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GREEN ECONOMY
POLICY REVIEW OF
THE ECOLOGICAL
COMPENSATION
POLICIES OF
HAINAN
PROVINCE IN
CHINA

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1. Background

In 2008, confronted with the global financial crisis, UNEP launched the Green Economy Initiative and introduced the concept of a green economy, which provided a pathway for achieving sustainable development, while respecting planetary boundaries, improving human well-being and building social equity. In 2015, Member States of the United Nations adopted the Sustainable Development Goals (SDGs) to stimulate action over the next fifteen years in areas of critical importance for humanity and the planet. In order to help countries to review and assess the coherence and effectiveness of existing policies in fostering Inclusive Green Economy transitions to achieve the SDGs, UNEP developed a green economy policy review methodology (United Nations Environment Programme 2020). This summary showcases the results of a longer study that used the methodology to review Ecological Compensation Policies of Hainan Province in China.

Over the past 40 years, significant economic and social change has taken place in China. The country has also experienced major challenges in regard to the protection of the ecological environment. To this end, the Chinese government put forward the idea of “ecological civilization” which has been included in the Constitution of China. It includes ecological compensation mechanisms, such as financial subsidies or rewards that are given for economic activities which contribute to protecting and improving the ecological environment, thereby incentivizing ecological restoration and the protection of environmental resources.

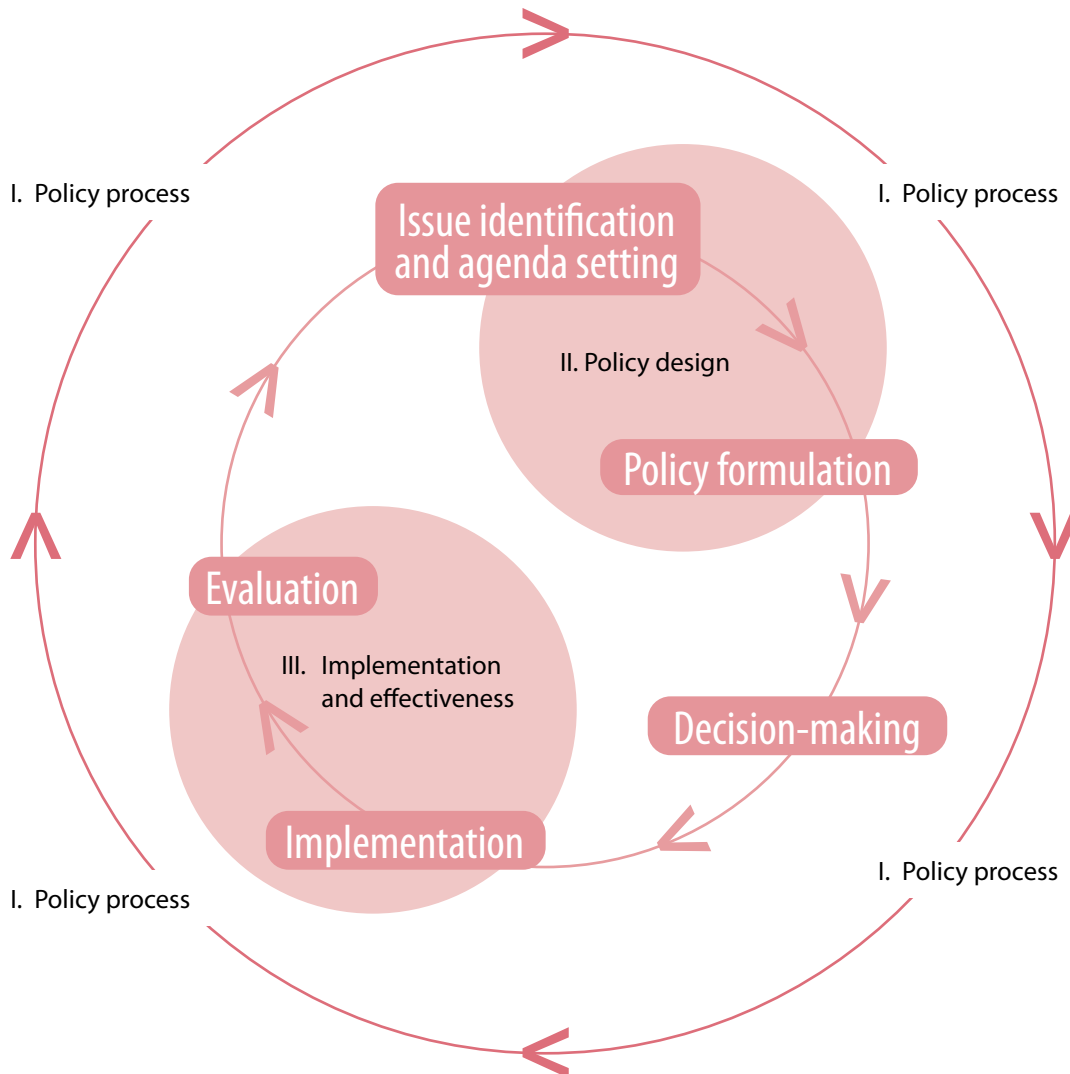
As an island province, Hainan is an independent geographical unit. Therefore, its ecological services and their derived benefits and beneficiaries are relatively easy to define. Hainan has issued ecological compensation policies for watersheds, forests and oceans, and it is the only province in China that is fully incorporated into the transfer-payment system for key ecological-function zones.¹

¹ Key ecological-function zones are areas designated as containing important ecological functions, such as water-source retention, water and soil conservation, windbreak and sand-fixation, and biological diversity conservation. The zones are important for ensuring national and regional ecological security and thus require protection from development contributing to large-scale, high-intensive industrialization or urbanization, so as to preserve and build the supply capacity of eco-friendly products.

