



REVIEW ARTICLE

New-Quality Productive Forces Leadership, National Ecological Well-Being Supremacy and Economic-Social Sustainable Development: Chinese Experience and its Worldwide Significance

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Abstract

Against the backdrop of global ecological crisis and unbalanced economic development, China has explored a path of sustainable development integrating New-Quality Productive Forces (NQPF), national ecological well-being supremacy, and economic-social coordination, forming distinctive Chinese experience. This paper first clarifies the theoretical connotation and logical relationship of the three core concepts, then systematically sorts out the practice path of Chinese sustainable development from four dimensions: institutional guarantee, industrial transformation, regional coordination, and people's livelihood improvement. Further, it analyzes the realistic effects of this path in ecological governance, economic growth quality, and people's well-being enhancement through empirical data and typical cases. Finally, it explores the worldwide significance of Chinese experience for developing countries to break the ecological poverty trap and for the global construction of a community with a shared future for mankind. The research shows that the organic combination of NQPF leadership, ecological well-being orientation, and systematic institutional design is the core of Chinese experience, which provides a feasible reference for global sustainable development and enriches the theoretical system of ecological economics and sustainable development.

Introduction

Research background

In the 21st century, global sustainable development is facing dual challenges: on the one hand, climate change, environmental pollution, and resource scarcity have become common threats

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- Worldwide significance

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to human survival and development, and the ecological crisis has increasingly restricted economic and social progress [1]; on the other hand, the unbalanced development between developed and developing countries, as well as the contradiction between economic growth and ecological protection within countries, make it difficult to implement the concept of sustainable development in practice [2] Under this background, how to balance economic development, ecological protection, and people's well-being improvement has become a key issue concerned by the international community.

China, as the world's largest developing country, has a large population, scarce per capita resources, and prominent ecological and environmental problems in the process of industrialization. Since the reform and opening up, China has achieved remarkable economic growth, but it also paid a certain ecological price. In recent years, with the in-depth promotion of the concept of ecological civilization construction, China has taken national ecological well-being supremacy as the value orientation, taken new-quality productive forces as the core driving force, and explored a sustainable development path with Chinese characteristics. This path not only promotes China's economic transformation and ecological improvement but also provides new ideas for global sustainable development, which has important theoretical and practical significance to in-depth study its connotation, practice, and worldwide value.

Literature review

Foreign research on sustainable development: Foreign research on sustainable development started earlier. The Brundtland Report (1987) put forward the classic definition of sustainable development: meeting the needs of the present without compromising the ability of future generations to meet their own needs, laying the theoretical foundation for global sustainable development research [3]. In the follow-up research, scholars have carried out in-depth discussions from different

perspectives: Ecological economists such as Daly (1996) proposed the steady-state economy theory, emphasizing that economic growth should be within the carrying capacity of the ecological environment and oppose unlimited economic expansion [4]; Environmental economists represented by Pearce (1990) put forward the environmental Kuznets curve hypothesis, holding that there is an inverted U-shaped relationship between economic development level and environmental pollution, and environmental quality will gradually improve when economic development reaches a certain stage [5]. In recent years, with the rise of digital economy and green technology, foreign research has focused on the role of technological innovation in sustainable development, such as the research on the impact of renewable energy technology, digital technology, and circular economy model on ecological protection and economic growth[6]; However, most foreign research is based on the national conditions of developed countries, and there is a lack of in-depth analysis on the sustainable development path of developing countries, especially the integration model of technological innovation, ecological value, and people's well-being orientation.

Domestic research on Chinese sustainable development experience: Domestic scholars have carried out a lot of research on China's sustainable development experience around ecological civilization construction and new-quality productive forces. In terms of ecological civilization, some scholars have analyzed the institutional system and practice path of China's ecological governance, such as the river chief system, lake chief system, and ecological compensation mechanism, and affirmed their role in improving environmental quality [7]; Some scholars have discussed the value connotation of "ecological well-being supremacy", pointing out that it is a transcendence of the traditional economic growth first concept and embodies the people-oriented development philosophy [8]. In terms of new-quality productive forces, scholars have clarified its core connotation—taking



technological innovation as the core, relying on digital technology, green technology, and other new technologies to improve production efficiency and quality, and realize the organic unity of economic development and ecological protection [9]; Some studies have explored the role of new-quality productive forces in promoting industrial transformation and ecological upgrading, such as the integration of digital economy and green industry, and the development of low-carbon circular economy [10]. However, existing domestic research mostly focuses on a single dimension of ecological civilization or new-quality productive forces, and there is a lack of systematic research on the logical relationship, integrated practice, and worldwide significance of new-quality productive forces leadership, ecological well-being supremacy, and economic-social sustainable development.

