

**International Economics**

Roman ZVARYCH,  
Wei LINHAI

**THE IMPACT  
OF NATURAL RESOURCES USE  
AND CONSUMPTION  
ON INTERNATIONAL TRADE**

**Abstract**

The article analyzes the utilization of various resources, the speed of their consumption and the impact on the environment.

The economic dynamics surrounding natural resources in international trade are subject to comprehensive examination. This analysis encompasses the utilization patterns of energy, minerals, agricultural commodities, water, and biological resources within the framework of their influence on international relations.

The methodology for analyzing information on global tendencies in natural resources trade is applied to substantiate recommendations aimed at their balanced utilization in the macroeconomic policy of sustainable development.

On the basis of the analysis of the status and role of natural resources in international trade, recommendations for states regarding the formulation of sustainable development and natural resource management policies are provided.

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Zvarych Roman, Ds (Econ), Professor, Head of International Economic Relations Department, West Ukrainian National University, Ternopil, Ukraine. ORCID: 0000-0003-3741-2642 Email: romazvarych@yahoo.com  
Linhai Wei, PhD student, Department of International Economic Relations, West Ukrainian National University, Ternopil, Ukraine. ORCID: 0000-0002-9583-7713 E-mail: 85567415@qq.com

**Key Words:**

consumption of natural resources; international trade; sustainable development; utilization of natural resources.

**JEL:** F13, Q27, Q37, P28.

5 figures, 15 references.

**Problem Statement and Literature Review**

The impact of the use and consumption of natural resources on international trade is a complex issue that requires the consideration of various economic aspects, including the identification of the relationship between demand and supply for resources, the process of forming the price mechanism, features of environmental policy and international trade rules. Many scientists have studied the impact of the use and consumption of natural resources on international trade. In particular, Gao (2023) systematized the balance of great powers in international trade. Weiming (2020) examined the impact of global trade and its structural changes on national economies, resources, and the environment. Na & Yang (2020) investigated environmental pollution in the context of China's foreign trade development. Ran & Hongjun (2024) highlighted the trends of international trade and foreign trade in China. Shaojian et al. (2024) established the impact of international trade on environmental vulnerability. Lin (2016) analyzed China's foreign trade based on environmental sustainability. Zhuangzhuang et al. (2023) examined trade in aquatic products, impacts on land use trade, impacts of trade on carbon emissions, and biodiversity. Xia et al. al. (2015) analyzed the current situation of energy consumption in agricultural production in China. Yuqin (2022) focused on China's agricultural export trade in the context of environmental impact and carbon emissions. Jing (2023) investigated the impact of import trade on energy efficiency research in China. Arslan et al. (2022) also investigated the dynamics of natural resource rents, environmental sustainability, and

sustainable economic growth in China. Yatsenko & Zavadzka (2017) investigated the ecological perspective of Ukraine's trade policy in industrial policy and sustainable growth.

Current research results show that in order to promote sustainable development and balanced development of international trade, it is necessary to formulate and implement a more comprehensive and effective resource management policy and environmental protection policy (Shaojian et al., 2024). At the same time, transnational cooperation, technological innovations and consumption of natural resources are important ways to achieve sustainable use of resources and mutually beneficial international trade, which determines the relevance of the research topic.

**The purpose of this study** is to substantiate the rational utilization and consumption of natural resources at the macroeconomic level.

## Methodology

This paper adopts a comprehensive research method, including literature review, data analysis, case analysis and experience summary. Firstly, through the comprehensive review of relevant academic literature and statistical data, the theoretical framework of natural resources in international trade is established. Secondly, quantitative analysis using data from authoritative agencies such as Chinese government departments reveals the scale, trends, import and export situation of natural resources trade. Moreover, through the case analysis of specific countries or regions, the characteristics and influencing factors of natural resource trade are further explored. Finally, based on the empirical and theoretical analysis, the status and role of natural resources in international trade are summarized, and relevant policy suggestions and directions for sustainable development are proposed.

These methods complement each other, which determines the conduct of a comprehensive and in-depth analysis of the impact of natural resources on international trade in this article and serves as a basis for further research in this area.

## Research Results

Natural resources, including energy, minerals, water resources and land resources, are an essential basis for human survival and development. However, with the rapid development of the world economy and continuous population growth, the demand for natural resources is increasing, and the flow of resources

in international trade is becoming more and more frequent (Gao, 2023; International trade risk and prevention. Cooperative Economics and Science and Technology, 2023).

The use and consumption of natural resources not only affects the national economy and the environment, but also has an important impact on international trade as a bridge connecting the economies of different countries. Unwise exploitation and excessive consumption of natural resources will not only lead to environmental destruction and ecological imbalance, but also affect the stability and sustainable development of international trade (Ran & Hongjun, 2024).

Thus, the study of the impact of the use and consumption of natural resources on international trade is useful for the formulation of more scientific and informed policies and measures, and is of great importance for the promotion of global sustainable development, which deserves in-depth research and discussion.

Some studies claim that international trade has led to the overuse and consumption of natural resources in some countries. By exporting resource-intensive products to developing countries, developed countries have indirectly stimulated the demand for natural resources, leading to their depletion and environmental problems in some developing countries.

On the other hand, some studies have pointed out that international trade can also promote the rational allocation of resources, while reducing the risk of shortages.

The utilization and consumption of natural resources affect international trade mainly through supply and demand relationship and the price mechanism. Some studies suggest that resource consumption has led to an increase in resource prices, which may have affected the competitiveness and cost structure of international trade.

High resource prices may increase the production cost of resource-intensive products and affect their competitive position in the international market. On the other hand, the rational use of resources can enhance the competitiveness of enterprises in the international market by reducing production costs and improving product quality. There is a close relationship between the utilization and consumption of natural resources and international trade. Trade can promote the development, utilization, flow and allocation of resources.

The theory of comparative advantage and the theory of resource endowment are regarded as the cornerstone of international trade. They explain how trade can realize economic benefits based on the comparative advantage of resources, emphasizing the positive effects of trade on national economies, such as increasing GDP and improving residents' welfare. This is a result of trade allowing countries to focus on industries in which they have a comparative advantage, thereby increasing productivity and economic efficiency.

However, the theory of comparative advantage warns of the structural disadvantages that trade can cause. Overreliance on comparative advantage can trap countries in certain low-value-added or resource-intensive industries, thereby increasing economic vulnerability. International trade can also lead to excessive consumption of resources and environmental problems. This may be due to the relaxation of environmental controls in some countries in order to attract foreign investment or reduce production costs, which leads to overexploitation of resources and environmental pollution.

The comparative advantage trap theory is considered a cornerstone of international trade, emphasizing the positive effects of trade on national economies, such as increased GDP and improved public welfare. The authors cite the views of economist Adam Smith and refer to a series of studies that support the theory of comparative advantage, such as the empirical analysis by Lin Yifu et al., as well as the discussion of the path of industrial modernization.

