Modern economic system based on green and low-carbon circular development: realization path and practical significance

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Keywords: practical significance; realization path; low-carbon circular development; Modern economic system

Abstract: This paper deeply studies the modern economic system (MES) based on green and low-carbon circular development (LCCD), focusing on the key path to realize this concept and its practical significance to society. In terms of path, through the analysis of technological innovation, policy and system innovation, international cooperation and global governance, the key elements of green and low-carbon circular development and their relationships are revealed. Technological innovation promotes the rise of green industry, policy and system innovation provides guidance for the reform of economic system, and international cooperation builds a global cooperation mechanism. In terms of practical significance, this paper emphasizes the far-reaching impact of green and LCCD on the environment, society and economy. The realization of this concept helps to ensure environmental sustainability, promote social fairness and tolerance, improve resource utilization efficiency, and provide opportunities for new economic growth points. Finally, this paper looks forward to the future development and emphasizes the importance of global cooperation, scientific and technological innovation and social participation. The MES based on green and LCCD is not only a positive response to contemporary social problems, but also a key path to promote global sustainable development.

1. Introduction

On a global scale, with the increasing challenges of climate change, resource shortage and environmental pollution, it is urgent to explore a sustainable economic system in order to realize the organic integration of economic prosperity, social equity and environmental protection. In this context, a modern economic system (MES) based on green and low-carbon circular development (LCCD) emerged as the times require, which has become the key path to lead the future development [1]. In the past few decades, the traditional economic growth model has brought remarkable economic prosperity, but at the same time it has also been accompanied by problems such as over-exploitation of resources, environmental pollution and social inequality. Faced with these challenges, we can no longer adopt the development mode of "seeking economic growth at the expense of the environment". On the contrary, the essence of economic growth needs to be re-conceived to complement environmental sustainability and social equity.

The development of green and low-carbon cycle is not only a revolutionary change to the traditional economic model, but also a comprehensive re-examination of our relationship with nature, society and economy[2]. This paper aims to explore the feasibility, approach and practical significance of realizing this development path. It will focus on how to integrate advanced scientific and technological means, institutional innovation and global cooperation to build a sustainable economic framework and create a more prosperous, just and clean life for mankind. Through in-depth excavation of the path to achieve green and LCCD, it aims to provide practical suggestions for policy makers, business leaders and academic circles, and push the global economy towards a more sustainable future. The realization of this development path will not only leave more abundant natural resources and a clean environment for our future generations, but also bring a triple win-win situation of economy, society and environment to contemporary society.

  DOI: 10.25236/ieesasm.2023.040

2. Concept and principle of green and LCCD

The development of green and low-carbon cycle is a concept of completely changing the traditional economic model, and its core lies in realizing a virtuous cycle of economic growth and environmental sustainability by minimizing resource consumption and reducing greenhouse gases [3-4]. This concept transcends the traditional concept of "sacrificing the environment for economic growth" and emphasizes the coordinated development of economy, society and environment (Figure 1).