With a view to understanding the China-specific policies and the efforts of the Government to advance its green economy, the ecological compensation policies of Hainan Province are assessed below, following the different steps of the policy cycle (see Figure 1).



Figure 1: Three areas of policy review in relation to the policy cycle



Source: United Nations Environment Programme (2020).

2. National policy framework

The ecological compensation policies of China state that public funding from government should be used to protect areas or objects of critical ecological value. Under the policies, individuals or areas are compensated for lost development opportunities arising from the protection of the ecological environment.

2.1. The ecological compensation policies of China

In recent years, the Government has issued a number of policy documents relating to ecological compensation (see Table 1). The documents form an overall framework for ecological protection and compensation, funded by transfer payments and financial subsidies from the central government. The framework is implemented by all levels of government, mainly through major projects and supporting measures that promote ecological protection and restoration.



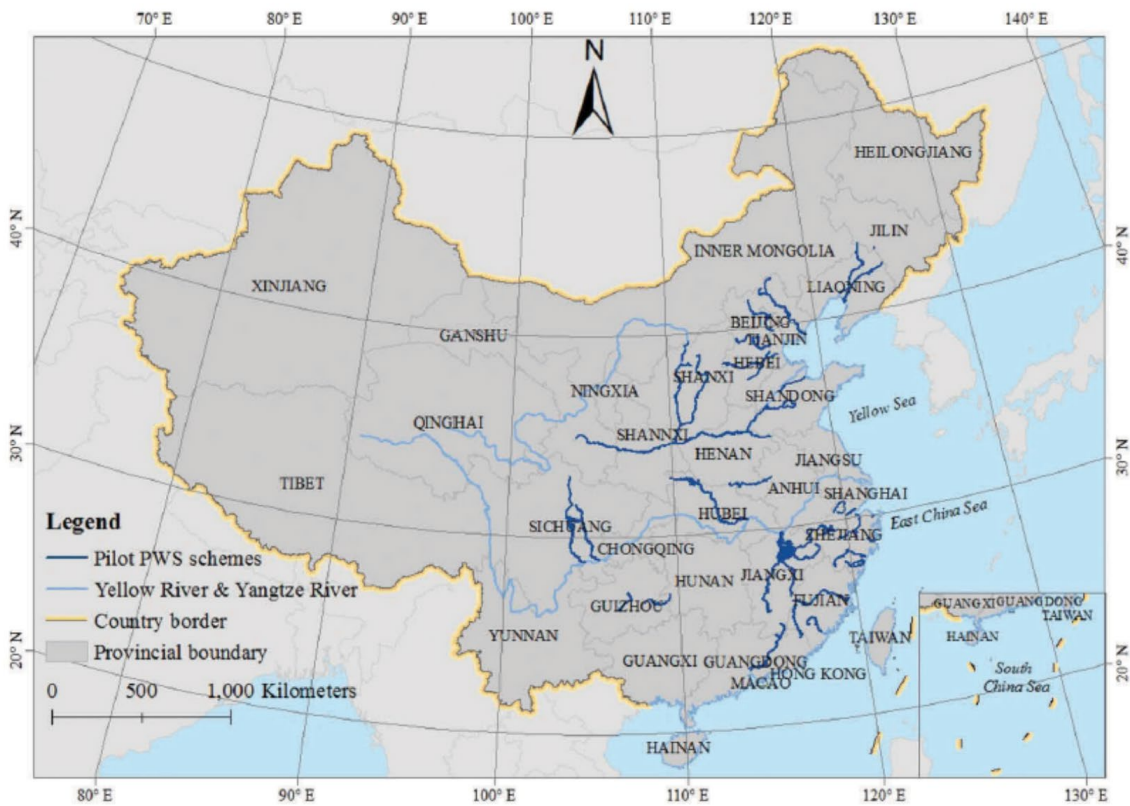
Table 1: Summary of policy documents relating to ecological compensation (China)²

Year	Title
2006	The Eleventh Five-Year Plan for national economic and social development
2006	Guiding opinion on the establishment of accountability mechanisms for the environmental governance and ecological restoration of mines
2007	Guiding opinion on the development of pilot schemes relating to ecological compensation
2007	Administrative measures for the compensation fund of the central government for forest-derived ecological benefits
2009	Measures for transfer payments to national key ecological-function zones (pilot)
2011	The Twelfth Five-Year Plan for national economic and social development
2012	Report of the Eighteenth National Congress of the Communist Party of China
2014	Administrative measures for the subsidy fund of the central government for forests
2016	Opinion on the full implementation of the "river chief" system
2016	Opinion of the General Office of the State Council on improving ecological compensation mechanisms
2017	General programme for establishing a national park system
2017	Report of the Nineteenth National Congress of the Communist Party of China
2018	Guiding opinion of the Ministry of Finance on establishing a robust long-term mechanism for ecological compensation and protection in the Yangtze River Economic Belt
2018	Action plan to establish market-based and diverse ecological compensation mechanisms
2019	Pilot scheme for comprehensive ecological compensation

² Available only in Chinese.