The *theory of comparative advantage trap* emphasizes the structural problems that may be caused by trade, especially for developing countries, where excessive reliance on comparative advantage may cause them to fall into the low-end industrial cycle and increase economic vulnerability. Hong Yinxing et al. suggest to deal with this problem by focusing on industrial upgrading and technological innovation (Chong et. al., 2023).

The *resource endowment theory* explains how countries can achieve economic benefits from international trade based on the comparative advantage of resources. According to the theory Eli Heckscher and Berthel Olin, among others, differences in resource endowments may lead to the optimal allocation of global production factors and have effects on economic growth (Zhuangzhuang et al., 2023).

The *theory of the environmental Kuznets curve* describes the relationship between environmental quality and economic development, postulating that as the economy develops and as its per capita income increases, environmental quality may first deteriorate and subsequently improve. Grossman and Krueger suggest that trade may be a key factor in this process.

The *pollution paradise* hypothesis and the *race to the bottom* hypothesis warn that trade may lead to the relocation of resource-intensive industries to regions with lower environmental regulations, thus exacerbating environmental issues. This issue has been highlighted in a number of works, including Copeland and Taylor's analysis of the North-South trade model, and Solarin et al.'s study of the phenomenon of polluted havens in Ghana (Yuqin, 2022).

Natural resources refer to all kinds of material and energy that exist in nature and can be used by human beings, which is the material basis for the survival and development of human society. According to the nature and characteristics of the resources, natural resources can be divided into distinct categories.

*Renewable resources* are resources that can be restored naturally or regenerated by human measures under reasonable use and management, such as, for example, solar energy, wind energy, water energy, forests, fishery resources, etc.

*Non-renewable resources* are resources that exist in limited quantities and are not renewable and cannot be reused once consumed, for example, oil, natural gas, coal, iron ore, etc.

*Land resources* refer to the land on the earth's surface, including cultivated land, grassland, forest, water, etc., which is the basic space for human production and life.

*Mineral resources* refer to a variety of minerals, ores and mineral deposits in the earth's crust, including metal minerals, non-metallic and energy minerals.

*Water resources* refer to the freshwater resources on the earth, including surface water and groundwater, which is an important basis for human life, agriculture, and industrial production.

*Biological resources* refer to all kinds of biological resources on the earth, including plants, animals, microorganisms, etc., which are important sources of human food, drugs, fibers, etc.

*Atmospheric resources* refer to the gases and aerosols in the atmosphere, including air, oxygen, carbon dioxide, etc., which are necessary resources for human respiration and industrial production.

Above general classifications of natural resources are provided. Different classifications of resources have different characteristics and methods of use, which are of great importance for the development and sustainability of human society.

The use and consumption of natural resources refers to the process of human exploitation, utilization and consumption of various resources existing in nature.

Natural resources are utilized in a variety of ways, including mining, agriculture, forestry, fisheries, energy development, etc. Different resources need to be used in different ways, but the sustainability and ecological environment of resources need to be fully considered in the process of utilization.

With the development of human economy and the growth of population, the demand for natural resources continues to increase, leading to the acceleration of resource consumption. In particular, some non-renewable resources, such as oil and natural gas, cannot be recycled after consumption, so it is necessary to strengthen the rational use and management of these resources.

The use and consumption of natural resources have a non-negligible impact on the environment, including water pollution, soil degradation, deforestation

and other issues. Excessive use and consumption will lead to the imbalance of the ecosystem, affecting biodiversity and climate change, so it is necessary to pay attention to environmental protection and ecological balance in the process of resource utilization.

In order to achieve sustainable development, it is necessary to adopt effective resource management and protection measures, including promoting circular economy, advocating resource conservation, and strengthening environmental supervision. Only through rational use and protection of natural resources can we achieve sustainable economic development and balanced ecological development.

Natural resources are shared globally, and the international community needs to work together to formulate international norms and policies to jointly address the challenges brought about by resource utilization and consumption. International cooperation can promote the rational use and protection of resources and achieve the goals of global sustainable development (Weiming, 2020).

At present, the utilization and consumption of global natural resources are facing many challenges and problems. Overexploitation is one of them, many non-renewable resources such as oil, natural gas, coal, etc. are over-exploited, resulting in the reduction of resource reserves, which seriously affects the sustainable use of resources.

Moreover, water scarcity is a prominent issue, with many parts of the world facing its shortages due to over-pumping of groundwater, pollution and other reasons, resulting in insufficient water supplies, affecting agricultural, industrial and domestic water use.

In addition, deforestation has reduced forest cover, affecting biodiversity and ecological balance, while overfishing and illegal hunting of biological resources have exacerbated species extinction and ecosystem destruction.

Concurrently, the large-scale overdevelopment of land resources and the release of a large number of pollutants in industrial production also aggravate the problem of land and air pollution.

To address these challenges, a sustainable approach is needed that promotes the rational use and conservation of resources. This includes measures to strengthen environmental protection, promote green development, promote circular economy, strengthen resource management and supervision, so as to achieve sustainable use of resources and protect the natural environment.

Natural resources play vital role in international trade and have a far-reaching impact on the economic development of various countries and international trade relations.

## 1. Energy resources

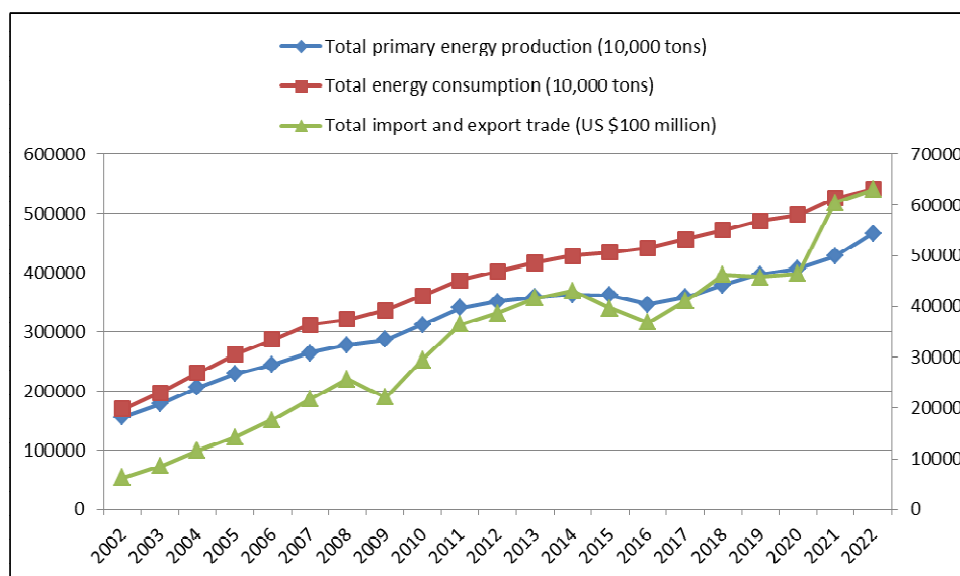
Energy resources such as oil, natural gas and coal play a significant role in international trade. They are a major source of global energy supply, and many countries rely on imported energy to meet their domestic energy needs.