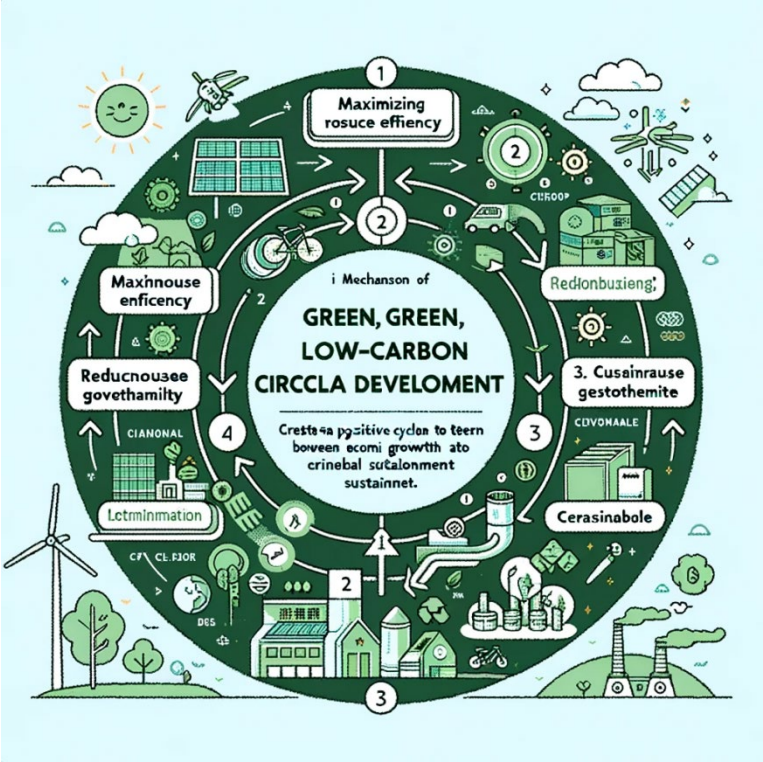

Figure 1 The concept of green and LCCD

The first principle of green and LCCD is to realize efficient utilization of resources. This includes advocating circular economy, reducing excessive dependence on limited resources by reducing waste and recycling. Governments and industries should pay attention to the adjustment of energy structure, promote the application of more renewable energy, reduce dependence on high-carbon energy, and promote clean production and utilization of energy [5]. With the goal of reducing greenhouse gas emissions, the carbon footprint of production processes and lifestyles will be reduced through technological innovation and industrial upgrading. Societies and policymakers should attach importance to the protection of natural ecosystems, pay attention to ecological restoration and biodiversity maintenance, and ensure the harmonious coexistence of economic development and ecological environment. The development of green and low-carbon cycle requires social equity while economic growth [6-7]. Governments and policymakers should ensure the fairness of resource allocation, pay attention to the interests of vulnerable groups and realize extensive social participation.

Governments and international organizations should use advanced technology to promote the development of the green industry, improve the efficiency of resource utilization, reduce the environmental burden, and promote economic transformation towards a green direction [8]. They should also formulate and implement policies and regulations to support the development of a green and low-carbon cycle, including incentive measures, emission reduction targets, and environmental protection standards, to guide the behavior of enterprises and the public. Furthermore, efforts should be made to strengthen international cooperation and exchanges to jointly address climate change and environmental issues, share technology, policies and resources, and build a cooperation mechanism for global green and LCCD.

Green and LCCD provides new growth momentum for the economy, promotes the rise of new industries, creates employment opportunities and promotes sustainable economic growth. By slowing down climate change, improving air quality and protecting the ecosystem, the development of green low-carbon cycle has realized the protection of the natural environment and ensured the living environment of future generations. The development of green and low-carbon cycle pays attention to social equity, and realizes the wide sharing of economic growth through the rational distribution of resources and the participation of vulnerable groups.

Generally speaking, green and LCCD is a strategic choice to comprehensively optimize the economic structure and realize sustainable development. Its core lies in organically combining environmental, social and economic development to build a more prosperous, clean and just world for the future.

3. Realization path

The MES itself covers not only the production, distribution, exchange and consumption of economic activities, but also the industrial system, market system, distribution system, regional system, opening system, technology system and policy system in the field of economic construction (see Figure 2 for details).