Research framework and methods

Research framework: This paper is divided into six parts: the first part is the introduction, which clarifies the research background, combs the literature, and puts forward the research framework and methods; the second part defines the core concepts and analyzes the logical relationship between new-quality productive forces, national ecological well-being supremacy, and economic-social sustainable development; the third part systematically sorts out China's practice path of sustainable development from four aspects: institutional system construction, industrial transformation driven by new-quality productive forces, regional coordinated development, and people's ecological well-being improvement; the fourth part uses empirical data and typical cases to verify the practice effect of China's sustainable development path; the fifth part explores the worldwide significance of Chinese experience from two levels: reference for developing countries and contribution to global ecological governance; the sixth part is the conclusion and prospect, summarizing the core viewpoints and putting forward the direction of follow-up research.

Research methods: This paper adopts a combination of multiple research methods.

- Theoretical analysis method: Based on the theories of ecological economics, sustainable development, and institutional economics, this paper clarifies the connotation of core concepts and constructs the theoretical framework of the logical relationship between the three;
- Empirical analysis method: Using China's macroeconomic and ecological environment data from 2012 to 2023 (from the National Bureau of Statistics, the Ministry of Ecology and Environment, etc.), this paper analyzes the effect of sustainable development through descriptive statistics and trend analysis;
- Case study method: Selecting typical cases such as Zhejiang's two mountains theory practice, Guangdong's digital green industrial transformation, and the Yellow River basin ecological protection, this paper deeply analyzes the specific path and effect of China's sustainable development;
- Comparative analysis method: By comparing the sustainable development paths of developed countries and developing countries, this paper highlights the particularity and universality of Chinese experience.

Innovation points

Theoretical innovation: This paper constructs a theoretical framework of new-quality productive forces leadership - ecological well-being supremacy - economic-social sustainable development, clarifies the logical relationship of driving force - value orientation - development goal, and enriches the theoretical system of sustainable development.

- Practice innovation: Systematically sorting out China's sustainable development practice from the perspective



of integration of three dimensions, and deeply analyzing the institutional guarantee and technical support of Chinese experience;

- Value innovation: From the perspective of global governance, this paper explores the reference significance of Chinese experience for developing countries and its contribution to the construction of a global ecological community, which has strong practical guiding value.

Core Concepts and Logical Relationship

Definition of core concepts

New-quality productive forces: New-quality productive forces are a new form of productive forces adapting to the new stage of economic development, with technological innovation as the core driving force, digitalization, networking, and intelligence as the main characteristics, and green low-carbon and high efficiency as the development direction [11]. Different from traditional productive forces that rely on factor input and scale expansion, new-quality productive forces focus on improving the quality and efficiency of production through technological breakthroughs, institutional innovation, and structural optimization, and realize the organic unity of economic growth, ecological protection, and social progress. Its core elements include: frontier technologies such as artificial intelligence, big data, and renewable energy; high-quality human capital with innovative ability; institutional environment supporting technological innovation and green development; and industrial forms such as digital economy, green industry, and circular economy.

National ecological well-being supremacy: National ecological well-being supremacy is a development concept taking the people's ecological needs and well-being improvement as the core value orientation, emphasizing that ecological protection is the premise of economic and social development, and ecological well-

being is an important part of people's overall well-being [12]. Its connotation includes three levels: first, in terms of value, it takes clear waters and green mountains are invaluable assets as the core concept, and regards ecological environment as a basic public product to meet people's needs for a better life; second, in terms of practice, it adheres to the priority of ecological protection and green development, and realizes the coordinated development of economy, society, and ecology; third, in terms of goal, it aims to improve people's living environment quality, enhance their sense of gain and happiness in ecological aspects, and realize the all-round development of people. This concept is a transcendence of the traditional economic growth first model and embodies China's people-oriented development philosophy and responsibility for ecological protection.

Economic-social sustainable development: Economic-social sustainable development refers to a development model that realizes the coordinated development of economic growth, social equity, and ecological protection, ensuring that the needs of the present generation are met without endangering the development rights and interests of future generations [13]. Its core requirements include: first, economic sustainability, realizing high-quality economic growth through technological innovation and industrial transformation, and avoiding excessive dependence on resource consumption; second, social sustainability, ensuring social equity and justice, improving people's living standards, and promoting social harmony and stability; third, ecological sustainability, protecting the ecological environment, saving resources and energy, and maintaining the stability of the ecological system. China's economic-social sustainable development is not only in line with the global sustainable development goals but also combined with its own national conditions, forming a path with distinctive Chinese characteristics.

Logical relationship between core concepts

The three core concepts of new-quality



productive forces leadership, national ecological well-being supremacy, and economic-social sustainable development form an organic unity of driving force - value orientation - development goal, with close logical correlation and mutual promotion.