The supply and price fluctuations of energy resources have a major impact on international markets and economic development. For example, the Middle East region is a major oil exporting region, while other countries rely on importing substantial amounts of oil from the region, and this dependence makes energy resources important in international trade.

This paper takes the statistical yearbook compiled by the National Bureau of Statistics of China (2023) as the data source, and tries to interpret the status and role of energy resources in international trade through the data changes in the past 20 years, as shown in Figure 1 (China's National Bureau of Statistics. China statistical yearbook, 2023):

Figure 1

### Comparison of China's total primary energy production, total energy consumption and total import and export trade from 2002 to 2022



Note: Energy unit: 10,000 tons; Trade unit: \$100 million. Source: National Bureau of Statistics of China (2023).



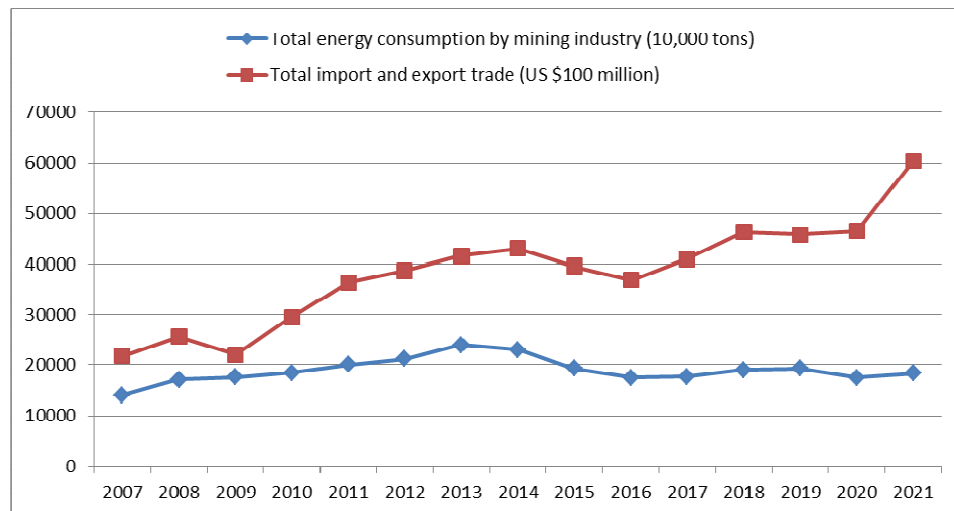
## 2. Mineral resources

Mineral resources such as iron ore, copper, aluminum and other important commodities in international trade are used in the production of industrial goods and infrastructure that underpin the global economy. Many countries rely on imported mineral resources to support industrial production and economic development, while some countries have become significant exporters because of their abundant mineral resources.

For example, Australia, Brazil and other countries are large exporters of mineral resources, and their export of mineral resources has an important impact on the international market and economic development. Using the data from the National Bureau of Statistics of China (2023), this paper attempts to interpret the status and role of the total energy consumption of mining industry in international trade from 2005 to 2022, as shown in Figure 2 (China's National Bureau of Statistics. China statistical yearbook, 2023):

Figure 2

### Comparison of total energy consumption in China's mining industry and total import and export trade from 2007 to 2021



Note: Energy unit: 10,000 tons; Trade unit: \$100 million. Source: National Bureau of Statistics of China database.

### 3. Agricultural resources

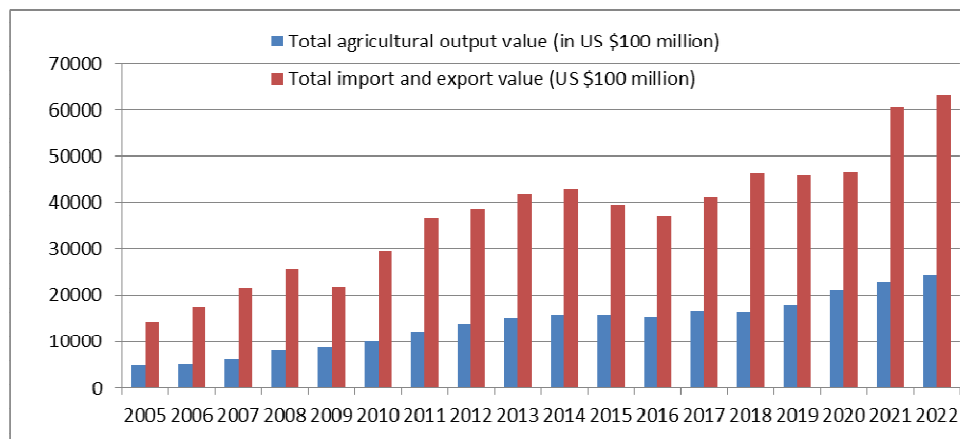
Agricultural resources such as grain, cotton and coffee as well are instrumental in international trade. These resources are used to meet global food demand and consumption needs, ensuring food security and diversified consumption.

Many countries rely on imported agricultural resources to secure food supplies, while some countries have become major exporters because of their abundant agricultural resources. For instance, the United States, Brazil, Argentina and other countries are major exporters of agricultural products, and their agricultural exports are of great significance to international markets and food security.

Based on data from the Chinese National Bureau of Statistics (2023), this paper attempts to interpret the status and role of total agricultural output value (including agriculture, forestry, animal husbandry and fish industry) in international trade from 2005 to 2022, as shown in Figure 3 (China's National Bureau of Statistics. China statistical yearbook, 2023):

Figure 3

#### Comparison of China's total agricultural output value and total import and export trade from 2005 to 2022



Note: in 100 million US dollars. Source: National Bureau of Statistics of China (2023).

