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The Identification of Land Use Conflicts and Policy Implications for Donghai County Based on the "Production–Living–Ecological" Functions

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Abstract: The rapid development of urbanization has continuously encroached on people's living space and ecological space, leading to an imbalance in territorial spatial functions. Identifying potential land use conflicts and optimizing land use structure are conducive to carrying out territorial spatial planning rationally. In this paper, we adopt the suitability assessment method to evaluate the suitability of land for production, living, and ecological functions and then use the land use conflict identification matrix to identify land use conflicts in Donghai County and make relevant suggestions according to the intensity of land use conflicts. The results of this study show the following: (1) the areas of suitable land use zones, strong conflict zones, medium conflict zones, and weak conflict zones in Donghai County are, respectively, 58.83%, 10.62%, 26.31%, and 4.24%. (2) The spatial distribution differences in the different conflict zones could determine the pertinence of conflict mitigation and spatial planning. In the process of the urbanization of Donghai County, ecological environmental protection is still the top priority. (3) It is necessary to economically and intensively use construction land, improving its fine management level. Land use efficiency should be maximized, and the spatial distribution of national territory should be reasonably optimized while strengthening the guiding role of planning. This study addresses land conflicts from the perspective of spatial planning rather than economic behavior. It also provides significant insight into land use layout at the county level, which is exactly what China is exploring in the new era.

Keywords: production–life–ecological functions; land use conflicts; suitability assessment

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1. Introduction

Since the middle of the last century, human beings have intensified the development of land resources in order to meet the rapid growth of the population and the expansion of social demand. This has led to enormous pressure on resource allocation and aggravated the functional conflict of land use. The contradiction between limited land resources and increasing demand and the problem of land use conflicts have seriously affected the coordinated development of regions. This has become a common problem faced by different countries in the process of industrialization and urbanization [1]. In China, with urbanization entering into a rapid development process, the problem of land use conflict has seriously affected the coordinated development of regions. Urbanization and industrialization have led to rapid economic development. While significant attention has been directed toward the speed of development, the issues arising from the careless use of resources have often been overlooked. The rapid pace of production has encroached upon both living and ecological spaces, resulting in an imbalance in the functions of geographical space. Due to the land resource characteristics of territoriality, finiteness, and scarcity, the problem of land use function conflict has become more and more prominent [2,3]. The

report of the 20th National Congress of the Communist Party of China (CPC) points out that it is necessary to build a regional economic layout and territorial space system with complementary advantages and high-quality development. It has become an important task to identify land use conflicts, rationally carry out land space planning, mitigate land use function conflicts, achieve the coordinated development of land with multiple objectives, and promote the high-quality and sustainable use of land resources.

Since the 1970s, the problem of land use conflict has attracted scholars' attention at home and abroad. It has become a research focus and hotspot [4]. "Agenda 21" outlined conflict as a key topic in land use planning. Different scholars have carried out extensive research on land use conflict from their own perspectives [5,6]. The consensus about the definition is that land use conflict is a kind of conflict caused by the scarcity of land resources, the multiplicity of functions, and different stakeholders' diverse needs [7].

The content of research on land use conflict has included the root causes of conflicts [8–10], land use conflict management [11,12], land use conflict simulation [13,14], land use conflict coordination and solutions [15,16], land use conflict identification and intensity diagnosis [17], land use conflict in different countries and global sustainable development [18], etc. In fact, the prevention and mitigation of land use conflicts and the formulation of reasonable territorial spatial planning must be based on the identification of land use conflicts [19]. While relevant research about land use spatial conflict is inadequate, spatial identification has become the most important issue in the land use conflict research field [20].

Land use conflict identification methods include qualitative and quantitative analyses. Qualitative methods of land use conflict identification include the participatory survey method, participatory mapping method [21,22], game theory analysis method, etc. [23,24]. Quantitative methods include the PASIR model [25], PSR model [26], multi-objective planning method [27], landscape ecological risk method [28,29], suitability evaluation method, etc. [30,31]. Among them, suitability evaluation is usually used in spatial conflict identification [32]. Within research on land suitability and competitiveness evaluation, the combination of land use conflict types and intensity has great application value. A variety of methods have been used for land use suitability assessment, including overlay mapping [33], the multi-criteria evaluation method [34], the weighted superposition method of GIS and RS [35], and so on. Among them, the methods of determining suitability weight include the analytic hierarchy process, the expert scoring method combined with the analytic hierarchy process, the network analysis method [36–38], and so on. Referring to the relevant literature, we selected the entropy weight method in this paper to evaluate the suitability of land use function [39].

Regarding survey regions, previous spatial research on land conflicts has been more concentrated in economically developed regions at the macro level, such as at the national [40], province [41], city [42], urban agglomeration [43], and river basin [44] levels. In China, the General Offices of the CPC Central Committee and the State Council issued "opinions on promoting urbanization construction with county seat as an important carrier" in 2022. The county seat has been listed as an important carrier of future urbanization construction. It has become an important task to study how to coordinate the production, life, ecology, and security needs of the county and jointly promote the development of new urbanization in the implementation of the national strategy. Land use function conflicts are important factors limiting the sustainable development of urbanization [45]. Based on the new trend of territorial spatial planning and economic and social sustainable development considerations, studying land use conflicts from the perspective of "production–living–ecological" functions becomes a practical requirement [37,46]. Existing studies of land use conflicts with spatial analysis have paid less attention to the county level, especially the township level. Research on County areas could improve the precision of evaluation results, which is of greater significance in guiding the land use planning of provincial and grassroots governments.

This study identifies the types and intensity of land use conflicts in Donghai County from the perspective of the suitability of "production-living-ecological" functions (PLEFs).

It analyzes the zones of land use conflicts within Donghai County and its townships. The main contributions of this research include: (1) identifying and diagnosing the intensity of land use conflicts in Donghai County, which could provide case references for coordinating ecological environmental protection with social development, thereby offering a scientific basis for decision-making by local and regional land use spatial planning administrators. (2) Using a land use conflict identification matrix, this study examines the land use conflict situation in each township from a county-wide perspective. The exploration of land use conflict issues at both the county and township scales provides valuable support materials for grassroots planning and governance. (3) Through the evaluation of the appropriateness of PLEFs, the research findings will contribute to systematic planning and layout, enhance the protection of land resources, and promote sustainable societal development.

2. Theoretical Analysis Framework

2.1. Land Use Conflicts Based on PLEFs

This study analyzes land conflicts from the perspective of spatial configuration. The same land can serve multiple functions simultaneously. The functional suitability of land use refers to the degree to which a particular land area is appropriate for agricultural and industrial production, urban construction, ecological protection, and other human activities. The scarcity of land resources, the multifunctional suitability of land use, and the diversity of human needs contribute to conflicts during the land use process [37]. From the perspective of "production-living-ecological" functions, we define land use conflict as the contradiction arising from the multiplicity of land functions, the competitiveness of land resources, and the diversity of social needs during production, economic construction, ecological protection, and other land use processes [29,43]. This definition encapsulates the spatial dynamics involved in land development and utilization, which are caused by conflicts among multiple land functions. When two or more functions exhibit an equal degree of suitability within the same land area, subsequent land use processes may give rise to corresponding conflicts due to different needs. Based on the evaluation of production, living, and ecological functions, this study identifies zones of land with high or medium suitability for two or three functions as potential areas for land use conflicts. To assess the intensity of these potential conflicts, a land use conflict matrix will be constructed, categorizing spatial land into strong conflict zones, medium conflict zones, and weak conflict zones.

2.2. Analysis Framework of Land Use Conflict Identification

The natural supply of land resources is limited. The development of urban and rural economic construction has led to an increasing demand for land resources, resulting in an increasingly tense relationship between humans and land. The scarcity of land resources has given rise to competition for land use, which is a primary cause of land use conflicts. With the proposal and widespread application of sustainable development theory, the study of land use functions has gradually expanded beyond agriculture to encompass economic, social, and ecological fields [30]. Land possesses multifunctionality, serving productive, subsistence, and ecological purposes [45]. This multiplicity of land functions is a significant factor contributing to the emergence of land use conflicts. In the use process, different stakeholders have varying needs, leading to competition in selecting land use methods and primary functions, which in turn results in conflicts. The conflicts between the production, living, and ecological functions of land reflect the competing demands of economic development, social construction, and ecological environment protection. Natural attributes represent the inherent qualities of the land, while location conditions arise from the interplay of various regional land attributes influenced by human economic activities. Lands in different areas exhibit varying functional suitability due to differences in their natural properties and location conditions. The suitability of production, living, and ecological functions is considered goal oriented. An indicator system is constructed to

evaluate the suitability of regional land functions by selecting indicators from both natural and locational perspectives [32].