New-quality productive forces: the core driving force of sustainable development: New-quality productive forces provide a fundamental driving force for economic-social sustainable development through technological innovation and industrial transformation. On the one hand, green technologies such as renewable energy, circular economy, and environmental governance in new-quality productive forces can effectively reduce environmental pollution and resource consumption, and improve ecological environment quality, laying an ecological foundation for sustainable development [14]; on the other hand, digital technologies such as artificial intelligence and big data can optimize resource allocation, improve production efficiency, and promote the transformation of economic development from factor-driven to innovation-driven, realizing high-quality economic growth and providing an economic guarantee for sustainable development [15]. Without the support of new-quality productive forces, sustainable development will lack technical and economic driving force and be difficult to realize in practice.

National ecological well-being supremacy: the value orientation of sustainable development: National ecological well-being supremacy determines the direction of economic-social sustainable development and ensures that sustainable development does not deviate from the people-oriented goal. Traditional sustainable development models in some countries often focus on economic growth or ecological protection unilaterally, resulting in the separation of economic development from people's well-being or the sacrifice of economic development for ecological protection. China's ecological well-being supremacy concept integrates ecological protection and people's well-being improvement, clarifying that the

ultimate goal of sustainable development is to meet people's needs for a better ecological environment and a better life [16]. This value orientation restricts the development model of new-quality productive forces, ensuring that technological innovation and industrial transformation take green low-carbon and people's well-being improvement as the direction, and avoiding technological innovation from being divorced from ecological and social needs [17].

Economic-social sustainable development: the ultimate goal of the two: The leadership of new-quality productive forces and the supremacy of national ecological well-being ultimately serve the goal of economic-social sustainable development. The development of new-quality productive forces and the practice of ecological well-being supremacy are not isolated, but to realize the coordinated development of economy, society, and ecology, and build a sustainable development system with mutual promotion of economy, ecology, and society [18]. Economic-social sustainable development, in turn, provides a good development environment for the development of new-quality productive forces and the improvement of ecological well-being: high-quality economic development provides financial support for technological innovation and ecological governance; a stable social environment ensures the smooth progress of institutional innovation and policy implementation; a good ecological environment lays a foundation for the healthy development of new-quality productive forces and the improvement of people's well-being [19].

In summary, the three form a logical closed loop of driving force support - value guidance - goal realization. The leadership of new-quality productive forces provides technical and economic support for sustainable development, the supremacy of national ecological well-being ensures the correct direction of sustainable development, and economic-social sustainable development is the ultimate embodiment of the effectiveness of the two, jointly promoting China's sustainable development process.



China's Practice Path of Sustainable Development: Integration of New-Quality Productive Forces and Ecological Well-Being

Since the 18th National Congress of the communist Party of China, China has taken ecological civilization construction as an important part of the Five-sphere Integrated Plan and the Four-pronged Comprehensive Strategy, taken new-quality productive forces as the driving force, and taken national ecological well-being supremacy as the value orientation, and explored a series of effective practice paths in promoting economic-social sustainable development, forming a complete sustainable development practice system.

Improve the institutional system: lay a system guarantee for sustainable development

China has established a sound institutional system covering ecological governance, technological innovation, and well-being improvement, providing a strong institutional guarantee for the integration of new-quality productive forces and ecological well-being.

Improve the ecological governance institutional system: China has established a vertical ecological governance system from the central to the local, and a horizontal coordination mechanism involving multiple departments, forming a full-chain ecological governance model. First, improve the top-level design: incorporate ecological civilization construction into the national development strategy, issue documents such as The Overall Plan for Ecological Civilization Construction and the 14th Five-Year Plan for Ecological Environmental Protection, and clarify the goals and tasks of ecological protection and sustainable development [20]. Second, innovate the ecological governance mechanism: implement the river chief system, lake chief system, and forest chief system, clarify the responsibility of ecological protection at all

levels, and realize the full coverage of ecological governance [21]; establish a cross-regional ecological compensation mechanism, such as the ecological compensation mechanism in the Yangtze River Economic Belt and the Yellow River basin, to coordinate regional ecological protection interests [22]. Third, improve the ecological legal system: revise and issue laws such as the Environmental Protection Law, Air Pollution Prevention and Control Law, and Water Pollution Prevention and Control Law, and increase the punishment for ecological and environmental violations, forming a rigid constraint on ecological protection [23].

Improve the institutional system for the development of new-quality productive forces: China has established a institutional system supporting the development of new-quality productive forces, focusing on promoting technological innovation and industrial transformation. First, strengthen technological innovation support: increase investment in scientific and technological research and development, establish a national key laboratory system focusing on digital technology, green technology, and other fields, and support enterprises to carry out independent innovation [24]; implement talent introduction and training policies, cultivate high-quality innovative talents, and provide human capital support for the development of new-quality productive forces [25]. Second, optimize the industrial development policy: issue policies such as The Action Plan for Developing New-Quality Productive Forces and The Plan for Promoting the Integration of Digital Economy and Real Economy, support the development of strategic emerging industries such as digital economy, green energy, and high-end manufacturing, and promote the transformation and upgrading of traditional industries [26]. Third, improve the market mechanism: establish a market-oriented allocation mechanism for innovation factors, improve the intellectual property protection system, and stimulate the innovation vitality of enterprises and individuals. [27].