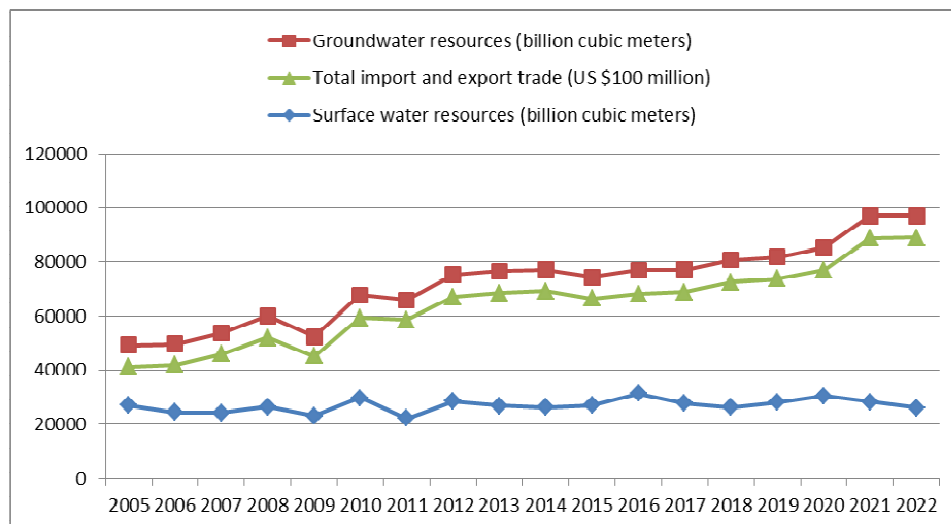
#### 4. Water resources

In some regions, water is regarded as an indispensable natural resource, and there is a trade in water. Some water-rich countries export it to meet the needs of other countries, and international trade in this water is also influenced by environmental and social factors.

Based on the statistical yearbook compiled by the National Bureau of Statistics of China (2023) as the data source, this paper attempts to interpret the status and role of water resources changes in international trade through the changes in the total water resources data from 2005 to 2022, as shown in Figure 4 (China's National Bureau of Statistics. China statistical yearbook, 2023):

Figure 4

#### Comparison of total water resources and total trade turnover in China, 2005-2022



Note: Water resources unit: 100 million cubic meters; Trade unit: \$100 million. Source: National Bureau of Statistics of China (2023).

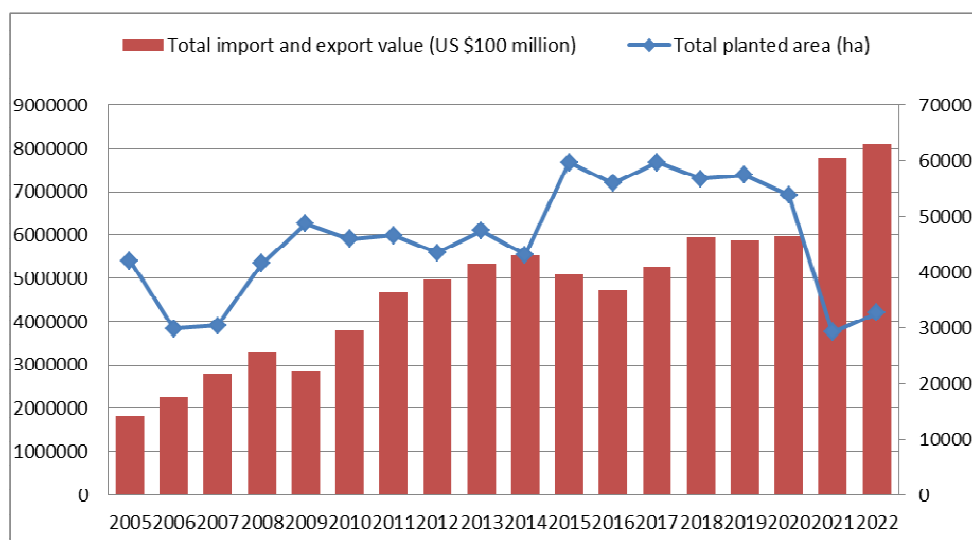
## 5. Biological resources

Biological resources such as wood, fishery resources, medicinal materials and so on are also important commodities in international trade. These resources are used to meet the production and consumption needs of countries and play a vital role in promoting economic development and improving living standards.

However, the international trade of biological resources is also concerned about ecological protection and sustainable use, and it is necessary to strike a balance between the protection of resources and the environment and the realization of sustainable use. Using the statistical yearbook compiled by the National Bureau of Statistics of China, this paper attempts to interpret the status and role of changes in biological resources in international trade through the changes in total afforestation area from 2005 to 2022, as shown in Figure 5 (China's National Bureau of Statistics. China statistical yearbook, 2023):

Figure 5

### Comparison of total afforestation and total import and export trade from 2005 to 2022



Note: Afforestation unit: hectare; Trade unit: \$100 million. Source: National Bureau of Statistics of China (2023).

Trade relations between resource-rich countries and resource-poor countries are mutually beneficial and conducive to economic development, technology transfer and international cooperation. However, both sides also need to pay attention to the sustainability of resource utilization and environmental protection to avoid over-exploitation of resources and environmental damage.

The trade relationship between resource-rich countries and resource-poor countries is vital part of international trade, showing the complementarity and interdependence of resources. This relationship embodies several characteristics (Xia et. al., 2015).

First of all, complementary trade is a valuable feature, resource-rich countries tend to export oil, minerals and other resources, while resource-poor countries need to import to meet domestic demand, promoting mutual benefit and win-win.

Secondly, this trade relationship promotes division of labor and cooperation, with resource-rich countries focusing on resource extraction and production, while resource-poor countries focus on resource processing and manufacturing, improving production efficiency and international competitiveness.

Third, this trade relationship promotes technology transfer, resource-rich countries have advanced resource exploitation and production technology, resource-poor countries can obtain technology transfer through cooperation to improve their own industrial level. At the same time, this relationship as well has a positive impact on economic development. Resource-rich countries promote economic development and national prosperity through exports of resources, while resource-poor countries promote economic structure upgrading and industrial development through imports of resources.

Furthermore, such trade relationships help spread risks, reduce dependence on a single resource, and improve economic resilience and stability. In general, trade relations between resource-rich and resource-poor countries are conducive to both economic development and technology transfer, but also need to pay attention to the sustainable use of resources and environmental protection to ensure long-term sustainable development.

Resource price volatility has a broad and profound impact on trade, especially for countries and industries that are highly dependent on resources (Xia et. al., 2015). To begin with, resource price fluctuations directly affect the import and export of resources. When resource prices rise, exporting countries tend to increase exports to capture higher revenues, while importing countries may reduce imports to reduce costs. Conversely, when resource prices fall, exporting countries may reduce exports to avoid losses, whereas importing countries may increase imports to take advantage of lower prices.

Secondly, resource price fluctuations can also affect a country's trade balance. Rising resource prices can lead to a larger trade deficit for importing coun-

tries and a larger trade surplus for exporting countries, while falling resource prices can have the opposite effect.

Moreover, resource price fluctuations as well affect the economic growth of resource exporting and importing countries. Higher resource prices are beneficial to the economic growth of resource-exporting countries but may have a negative impact on the economies of resource-importing countries.

Conversely, lower resource prices can have a negative impact on the economies of resource-exporting countries but benefit economic growth in resource-importing countries.