Based on the analysis of theoretical concepts and the existing literature [39,42,47], this study integrates the theory of human–land coordination with the theory of sustainable development to evaluate land use function suitability. The evaluation is approached from three perspectives: production function, living function, and ecological function. An indicator system is developed, considering both natural attributes and locational conditions. Furthermore, the study identifies regional land use conflict zones and assesses the intensity of these conflicts, thereby providing valuable case references for subsequent spatial planning (Figure 1).

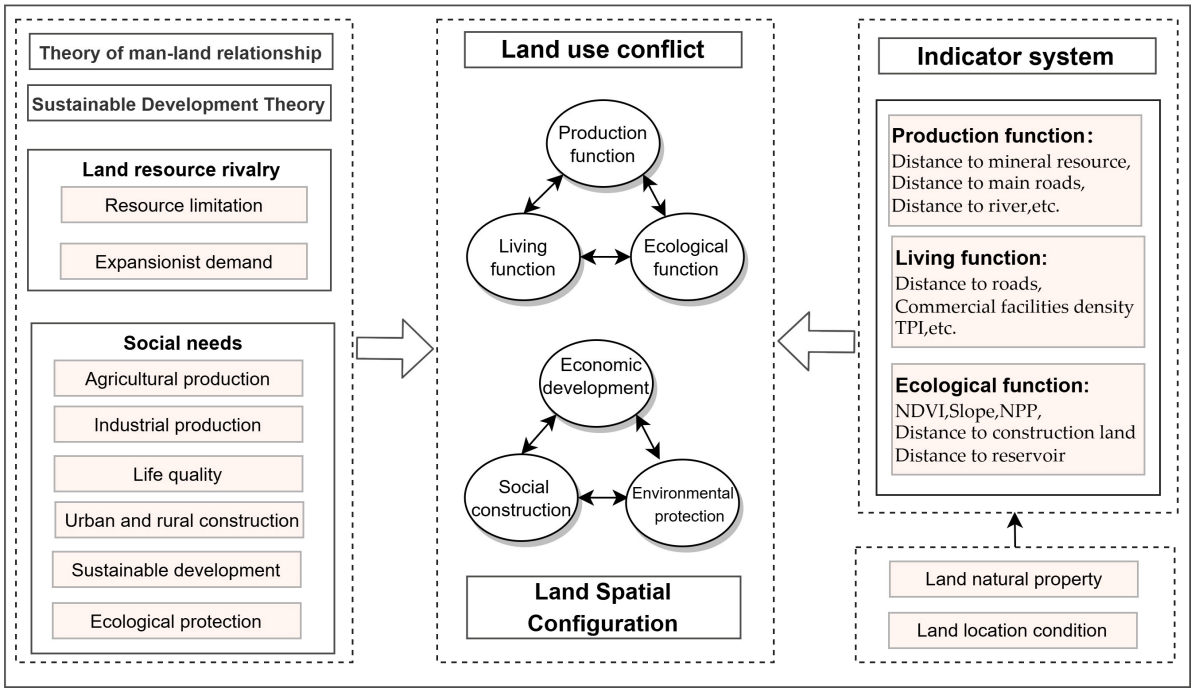


Figure 1. Theoretical analysis framework.

3. Materials and Methods

3.1. Study Area

Donghai County is part of Lianyungang City, situated in the north of Jiangsu Province. It falls under the jurisdiction of a provincial economic development zone and comprises 13 towns, 4 townships, and 2 streets. The county features a long east–west terrain and a shorter north–south expanse, with higher elevations to the west and lower elevations to the east, where the terrain is predominantly flat. Donghai County is located at the core of the national intersection of the "Belt and Road "initiative. Additionally, it serves as an overlapping area for three major strategies: the Coastal Economic Belt, the Jianghuai Ecological Zone, and the Huaihai Economic Zone (see Figure 2). Adhering to the principle of "Establishing industry to strengthen the county", Donghai County is leveraging its resource advantages to develop the new materials industry and a circular economy. The county has made significant progress in these sectors and has been recognized as one of the top 100 counties in the nation for high-quality development and for its development potential. As a significant grain functional area, Donghai County is endowed with abundant arable land resources and is recognized as a national leader in grain production. Situated in the core region of the mountainous and hilly ecological landscape in western Lianyungang City, Donghai County features a national wetland park, a provincial forest park, and several water conservation areas. In recent years, the intensity of land development and utilization in Donghai County has escalated. Industrial development and urbanization have resulted

in the continuous expansion of construction land, encroaching upon other land types. Issues such as the unbalanced development of production and living spaces, as well as the deterioration of the ecological environment, have increasingly come to the forefront. The conflicts among the production, living, and ecological functions of land resources are critical factors influencing the coordinated use of land and the economic and social development of the area. Therefore, identifying potential land use conflicts is essential for rationally formulating territorial spatial planning, promoting the coordinated fulfillment of production, living, and ecological functions (PLEFs), and achieving the efficient use of land resources.

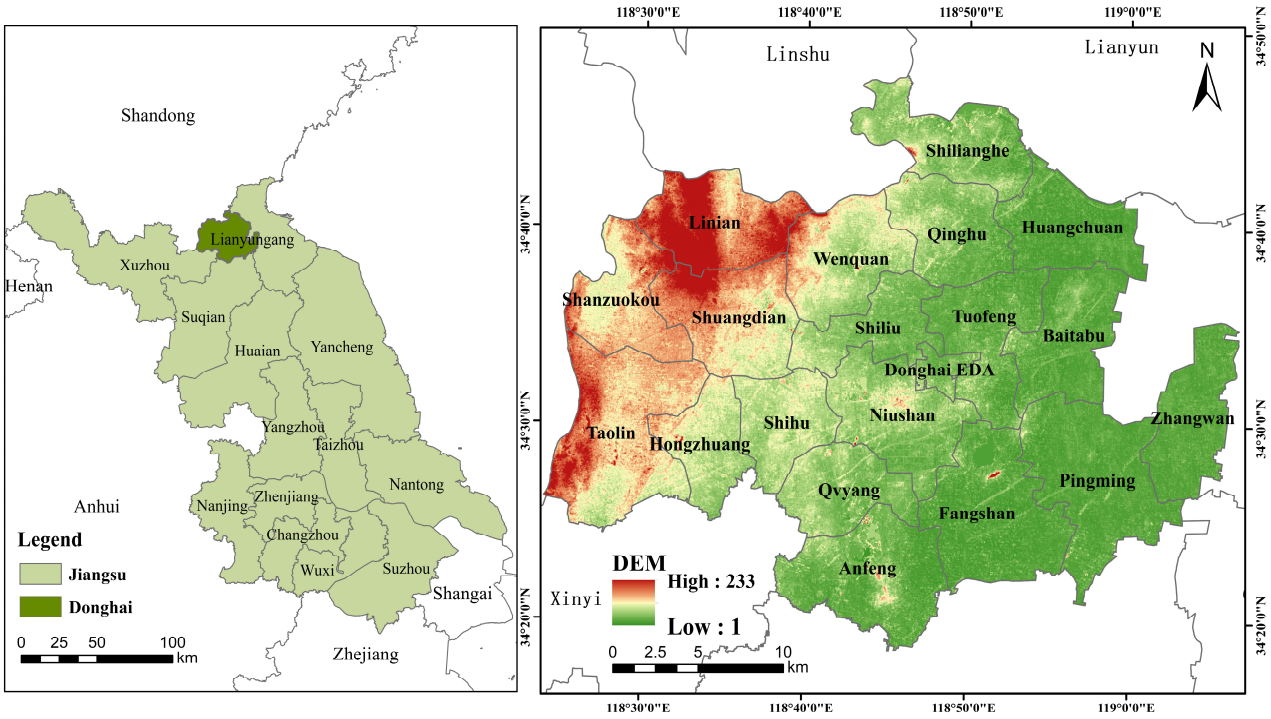


Figure 2. Map of the study area.