Improve the institutional system for ecological well-being improvement: China takes improving people's ecological well-being as the core, and establishes an institutional system covering environmental public services, ecological poverty alleviation, and public participation. First, improve environmental public services: increase investment in environmental infrastructure construction, such as urban sewage treatment, garbage disposal, and air pollution control, and improve the quality of living environment [28]; carry out rural ecological renovation, promote rural toilet revolution, sewage treatment, and garbage classification, and narrow the gap between urban and rural ecological environments [29]. Second, implement ecological poverty alleviation and rural revitalization: combine ecological protection with poverty alleviation, develop ecological industries such as ecological agriculture, eco-tourism, and forestry economy, and realize ecological enrichment [30]; in the rural revitalization stage, continue to develop ecological industries to improve farmers' income and ecological well-being [31]. Third, expand public participation channels: establish an environmental information disclosure system, improve the environmental public hearing and supervision mechanism, and encourage the public to participate in ecological protection and supervision [32].

Drive industrial transformation: realize the integration of economic growth and ecological protection

Taking new-quality productive forces as the core, China promotes industrial transformation and upgrading, develops green and low-carbon industries, and realizes the organic unity of economic growth and ecological protection.

Develop strategic emerging industries with digital and green characteristics: China focuses on developing strategic emerging industries such as digital economy, green energy, and high-end manufacturing, and builds a new industrial system driven by new-quality productive forces. In the field of digital

economy: develop digital technologies such as 5G, artificial intelligence, big data, and cloud computing, promote the digital transformation of industries, and improve production efficiency and resource utilization [33]; in 2023, the scale of China's digital economy reached 55.6 trillion yuan, accounting for 48.8% of GDP, becoming an important driving force for economic growth [34]. In the field of green energy: vigorously develop renewable energy such as wind power, solar power, hydropower, and biomass energy, optimize the energy structure, and reduce carbon emissions [35]; by the end of 2023, the installed capacity of renewable energy in China reached 1.45 billion kilowatts, accounting for 49.6% of the total installed capacity of power generation, ranking first in the world [36]. In the field of high-end manufacturing: develop high-end equipment, new materials, and other industries, improve the added value of products, and reduce the dependence on resource-intensive industries [37].

Promote the green transformation of traditional industries: For traditional industries such as steel, non-ferrous metals, chemicals, and building materials that have high energy consumption and high pollution, China promotes green transformation through technological upgrading and process improvement. First, carry out energy-saving and emission-reduction transformation: adopt advanced energy-saving technologies and environmental protection equipment to reduce energy consumption and pollutant emissions per unit product [38]; for example, the iron and steel industry has eliminated backward production capacity, promoted the circular economy model of coke-steel-chemical industry, and the comprehensive energy consumption per ton of steel has decreased by 15% from 2012 to 2023 [39]. Second, develop circular economy: promote the resource-product-waste-resource circular development model, realize the recycling of resources, and improve resource utilization efficiency [40]; establish circular economy industrial parks, such as the Suzhou Industrial Park and the Tianjin Binhai New Area Circular Economy



Demonstration Zone, which have achieved the sharing of resources and the centralized treatment of pollutants [41] Third, strengthen environmental supervision: implement the environmental protection access system for traditional industries, restrict the development of high-energy-consuming and high-polluting projects, and force traditional industries to transform and upgrade [42].

Develop ecological agriculture and modern service industry: China combines ecological protection with agricultural and service industry development to improve the quality of ecological well-being while promoting economic growth. In ecological agriculture: develop organic agriculture, ecological planting, and breeding, reduce the use of chemical fertilizers and pesticides, and protect agricultural ecological environment [43]; promote the rice-shrimp symbiosis, fruit-poultry intercropping and other ecological planting and breeding models, which not only improve agricultural output and quality but also protect soil and water resources [44]; by 2023, the area of ecological agriculture demonstration bases in China has reached 100 million mu, and the output of green and organic agricultural products has accounted for 18% of the total agricultural output [45]. In modern service industry: develop eco-tourism, cultural creativity, health care, and other industries, relying on good ecological resources to meet people's needs for a better life [46]; for example, Zhejiang, Yunnan, and other places have developed eco-tourism based on ecological resources such as forests, lakes, and rural areas, which not only promotes local economic development but also improves the ecological awareness of the public [47].

Promote regional coordination: realize balanced sustainable development in different regions

China combines regional development strategy with ecological protection, promotes coordinated development among regions, and realizes balanced improvement of economic development and ecological well-being in different regions.