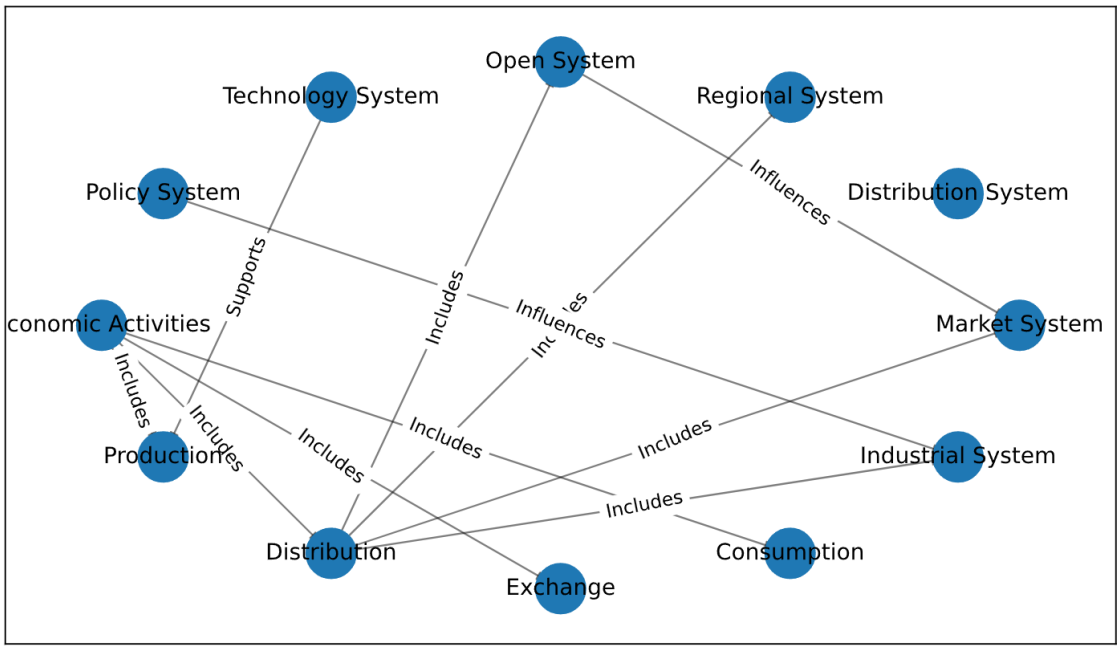

Figure 2 Operation mechanism of MES

3.1. Technological innovation and the development of green industry

In building a MES based on green and LCCD, technological innovation is the engine to promote change, and the development of green industry is the actual embodiment of technological innovation in the economy. By introducing advanced technology and promoting the rise of green industry, efficient utilization of resources, clean utilization of energy and reduction of carbon emissions can be achieved, laying the foundation for sustainable economic growth [9].

Technological innovation plays a vital role in the field of renewable energy. The research and application of emerging energy technologies such as wind energy, solar energy and tidal energy can not only replace traditional energy, but also solve the problem of unstable energy supply. The introduction of smart grid technology can effectively integrate renewable energy and improve energy utilization efficiency. Through the innovation of green manufacturing technology, enterprises can optimize the production process and reduce the consumption of raw materials and waste emissions. With the integration of the concept of circular economy, product design is more environmentally friendly, and materials are easier to recycle, so as to maximize the utilization of

resources and promote the transformation of production methods to a more environmentally friendly and sustainable direction. Technological innovation also plays a key role in intelligent transportation and urban planning. By introducing intelligent transportation system, traffic flow can be optimized and traffic congestion and exhaust emissions can be reduced. Smart city planning can achieve more efficient land use and reduce the city's excessive dependence on natural resources.

The innovation of digitalization and Internet of Things technology provides strong support for the green and low-carbon cycle. By connecting devices and analyzing data intelligently, enterprises can monitor energy usage more accurately, realize lean production and reduce energy waste [10]. Facing the severe challenge of climate change, carbon capture and storage technology has become the key to slow down greenhouse gas emissions. The application of technological innovation in this field can control industrial emissions and store carbon dioxide safely, thus alleviating the adverse effects of climate change.

Technological innovation promotes the development of green industry, provides a new engine for economic growth and urges enterprises to turn to a more sustainable and innovation-driven direction. The development of green industry not only provides new business opportunities for enterprises, but also creates a lot of employment opportunities, especially in emerging fields and high-tech industries. Through technological innovation, green industry can use resources more efficiently and realize more rational and sustainable development and utilization of limited resources. On a global scale, leading the development of green industries through technological innovation will help to enhance the country's global competitiveness and strengthen its position in emerging industries.