3.2. Research Methods

3.2.1. Topographic Position Index

The Topographic Position Index (TPI) is derived from the integration of elevation and slope, effectively representing the topographic variations within a region. A lower slope and reduced elevation result in a smaller YPI, suggesting that the challenges associated with development and construction are minimized, making these areas more suitable for habitation. The calculation formula is as follows:

$$T = \lg\left[\left(\frac{e}{E} + 1\right) \times \left(\frac{s}{S} + 1\right)\right] \quad (1)$$

In this context, T represents the Topographic Position Index (TPI) of a specific point within the area. The variable e denotes the elevation value at that point, while E signifies the average elevation value across the area. Additionally, s refers to the slope at the point, and S represents the average slope value within the area.

3.2.2. Entropy Weight Method

The entropy weight method is an objective assignment technique that draws upon the conceptual framework of information entropy. This method enables the objective calculation of the weight of each indicator, thereby mitigating the errors introduced by subjective judgment [39]. The weights derived from the entropy weight method reflect the relative change rates of the indicators within the system.

To calculate the entropy value of the jth metric e_j, the following formula was used:

$$P_{ij} = z_{ij} \sum_{i=1}^{m} z_{ij} \; i = 1, 2, \ldots, m, \; j = 1, 2, \ldots, n \tag{2}$$

$$e_j = -K \sum_{i=1}^{m} p_{ij} \ln\left(p_{ij}\right) \tag{3}$$

where i is the divided grid cell and j is each indicator; z_{ij} is the value of the jth indicator in the ith grid; and P_{ij} is the weight of the jth indicator in the ith grid. The constant K, which is greater than zero, is typically associated with the number of samples m. In this paper, we set the constant K to $1/\ln(m)$.

To calculate the information utility value for the jth indicator d_j, the following formula was used:

$$d_j = 1 - e_j. \tag{4}$$

To calculate the weight of the indicator w_j, the following formula was used:

$$w_j = d_j / j \sum_{i=1}^{n} d_j \tag{5}$$

3.2.3. Calculation Results of Suitability Evaluation

The comprehensive evaluation method was used to calculate the comprehensive index of PLEF suitability, with the following formula:

$$S_i = i \sum_{j=1}^{n} w_j \times A_{ij} \tag{6}$$

where S_i is the suitability score of the ith grid and A_{ij} is the standardized score for the jth indicator of the ith raster. The higher the Si value, the higher the functional suitability of the ith grid.

3.2.4. Matrix for Identifying Land Use Conflict Types

Based on the suitability evaluation results and the existing literature [48], the suitability levels of the production function, living function, and ecological function are ranked and combined, yielding 27 distinct results. These results are categorized into 4 first-level categories and 12 second-level categories. The specific land use conflict identification matrix is presented in Table 1. The term "Production-living-ecological" indicates a potential land use conflict among the production, living, and ecological functions of land. "Production-living" denotes a potential conflict between the production and living functions, while "Production-ecological" refers to a potential conflict between the production and ecological functions. Lastly, "Living-ecological" signifies a potential conflict between the living and ecological functions of land.

Based on the perspective of PLEFs, 18 evaluation indicators were selected from two dimensions: natural and social factors that influence land use, reflecting the characteristics of different functions. The indicators were standardized to determine their weights more objectively, employing the entropy weight method. Five assignment levels were established, referencing the existing literature. A land use functional suitability evaluation index system was constructed using these indicators. Following the suitability evaluation results, land use conflicts were identified using a conflict identification matrix, enabling the diagnosis of conflict zones and their intensity. Policy suggestions will be proposed for the targeted analysis of land use conflict zones with various intensities. The overall framework of the paper is illustrated in Figure 3.

Table 1. Identification matrix of land use conflicts.

Type of Conflict		Appropriateness of PLEFs		
Conflict Type	**Secondary Conflict Type**	**Production**	**Living**	**Ecological**
PLEF Suitability Zone	Production Suitable Area	High Medium	Medium/Low Low	Medium/Low Low
	Living Suitable Area	Medium/Low Low	High Medium	Medium/Low Low
	Ecological Suitable Area	Medium/Low Low	Medium/Low Low	High Medium
Strong conflicts zone	Production–living–ecological	High	High	High
	Production–living	High	High	Medium/Low
	Production–ecological	High	Medium/Low	High
	Living–ecological	Medium/Low	High	High
Medium conflicts zone	Production–living–ecological	Medium	Medium	Medium
	Production–living	Medium	Medium	Low
	Production–ecological	Medium	Low	Medium
	Living–ecological	Low	Medium	Medium
Weak conflicts zone	Weak conflicts zone	Low	Low	Low

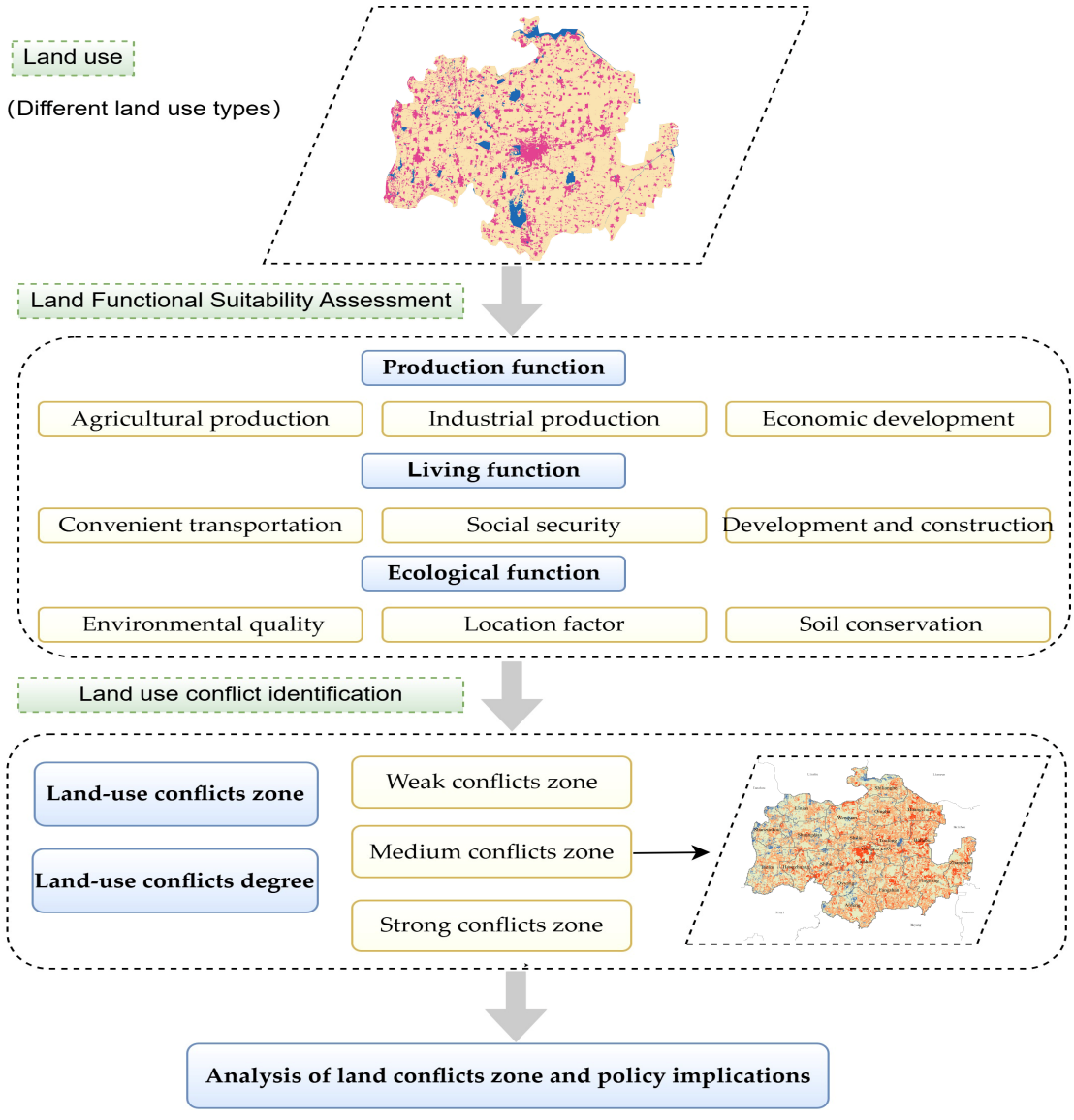


Figure 3. Flow chart of the research.