Implement major regional development strategies with ecological protection as the premise: China has implemented major regional development strategies such as the Beijing-Tianjin-Hebei Coordinated Development, the Yangtze River Economic Belt Development, the Guangdong-Hong Kong-Macao Greater Bay Area Construction, the Integrated Development of the Yangtze River Delta, and the Ecological Protection and High-Quality Development of the Yellow River Basin, and incorporated ecological protection into regional development strategies. For the Yangtze River Economic Belt: adhere to the principle of ecological priority and green development, carry out the rectification of ecological environment problems in the Yangtze River basin, prohibit overfishing of the Yangtze River, and restore the Yangtze River ecological system [48]; at the same time, develop digital economy, green industry, and other industries to promote high-quality economic development [49]. For the Yellow River basin: focus on ecological protection, carry out soil and water conservation, afforestation, and other projects, and improve the ecological environment of the basin [50]; coordinate the economic development of the upper, middle, and lower reaches of the Yellow River, develop characteristic industries according to local conditions, and realize the coordinated development of ecology and economy [51]. For the Beijing-Tianjin-Hebei region: carry out joint prevention and control of air pollution, coordinate the allocation of water resources, and improve the regional ecological environment quality [52]; at the same time, transfer non-capital functions, develop high-end manufacturing and modern service industries, and promote coordinated economic development [53].

Promote urban-rural coordinated sustainable development: China takes narrowing the urban-rural gap as the goal, promotes the integrated development of urban and rural areas, and realizes the balanced improvement of urban and rural ecological well-being. First, promote urban green development: build green cities, sponge cities, and low-carbon



cities, improve urban ecological environment quality [54]; for example, Shenzhen has built a green city with a green space rate of 43.4%, and Shanghai has promoted the construction of a sponge city to improve the urban waterlogging prevention and control capacity [55]. Second, strengthen rural ecological renovation: carry out rural living environment improvement actions, promote rural toilet revolution, sewage treatment, garbage classification, and domestic waste treatment [56]; by 2023, the penetration rate of rural sanitary toilets in China has reached 78.5%, and the harmless treatment rate of rural domestic waste has reached 90.5% [57]. Third, promote the integration of urban and rural industries: transfer urban industries to rural areas in an orderly manner, develop rural characteristic industries, and increase farmers' income [58]; at the same time, promote the integration of urban and rural public services, improve rural education, medical care, and environmental public service levels, and narrow the urban-rural well-being gap [59].

Support ecological protection and development in less developed regions: For less developed regions such as the western region and old revolutionary base areas, China increases support for ecological protection and economic development to realize ecological protection and development at the same time. First, strengthen ecological protection investment: increase financial transfer payments to less developed regions, support ecological protection projects such as afforestation and soil and water conservation, and improve the ecological environment of less developed regions [60]; for example, the western region has carried out the Three-North Shelterbelt Program, the Grain for Green Program, and other ecological projects, with a cumulative afforestation area of 500 million mu [61]. Second, develop characteristic ecological industries: support less developed regions to develop eco-tourism, characteristic agriculture, and forestry economy according to local ecological resources, and realize ecological enrichment [62]; for example, Guizhou, Qinghai, and other places have developed eco-tourism and photovoltaic power generation

industries, which have become important pillars of local economic development [63]. Third, strengthen regional cooperation: promote the transfer of industries from developed regions to less developed regions, realize the sharing of resources and complementary advantages, and promote the coordinated development of regions [64].

Improve people's livelihood: realize the synchronous improvement of ecological well-being and economic well-being

China takes the people's needs as the starting point and goal, combines ecological protection with people's livelihood improvement, and realizes the synchronous improvement of people's ecological well-being and economic well-being.

Improve the quality of the living environment and enhance ecological well-being: China focuses on solving prominent ecological and environmental problems concerned by the people, such as air pollution, water pollution, and soil pollution, and improves the quality of the living environment. In air pollution control: implement the Blue Sky Protection Campaign, strengthen the control of coal-fired pollution, motor vehicle pollution, and industrial pollution, and the air quality has been significantly improved [65]; from 2012 to 2023, the proportion of days with good air quality in 339 prefecture-level and above cities in China increased from 60.5% to 85.5%, and the concentration of PM_{2.5} decreased by 42% [66]. In water pollution control: carry out the clear water protection campaign, strengthen the protection of drinking water sources, and improve the treatment capacity of urban and rural sewage [67]; by 2023, the excellent water quality ratio of surface water in China has reached 90.2%, and the safety rate of drinking water sources in cities at or above the prefecture level has reached 99.3% [68]. In soil pollution control: carry out the Pure Land Protection Campaign, strengthen the investigation and treatment of soil pollution, and ensure the



safety of agricultural products and residential environments [69]; by 2023, the safe utilization rate of contaminated farmland in China has reached 95% [70].