Technological innovation and the development of green industry complement each other, and jointly build a MES based on green and LCCD. This not only provides a new impetus for economic growth, but also opens up new possibilities for the sustainable development of society and environment.

3.2. Policy and institutional innovation

When building a MES based on green and LCCD, policy and institutional innovation are the key driving forces to promote change. Effective policy and institutional support can provide guidance for the transformation of the economic system and promote enterprises and all sectors of society to more actively integrate into the track of sustainable development.

In order to encourage and guide enterprises to develop in the direction of green and low carbon, the government should formulate clear green industry policies. These policies can include tax incentives, financial support and market access to encourage enterprises to invest in green technology and innovation. Establishing carbon market and emission trading system is an effective means to promote the development of low-carbon economy. By setting up a carbon emissions trading market, the government can guide enterprises to actively reduce carbon emissions, improve energy efficiency and realize a market mechanism for carbon emissions reduction. The government should promote the upgrading of energy structure by formulating clean energy policies. This includes subsidies and support for renewable energy, as well as regulatory restrictions on phasing out high-carbon energy, thus encouraging enterprises to use more clean energy. In order to support the development of green and low-carbon cycle, the government can guide financial institutions to increase investment in green projects. Financial institutions and regulators should establish a green financial system, including developing green credit, issuing green bonds and other financial instruments, so as to promote more funds to flow to green industries. The government needs to formulate stricter environmental regulations and standards to regulate the environmental protection behavior of enterprises. By strengthening laws and regulations, the government can promote enterprises to adopt more environmentally friendly and low-carbon production methods and reduce the negative impact on the environment. In urban planning, the government can introduce the concept of low-carbon city and promote the construction of intelligent transportation system. By improving the urban traffic structure and reducing traffic congestion and exhaust emissions, cities can better achieve LCCD.

By providing incentives and support, the government can stimulate enterprises to innovate in technology research and development and production methods, and promote economic development in the direction of green and low carbon. Government policies and institutional support will help reduce the cost of low-carbon transformation for enterprises and encourage more enterprises to participate in the development of green industries. Effective policy and institutional innovation can guide all sectors of society to participate more actively in the process of green and LCCD and form the joint efforts of the whole society. A sound policy and institutional system enhances the image of the country's sustainable development in the international arena, and helps to strengthen international cooperation and jointly deal with global environmental problems.

Policy and institutional innovation is the key to promote the MES based on green and LCCD. Its implementation can effectively guide the flow of social, enterprise and market resources towards sustainable development and promote the green upgrade of economy and society.

3.3. International cooperation and global governance

When building a MES based on green and LCCD, international cooperation and global governance are crucial links. Because environmental problems and climate change have global characteristics, countries must strengthen cooperation and jointly promote the global cooperation mechanism of green and low-carbon cycle development. This cooperation is not only reflected in the level of international organizations, but also needs to be carried out at the level of enterprises, social groups and the public.

The sustainable development goals of the United Nations provide a common program of action for the whole world. Countries are committed to solving global environmental, social and economic problems through concerted efforts. The international community should jointly promote and strengthen cooperation in the field of green and low carbon to realize this vision. The Paris Climate Agreement provides a framework for countries to work together to address climate change. The international community should jointly implement emission reduction targets, strengthen technology transfer and support developing countries to adapt to climate change. At the same time, through the mechanism of international agreements, we will promote the construction of the global carbon market and urge countries to mitigate the impact of climate change more actively. Multinational enterprises play an important role in the development of global green and low-carbon cycle. International cooperation mechanism can encourage enterprises to share green technology and experience more actively, jointly study solutions and promote the construction of global green supply chain. In addition, international enterprise cooperation will also help promote the joint efforts of global enterprises in social responsibility and sustainable management.