3.3. Data Sources and Processing

3.3.1. Indicator System for Evaluating the Suitability of PLEFs

The suitability of PLEFs refers to the appropriateness of land resources in fulfilling production, living, and ecological functions. Different conditions are required to achieve these distinct functions. Consequently, based on the specific circumstances of Donghai County and the requirements of each function, we selected evaluation indexes to construct an evaluation index system for assessing the suitability of Donghai County's production, living, and ecological functions, drawing on relevant studies [1,32,49] (Table 2).

Table 2. Evaluation indicator system for the suitability of PLEFs.

Target	Indicator	Indicator Classification and Score					Weight
		9	7	5	3	1	
Production Functional Suitability	Distance to mineral resource (m)	200	500	1000	1500	>1500	0.1905
	Distance to ponds and ditches (m)	100	300	500	1000	>1000	0.1410
	Soil organic matter content (g/kg)	>8	7	6	5	<4	0.1462
	Distance to river/m	100	300	500	1000	>1000	0.0979
	Slope (°)	2	6	15	25	>25	0.1423
	Industrial agglomeration degree			Natural Breaks			0.1915
	Distance to main road (m)	100	300	500	1000	>1000	0.0905
Living Functional Suitability	TPI			Natural Breaks			0.0909
	Distance to road	100	300	500	1000	>1000	0.0853
	Commercial facilities density			Natural Breaks			0.2584
	Distance to rural settlement	200	500	1000	1500	>1500	0.1094
	Educational infrastructure density			Natural Breaks			0.2304
	Medical infrastructure density			Natural Breaks			0.2255
Ecological Functional Suitability	NDVI	>0.8	0.8	0.6	0.4	<0.2	0.2658
	Slope (°)	5	8	15	25	>25	0.2320
	NPP			Natural Breaks			0.1565
	Distance to construction land (m)	1000	500	300	100	<100	0.1587
	Distance to reservoir (m)	200	500	1000	2000	>2000	0.1870

Evaluation indicators for the suitability of land use production functions were selected from both natural and social dimensions. In the natural dimension, mineral resources are crucial for industrial production in Donghai County; thus, the distance to these resources was chosen as one of the indicators. Ponds, ditches, and rivers provide essential water resources for both agricultural and industrial production, while rivers also serve important ecological functions. The content of soil organic matter directly reflects the soil's suitability for agricultural production, leading to the separate selection of distances to ponds and ditches as indicators. Additionally, slope significantly influences soil and water conservation capabilities during agricultural production, making it a key factor in this context. In the social dimension, indicators include the degree of industrial agglomeration and the distance to main roads. A higher degree of industrial agglomeration correlates with greater scale effects in production, with indicator values derived from the analysis of the density of enterprise distribution density in Donghai County. Furthermore, increased accessibility and improved traffic conditions facilitate both agricultural and industrial production, with indicator values calculated based on distances to roads and railways.

For the evaluation index for land use suitability concerning living functions, we selected the Topographic Position Index (TPI), which indicates the challenges and costs

associated with residential development and construction. Proximity to the township center and the convenience of transportation correlate positively with the ease of living and overall quality of life. Additionally, the presence of commercial facilities, educational infrastructure, and medical services offers essential support for residents, thereby enhancing life convenience.

The evaluation indicators for assessing the ecological function suitability of land use include the NDVI, slope, NPP, and the proximity to construction land and reservoirs. The NDVI reflects the status of vegetation cover and provides insights into the ecological condition of the area. A steeper slope increases the risk of soil erosion, which is detrimental to ecological environmental protection. NPP represents the organic mass produced by green plants through photosynthesis, excluding the portion utilized by plant respiration. This indicator is crucial for evaluating the quality of the regional ecological environment. Proximity to construction land correlates with increased ecological impacts, while reservoirs significantly contribute to climate regulation and possess ecosystem service value; thus, closer distance to them indicates higher ecological value.

3.3.2. Data Sources

The land use data are derived from China's province-by-province yearly surface cover dataset (CLCD). The elevation data utilized in the natural environment analysis were sourced from the Geospatial Data Cloud. Slope data were processed based on the elevation data. The Topographic Position Index was calculated using both elevation and slope data. Data on rivers, ponds, ditches, and reservoirs were obtained from the third national land survey database. Soil organic matter content data and vegetation normalized index data were sourced from the National Tibetan Plateau Data Center (http://data.tpdc.ac.cn accessed on 3 July 2024). Vegetation net primary productivity data were derived from the MODIS MOD17A3HGF satellite remote monitoring dataset. In the socio-economic data category, the transportation road network data were acquired from the Open Street Map. Mineral point data were obtained from the National Mineral Points Database Version 2021 (ngac.org.cn accessed on 3 July 2024). Data on industrial points, educational facilities, medical facilities, and commercial facilities were sourced from the GOOD MAP POI Points of Interest (POIs). Location correction and cropping were performed using ArcGIS. Distribution density was calculated through kernel density analysis. The aforementioned data were converted to a 30 m $\times$ 30 m raster format following preprocessing steps, which included projection transformation, cropping, resampling, Euclidean distance analysis, and kernel density analysis.

4. Results

4.1. Evaluation of Land Use Function Suitability

Based on the evaluation index system of PLEFs, ArcGIS was employed for data processing and spatial analysis to derive the suitability evaluation results for production, living, and ecological functions in Donghai County.

4.1.1. Evaluation of Production Functions Suitability

From a quantitative perspective, the area classified as highly suitable for production functions is 454.45 km^2, which accounts for 22.38% of the total area of Donghai County. The area deemed moderately suitable for production functions is 999.41 km^2, representing 49.23%. Additionally, the area identified as low suitability for production functions is 576.39 km^2, making up 28.39% of the total area. Together, the highly and moderately suitable areas for production functions exceed 70% of Donghai County's total area, indicating an overall high suitability for production.

The spatial distribution of production function suitability levels in Donghai County is illustrated in Figure 4. From a spatial distribution perspective, the overall pattern exhibits a strip-like shape, with higher suitability in the central southeast and lower suitability in the northwest. The areas of high production function suitability are primarily concentrated in

the central region. At the township scale, the analysis reveals that the highly suitable areas are predominantly located in the Donghai Economic Development Zone, Baitabu Township, Niushan Street, and Hongzhuang Township. Specifically, the highly suitable areas in the Donghai Economic Development Zone and Baitabu Township account for 63.81% and 47.54% of their respective total areas. Additionally, significant high-production function suitability areas are also found in Hot Spring Town, Hongzhuang Town, and Shuangdian Town. The medium suitability areas for the production function encompass the largest expanse and are mainly distributed in the southeast of Donghai County, characterized by a more fragmented distribution. The medium suitability areas primarily include Civilian Township, Huangchuan Township, Zhangwan Township, Shiliang Street, and Fangshan Township, which account for 80.79%, 59.31%, 58.23%, 57.58% and 57.69% of their total township areas, respectively. Most townships exhibit the largest proportion of production function suitable areas within their administrative boundaries.