Finally, resource price fluctuations also have an impact on a country's investment and industrial structure. Higher resource prices may prompt resource exporting countries to increase investment in resource development, while importing countries may increase investment in resource alternatives.

Lower resource prices can lead to reduced investment in resource exporting countries and increased demand for resources in importing countries. Therefore, the impact of resource price fluctuations on trade is complex and diverse, and different countries and industries will have different coping strategies. Governments and enterprises need to pay close attention to resource price fluctuations and flexibly adjust trade policies and industrial structure to meet the challenges and opportunities in different situations.

The impact of excessive exploitation and consumption of resources on the environment is profoundly serious, including ecological destruction, soil erosion, water resource depletion, air pollution, greenhouse gas emissions and possible social conflicts.

First of all, over-exploitation of resources has caused a lot of ecological damage, such as land destruction, deforestation, etc., which has seriously affected the balance of the ecosystem and biodiversity. Secondly, over-exploitation has aggravated desertification and soil erosion of the land, negatively affecting agricultural production and ecological environment. In addition, the over-exploitation of resources will lead to the depletion of water resources, affecting agricultural irrigation, urban water supply and other aspects.

At the same time, resource exploitation and consumption release a large number of harmful gases and particulate matter, resulting in increased air pollution, posing a threat to human health and the ecological environment. Furthermore, this behavior will release a large amount of greenhouse gases, exacerbate global climate change, lead to frequent extreme weather events, and bring adverse effects on ecosystems and human society.

Finally, over-exploitation of resources may lead to social conflicts, including resource competition and environmental damage, which seriously affect social stability and sustainable development (Na & Yang, 2020).

In order to reduce the environmental impact of resource overexploitation and consumption, a number of effective resource management and protection measures must be taken. These include initiatives to promote sustainable development, strengthen environmental regulation, encourage resource conservation and recycling, and promote green production and consumption. Specifically, it is necessary to strengthen resource management, improve the efficiency of resource utilization, promote technological innovation, explore alternative resources, strengthen international cooperation, jointly address resource and environmental problems, and formulate and improve relevant policies and regulations to promote the sustainable use of resources and the healthy development of trade.

The implementation of these measures will help to realize the sustainable use and protection of resources and the environment, thus creating better conditions for the sustainable development of human society. The impact of environmental issues on trade is multifaceted and manifested itself mainly in the following ways.

*Trade barriers:* Environmental standards and regulations are often used as the instruments for imposing trade barriers. Some countries may set high environmental requirements to limit the inflow of imported products and protect their domestic markets and the environment. Such practices can lead to trade imbalances, impeding exports and economic growth in developing countries.

*Green trade and demand for ecological products:* With the growing awareness of the need to protect the environment, the demand for green products is also growing. Many countries tend to buy environmentally friendly products, which promotes the development of green trade. Thus, environmental issues can be a driver of trade growth too, while simultaneously providing business opportunities for the development of clean technologies and sustainable industries.

*Environmental taxes and subsidies:* In order to encourage the development of environmental industries or punish environmental pollution, some countries impose environmental taxes on imported products or provide subsidies for environmentally friendly products produced in their own countries. These policies may affect the competitiveness and market share of international trade, causing trade frictions and disputes.

*Environmental cooperation and trade agreements:* Environmental issues often feature prominently in international trade negotiations and agreements. Some countries include environmental protection clauses in trade agreements to ensure that trade activities do not cause serious damage to the environment and promote sustainable development and environmental protection. In addition, international environmental cooperation can as well help reduce cross-border pollution and waste of resources, and promote a virtuous cycle of trade and environmental protection.

The concept of sustainable development requires the coordination of economic, social and environmental development in the use and consumption of resources. This includes ensuring the sustainable use of resources by balancing economic growth, social equity and environmental protection. We can discuss how to achieve this goal by promoting green production, advocating resource conservation and recycling, and strengthening environmental regulation.

While discussing sustainable development and resource conservation, it is necessary to study the following aspects in detail (Shaojian et al., 2024):

*Application of the concept of sustainable development in the use of resources:* The concept of sustainable development requires the coordination of economic, social and environmental development in the use and consumption of resources. This includes ensuring the sustainable use of resources by balancing economic growth, social justice and environmental protection. We can discuss how to achieve this goal by promoting green production, promoting resource conservation and recycling, and strengthening environmental regulation.

*Impact of resource conservation on international trade:* The development of resource conservation policies and regulations can have an important impact on international trade. On the one hand, some countries may restrict the export of certain resources or tighten resource controls to protect their own resources and the ecological environment.

On the other hand, international cooperation in transnational resource management can be strengthened to ensure sustainable use and conservation of resources. We can explore the impact of these policy measures on the scale and structure of trade, and how to achieve sustainable resource use and healthy trade through international cooperation.

*Coordinating sustainable development and trade policies:* To achieve sustainable development and resource conservation goals, it is necessary to develop environmentally friendly trade policies and promote measures such as resource recycling and carbon reduction.

This may involve including environmental provisions in trade agreements, developing policies to promote green trade, and creating green supply chains. We can explore how these measures contribute to a win-win situation for economic growth and resource conservation, and assess their effectiveness and feasibility through case studies or model-specific analysis.

Competition for resources and disputes over resources have profound effects on international political relations. Below are the main consequences of competition for resources and resource disputes on international political relations.

While analyzing the impact of resource competition and resource disputes on international political relations, the first thing to consider is geopolitical ten-



sions. The control and utilization of resources often involve national interests and security, and thus may trigger geopolitical tensions between countries. For example, competition for Marine resources in the South and East China Seas has led to tensions between China, Japan, Vietnam, the Philippines, and others. This tension could evolve into a military confrontation or even trigger a military conflict, with a negative impact on international political stability.

Secondly, the impact of resource competition and disputes on the economy cannot be ignored. Resources are the important support of national economic development, and the acquisition and utilization of resources directly affect the economic prosperity of the country. The scarcity and value of resources will affect the supply and demand relationship in the international market, and then affect the global economic pattern.

Resource disputes can lead to volatility in resource prices, which in turn affects international trade and investment. For instance, sharp fluctuations in the price of oil can have a significant impact on the global economy, especially in countries with a high dependence on oil. Concurrently, trade restrictions and sanctions have a chance of transforming into economic weapons between countries, further increasing economic competition and tensions.

Considering aforementioned, the environmental implications need to be explored. The exploitation and utilization of resources is usually accompanied by environmental damage, such as deforestation, soil erosion and other problems. These environmental issues can lead to international disputes, as the exploitation and use of resources often transcends national borders, causing problems in resource sharing and management.

At the same time, over-exploitation and pollution of resources as well pose a threat to ecosystems and biodiversity, and international cooperation is needed to solve transnational environmental problems, so as to reduce the environmental damage that may be caused by resource disputes.