The international community needs to strengthen international cooperation in environmental research and promote environmental science and technology innovation. By sharing scientific research results, we will improve the level of environmental protection technology in various countries and promote the spread and application of green technology on a global scale. Through international cooperation, we will jointly promote the education and awareness of green and LCCD. Educational institutions, media, and advocacy groups should popularize environmental awareness around the world, cultivate the concept of green and low-carbon development, strengthen the awareness of sustainable development of global citizens, and provide a broader social foundation for promoting green and LCCD.

International cooperation is helpful to jointly deal with global problems, such as climate change and environmental pollution, and achieve global environmental protection goals. Encourage countries to share technology and experience in the field of green and low carbon, improve the global environmental protection level and achieve common prosperity. It is helpful to support the development of developing countries in the field of green and low-carbon cycle, narrow the development gap and realize the common prosperity of global green development. It is helpful to build a global green economic system and create favorable conditions for the long-term sustainable development of the global economy. International cooperation and global governance play an irreplaceable role in the development of green and low-carbon cycle. Only through joint efforts can

we truly realize the organic integration of global economic modernization and sustainable development.

4. Practical significance and social influence

The MES based on green and LCCD is not only an idea, but also a response to the realistic needs of contemporary society and future sustainable development. The realization of this economic system has far-reaching practical significance and positive social impact.

By building a green and low-carbon circular economy system, we can effectively slow down climate change, reduce environmental pollution and protect the ecosystem. This is of direct and urgent practical significance for maintaining the ecological balance of the earth and ensuring a clean and healthy environment for human survival. The development of green and low-carbon cycle emphasizes social equity and the interests of vulnerable groups. Through the innovation of policies and systems, the gap between the rich and the poor can be reduced and the fruits of economic growth can be ensured to benefit the whole society more widely. This will help to build a more equal and inclusive social structure. The green and low-carbon circular economy system pursues efficient use of resources and reduces waste. This is of practical significance for solving the problem of resource shortage, improving the efficiency of resource utilization, and thus ensuring that human society will have sufficient resource support in the future.

Turning to green and low-carbon cycle development has provided new growth momentum for the economy. Promoting the development of green industries and encouraging technological innovation will create new business opportunities for enterprises, create more employment opportunities and achieve more sustainable economic growth. The development of green and low-carbon cycle will become the commanding height of global economic competition in the future. Promoting the green development of enterprises through technological innovation and environmental awareness will help to enhance the country's position in emerging industries and enhance its global competitiveness. Actively participating in global environmental protection affairs and green and low-carbon development will not only help to enhance the national image, but also make the international community recognize and respect it. The image of a country's sustainable development in the world is of practical significance for international cooperation, attracting investment and expanding cooperative partnership. Promoting the development of green and low-carbon cycle will promote social innovation, not only technological innovation, but also social and lifestyle innovation. People may pay more attention to environmental protection and health, and the production and consumption patterns will undergo fundamental changes.

The MES based on green and LCCD will not only help to solve the environmental and resource pressures facing the world at present, but also promote the development of society in a fairer, more prosperous and sustainable direction. The construction of this MES is a beneficial attempt to the responsibility of future generations and the sustainable prosperity of human society.

5. Conclusions

At a time when the world is facing increasingly severe climate change and environmental pressure, it is increasingly urgent to build a MES based on green and LCCD. The development of green and low-carbon cycle is not only an environmental protection concept, but also a positive response to real social problems. In this concept, we see the concern for environmental sustainability, the pursuit of social equity and the exploration of new economic growth points. This has brought many practical benefits to society, such as environmental sustainability, social fairness and tolerance, and efficient use of resources. However, there are still many challenges to realize this concept. Global collaboration and cooperation need to be deeper, technological innovation needs to be faster, and international governance mechanisms need to be more sound. On the road of future development, we need more extensive social participation, stronger policy support and more sustained scientific and technological innovation.

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