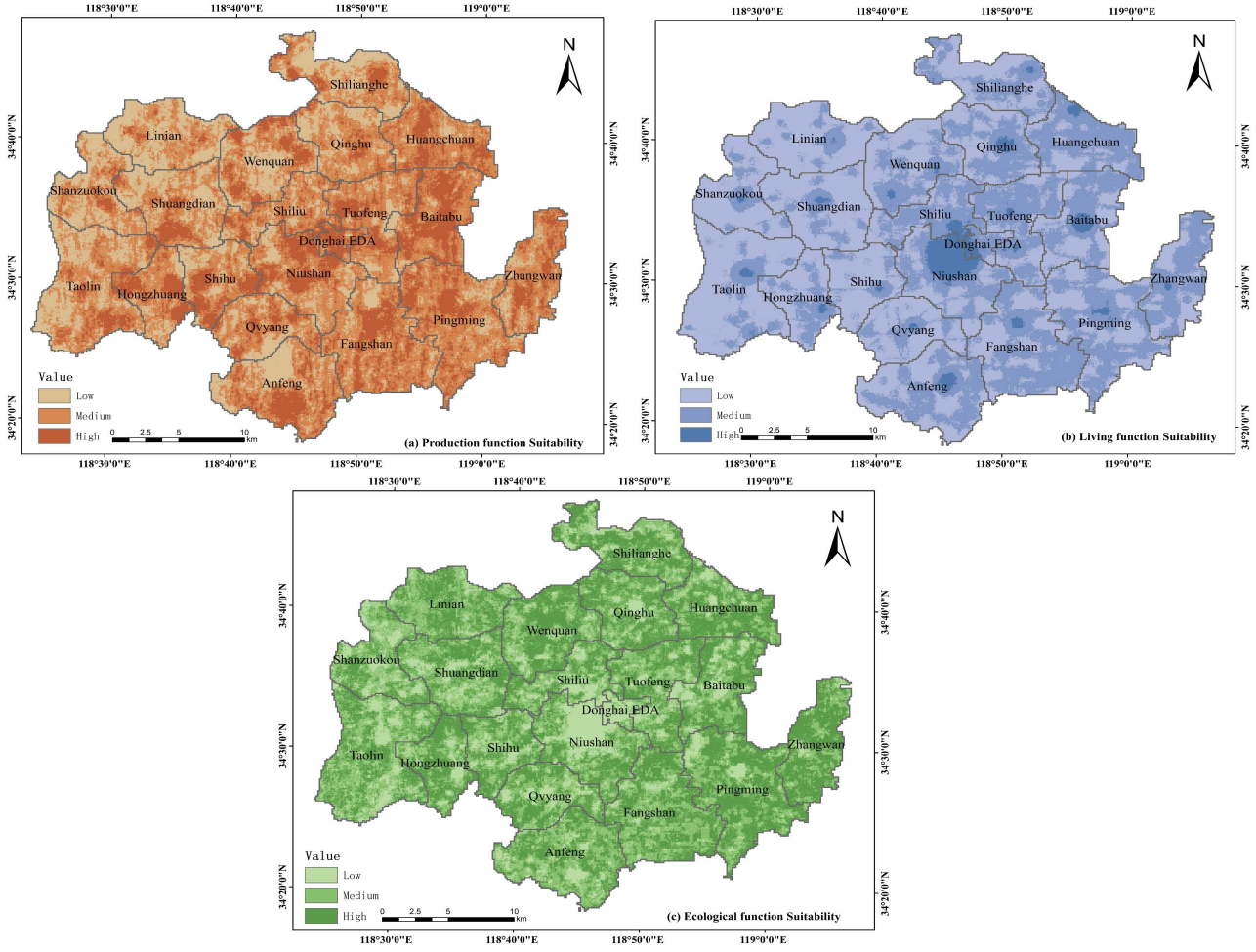


Figure 4. Spatial distribution of PLEF suitability.

4.1.2. Evaluation of Living Function Suitability

The results of the quantitative evaluation analysis regarding the suitability of living functions in Donghai County indicate that the areas designated as high, medium, and low suitability zones measure 65.24 km^2, 868.69 km^2, and 1096.32 km^2 respectively. Notably, suitability zones occupy the largest proportion, accounting for 54.00% of the entire study area, while medium suitability zones represent 42.79% of the total area. In contrast, high suitability zones constitute the smallest proportion at only 3.21%. The combined area of medium and high suitability zones in Donghai County does not exceed 50% of the total area. This suggests that the current infrastructure development and urban planning in Donghai County are insufficient to adequately support living functions.

The spatial distribution of living function suitability levels in Donghai County is illustrated in Figure 3, which reveals a cluster-like spatial arrangement primarily centered around the town center. Areas with high living function suitability are predominantly found in the Donghai Economic Development Zone and Niushan Street, collectively accounting for over 24% of the total area. These high suitability regions are situated within 200 m of the township center. Surrounding the high living function suitability areas, medium and low suitability regions are distributed in concentric circles. A statistical analysis of the living space suitability proportions across each township indicates that the medium living function suitable areas are predominantly located in Huangchuan Township, Camel Peak Township, Shidu Street, and Fangshan Township. Notably, the proportion of medium living function suitable area exceeds 50% of the total area in eight townships.

4.1.3. Evaluation of Ecological Function Suitability

The ecological function suitability results for Donghai County can be categorized into high suitability, medium suitability, and low suitability areas using the natural breakpoint method. Statistical findings indicate that the areas classified as high ecological function suitability, medium suitability, and low suitability areas of Donghai County are 816.21 km^2, 856.10 km^2, and 357.94 km^2, respectively, accounting for 40.20%, 42.17%, and 17.63% of the total area. Notably, the combined proportion of areas with high and medium ecological function suitability exceeds 80% of Donghai County's total area. Overall, the area classified as highly suitable for ecological functions is larger than that designated for high production functions and high living functions, indicating a generally high level of ecological suitability.

The spatial distribution of ecological function suitability levels in Donghai County is illustrated in Figure 4. Low suitability zones are primarily concentrated in the center and are also scattered throughout the region. In contrast, high and medium suitability zones are distributed around the center, with high suitability zones predominantly located in the eastern part, accounting for a larger proportion. Medium suitability zones are found in the west and are more widely distributed. Analyzing the spatial distribution structure of ecological function suitability at the township scale reveals that highly suitable ecological function areas are mainly concentrated in Zhangwan Township, Pingming Township, Hot Spring Township, Huangchuan Township, and Fangshan Township in the east, with proportions of 60.24%, 52.22%, 50.18%, 49.38%, and 44.08%, respectively. Medium ecological suitability areas are primarily situated in Anfeng Township, Fangshan Township, Li Communities, Shanzokou Township, Taolin Township, and Shihu Township, all of which account for more than 45% of the total township area. The low ecological suitability zones are smaller in size and are primarily located in the Donghai Economic Development Zone and Nushan Street.

4.2. Land Use Conflict Analysis

The distribution map of PLEF suitability (Figure 4), reveals overlapping areas of PLEF suitability, indicating the potential land use conflicts in Donghai County. Based on the suitability evaluation of production, living, and ecological functions in Donghai County, an overlay analysis was conducted using ArcGIS, resulting in 27 distinct functional combinations, which were subsequently merged into similar types. The area and percentage of each conflict type are presented in Table 3 and Figure 5.

Table 3. Statistics on the area of land use conflict zones in Donghai County.

Conflict Type	Area (km^2)	Proportion	Secondary Conflict Type	Area (km^2)	Proportion
Suitability Zone	1194.37	58.83%	Production	301.36	14.84%
			Living	65.43	3.22%
			Ecological	827.58	40.76%
Strong conflict area	215.66	10.62%	Production–living–ecological	1.65	0.08%
			Production–living	33.26	1.64%
			Production–ecological	179.43	8.84%
			Living–ecological	1.32	0.06%
Medium conflict zone	534.17	26.31%	Production–living–ecological	192.58	9.49%
			Production–living	65.79	3.24%
			Production–ecological	209.47	10.32%
			Living–ecological	66.33	3.27%
Weak conflict zone	86.05	4.24%	Production–living–ecological	86.05	4.24%

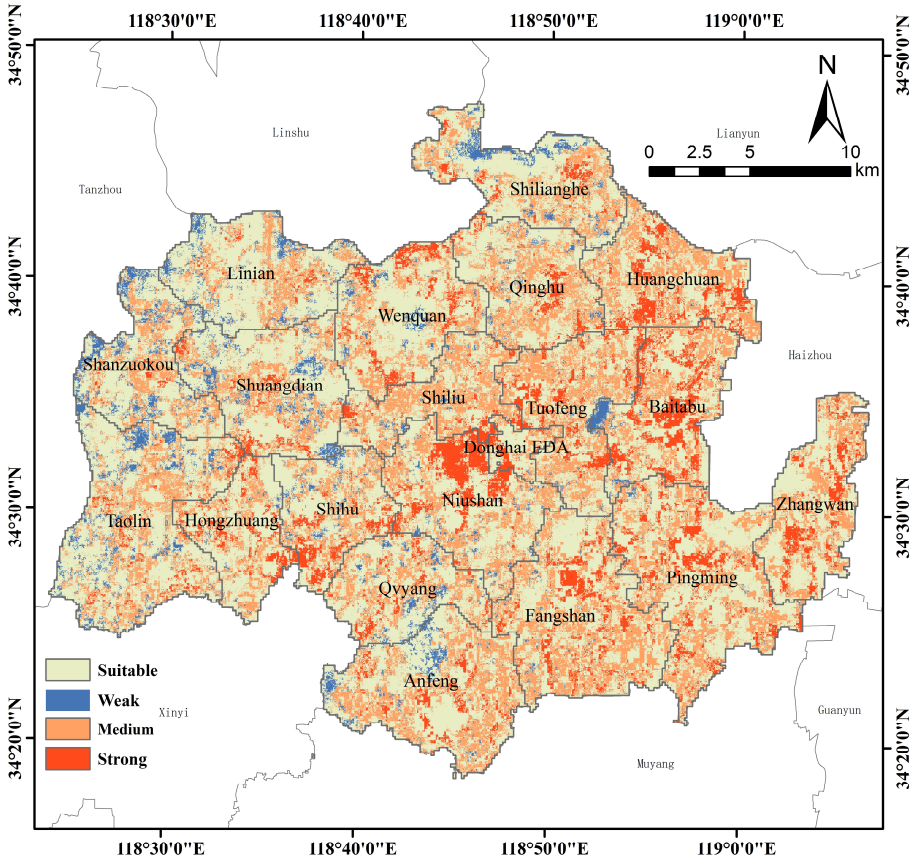


Figure 5. Spatial distribution of land use conflicts in Donghai County.