Currently, China is close to providing full-coverage ecological compensation in ecologically significant areas (e.g. prohibited development zones³ and key ecological-function zones) and for key resources (e.g. forests, grasslands, wetlands, deserts, oceans, water basins and arable lands). Pilot schemes for ecological compensation for watershed services have been implemented in 17 provinces (see map).

Map: Pilot schemes for ecological compensation for watershed services in China



Source: Wang and others (2016), p. 273.

Abbreviations: PWS [sic], eco-compensation for watershed services.

Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

³ Prohibited development zones are legally established areas containing natural or cultural resources that require protection at all levels, as well as other zones that require special protection or are prohibited from development contributing to industrialization or urbanization.

In 2014, the Government also amended the Environmental Protection Law of the People's Republic of China and added new provisions relating to ecological compensation. The Law stipulates that the central government has the main responsibility for constructing and financially investing in the ecological compensation system. Moreover, it has an obligation to provide guidance to relevant local governments. Over the years, the ecological compensation system has been incorporated into various laws (see table 2).

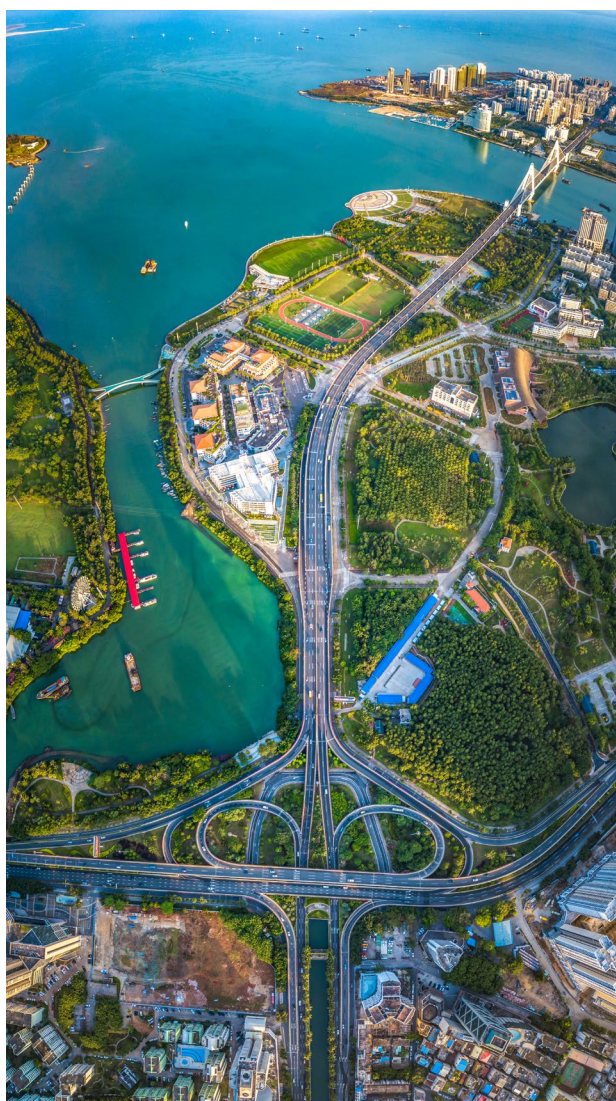


Table 2: Summary of laws relating to ecological compensation (China)⁴

Year	Title
1979	Environmental Protection Law of the People's Republic of China (trial implementation)
1979	Forestry Law of the People's Republic of China (trial implementation)
1984	Forestry Law of the People's Republic of China (passed)
1985	Grassland Law of the People's Republic of China (passed)
1986	Mineral Resources Law of the People's Republic of China (passed)
1988	Water Law of the People's Republic of China (passed)
1989	Environmental Protection Law of the People's Republic of China (passed)
2002	Grassland Law of the People's Republic of China (amended)
2002	Water Law of the People's Republic of China (amended)
2010	Water and Soil Conservation Law of the People's Republic of China (amended)
2014	Environmental Protection Law of the People's Republic of China (amended)
2016	Wildlife Protection Law of the People's Republic of China (amended)
2017	Marine Environment Protection Law of the People's Republic of China (amended)

⁴ Available only in Chinese.

3. Scope of the review

Within the national policy context outlined, the present review covers the ecological compensation policies issued by Hainan Province, in particular those issued in recent years. The policies are assessed with respect to policy formulation, policy design, policy implementation and policy impact.

The provincial government of Hainan Province has issued a series of policy documents (see table 3) which can be reviewed. Of particular relevance is the “Implementation advice of Hainan Province on improving the ecological compensation mechanisms” (hereafter referred to as “implementation advice”). Moreover, the provincial government has developed a policy framework for ecological compensation for ecological forests,⁵ other forests, wetlands, oceans, arable lands and watersheds.