In addition, energy security issues can exacerbate geopolitical tensions in international political relations. The uneven geographical distribution of energy resources will lead to the high dependence of some countries on key energy resources, which will become the focus of geopolitical competition.

Some countries may use energy as a political tool to exert pressure or impose sanctions on other countries by controlling energy resources. Such an approach could give rise to tensions in international relations and lead to conflict and confrontation, posing a threat to regional and global stability. Finally, the impact of resource competition and disputes on international cooperation and conflict is also highly important.

Resource competition may promote international cooperation, resource sharing and cooperative development among countries, and enhance international interdependence and cooperation. However, resource disputes can also

lead to international conflicts and wars, increasing tensions in international relations and posing a threat to international peace and security. Therefore, we need to deeply analyze the influence mechanism of resource competition and dispute on international cooperation and conflict and explore countermeasures to maintain the stability and harmony of international political relations.

Cooperation and competition among resource countries is a significant and complex aspect of international political and economic relations. Cooperation and competition complement each other, with both win-win cooperation mechanisms and competition arising from resource competition. The following is a detailed interpretation of the characteristics of cooperation and competition among resource countries (Lin, 2016):

*Resource sharing:* The cooperation mechanism can promote the sharing of resources among resource countries, as well as the joint development and use of resources. This sharing can build a relationship of trust between countries, achieve optimal allocation of resources, and promote economic development and social progress.

For example, some countries rich in resources but lacking in technology can cooperate with technologically advanced countries to jointly develop resource projects, achieving the goal of resource sharing and mutually beneficial cooperation.

*Technical cooperation:* Technical cooperation is one of the important forms of cooperation among resource countries. Through technical cooperation, resource countries can jointly develop new resource extraction technologies and environmental protection technologies to improve the efficiency and sustainability of resource development.

Such cooperation not only helps to improve the level of resource extraction and utilization, but also reduces the environmental impact of resource extraction. For example, some developed countries can share advanced environmental protection technologies with resource exploitation countries to jointly promote resource development and environmental protection.

*Trading resources:* Resource countries can meet their respective resource needs and promote economic development through resource trade cooperation. Resource trading can realize the complementary advantages of resources in the international market, improve the efficiency of resource utilization, and promote the development of international trade. This form of cooperation is conducive to the rational allocation of resources and mutually beneficial trade relations, providing impetus for the economic growth of all countries.

*Environmental protection:* Resource countries can jointly protect resources and environment through cooperation mechanisms to reduce the damage to the environment caused by resource exploitation. Resource exploitation is often accompanied by environmental pollution and ecological damage, and cooperation

can promote resource countries to jointly formulate environmental protection policies and standards, adopt environmentally friendly mining methods, and reduce the negative impact of resource exploitation on the environment.

Such cooperation contributes to the sustainable use of resources and sustainable development of the environment.

*Resource competition:* In addition, there is competition for scarce resources among resource countries, which involves the competition for the control of resources and the right to develop them. Due to the scarcity and strategic importance of resources, some countries may resort to various means, including diplomatic mediation, economic cooperation, and even military intervention, to gain control and development rights of resources.

Such competition for resources may lead to regional tensions and instability in international relations, and even trigger geopolitical conflicts and wars. For instance, some regions may become the focus of multinational competition due to their rich resources, leading to regional instability and conflicts.

*Price competition:* There may also be resource price competition among resource countries to compete for market share and price advantage. Resource price fluctuations and competition are often influenced by supply and demand, international politics, and geopolitics.

Some countries may adjust resource prices and offer preferential terms to gain market share and competitive advantages. Such price competition may trigger fluctuations and instability in the international market, affecting the international trade order and economic development.

*Geopolitical competition:* Competition between resource countries can be manifested as geopolitical competition, especially disputes over control of resources. Resource-rich areas are often the focus of contention among multiple countries, and disputes over territory, maritime rights and other issues can be exacerbated by the presence of natural resources.

Such geopolitical competition may lead to regional tensions and tensions in international relations, which need to be alleviated and resolved through diplomatic channels and international cooperation.

*Energy security competition:* Energy resources play a vital role in national security, so there may be competition between resource countries as a result of energy security issues. Some countries may take various measures to ensure the stability of energy supply, including controlling energy supply channels, strengthening energy diplomacy, and implementing energy diversification strategies. This competition for energy security can lead to tension and instability in international relations, especially when energy resources are constrained, or geopolitical situations are volatile.

Resource diplomacy and trade policy is a series of policies and strategies formulated by resource countries in international affairs, aiming at safeguarding and promoting national resource interests, as well as promoting rational development, utilization and trade of resources. It is of great significance for safeguarding national resource interests, promoting resource cooperation and development, and promoting sustainable development of resources. These policies encompass the following:

*Multilateral cooperation:* Participation in international organizations and multilateral cooperation mechanisms is an important way for resource countries to realize resource diplomacy and trade policies. By participating in these mechanisms, they can establish cooperative relations with other countries, jointly promote international rules and standards in the field of resources, fostering cooperation and development in resource development and trade. Such multilateral cooperation helps resource countries exert greater influence in the international arena and improve the protection and realization efficiency of their resource interests.

*Bilateral cooperation:* Signing bilateral agreements and cooperation agreements with other countries is one of the important ways for resource countries to carry out resource diplomacy and trade policies. Through bilateral cooperation with other countries, resource countries can establish mutually beneficial and win-win cooperative relations in resource development, technical cooperation, and resource trade. Such bilateral cooperation helps resource countries strengthen resource cooperation and exchanges in specific fields or regions, maximize and optimize resource benefits.

*Resource diplomacy:* Through diplomatic means, resource countries can safeguard national resource sovereignty and interests, deal with resource disputes, and promote resource cooperation and exchange. Resource diplomacy is an important way for resource countries to safeguard their own resource interests and solve resource problems in international affairs. It is necessary to maximize and protect resource interests through diplomatic channels and international cooperation.

*Resource security:* Formulating resource security policy is an important measure to ensure the stability and security of resource supply in resource countries. Resource countries need to take various measures, including diversifying energy supply channels, strengthening energy diplomacy, and ensuring the security of maritime transport channels, so as to ensure the reliability and stability of national resource supply and safeguard national economic development and national security.

*Trade policy:* Through the formulation of trade policies, resource countries can promote the liberalization and facilitation of resource trade, and promote the international trade and circulation of resources. Resource countries need to reduce trade barriers, promote trade facilitation and improve trade efficiency through trade policies, so as to optimize and develop resource trade.

*Sustainable development:* Adopting sustainable development policies is the key for resource countries to maximize resource benefits and achieve sustainable development. Resource countries should pay attention to environmental protection, ecological balance and sustainable utilization in the process of resource development and utilization, so as to ensure the long-term stable supply of resources and the sustainability of resources and environment.