4.2.1. Strong Conflict Zone Analysis

The strong conflict zone comprises areas highly suitable for production, living, and ecological functions, or combinations of these functions, where land use conflicts are likely to arise in future land use processes. The identification results indicate that the strong conflict zone covers an area of 215.66 square kilometers, accounting for 10.62% of the total study area. Among these zones, the production–ecological function strong conflict zone occupies the largest area at 179.43 square kilometers, significantly exceeding that of other types, followed by the production–life function strong conflict zone at 33.26 square kilometers. The production–ecological function strong conflict area is predominantly located in the eastern part of Donghai County. An analysis at the township scale reveals that it is primarily situated in Baitabu Township, Huangchuan Township, Zhangwan Township, Hongzhuang Township, and Fangshan Township, which account for 20.07%,

16.36%, 15.29%, 12.85%, and 10.90% of the total area, respectively. Some strong conflict zones are distributed along both sides of the road. In Baitabu Township and Huangchuan Township, the production–ecological function of strong conflict zones is found in areas with high soil organic matter content, which is conducive to agricultural production. When conflicts arise between production and ecological functions, the ecological space may be easily encroached upon by production activities, thereby threatening the quality of the ecological environment. The production–life function conflict zones are mainly concentrated in the center of Donghai County and are sporadically distributed across various townships. From a township perspective, the production–life conflict zones are primarily located in Niushan Street, Baitabu Township, and Jiangsu Donghai Economic Development Zone, with areas of 16.24 square kilometers, 3.58 square kilometers, and 2.31 square kilometers, respectively.

4.2.2. Medium Conflict Zone Analysis

The medium conflict zone in Donghai County encompasses an area of 534.17 square kilometers, representing 26.31% of the total land area, thereby constituting the largest proportion. The predominant land use conflicts in Donghai County are classified as medium conflicts. This medium conflict zone serves as an intermediate buffer between the strong conflict zone and the weak conflict zone. Although potential conflicts exist within this zone, they remain within a controllable range. The medium conflict zones include the production–ecology medium conflict zone and the production–life–ecology function conflict zone, which cover areas of 209.47 square kilometers and 192.58 square kilometers respectively, accounting for 10.32% and 9.49% of the total area. The production–ecological function medium conflict zone is primarily located in Shihu Township, Taolin Township, Quyang Township, Shuangdian Township, and Shankouzuo Township, predominantly concentrated in the western and southwestern regions of Donghai County. The total area of the production–life–ecology function conflict zone is 192.58 km^2, representing 9.49% of the County's area. They are spatially distributed and scattered, with a higher density observed in the northern and southwestern parts of the county. Township-scale analyses reveal that eight townships contain production–life–ecology function conflict zones that exceed 10% of their total area, with Shiduajie, Huangchuan Township, Fangshan Township, and Mofeng Township accounting for the majority.

4.2.3. Weak Conflict Zone Analysis

The weak conflict zone is characterized by overlapping areas with low PLEF suitability. It is primarily located on the edges of townships in the western part of Donghai County, as illustrated in Table 3. This weak conflict zone encompasses an area of 86.05 square kilometers, which represents 4.24 percent of the total land area. It is the smallest zone in terms of area and is distributed sporadically. The weak conflict zones, situated at higher elevations and featuring a wide distribution of mountains and hills, are located far from township centers, which complicates development and construction efforts.

5. Discussion

5.1. Evaluation and Analysis of Land Use Function Suitability

Geographical location is a crucial factor influencing land use suitability, consistent with the findings of previous studies [34,47]. Each land use type is affected by distinct factors. Areas with high production function suitability are predominantly situated in the central region. The central and south-central slopes are characterized by relatively low topography, with less undulating terrain that favors agricultural production [43]. Additionally, the degree of industrial agglomeration is significant, particularly in the Economic Development Zone and Niushan Street. The high level of accessibility further supports the transportation needs of both agriculture and industry, thereby enhancing production suitability. Furthermore, regions with a denser distribution of mineral resources are likely to develop production advantages, a phenomenon attributed to the unique resource char-

acteristics of the study area. The production function suitable area constitutes the largest segment, indicating that the current natural environment and basic public facilities in Donghai County are conducive to production. The largest area suitable for living function is located in the center of the study area, characterized by high transportation convenience, superior commercial facilities, and a greater density of medical and basic educational services [50]. In contrast, areas with low suitability for living functions are predominantly situated in mountainous and hilly terrains, which exhibit significant topographic relief. These regions are distanced from the town center, resulting in challenges for the provision of various public infrastructure services and facilities. Conversely, areas with high ecological function suitability boast extensive forest coverage, substantial ecosystem service value, dense distribution of reservoirs, and numerous water conservation areas, such as Anfeng Mountain and Fangshan Mountain. Conversely, regions with low ecological function suitability are heavily developed, with dense land use, leading to frequent disruptions of ecological functions due to human activity.

5.2. Analysis of Major Land Use Conflict Zones

We developed an analytical framework for land use conflict from the perspective of PLEF suitability, and the empirical study was conducted at the county level. Cartography was employed to illustrate the extent of the conflict, as noted in other literature sources [32]. Our focus is on the county scale, where we analyze the relevant factors in detail. The primary conflict zones are identified as strong production–ecological function conflict zones and strong production–life function conflict zones. High production–ecological function conflicts are predominantly concentrated in the eastern part of Donghai County, Primarily located near transportation arteries and industrial and mining areas. The presence of convenient transportation infrastructure serves as an advantageous space for future production. Additionally, numerous rivers traverse the eastern part of Donghai County, which features high vegetation coverage and several water conservation areas, such as Fangshan. These dynamics result in a conflict between production and ecological considerations. A significant area of this conflict is situated in the center of Donghai County, which serves as the primary development zone. The dense road network facilitates industrial agglomeration, while the flat terrain supports production and construction [40]. Additionally, a variety of medical, scientific, educational, and cultural facilities contribute to a high-density concentration of living resources, enhancing convenience and quality of life in the area. The infrastructure surrounding the center is well developed, offering convenient transportation options that further elevate the suitability for living. Concurrently, the degree of industrial agglomeration is high, leading to an intensified conflict between production and residential needs.

The main conflict zones include production–ecology conflicts and production–life–ecology conflicts. The production–ecology conflict zones are located near major traffic arteries, as well as industrial and mining sites. In the western part of Donghai County, lakes, water surfaces, and reservoirs are densely populated with water sources, making them susceptible to production–ecology conflicts due to the anticipated continuous development of industrial production. Conflict zones in PLEFs are mainly situated around townships and central towns. These areas are characterized by their proximity to urban centers, convenient transportation, high industrial density, and advantages in production and living conditions. Consequently, potential conflicts within the production–living–ecological function have emerged, particularly in key development and construction areas for the future.

5.3. Land Use Conflicts and Policy Implications

The analysis of land use conflicts based on the evaluation of land suitability through PLEFs is instrumental in mitigating these conflicts in a more targeted manner. It provides valuable insights for land use planning and the high-quality development of regions. The ecological quality of the environment in Donghai County has significantly improved due to ongoing protection and restoration efforts. To achieve the coordinated and sustainable

development of urban and rural areas, prioritizing ecological environmental protection is essential. Unlike other literature sources that analyze policy direction from the perspective of urban–rural relationships [32], this study examines the spatial pattern of PLEFs through the lens of national spatial planning. In instances of conflict between land ecological functions and other land uses, greater emphasis should be placed on ecological functions. The realization of living functions is contingent upon the local economy and the level of social development; therefore, relevant policies should be formulated with consideration for the specific circumstances of each location.

