areas where the quality of the environment is deteriorating and that are populated, have important transportation facilities, are habitats to important species, or that serve an important ecological function.

III. Feasibility

To determine the feasibility of improvement plans in the six types of environmental restoration areas, the following factors should be considered: restoration technique feasibility, cost-benefit feasibility, property right, and the integrity of investigation data. Another important factor is the willingness of the local indigenous peoples, other residents, or landowners.

Restoration plans in environmental restoration areas shall prioritise techniques with the lowest harmful impact to the environment and that comply with ecological principles. After evaluation, if a decision is made not to demarcate an area as an environmental restoration area and not to carry out a restoration plan, after the land returns to the authority of the relevant competent authority and the local government, the receiving authority shall strengthen safety measures, ecological corridors, or carry out other needed improvements or supplementary plans.

Taipingshan Sunrise by Wen-Yan CHIAU



Envisioning Future Homeland: Towards the Era of Co-Prosperity

People and the land they live on must co-exist in harmony. In Taiwan, where people have exploited the natural environment for many years, intentionally or unintentionally exceeded the land's capacity, and failed to properly manage the land resources, development problems are apparent in mountain, sea and countryside environments. The relationship between people and the land is strained. Ecological imbalance and extreme climate events create a damaged environment that poses a threat to lifestyles and livelihoods.

International research institutes have already shown that human influence on the climate system is clear, and we have the means to limit climate change and build a more prosperous, sustainable future. Resuming the priorities of land uses and land ethics demands immediate action. In this summary of National Spatial Olan, the past and present threats to national land as well as the unavoidable challenges of the future are presented. Besides the vast blue bodies of water, boundless green farming fields, and towering mountain ranges of Taiwan, there must also be many areas where the relationships between production, lifestyles, and the ecology are imbalanced, and where improper land use ethics has led to environmental scarring.

To turn environmental catastrophe into action, the National Spatial Plan proposed by the Ministry of the Interior contains the first set of spatial planning guidelines with statutory force. The purpose of the plan is to establish planning institution with proper procedures, and to ensure the jurisdiction in planning and management for government agencies of central and local levels towards various functional zones and sub-zones.

Planning content is based on the lessons of past environmental disasters and ecological risks. Comprehensive spatial development and land use guideline principles that are objective-based and policy-based are proposed for national land. The sustainable development vision indicates management strategies that strengthen land resilience and offer guidelines on the functional distribution of land, hoping to promote robust spatial planning, recover and reuse areas at high risk of disaster, ensure marine ecological conservation, uphold proper marine utilisation procedures, and maintain farm production environments. These objectives will build high-quality countryside environments and will respect and preserve traditional indigenous culture, areas and knowledge. National Spatial Plan seeks to build a consensus among central government departments. The national land will be jointly governed and overseen, and municipal and county (city) governments will support this with follow up planning and management based on strategic principles.

Spatial planning involves more than just the hard work of the government. Besides reading about spatial planning, we hope that you think about how we are all citizens of the earth. As we embark on the long road towards sustainability, we should adopt a more modest, mature attitude that supports coexistence with the land we live on. We are empowered to manage the environment. Together, we can protect the beauty of the land and nurture damaged areas back to health. The joint pursuit of sustainability will create a better place for all.

Moon world, Tainan City by Randl Design

Taipingshan Sunrise by Wen-Yan CHIAV

Title	Towards a Sustainable Taiwan: Summary National Spatial Plan
Publisher	Ministry of the Interior (MOI)
Editor	Construction and Planning Agency, MOI
Tel	+886-2-8771-2345
Address	342, Sec. 2, Bade Rd., Songshan District, Taipei City, 10556, Taiwan(R.O.C.)
Website	https://www.cpami.gov.tw/
Design	Randl Design Co.

ISBN	978-986-5448-01-1
GPN	101-080-1514
Date Published	September 2019

ACKNOWLEDGEMENT

Prologue and Epilogue	Wen-Yan CHIAU, Keats Yu-Tzu LIN (Project Investigator)
Photography and Authorization	An-Shun HSIAO, Chien-Nan LIU, Chih-Hsuei WU, Hsien-Cheng YEN, Ming-Ming CHEN, Monica KUO, Wen-Yan CHIAU, Yu-Yuan LU, Randl Design Co., Center for Space and Remote Sensing Research of National Central University, Central Taiwan Science Park Bureau, Construction and Planning Agency, MOI
Cover Photo	Photo by Chi Po-lin Provided by Chi Po-lin Foundation

Spatial Planning Act

ISBN 978-986-54-4801-1
9 789865 448011
GPN: 101-080-1514

Ministry of the Interior
Republic of China (Taiwan)