⁵ Ecological forests are forests, forest trees or forest lands that are situated in ecologically important locations or are in fragile ecological conditions. Ecological forests play a vital role in maintaining ecological security, biological diversity and sustainable socioeconomic development. They include shelter forests and special-purpose forests whose main purpose is to provide ecological and social products or services.

Table 3: Summary of policy documents relating to ecological compensation (Hainan Province)⁶

Year	Title
2005	Outline plan for turning Hainan into an eco-province
2006	Interim measures of Hainan Province for the payment of ecological compensation
2008	Pilot scheme of the People’s Government of Hainan Province to establish and improve the ecological compensation mechanisms in the central mountainous areas
2015	Measures of Hainan Province for transfer payments to the cities and counties previously not in receipt of transfer payments for national key ecological-function zones
2017	Decision of the Hainan Provincial Committee of the Communist Party of China on strengthening efforts to build an ecological civilization with a view to building a beautiful China
2017	Implementation advice of Hainan Province on improving the ecological compensation mechanisms
2018	Implementation plan of Hainan Province for a horizontal ecological compensation mechanism between the upper and lower reaches of watersheds (trial implementation)
2018	Administrative measures of Hainan Province for transfer payments to key ecological-function zones
2019	Implementation advice on establishing a new, more effective mechanism for regional coordinated development

The provincial government has also been improving the legal safeguards for ecological compensation (see table 4) which form part of the overall framework to be reviewed. The provincial government plans to introduce the regulations of Hainan Province on ecological protection in 2020.

⁶ Available only in Chinese.

Table 4: Summary of regulations relating to ecological compensation (Hainan Province)⁷

Year	Title
2012	Regulations of Hainan Province on environmental protection (amended)
2013	Regulations of Hainan Province on protecting drinking water sources

As outlined in Box 1, there are four key components within the ecological compensation policies. These components are important for consideration throughout the review.

Box 1. Key components of ecological compensation policies*

a) Compensation providers

The main compensation providers are the central government and the local governments of beneficiary regions. They have the authority to represent public interest, such as the right to enjoy a healthy ecological environment. The central government compensates for any direct costs or opportunity costs that are incurred by local governments or individuals in the protection of the ecological environment.

The local governments of beneficiary regions generally act as local representatives and compensate either lower-level or same-level governments or individuals for protecting the area. Compensation providers undertake the following responsibilities: formulate policies relating to ecological compensation; allocate compensation and related funds; organize work related to the implementation of ecological compensation policies; monitor and evaluate the implementation of the policies; manage the compensation and related funds; and handle violations of laws and regulations that occur in the compensation process.

b) Compensation recipients

The local governments, and their departments, of ecologically protected areas represent those directly affected by environmental protection measures and that should, therefore, be compensated. Recipients are compensated for being subjected to restrictions on investment or development, which are put in place to create and maintain the value of ecosystem services in the region or country. Their rights include the following: the right to be informed of, investigate and monitor development involving the use of natural resources; the right to receive ecological compensation; the right to manage and lawfully use the received compensation; and the right to organize work related to ecological compensation in accordance with the relevant laws and regulations.

c) Forms of compensation

The government directly provides earmarked funds and investments, which are used to compensate for ecological protection activities by means of transfer payments – the most widely used form of ecological compensation in China. There are three main methods of transfer payment: a) vertical transfer: transfer payments from the central government to local governments, or from provincial governments to lower levels of government under their jurisdiction; b) horizontal transfer: transfer payments between local governments; and c) a mix of vertical and horizontal transfers. The compensation funds come mainly from the central government or from provincial governments, with the central government providing the largest portion.

d) Legal framework

The areas, standards and scope of ecological compensation are mostly provided for in the laws and regulations and in government-issued policy documents. The policy documents form the main basis for ecological compensation activities.

* Text adapted from Pan (2016), and Li and Liu (2010).

⁷ Available only in Chinese.

4. The policy process

4.1. Policy formulation

At the macro level, the central government provides guidance on the agenda and direction of national ecological compensation policies. In 2016, the State Council of the People's Republic of China issued the "Opinion of the General Office of the State Council on improving ecological compensation mechanisms", which provides a schedule for provinces to establish ecological compensation systems in accordance with the conditions of the provinces. Moreover, the Opinion stipulates the guiding principles for the formulation of ecological compensation policies relating to various fields.

The People's Government of Hainan Province coordinates the formulation of ecological compensation policy options for the province and the decision-making thereon. In 2017, the People's Government issued the implementation advice. It proposes policy implementation plans and research plans and defines the compensation recipients, providers, sums and methods in the ecological compensation process. It provides guidance to the cities and counties in the province on the ecological compensation process.

Scientific institutions in and around Hainan provide technical support for the formulation of ecological compensation policy options and the decision-making thereon. Scientific institutions, such as the Environmental Science Research Institute of Hainan Province, have been conducting long-term research on the ecological compensation policies issued by the province. To tackle technical issues such as the scope of compensation and compensation plans, they have carried out field research and solicited the public's views. The research provides a scientific basis for the People's Government to formulate policy options and to make decisions thereon.

The public provides recommendations and feedback on the ecological compensation policies through multiple channels. Every year, a number of proposals regarding ecological compensation policies are made at the meetings of the People's Congress and the Chinese People's Political Consultative Conference. This provides an opportunity for the People's Government of Hainan

Province to incorporate the public's views on ecological compensation into the policies and understand the public's concerns regarding the policies.