Strong conflict zones primarily encompass production–ecology conflicts and production–life conflicts. With the advancement of urbanization, industrial production inevitably impacts both ecology and people's lives [51], which is a critical issue to consider in land use planning and policy making. In agricultural production, it is essential to prioritize the construction of high-standard farmland and enhance agricultural comprehensive production capacity. In industrial production, a rational layout and planning of industrial production zones are necessary. For instance, promoting the concentration of various production factors within industrial parks can leverage agglomeration effects to improve resource utilization efficiency and production quality. Additionally, it is vital to elevate the level of fine management of construction land, ensuring that its development and utilization are both economical and intensive. It is crucial to control the encroachment of ecological and residential land caused by the expansion of construction land. Furthermore, delineating and strictly protecting the regional ecological environment while increasing efforts in ecological restoration is imperative. Initiatives centered on the construction of forest parks, such as Fangshan Forest and Anfeng Mountain Forest, should be implemented to enhance water conservation and soil conservation capacities, thereby safeguarding the ecological and living environment.

The medium conflict zone is primarily characterized by the production–ecology conflict and the PLEF conflict, both of which fall within a controllable range. However, this conflict zone represents the largest proportion of various land use conflicts. It is crucial to implement necessary measures to prevent its escalation into a strong conflict zone, a key concern during the land use planning process. The production–ecology medium conflict zone is predominantly located in the western part of Donghai County, in contrast to the production–ecology strong conflict zone. The townships in this western region are abundant in mineral resources, necessitating a prioritization of ecological environmental protection during the production process. For instance, green belts should be established along major traffic routes in conjunction with industrial development. Additionally, the development of an "ecology-culture-tourism" initiative could leverage local resources such as forests, geothermal hot springs, and historical and cultural assets. In PLEF conflict zones, efforts should focus on enhancing ecological functions, increasing the per capita area of green space in urban areas, and improving the quality of industrial development.

A weak conflict zone is characterized by a smaller size and greater stability, resulting in a reduced risk of land use conflicts. Relevant authorities should maintain a certain level of oversight to enhance the intensive and economical use of land. Each land use suitability zone has a dominant function that should be recognized. It is recommended that each township concentrate on and strengthen its dominant function within the land use process.

6. Conclusions

In this paper, we constructed a suitability evaluation index system for production–life–ecological functional suitability from the perspective of ecological sustainability. We identified and analyzed land use conflicts. The conclusions are as follows: (1) the structural composition and spatial distribution of production, life, and ecological suitability in Donghai County exhibit distinct characteristics. The distribution of production suitability is linear, with high suitability observed in the central and southeastern regions of the county, while the northwestern area shows lower suitability levels; the high suitability area constitutes 22.38% of the total. Living suitability is clustered around the town center, with high suitability areas accounting for 3.21%. In contrast, the distribution of ecological suitability is

characterized by low values in the middle and high values on all sides, with high suitability land covering 40.20%. (2) In Donghai County, the areas of land use are categorized as follows: suitable area (58.83%), strong conflict area (10.62%), medium conflict area (26.31%), and weak conflict area (4.24%). The strong conflict zones are primarily characterized by production–ecological and production–life function conflicts, predominantly located in regions with dense road networks, industrial agglomeration, and flat terrain with high soil organic matter content. In these areas, the suitability for each function is relatively high, which increases the likelihood of conflicts. Conversely, the medium conflict zones are mainly identified as production–ecology and production–life–ecology conflict zones, primarily situated near traffic arteries and industrial or mining lands. In these locations, the development and construction processes may adversely affect both production and ecological functions.

Through the identification of land use conflicts, this study presents the distribution structure of potential land use conflicts across various regions, providing valuable references for governmental departments aiming to optimize the spatial use of national territory. This approach is intended to enhance the economic, social, and ecological benefits of land, thereby facilitating high-quality sustainable development. Additionally, we have conducted an exploration into the identification and intensity diagnosis of land use conflicts at the county scale. This expansion of the research scale offers greater accuracy and practical guidance, which is of significant importance to China's ongoing urbanization efforts and integrated development plans. Furthermore, it will aid in the land use planning of small- and medium-sized cities and enhance the coordination of land use structure.

Despite these innovations, there remains significant potential for further enhancement of the land use functional suitability evaluation index system. Future efforts should incorporate policy and social factors to refine this evaluation process. Land use conflicts can be identified from various perspectives, utilizing relevant and appropriate methodologies, such as the modulation model, in combination to address future sustainable development demands. This approach aims to optimize the spatial structure of the country and promote efficient resource utilization.

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References

1. Chen, X.; Wu, S.; Wu, J. Characteristics and formation mechanism of Land use conflicts in northern Anhui: A Case study of Funan county. *Heliyo* **2024**, *10*, e22923. [CrossRef]
2. Zhang, Y.; Long, H.; Tu, S.; Tu, S.; Ge, D.; Ma, L.; Wang, L. Spatial identification of land use functions and their tradeoffs/synergies in China: Implications for sustainable land management. *Ecol. Indic.* **2019**, *107*, 105550. [CrossRef]
3. Cui, X.; Li, F.; de Vries, W.T. Smart land use planning: New theories, new tools and new practice. *Land* **2023**, *12*, 1315. [CrossRef]
4. Jiang, S.; Meng, J.; Zhu, L. Spatial and temporal analyses of potential land use conflict under the constraints of water resources in the middle reaches of the Heihe River. *Land Use Policy* **2020**, *97*, 104773. [CrossRef]
5. Peerzado, M.B.; Magsi, H.; Sheikh, M.J. Land use conflicts and urban sprawl: Conversion of agriculture lands into urbanization in Hyderabad, Pakistan. *J. Saudi Soc. Agric. Sci.* **2019**, *18*, 423–428. [CrossRef]
6. Ianoş, I.; Sorensen, A.; Merciu, C. Incoherence of urban planning policy in Bucharest: Its potential for land use conflict. *Land Use Policy* **2017**, *60*, 101–112. [CrossRef]
7. Halleux, J.M.; Marcinczak, S.; van der Krabben, E. The adaptive efficiency of land use planning measured by the control of urban sprawl. the cases of the Netherlands, Belgium and Poland. *Land Use Policy* **2012**, *29*, 887–898. [CrossRef]