*Technical cooperation:* Through technical cooperation policies, resource countries can promote the exchange and cooperation of resource technologies and improve the both the technical level and the efficiency of resource development. Resource countries need to strengthen technical cooperation with other countries to jointly develop and apply advanced resource development technology and environmental protection technology, to enhance the efficiency and sustainability of resource development and realize the maximization of resource benefits and win-win situation.

The impact of resource extraction on local communities is a complex and diverse issue, with both positive and potentially negative impacts (Chong, 2023).

Among the positive impacts, it is worth mentioning, first, that resource extraction brings the spread of technology and management experience to local communities. In the process of resource extraction, advanced technology and management experience are often introduced, which improves the skill level and management capacity of local residents. The dissemination of this technology and management experience not only helps to improve the employment competitiveness of residents, but also promotes the development of related industries, providing strong support for the economic transformation and upgrading of the community.

Second, resource extraction projects often lead to improvements in infrastructure and public services. In order to support resource exploitation activities, the government and enterprises usually invest a lot of money in infrastructure construction, such as the construction of roads, bridges, water and power supply facilities, so as to improve the infrastructure conditions of the community and enhance the convenience and comfort of residents.

Concurrently, resource extraction projects increase the demand for public services such as education, health care and culture, thus promoting the development of related fields and improving the social welfare level of communities.

In addition, resource extraction can promote the diversification of local industries. Driven by resource exploitation projects, it will attract the development of a large number of related industries and supporting services, thus achieving the diversified and coordinated development of the industry. This is not only conducive to improving the economic resilience and resilience of communities, but also provides residents with more opportunities for employment and entrepreneurship, and promotes social stability and harmonious development.

Finally, resource exploitation may bring a certain degree of environmental protection awareness and ecological civilization construction to local communities. In the process of resource exploitation, enterprises and governments often need to comply with relevant environmental regulations and policies, take various measures to reduce the impact on the environment, protect the ecological environment and biodiversity.

The cultivation of environmental awareness and the promotion of ecological civilization construction help to improve the environmental protection awareness and behavioral norms of local residents and promote the sustainable development and ecological security of the community.

On the negative side, the problems caused by resource exploitation are not limited to environmental damage and social conflict, but involve deeper social, economic and cultural challenges. First, resource exploitation may lead to the destruction of ecosystems and the loss of biodiversity, which has a long-term impact on the local ecological balance and ecosystem function. This, in its turn, may lead to the impossibility of restoration of the ecological environment or a long recovery cycle (Zhuangzhuang et al., 2023).

Secondly, resource exploitation is often accompanied by large-scale land use and development, which may lead to overexploitation of land resources and land use conflicts, affecting agricultural production, food security and sustainable development of rural communities. In addition, resource extraction can have health impacts on local populations, such as air pollution, water pollution and soil pollution, which increase the risk of disease and have adverse public health and health impacts.

At the same time, resource exploitation may also exacerbate inequalities in local societies, widening the gap between resource rich and poor, and exacerbating social polarization and social injustice.

In dealing with these negative impacts, it is necessary to take into account the interests of all parties and adopt a series of comprehensive measures. First of all, it is necessary to establish a sound environmental protection and ecological restoration mechanism, strengthen the supervision and management of resource exploitation activities, and ensure that environmental risks in the process of resource exploitation are effectively controlled and managed.

Secondly, it is necessary to promote resource mining enterprises and local governments to strengthen their sense of social responsibility, actively fulfill their corporate social responsibilities, participate in the development of local communities, and invest funds and resources in community construction and social welfare projects to improve residents' living standards and well-being.

At the same time, it is also necessary to establish a sound social dialogue and participation mechanism to promote communication and consultation between resource mining enterprises, the government, and local residents, and form

a win-win cooperative relationship, minimize the negative impact of resource mining on local communities, and realize the positive interaction between resource mining and community sustainable development.

**Environmental damage:** Resource exploitation may lead to environmental pollution, soil erosion, ecological damage, and other problems, affecting the stability of the local ecological environment and ecosystem.

In international trade, social equity and sustainable development are crucial issues. First, the lack of social equity may lead to uneven economic development brought about by resource extraction. For example, resource-rich areas may be economically prosperous, but at the same time environmental protection and social justice in resource-poor areas may be neglected.

This inequality can affect international trade relations, as economic activities related to resource extraction can lead to further widening of the wealth gap between regions, thus affecting the fairness and sustainability of trade (Ran & Hongjun, 2024).

Thus, through the development of inclusive trade policies and enhanced international cooperation, equitable distribution and sustainable use of resources can be promoted to achieve coordinated economic, social and environmental development.

On the other hand, sustainable development has an important impact on international trade. The paper may emphasize the importance of the sustainable use of natural resources for trade. Excessive exploitation and consumption of resources may cause severe damage to the environment, thereby affecting the sustainability and stability of trade activities. Therefore, by exploring the sustainable development and utilization of resources, we can analyze how to promote sustainable development in international trade and achieve the balance between economic growth and environmental protection.

To sum up, social equity and sustainable development should be promoted in tandem, through the formulation of trade policies and the strengthening of international cooperation, in order to promote the fair distribution and sustainable use of resources, so as to achieve the coordinated development of economy, society and environment. This includes developing inclusive trade policies, strengthening transnational cooperation mechanisms, promoting resource extraction and trade activities consistent with the principles of sustainable development, and building a more just and sustainable foundation for future international trade relations.

Natural resources not only face challenges in international trade, but also contain many opportunities. First, as demand for clean energy increases, trade in natural resources such as solar and wind power is expected to grow.

Secondly, countries with rich natural resources can obtain economic development opportunities by exporting resources. Technological advances are also driving resource development, such as more sophisticated mining techniques that can improve the efficiency of resource extraction and thus facilitate trade. In addition, the increased demand for green buildings has also boosted the trade of natural resources such as timber, bringing development opportunities for related industries.

Global population growth has led to rising demand for natural resources such as agricultural products, providing a broader market for agricultural trade. Concurrently, some rare natural resources have high trade value and become valuable resources in international trade. Additionally, the beauty of natural landscape also attracts a vast number of tourists, promoting the development of tourism resources, and driving the growth of related trade (Ji, 2023).

For instance, some countries with abundant solar resources can export solar panels or related technology and achieve economic growth. Some countries have abundant forest resources to meet the global demand for wood products. These opportunities provide broad prospects for the development of natural resources in international trade, and at the same time provide new impetus for the sustained economic growth of various countries.

Natural resources face many challenges in international trade, including resource competition, differences in environmental regulations, resource dependence, geopolitical factors, technical barriers, resource theft and illegal trade, market volatility, and transportation costs. Increased competition among countries for scarce resources leads to price volatility and supply instability, while differences in environmental standards and regulations across countries also affect trade in resource products.