4.2. Policy implementation

The People's Government of Hainan Province is responsible for implementing the policies of the central government. The provincial government formulates ecological compensation policies in the light of the province's conditions and promotes their implementation in the province. Various departments carry out tasks in the ecological compensation process. They include the main implementers of the policies (e.g. the Department of Finance, the Development and Reform Commission, the Department of Ecological and Environmental Protection, the Forestry Administration and the Department of Water), the municipal and county governments, and other departments that support implementation (e.g. the bureau of statistics, the Department of Land and Resources and the tax bureaux). Moreover, companies and the general public participate, to varying degrees, in the ecological compensation process.

The ecological compensation policies have provided key support to companies involved in industrial restructuring and to environmentally friendly companies. Furthermore, the policies have enabled people living in harsh environments to relocate to areas with better living conditions. Lastly, the policies have led to the creation of green jobs for the mountain populations, thereby changing their conventional working and living conditions.



5. Policy design

5.1. Policy objectives

5.1.1 The objectives of Hainan's ecological compensation policies

After an analysis of Hainan's ecological compensation policies – in particular the implementation advice – the following main objectives were identified.

- 1. To promote coordinated development in the province:** In comparison with accelerated development in the coastal areas, development in the central mountainous areas lags behind. The ecological compensation policies provide that the cities and counties in the central mountainous areas should be compensated for their development rights. This ensures social equity by bridging the development gap between the central areas and other areas.
- 2. To conserve key ecosystems in the province:** The central mountainous areas are located in the upper reaches of major rivers and are among the most biologically diverse places in the country. The offshore areas have the richest tropical living marine resources in China. The purpose of implementing ecological compensation policies in Hainan is to protect ecosystems of all kinds and increase the value of ecosystem services.
- 3. To promote green transformation in the central mountainous areas:** In the central mountainous areas, available land resources are scarce. The economy and the living conditions of the inhabitants are heavily dependent on the development of forest resources. Striking a balance between protecting the environment and developing the local economy is imperative. Implementing the ecological compensation policies is expected to improve public services and raise the education level in those areas. It might also help develop environmentally friendly industries, thus transforming the working and living conditions of the inhabitants and promoting green development
- 4. To promote green development in the cities and counties of the province:** The coastal areas may have more advanced economies, but they still face many challenges regarding green transformation. Therefore,

in ecological compensation policies, differentiated objectives have been set for the cities of the coastal areas, the goal being to promote green development.

5.1.2 Alignment with international frameworks

A comparison of the objectives of Hainan's ecological compensation policies with the objectives of international frameworks has revealed a relatively high degree of alignment with some of the Sustainable Development Goals⁸ and Article 5 of the Paris Agreement (see Table 5).

Table 5: Alignment of Hainan's ecological compensation policies with international frameworks

Policy objectives	Sustainable Development Goals	Paris Agreement	Alignment
1. To promote regional coordinated development in the province	Target 10.1	—	Partial
	Target 1.a		
2. To conserve key ecosystems in the province	Target 4.4	—	Full
	Target 15.2		
3. To promote green transformation in the central mountainous areas	Target 15.2	Article 5	Full
	Target 15.b		
	Target 6.1	—	Partial
	Target 6.3		
Target 15.a	—	Full	
4. To promote green development in the cities and counties	Target 10.4	—	Partial
	Target 8.2		
4. To promote green development in the cities and counties	Target 8.2	—	Partial
	Target 9.4		

⁸ For more information on the Goals, see www.un.org/sustainabledevelopment/sustainable-development-goals/.

In Hainan, there has historically been a lack of coordinated development between the central mountainous and coastal areas, as shown by factors such as the number of people living in poverty and the education level. The implementation advice states that ecological compensation can be combined with targeted poverty alleviation and targeted poverty reduction, which include raising the income of the poor, creating jobs and providing access to education. Those objectives are in line with targets 1.a,⁹ 4.4¹⁰ and 10.1¹¹ of the Sustainable Development Goals. Unlike targets 1.a and 10.1, however, Hainan's ecological compensation policies were not specifically designed to address poverty alleviation or access to education. Without specific indicators set, alignment is deemed partial in regard to those targets.

In the reviewed policies, the conservation of key ecosystems concerns mainly the protection of forest ecosystems. The implementation advice stipulates that forest protection should be further expanded, which is in line with target 15.2¹² of the Sustainable Development Goals. Moreover, the implementation advice states that the province should increase investment in ecological compensation year by year, which includes a fund for conserving forest ecosystems. That is in full alignment with target 15.b¹³ of the Goals and article 5 of the Paris Agreement,¹⁴ of which paragraph 2 states as follows:

Parties are encouraged to take action to implement and support, including through results-based payments, the existing framework as set out in related guidance and decisions already agreed under the Convention for: policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries; and alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests, while reaffirming the importance of incentivizing, as appropriate, non-carbon benefits associated with such approaches.

As regards the protection of water sources and water conservation, the implementation advice focuses on protecting water quality and water sources, which is in line with targets 6.1¹⁵ and 6.3¹⁶ of the Goals. Nevertheless, as Hainan's ecological compensation policies do not mention ways to improve water quality or equitable access to safe drinking water, alignment is deemed partial with regard to those targets.