8. de Jong, L.; De Bruin, S.; Knoop, J.; van Vliet, J. Understanding land-use change conflict: A systematic review of case studies. *J. Land Use Sci.* **2021**, *16*, 223–239. [CrossRef]
9. Delgado-Matas, C.; Mola-Yudego, B.; Gritten, D.; Kiala-Kalusinga, D.; Pukkala, T. Land use evolution and management under recurrent conflict conditions: Umbundu agroforestry system in the Angolan Highlands. *Land Use Policy* **2015**, *42*, 460–470. [CrossRef]
10. Tan, S.; Tong, B.; Zhang, J. How did the land disputes evolve? Evidence from the Yangtze River economic belt, China. *Land* **2023**, *12*, 1334. [CrossRef]
11. Mann, C.; Jeanneaux, P. Two approaches for understanding land-use conflict to improve rural planning and management. *J. Rural Community Dev.* **2009**, *4*, 119–139.
12. Petrescu-Mag, R.M.; Petrescu, D.C.; Azadi, H.; Petrescu-Mag, I.V. Agricultural land use conflict management-Vulnerabilities, law restrictions and negotiation frames. a wake-up call. *Land Use Policy* **2018**, *76*, 600–610. [CrossRef]
13. Moein, M.; Asgarian, A.; Sakieh, Y.; Soffianian, A. Scenario-based analysis of land-use competition in central Iran: Finding the trade-off between urban growth patterns and agricultural productivity. *Sustain. Cities Soc.* **2018**, *39*, 557–567. [CrossRef]
14. Meimei, W.; Zizhen, J.; Tengbiao, L.; Yongchun, Y.; Zhuo, J. Analysis on absolute conflict and relative conflict of land use in mining metropolitan area under different scenarios in 2030 by PLUS and PFCI. *Cities* **2023**, *137*, 104314. [CrossRef]
15. Karimi, A.; Hockings, M. A socio-ecological approach to land-use conflict to inform regional and conservation planning and management. *Landsc. Ecol.* **2018**, *33*, 691–710. [CrossRef]
16. Cieślak, I. Identification of areas exposed to land use conflict with the use of multiple-criteria decision-making methods. *Land Use Policy* **2019**, *89*, 104225. [CrossRef]
17. Qu, Y.; Wang, S.; Tian, Y.; Jiang, G.; Zhou, T.; Meng, L. Territorial spatial planning for regional high-quality development-An analytical framework for the identification, mediation and transmission of potential land utilisation conflicts in the Yellow River Delta. *Land Use Policy* **2023**, *125*, 106462. [CrossRef]
18. Lin, Q.; Tan, S.; Zhang, L.; Wang, S.; Wei, C.; Li, Y. Conflicts of land expropriation in China during 2006-2016: An overview and its spatio-temporal characteristics. *Land Use Policy* **2018**, *76*, 246–251. [CrossRef]
19. Adam, Y.O.; Pretzsch, J.; Darr, D. Land use conflicts in central Sudan: Perception and local coping mechanisms. *Land Use Policy* **2015**, *42*, 1–6. [CrossRef]
20. Dong, G.; Liu, Z.; Niu, Y.; Jiang, W. Identification of Land Use Conflicts in Shandong Province from an Ecological Security Perspective. *Land* **2022**, *11*, 2196. [CrossRef]
21. Brown, G.; Raymond, C.M. Methods for identifying land use conflict potential using participatory mapping. *Landsc. Urban Plan.* **2014**, *122*, 196–208. [CrossRef]
22. Karimi, A.; Brown, G. Assessing multiple approaches for modelling land-use conflict potential from participatory mapping data. *Land Use Policy* **2017**, *67*, 253–267. [CrossRef]
23. Aghmashhadi, A.H.; Zahedi, S.; Kazemi, A.; Fürst, C.; Cirella, G.T. Conflict analysis of physical industrial land development policy using game theory and graph model for conflict resolution in Markazi Province. *Land* **2022**, *11*, 501. [CrossRef]
24. Reuveny, R.; Maxwell, J.W.; Davis, J. On conflict over natural resources. *Ecol. Econ.* **2011**, *70*, 698–712. [CrossRef]
25. Duraiappah, A.K.; Ikiara, G.; Manundu, M.; Nyangena, W.; Sinange, R. *Land Tenure, Land Use, Environmental Degradation and Conflict Resolution: A PASIR Analysis for the Narok District, Kenya*; International Institute for Environment and Development: London, UK; Institute for Environmental Studies: Amsterdam, The Netherlands, 2000; pp. 1–33. Available online: https://www.iied.org/sites/default/files/pdfs/migrate/8141IIED.pdf? (accessed on 9 October 2024).
26. Cheng, H.; Zhu, L.; Meng, J. Fuzzy evaluation of the ecological security of land resources in mainland China based on the Pressure-State-Response framework. *Sci. Total Environ.* **2022**, *804*, 150053. [CrossRef]
27. Bao, W.; Yang, Y.; Zou, L. How to reconcile land use conflicts in mega urban agglomeration? A scenario-based study in the Beijing-Tianjin-Hebei region, China. *J. Environ. Manag.* **2021**, *296*, 113168. [CrossRef]
28. Moomen, A.W. Strategies for managing large-scale mining sector land use conflicts in the global south. *Resour. Policy* **2017**, *51*, 85–93. [CrossRef]
29. Zhou, D.; Lin, Z.; Lim, S.H. Spatial characteristics and risk factor identification for land use spatial conflicts in a rapid urbanisation region in China. *Environ. Monit. Assess.* **2019**, *191*, 677. [CrossRef] [PubMed]
30. Iojă, C.I.; Niţă, M.R.; Vânău, G.O.; Onose, D.A.; Gavrilidis, A.A. Using multi-criteria analysis for the identification of spatial land-use conflicts in the Bucharest Metropolitan Area. *Ecol. Indic.* **2014**, *42*, 112–121. [CrossRef]
31. Carr, M.H.; Zwick, P. Using GIS suitability analysis to identify potential future land use conflicts in North Central Florida. *J. Conserv. Plan.* **2005**, *1*, 89–105.
32. Zou, L.; Liu, Y.; Wang, J.; Yang, Y. An analysis of land use conflict potentials based on ecological-production-living function in the southeast coastal area of China. *Ecol. Indic.* **2021**, *122*, 107297. [CrossRef]
33. Miller, W.; Collins, M.G.; Steiner, F.R.; Cook, E. An approach for greenway suitability analysis. *Landsc. Urban Plan.* **1998**, *42*, 91–105. [CrossRef]
34. Rahaman, S.A.; Aruchamy, S. Land suitability evaluation of tea (*Camellia sinensis* L.) plantation in Kallar watershed of Nilgiri Bioreserve, India. *Geographies* **2022**, *2*, 701–723. [CrossRef]
35. Aymen, A.T.; Al-husban, Y.; Farhan, I. Land suitability evaluation for agricultural use using GIS and remote sensing techniques: The case study of Ma'an Governorate, Jordan. *Egypt. J. Remote Sens. Space Sci.* **2021**, *24*, 109–117.

36. Morales, F., Jr.; de Vries, W.T. Establishment of land use suitability mapping criteria using analytic hierarchy process (AHP) with practitioners and beneficiaries. *Land* **2021**, *10*, 235. [CrossRef]
37. Dong, G.; Ge, Y.; Jia, H.; Sun, C.; Pan, S. Land use multi-suitability, land resource scarcity and diversity of human needs: A new framework for land use conflict identification. *Land* **2021**, *10*, 1003. [CrossRef]
38. Azizi, A.; Malekmohammadi, B.; Jafari, H.R.; Nasiri, H.; Parsa, V.A. Land suitability assessment for wind power plant site selection using ANP-DEMATEL in a GIS environment: Case study of Ardabil province, Iran. *Environ. Monit. Assess.* **2014**, *186*, 6695–6709. [CrossRef]
39. Cheng, Z.; Zhang, Y.; Wang, L.; Wei, L.; Wu, X. An analysis of land-use conflict potential based on the perspective of production–living–ecological function. *Sustainability* **2022**, *14*, 5936. [CrossRef]
40. Hua, L.; Squires, V.R. Managing China's pastoral lands: Current problems and future prospects. *Land Use Policy* **2015**, *43*, 129–137. [CrossRef]
41. Huang, A.D.; Zhao, M.S.; Gao, M. Spatial-temporal evolution characteristics of land use in Anhui province from 1980 to 2020. *Sci. Technol. Eng.* **2022**, *22*, 4627–4635.
42. Zhou, D.; Xu, J.; Lin, Z. Conflict or coordination? Assessing land use multi-functionalization using production-living-ecology analysis. *Sci. Total Environ.* **2017**, *577*, 136–147. [CrossRef] [PubMed]
43. Cui, J.; Kong, X.; Chen, J.; Sun, J.; Zhu, Y. Spatially explicit evaluation and driving factor identification of land use conflict in yangtze river economic belt. *Land* **2021**, *10*, 43. [CrossRef]
44. Wang, C.; Wang, H.; Wu, J.; He, X.; Luo, K.; Yi, S. Identifying and warning against spatial conflicts of land use from an ecological environment perspective: A case study of the Ili River Valley, China. *J. Environ. Manag.* **2024**, *351*, 119757. [CrossRef]
45. Owusu, G.; Oteng-Ababio, M.; Afutu-Kotey, R.L. Conflicts and governance of landfills in a developing country city, Accra. *Landsc. Urban Plan.* **2012**, *104*, 105–113. [CrossRef]
46. Bernués, A.; Rodríguez-Ortega, T.; Alfnes, F.; Morten Clemetsen, M.; Eik, L.O. Quantifying the multifunctionality of fjord and mountain agriculture by means of sociocultural and economic valuation of ecosystem services. *Land Use Policy* **2015**, *48*, 170–178. [CrossRef]
47. Long, H. Theorizing land use transitions: A human geography perspective. *Habitat Int.* **2022**, *128*, 102669. [CrossRef]
48. Zhao, J.; Ji, G.; Tian, Y.; Chen, Y.; Wang, Z. Environmental vulnerability assessment for mainland China based on entropy method. *Ecol. Indic.* **2018**, *91*, 410–422. [CrossRef]
49. Jing, W.; Yu, K.; Wu, L.; Luo, P. Potential land use conflict identification based on improved multi-objective suitability evaluation. *Remote Sens.* **2021**, *13*, 2416. [CrossRef]
50. Chen, M.; Liu, W.; Lu, D. Challenges and the way forward in China's new-type urbanization. *Land Use Policy* **2016**, *55*, 334–339. [CrossRef]
51. Koellner, T.; Schröter, M.; Schulp, C.J.; Verburg, P.H. Global flows of ecosystem services. *Ecosyst. Serv.* **2018**, *31 Pt B*, 229–230. [CrossRef]

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