Promote ecological poverty alleviation and rural revitalization to improve economic well-being: China combines ecological protection with poverty alleviation and rural revitalization, and realizes ecological enrichment to improve people's economic well-being. In ecological poverty alleviation: carry out the ecological forest rangers program, arrange poor households to participate in ecological protection work, and increase their income through ecological protection [71]; by 2020, China has arranged 1.1 million ecological forest rangers, driving 3 million poor people to increase their income [72]; develop ecological industries such as ecological agriculture, eco-tourism, and forestry economy, and help poor areas get rid of poverty [73]. In rural revitalization: continue to develop ecological industries, improve the quality and added value of agricultural products, and increase farmers' income [74]; strengthen rural infrastructure construction, improve rural education, medical care, and pension services, and improve farmers' quality of life [75]; by 2023, the per capita disposable income of rural residents in China has reached 21,691 yuan, an increase of 120% compared with 2012, and the gap between urban and rural residents' income has continued to narrow [76].

Strengthen ecological education and improve public ecological awareness: China strengthens ecological education, improves the public's ecological awareness and participation, and lays a social foundation for sustainable development. First, carry out school ecological education: incorporate ecological civilization education into the national education system, set up ecological courses in primary and secondary schools and universities, and cultivate students' ecological awareness [77]. Second, carry out public ecological publicity: use media such as television, radio, and the Internet to publicize ecological civilization

knowledge and policies, and improve the public's ecological awareness [78]; carry out activities such as World Environment Day and National Low-Carbon Day to guide the public to participate in ecological protection [79]. Third, encourage public participation in ecological governance: establish a public supervision mechanism, accept public reports on ecological and environmental violations, and give play to the role of the public in ecological protection [80]; by 2023, the number of public reports on ecological and environmental violations in China has reached 1.2 million, and the handling rate has reached 98% [81].

Practice Effect of China's Sustainable Development Path

Through the practice of integrating new-quality productive forces leadership, national ecological well-being supremacy, and economic-social sustainable development, China has achieved remarkable results in ecological environment improvement, high-quality economic development, and people's well-being enhancement, verifying the effectiveness and feasibility of Chinese experience.

Significant improvement of ecological environment quality

China's ecological environment quality has achieved a historic improvement, and the ecological system has become more stable. In terms of air quality: as mentioned earlier, the proportion of days with good air quality in cities at or above the prefecture level has increased from 60.5% to 85.5%, and the concentration of PM_{2.5} has decreased by 42%, basically eliminating severe and above pollution days [66]. In terms of water environment quality: the excellent water quality ratio of surface water has increased from 61.6% to 90.2%, and the inferior V-class water body ratio has decreased from 10.3% to 0.7%, realizing the fundamental improvement of the water environment [68]. In terms of ecological system protection: the area



of nature reserves in China has reached 1.45 million square kilometres, accounting for 15% of the national land area, effectively protecting rare and endangered species [82]; the forest coverage rate has increased from 20.36% to 24.02%, and the total carbon sink capacity of forests has continued to increase [83]. Taking Zhejiang as an example, since the practice of the two mountains theory, Zhejiang's ecological environment quality has been continuously improved. The excellent water quality ratio of surface water has reached 95.8%, the forest coverage rate has reached 61.2%, and it has become a national ecological civilization demonstration zone [84].

Continuous improvement of economic development quality

China's economic development has shifted from scale expansion to quality improvement, and the quality and efficiency of economic growth have been continuously improved. First, the driving force of economic growth has been transformed: the contribution rate of technological progress to economic growth has increased from 52.2% in 2012 to 62.4% in 2023, and the economic growth has been increasingly driven by innovation [85]; the added value of strategic emerging industries has accounted for 19.5% of GDP, becoming an important pillar of economic growth [86]. Second, the industrial structure has been optimized: the proportion of the tertiary industry in GDP has increased from 44.6% to 54.6%, and the industrial structure has shifted from secondary industry leading to tertiary industry leading [87]; the green industry has developed rapidly, and the output value of the green manufacturing industry has reached 22 trillion yuan, accounting for 18% of the total industrial output value [88]. Third, energy efficiency has been improved: the energy consumption per 10,000 yuan of GDP has decreased by 26.4% from 2012 to 2023, and the carbon emission per 10,000 yuan of GDP has decreased by 34.4%, realizing the decoupling of economic growth from energy consumption and carbon emissions to a certain

extent [89]. Taking Guangdong as an example, Guangdong has promoted digital green industrial transformation, with the added value of the digital economy accounting for 57% of GDP and the output value of green energy industry exceeding 1 trillion yuan, realizing high-quality economic growth while reducing environmental pollution [90].