As regards the protection of biological diversity, the implementation advice stipulates that the ecological compensation funds for the central mountainous areas should be used for protecting biological diversity, which is fully in line with target 15.a¹⁷ of the Goals. To compensate the cities and counties of the central mountainous areas for opportunity costs arising from the protection of the ecological environment, and to promote green transformation in those areas, the implementation advice states that the water environment of watersheds should be improved and green development in the underdeveloped areas of the upper reaches should be encouraged. In addition, horizontal incentive compensation should be strengthened with a view to establishing a harmonized

⁹ Target 1.a: "Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions."

¹⁰ Target 4.4: "By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship."

¹¹ Target 10.1: "By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average."

¹² Target 15.2: "By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally."

¹³ Target 15.b: "Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation."

¹⁴ See FCCC/CP/2015/10/Add.1, decision 1/CP.21, annex.

¹⁵ Target 6.1: "By 2030, achieve universal and equitable access to safe and affordable drinking water for all."

¹⁶ Target 6.3: "By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally."

¹⁷ Target 15.a: "Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems."

and standardized ecological compensation mechanism for the whole watershed area. Given that the central mountainous areas contain many nature reserves, drinking water sources, national parks, forest parks and ecological red-line zones,¹⁸ the areas receive comparatively higher compensation, which is partially aligned with target 10.4¹⁹ of the Sustainable Development Goals.

One of the main objectives for providing ecological compensation in Hainan is to spearhead green development in its cities and counties, especially those in the coastal areas. The implementation advice stipulates that the coastal areas should continue optimizing industrial structures, building environmental infrastructures, saving energy and reducing emissions. Those activities are in line with targets 8.2²⁰ and 9.4²¹ of the Goals. Nevertheless, the ecological compensation policies do not mention achieving higher levels of economic productivity or upgrading infrastructures, hence the alignment is deemed partial with regard to those targets.

5.2. Policy tools

Economic and policy instruments are the main policy tools for promoting ecological compensation in Hainan, as shown by the government's use of transfer payments and direct subsidies for ecological benefits. Moreover, ecological compensation has been included in relevant legal provisions with a view to ensuring the successful implementation of ecological compensation policies.

5.2.1 Legal instruments

The regulations of Hainan Province on ecological compensation will be promulgated in 2020. The regulations will help to clarify the basic principles, focus

areas and compensation methods in the implementation of ecological compensation, as well as determine the rights and obligations of, and the safeguards among, the relevant stakeholders. Furthermore, the regulations will ensure legality in the implementation of the ecological compensation policies by the People's Government of Hainan Province and urge governments at all levels to establish ecological compensation mechanisms in accordance with the legal requirements, thereby increasing investment in ecological compensation.

5.2.2 Economic instruments

The Government of Hainan Province provides transfer payments to municipal and county governments. The funds are used for protecting the ecological environment and improving people's livelihood in ecologically protected areas. The Government established a county-level assessment system for evaluating the quality of the environment of national key ecological-function zones. Transfer payments are adjusted on the basis of results.

The province provides direct subsidies to villagers as a way to promote awareness and incentivize the protection of forest ecosystems. Moreover, in places such as Sanya city, a significant number of poor villagers have been employed as forest rangers, who receive subsidies in the form of wages.

5.2.3 Policy instruments

Policy instruments are used to promote the implementation of ecological compensation mechanisms. The implementation advice reveals that subsidy policies relating to agriculture, oceans, forests and other areas will be introduced.

5.3 Evaluation indicators

The central government and the People's Government of Hainan Province use an indicator matrix to evaluate lower levels of government (i.e. municipal and county governments) and distribute ecological compensation according to the evaluation results. Data are collected mainly by various departments of the Government, with support from the cities and counties. The indicator matrix is based on the evaluation indicators for key ecological-function zones and supplemented by the evaluation indicators for watersheds, forests and other resources.

The indicator matrix for assessing ecological transfer payments contains indicators based on the objectives of

¹⁸ Ecological red-line zones are areas that require strict protection in regard to natural ecological services, environmental quality and security, and natural-resources use. The zones help to protect people's health and to maintain national and regional ecological security and sustainable socioeconomic development.

¹⁹ Target 10.4: "Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality."

²⁰ Target 8.2: "Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors."

²¹ Target 9.4: "By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities."

Hainan's policies, which include environmental governance and pollution prevention. Each city or county is evaluated according to the indicators; the evaluation results are used to determine disbursement. Moreover, the basic and incentive subsidies²² are defined, which ensure that the central government's transfer payments are accessible to all cities and counties while providing an incentive to achieve outstanding results in the protection of the environment.

For the cities and counties in the central ecological core areas, the province has cancelled assessments based on gross domestic product (GDP) and is prioritizing ecological protection in their performance evaluations. Under the tier I indicators, more detailed and quantifiable tier II indicators have been set. Every year, the departments of the

Government collect and monitor data in accordance with their assigned responsibilities and submit the data to the Hainan Provincial Department of Finance. The Department of Finance rewards or sanctions on the basis of the evaluation of fund use, as well as the county-level evaluation of the quality of the ecological environment in national key ecological-function zones. The cities and counties with outstanding results receive more compensation, but sanctions are imposed, in the form of deductions to transfer payments, for poor evaluation results, worsened environmental quality, major environmental pollution incidents, major pollutant emissions exceeding permitted levels or poor performance in ecological poverty-alleviation work.