In addition, some countries are overly dependent on one natural resource and their economies are vulnerable to fluctuations in resource prices, while political instability in resource-rich regions can affect resource extraction and trade. Technical barriers, such as green trade barriers, increase the technical requirements for resource products and make trade more difficult, while resource exploitation and illegal trade undermine the sustainable use of resources and harm legitimate trade. In addition, the price of natural resources fluctuates greatly under the influence of market supply and demand, and the transportation cost of resources will also have an impact on trade benefits.

For example, oil resources often face the challenge of price fluctuation and supply instability in international trade; many developing countries are overly dependent on mineral resources and their economic development is vulnerable to resource price fluctuations. These challenges require the joint efforts of the international community to address, strengthen cooperation and coordination, and promote fair trade and sustainable development.



Based on the challenges faced by global natural resources utilization and consumption and the needs of China's economic restructuring, this study puts forward the following recommendations (Chong, 2023):

1. Strengthening environmental protection and ecological progress: it is suggested to strengthen environmental protection and maintain the sustainability of natural resources and ecological environment, as well as formulate stricter laws and regulations on environmental protection, enhance environmental monitoring and governance capabilities, and promote the construction of ecological civilization, so as to achieve the coordinated development of economic growth and ecological environmental protection.

2. Promoting green development and circular economy: it is suggested to accelerate the promotion of green development, change the mode of economic development, optimize the industrial structure, promote the innovation and application of green technology, and promote the recycling of resources and waste reduction. Through the development of circular economy, to achieve the economical use of resources and sustainable development, reduce the excessive exploitation and consumption of natural resources.

3. Strengthening energy and water resources management: it is suggested to strengthen the management of energy and water resources, improve the efficiency of resource utilization and reduce the intensity of resource consumption. By promoting energy-saving and emission-reduction technologies and the use of clean energy, we should reduce energy consumption and pollution emissions, protect water resources, improve the efficiency of water resources utilization, and promote sustainable economic development.

4. Developing ecological industries and green finance: it is suggested to speed up the development of ecological industries, cultivate new drivers of green economy, and promote green consumption and production methods. At the same time, we will develop green finance, guide funds to invest in environmental protection and green projects, and support ecological protection and sustainable development.

5. Strengthening international cooperation and exchanges: it is proposed that China actively participate in international cooperation and exchanges to jointly cope with global environmental and resource challenges. Strengthen cooperation with other countries and regions, share experience and technology, jointly promote global environmental governance and promote global green development. We should advocate the vision of building a community with a shared future for mankind, jointly address global environmental and resource challenges, and share the fruits of green development.

The development of international trade is closely related to the utilization and consumption of natural resources, forming a mutually dependent relationship. With the continuous expansion of the scale of international trade and the adjust-

ment of trade structure, the demand for natural resources of various countries is constantly changing. To meet the needs of international trade, some countries may increase the exploitation of natural resources, resulting in their excessive consumption and environmental damage.

However, international trade also provides countries with access to new technologies that enable improvements in the efficiency of resource utilization, helping to promote sustainable use of resources and reduce waste. For instance, energy cooperation can allow multiple countries to jointly invest in and develop new energy resources, such as transnational oil and gas projects, to ensure the stability and sustainability of energy supplies.

Water management cooperation can help countries that share water resources such as rivers and lakes develop water management plans to avoid excessive consumption and conflicts. At the same time, cooperation in the area of forest conservation can help countries work together to prevent deforestation, protect forest resources, and ensure sustainable trade in wood and related products.

Mineral resource development cooperation enables joint exploration and extraction of mineral resources, improving efficiency and reducing environmental impact. Others, such as clean energy technology cooperation, resource recovery and recycling cooperation, and climate change cooperation, are international cooperation to jointly address the impact of natural resource use and consumption on trade in order to promote sustainable development and protect the environment.

The International Energy Agency (IEA) promotes cooperation among member countries on energy policy and technology, while several countries have signed multilateral environmental agreements to jointly protect biodiversity and forest resources. Such cooperation provides important mechanisms for addressing the impact of natural resources use and consumption on international trade. Examples of such cooperation include the following (General Administration of Customs of the People's Republic of China. Monthly Report of Customs Statistics, 2023):

(1) Cooperation between China and Madagascar: Tianxin will add more international trade channels for Madagascar's agricultural development, give full play to the potential of local agricultural labor and natural resources, and help agricultural development and improve farmers' living standards. At the same time, Tian Xinli will open up a new international trade business line, expand agricultural sales channels, let China's rural revitalization products go abroad, and empower "rural revitalization" agricultural development with the "Belt and Road" cooperation resources.

(2) China-Laos Railway: The China-Laos Railway is an electrified railway connecting Kunming, Yunnan Province, China, and Vientiane, Laos, with a total

length of 1,035 kilometers. Officially opened on December 3, 2021, the railway is a major project for the docking of China's Belt and Road Initiative and Laos' strategy of "transforming a land-locked country into a land-linked country". The opening of the China-Laos railway will promote trade between China and Southeast Asian countries and promote regional economic development, while also helping to reduce environmental damage and waste of resources.

These cases fully demonstrate the importance and effectiveness of international cooperation in addressing the impact of natural resource use and consumption on international trade. Through cooperation, countries can jointly develop policies and measures to promote sustainable development, protect natural resources, and promote the healthy development of international trade.

As an important trading country in the world, China has accumulated valuable experience and practices in addressing the impact of the use and consumption of natural resources on international trade. First, China actively participates in and promotes the formulation of new multilateral trade rules, strives for its own say in rule-making, and strictly abides by and upholds multilateral trade rules.

Secondly, China attaches great importance to the protection of strategic resources and takes safeguarding national security and national interests as the bottom line in the formulation of natural resource trade policies. In addition, the Chinese government actively encourages and supports the development of green industries, provides corresponding policy and financial support, and establishes a green trade certification system to encourage enterprises to take environmental actions and continuously improve the environmental protection standards of their products. These practices provide useful reference for other countries, help promote sustainable development and environmental protection on a global scale, and at the same time make positive contributions to the healthy development of international trade.

## Conclusions

The utilization and consumption of natural resources have a wide and far-reaching impact on international trade, which cannot be ignored. Countries must be fully aware of the critical position of natural resources in international trade and take active measures to protect and manage them. To achieve this objective, efforts should be made to promote the upgrading of industrial structure and technological innovation, strengthen international cooperation and exchanges, and jointly deal with resource shortage and environmental problems in order to achieve sustainable development of international trade.

Looking to the future, the utilization and consumption of natural resources will continue to have an important impact on international trade. The achievement

of balance between economic development and environmental sustainability requires countries to work together to foster partnerships focused on enhancing co-operation.

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