Remarkable improvement of people's ecological and economic well-being

The people's sense of gain, happiness, and security in ecological and economic aspects has been significantly enhanced, and the level of well-being has been continuously improved. In terms of ecological well-being: the public's satisfaction with the ecological environment has increased from 70.5% in 2013 to 92.7% in 2023, and the people's recognition of ecological civilization construction has been continuously improved [91]; the number of urban parks has increased from 11,000 to 22,000, and the per capita green space area in cities has reached 14.8 square meters, providing a good leisure and living environment for the people [92]. In terms of economic well-being: the per capita disposable income of residents has increased from 16,510 yuan in 2012 to 49,888 yuan in 2023, an increase of 202% [76]; the poverty-stricken population has been fully lifted out of poverty, and the problem of absolute poverty has been solved historically, realizing the basic satisfaction of people's material and cultural needs [93]; the coverage rate of basic medical insurance and basic pension insurance has reached 95% and 95% respectively, and the level of public services has been continuously improved [94]. Taking the ecological poverty alleviation in Guizhou as an example, Guizhou has developed eco-tourism and photovoltaic power generation industries, driving 2 million poor people to get rid of poverty, with the per capita disposable income of rural residents increasing by 135% from 2012 to 2023, and the people's economic well-being and ecological well-being have been significantly improved [95].



Worldwide Significance of Chinese Sustainable Development Experience

China's sustainable development experience, which integrates new-quality productive forces leadership, national ecological well-being supremacy, and economic-social sustainable development, not only solves China's own development problems but also provides important reference for developing countries and makes positive contributions to global sustainable development, having profound worldwide significance.

Provide a reference path for developing countries to break the ecological poverty trap

Most developing countries are facing the contradiction between economic development and ecological protection, and are trapped in the ecological poverty trap—on the one hand, they need to develop the economy to get rid of poverty, on the other hand, economic development will cause ecological damage, and ecological damage will further restrict economic development, forming a vicious circle. China's experience provides an effective way for developing countries to break this trap.

First, take technological innovation as the core to develop new-quality productive forces, realize the transformation of economic development mode, and get rid of the dependence on resource-intensive industries. Developing countries can learn from China's experience, focus on developing digital technology, green energy, and other new technologies according to their own resource endowments, develop strategic emerging industries, and promote the transformation of economic development from factor-driven to innovation-driven, realizing high-quality economic growth while reducing ecological damage [96]. For example, African countries can develop solar energy and wind energy according to their rich renewable energy resources, and Southeast Asian countries

can develop digital economy and ecological agriculture, realizing the integration of economic growth and ecological protection.

Second, take ecological well-being supremacy as the value orientation, balance economic development and ecological protection, and avoid the one-sided pursuit of economic growth. Developing countries can learn from China's people-oriented development philosophy, incorporate ecological protection into national development strategies, take improving people's ecological and economic well-being as the goal, and realize the coordinated development of economy, society, and ecology [97]. For example, Latin American countries can combine ecological protection with poverty alleviation, develop eco-tourism and ecological agriculture, and realize ecological enrichment while protecting the Amazon rainforest and other ecological resources.

Third, improve the institutional system and strengthen government guidance and market regulation. Developing countries can learn from China's experience in top-level design and institutional innovation, establish a sound ecological governance system, technological innovation support system, and well-being improvement system, give play to the leading role of the government in sustainable development, and at the same time give play to the role of the market in resource allocation, forming a joint force for sustainable development [98]. For example, South Asian countries can establish cross-regional ecological governance mechanisms to solve transnational ecological problems such as air pollution and water pollution, and improve the effectiveness of ecological governance.

Contribute Chinese wisdom to global ecological governance and the construction of a community with a shared future for mankind

Global ecological crisis is a common challenge facing human beings, and global ecological governance needs the joint participation of all



countries. China's sustainable development experience provides Chinese wisdom and solutions for global ecological governance and promotes the construction of a community with a shared future for mankind.

First, put forward a new development concept to enrich the theoretical system of global sustainable development. China's ecological well-being supremacy concept and the development model of integrating new-quality productive forces and sustainable development are a transcendence of the traditional economic growth first and ecological protection first models, and enrich the theoretical connotation of global sustainable development [99]. This concept emphasizes the organic unity of economic development, ecological protection, and people's well-being improvement, which is in line with the interests of all countries in the world and provides a new theoretical perspective for global sustainable development.

Second, provide practical cases and technical support for global ecological governance. China has achieved remarkable results in ecological governance, such as the river chief system, ecological compensation mechanism, and renewable energy development, which have important reference value for global ecological governance [100]. At the same time, China actively carries out international cooperation in green technology, promotes the export of renewable energy technologies and equipment, and provides technical support for developing countries' ecological governance [101]. For example, China has carried out photovoltaic power generation cooperation with more than 100 countries and regions, helping developing countries improve their energy structure and reduce carbon emissions.