²² Basic subsidies are transferred to all cities and counties. They are calculated according to factors such as poverty status, fiscal gap, the area of ecological red-line zones and size of population. Incentive subsidies are determined according to the assessment result of national key ecological-function zones.

6. Implementation and impact

6.1. Implementation

In the process of promoting ecological compensation in Hainan, the provincial government has steadily increased investment therein and explored operational modalities of marketization and socialization. The integration of projects – such as the development of tropical rainforest national parks, targeted poverty alleviation and targeted poverty reduction – into ecological compensation policies has created a synergistic effect between the policies. Moreover, implementation of the policies is ensured by legal instruments.

Transfer payments to key ecological-function zones have increased. From 2013 to 2017, the province invested a total of RMB 7.745 billion (USD 1.1 billion) in transfer payments to key ecological-function zones, of which RMB 6.675 billion was from the central government and RMB 1.070 billion from the provincial government. The provincial government increased its investment by 261 per cent during that period.

The Hainan Provincial Department of Finance established a separate key subsidy for central ecological core areas, due to their prominent poverty issues and important role in the protection of the environment. In 2018, four cities and counties in the central region received a total of RMB 500 million in key subsidies, which represented 25 per cent of the central government's disbursement that year.

Ecological compensation for forests has increased. Since 2006, Hainan has taken the national lead in establishing a province-level compensation fund for forest-derived ecological benefits. The fund is used to compensate farmers whose work or livelihood has been affected by mountain closures or protected forests. For more than a decade, the province has increased investment in ecological compensation for forests; the compensation standard has steadily improved. To promote formal stewardship of ecological forests, a management centre was established. The centre is responsible for guiding and supervising stewardship work throughout the province. The centre has also established stewardship posts (i.e. as forest rangers) for nature reserves across the province, thereby ensuring that all ecological forests are stewarded.

A horizontal ecological compensation mechanism for the upper and lower reaches of watersheds has been established. In accordance with the “whoever benefits should compensate” principle, currently 13 cities and counties in Hainan Province conduct cross-sectional pilot studies on water quality for evaluation and fund-settlement purposes. If the water-quality value meets the quarterly assessment target, the municipal and county governments in the lower reaches compensate those in the upper reaches; if the quarterly assessment target is not met, the governments in the upper reaches compensate those in the lower reaches. The Provincial Department of Finance rewards the cities and counties in the upper reaches for meeting the annual assessment target.

Several cities and counties have implemented policies relating to direct subsidies for ecological benefits. The municipal and county governments directly subsidize farmers living in ecological core areas or ecologically sensitive areas, in accordance with the area or population in the ecological forest.

Policies relating to marine ecological compensation have been explored. Since 2015, Hainan has integrated marine nature reserves and marine specially protected areas into the measures for transfer payments to the cities and counties of ecological-function zones, which are used to determine the general transfer payment to each city or county.

6.2. Impact

Strengthened the responsibility of local governments for environment protection: Using a variety of instruments, the Government of Hainan Province has deepened the responsibility of lower levels of government for environmental protection. Moreover, the Government has provided strong policy support and stable funding channels so that they could carry out ecological protection and restoration work. In the 10 or more years since the implementation of ecological compensation policies, the municipal and county governments of Hainan have raised consciousness on ecological compensation, strengthened awareness on ecological protection and increased investment therein.

Transformed the working and living conditions of the inhabitants of the mountainous areas: Hainan's ecological compensation policies have transformed the working and living conditions of some inhabitants of the

mountainous areas who live off the land. The policies have also helped to reverse harmful practices such as excessive deforestation, forest conversion and other food cultivation or hunting practices. For example, in Qiongzong County, a mountainous county in central Hainan characterised by poverty, traditional livelihoods include cutting trees, burning wood and hunting. However, drawing on the county's climatic and resource advantages, people are now encouraged to develop ecological industries such as bee-keeping and eco-tourism. The number of tourists has increased from 0.22 million in 2012 to 1.54 million in 2018, bringing economic growth.

Improved environmental quality and environmental management capacity: The implementation of ecological compensation policies has led to improvements in environmental quality and environmental management capacity throughout the province. During the years that ecological compensation has been implemented in the province, the data on environmental quality have improved and environmental monitoring capacity has increased. For example, in the past five years, the proportion of waterbodies that meet the standard of surface water type II²³ in Hainan Province has continued to increase, from 54% in 2013 to 70.9% in 2017. The increase in environmental monitoring capacity in the cities and counties has provided a basis for the more precise management of Hainan's ecological environment.

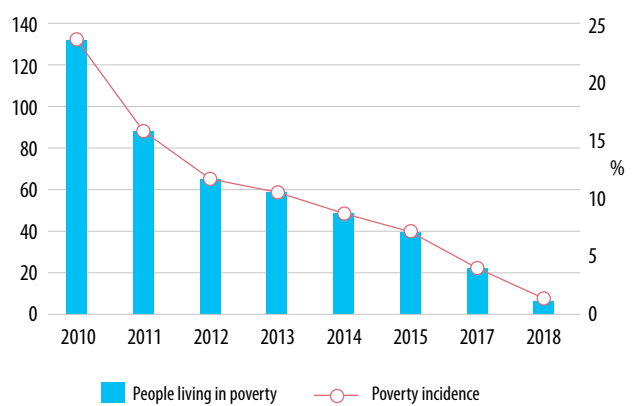
Increased forest cover: During the years that the ecological compensation policies have been implemented, the forest cover in Hainan has steadily increased. Since 2013, the stewardship of ecological forests has also become more effective and the ecosystem services of ecological forests have improved year by year. The compensation fund for forest-derived ecological benefits has contributed to that progress. The forest area of Hainan Province increased from 1.763 million hectares in 2014 to 2.136 million hectares in 2018 overall.

Decreased significantly the number of people living in poverty: The implementation of ecological compensation in the province may have contributed to a reduction in the number of people living in poverty. Poverty alleviation

²³ Surface water type II is a standard mainly applicable to the first-level protection areas of centralized drinking water sources, fish protection areas, fish and shrimp spawning grounds, etc. There are in total 31 indicators that define the quality of water according to the "Surface Water Environmental Quality Standards".

work has been combined with ecological compensation, and resources have been channelled to cities and counties in poorer areas. In the past 10 years, the number of people living in poverty in Hainan has substantially decreased (see figure 2); the disparity between areas has diminished. Moreover, social equity and the right to development for the residents of ecologically protected areas have been effectively safeguarded.

Figure 2: People living in poverty in Hainan Province
(Tens of thousands)



Note: The above figure is based on data from the website of the National Bureau of Statistics, Hainan Survey Unit.



7. Conclusions and recommendations

7.1. Main conclusions

The main conclusions from the present review of Hainan's ecological compensation policies are summarized below. They can help to further strengthen the ecological compensation framework in Hainan going forward.

The ecological compensation policies are grounded in law. Each government department formulates specific implementation plans according to its assigned responsibilities; the plans are broken down into tasks and carried out in a cascading fashion. Government public funding is used as a safeguard. An indicator matrix has been created to regularly assess the use of funds. A performance evaluation mechanism of strong operability has also been established.

Although seeking to yield environmental benefits, the policies take account of social equity and green industrial transformation. The policies combine the environmental, social and economic benefits in an integrated manner.

The ecological compensation policies are compatible with other policies, mutually complementary and mutually reinforcing. The ecological compensation policies play a positive role in promoting regional coordinated development, targeted poverty alleviation, targeted poverty reduction, energy saving and emissions reduction. Moreover, the objectives of the policies are relatively closely aligned with some of the Sustainable Development Goals and Article 5 of the Paris Agreement.

7.2. Recommendations

Based on the present review, there are advancements to be made in the areas of legal safeguards, compensation support systems and support for technical services. Moreover, compensation funding is only coming from the central and provincial government, which could be addressed by including other sources of funding. With a view to promoting the further implementation of the policies and alignment with international frameworks, the following recommendations are made:

Strengthen the legal and policy safeguards in the ecological compensation system: The regulations

of Hainan Province on ecological compensation should be promulgated soon. These will define, among other things, the principles, areas, recipients and providers (including their rights and obligations) of ecological compensation; the regulations will also define the criteria, procedures, sources of funding, evaluation mechanisms and accountability mechanisms. The regulations should address the need for improved institutional safeguards for ecological compensation operations. On an institutional level, the regulations should define the schedules, road maps and main tasks for implementing the ecological compensation policies relating to national parks.

Diversify further the compensation options: The economic and legal instruments should be applied more fully in order to diversify the ecological compensation options. A consultation platform could be built; and support policies could be further improved. Moreover, the beneficiary regions and ecologically protected areas should be guided and encouraged to establish horizontal-compensation relationships by means of voluntary consultations. Horizontal ecological compensation could be implemented by means of financial subsidies, industrial transfer, training programmes and co-developments of industrial parks. Compensation options such as carbon trading, emissions trading, water trading and eco-product labels could be further explored with a view to adopting market-based compensation models and broadening the funding channels.

Strengthen data monitoring and data management: Capacity-building for monitoring should be strengthened, and the automatic monitoring network for key ecological-function zones, forests and watersheds should be improved. A monitoring and evaluation indicator matrix could be formulated and improved, with the monitoring methods standardized and monitoring indicators refined. Intelligent and standardized monitoring technology could be developed with a view to creating a unified monitoring network. In addition, a system for publishing statistical information on ecological compensation could be built, which would help to lay the foundations for ecological compensation benefits assessment.

Mobilize society to participate in the ecological compensation process: Educational outreach on ecological compensation should be strengthened, and open and fair compensation procedures should be developed. The media could play a role in providing oversight, raising awareness of ecological compensation and gaining public

support. All stakeholders should be guided to fulfil their obligations in the process and managers must be urged to conscientiously fulfil their duties of ecological governance.

Align the policies with relevant global commitments:

Moving forward, the ecological compensation policies should be further aligned with international commitments relating to the environment, such as the Sustainable Development Goals and the Paris Agreement. When formulating new policies, policymakers should focus on aligning the policy objectives with those of international commitments.



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