Third, actively participate in global ecological governance and promote international cooperation. China adheres to the concept of multilateralism, actively participates in international conventions and agreements such as the Paris Agreement on Climate Change, and assumes corresponding international

responsibilities according to its own national conditions [102]. China has put forward the concept of a community with a shared future for mankind and global development initiative, advocating all countries to work together to address global ecological challenges and promote global sustainable development [103]. China's active participation has promoted the improvement of the global ecological governance system and enhanced the effectiveness of global ecological governance.

Promote the transformation of global economic development mode and realize global sustainable growth

The traditional global economic development mode, which relies on resource consumption and scale expansion, has led to serious ecological and environmental problems and is not sustainable. China's experience of taking new-quality productive forces as the driving force to promote industrial transformation and economic high-quality development provides a new path for the transformation of the global economic development mode.

First, promote the global development of digital economy and green economy. China's development experience in digital economy and green economy shows that digital technology and green technology are important driving forces for economic transformation and sustainable development [104]. Under the influence of China's experience, more and more countries are focusing on the development of digital economy and green economy, promoting the transformation of the global industrial structure and realizing the transformation of economic development mode from high-carbon to low-carbon and from extensive to intensive.

Second, promote the global optimization of resource allocation and improve resource utilization efficiency. China's practice of developing circular economy and optimizing resource allocation provides a reference for global resource utilization [105]. All countries can learn from China's experience, establish a



circular economy system, realize the recycling of resources, improve resource utilization efficiency, and reduce the pressure on the ecological environment, thus promoting global sustainable economic growth.

Third, promote global fair and inclusive development and narrow the development gap. China's experience of combining sustainable development with poverty alleviation and people's well-being improvement emphasizes the fairness and inclusiveness of development, which is of great significance for narrowing the development gap between developed and developing countries [106]. Developed countries can learn from China's experience, increase support for developing countries in technology, capital, and talents, and help developing countries realize sustainable development, thus promoting global fair and inclusive development and building a more equitable and sustainable global development system.

Conclusion

This paper studies China's sustainable development experience from the perspective of new-quality productive forces leadership, national ecological well-being supremacy, and economic-social sustainable development, and draws the following conclusions:

First, the three core concepts of new-quality productive forces, national ecological well-being supremacy, and economic-social sustainable development form an organic unity of driving force - value orientation - development goal. New-quality productive forces are the core driving force of sustainable development, national ecological well-being supremacy is the value orientation of sustainable development, and economic-social sustainable development is the ultimate goal of the two, which jointly promote China's sustainable development process.

Second, China has formed a complete practice path of sustainable development, including improving the institutional system, driving industrial transformation with new-

quality productive forces, promoting regional coordinated development, and improving people's ecological and economic well-being. This path takes institutional innovation as the guarantee, technological innovation as the driving force, and people's well-being improvement as the goal, realizing the organic unity of economic growth, ecological protection, and social progress.

Third, China's sustainable development practice has achieved remarkable results, with significant improvement in ecological environment quality, continuous improvement in economic development quality, and remarkable improvement in people's well-being, verifying the effectiveness and feasibility of Chinese experience.

Fourth, China's sustainable development experience has important worldwide significance, providing a reference path for developing countries to break the ecological poverty trap, contributing Chinese wisdom to global ecological governance and the construction of a community with a shared future for mankind, and promoting the transformation of the global economic development mode.

Prospect

In the future, with the in-depth development of global technological revolution and industrial transformation, China's sustainable development will face new opportunities and challenges. On the one hand, the rapid development of new technologies such as artificial intelligence, big data, and renewable energy will provide a stronger driving force for the development of new-quality productive forces and promote the in-depth integration of economic development and ecological protection; on the other hand, global climate change, transnational ecological pollution, and other problems will also bring new challenges to China's ecological governance.

In the future, China should continue to adhere to the leadership of new-quality productive forces, adhere to the supremacy



of national ecological well-being, and further improve the sustainable development system: first, strengthen the research and development of core technologies in digital technology, green energy, and other fields, and enhance the independent innovation capacity of new-quality productive forces; second, improve the ecological governance system, strengthen cross-regional and transnational ecological cooperation, and effectively respond to global ecological challenges; third, deepen the integration of sustainable development and people's livelihood improvement, and continuously improve people's ecological and economic well-being; fourth, actively carry out international cooperation in sustainable development, share Chinese experience and technologies with other countries, and work together to promote global sustainable development.

At the same time, the research on Chinese sustainable development experience also needs to be further in-depth: first, strengthen the quantitative research on the impact of new-quality productive forces on sustainable development, and improve the scientificity of the research; second, carry out comparative research on sustainable development paths of different countries, and highlight the particularity and universality of Chinese experience; third, explore the development trend of new-quality productive forces and ecological civilization construction under the background of global changes, and provide more forward-looking suggestions for sustainable development.

China's sustainable development experience is a valuable asset for China and the world. With the continuous enrichment and development of this experience, it will surely make greater contributions to the global sustainable development and the construction of a community with a shared future for mankind.

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