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Virtual Water Trade

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Introduction

Water is essential for life and for all economic activity. However, water resources are unevenly distributed around the world. Some countries have abundant water resources, while others are water-scarce. Virtual water trade refers to the hidden or embedded water in the products that are traded between regions or countries. It is a concept that quantifies the amount of freshwater used in the production of goods and services, and this water "moves" with the traded products. It allows countries to import water-intensive goods and services from countries with abundant water resources. This can help to reduce water consumption in water-scarce countries and improve water security. Virtual water trade can occur between countries with different water resources, climates, and agricultural practices.

Key terms related to virtual water trade

1. **Virtual Water**: Virtual water is the amount of water required to produce a specific product. It includes both the direct water used in the production process and the indirect water used in the entire supply chain, including the production of raw materials and transportation.
2. **Water-Scarce Regions**: Virtual water trade is particularly relevant for water-scarce regions that rely on imports of water-intensive products to meet their needs without depleting their own water resources.
3. **Water Footprint**: It's related to the concept of a "water footprint," which is the total volume of freshwater used to produce a product. The water footprint includes green water (rainwater), blue water (irrigation and surface water), and grey water (polluted water).

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4. **Global Trade**: Many countries import and export virtual water through the trade of agricultural products, industrial goods, and other commodities. For example, a country that imports a lot of wheat is effectively importing the water used to grow that wheat.
5. **Sustainability**: Virtual water trade is a tool used to assess the sustainability of water use and to understand how international trade can affect water resources globally. It allows policymakers to make informed decisions about water use, trade policies, and resource management.
6. **Efficiency and Water Stress**: Virtual water trade can be a way to improve water use efficiency by importing products that have a lower water footprint than producing them locally. It can also help alleviate water stress in regions where water resources are limited.
7. **Environmental Impact**: Analyzing virtual water trade can provide insights into the environmental impact of different consumption patterns and trade relationships.

Virtual water trade is a crucial concept in understanding how water resources are interconnected with global trade and sustainability. It quantifies the hidden water, or virtual water, embedded in products exchanged between regions and countries. This concept helps water-scarce regions manage their water resources by importing water-intensive products without depleting their own supplies. The notion of a "water footprint" encompasses all forms of water used in the production process, including green, blue, and grey water. As nations engage in global trade, they effectively import and export virtual water, and this trade has significant implications for water management and resource sustainability. Virtual water trade offers a means to enhance water use efficiency, mitigate water stress, and assess the environmental impact of consumption patterns and trade relationships on a global scale.

Milestones in the development of virtual water trade

- **1993:** Professor Tony Allan coins the term "virtual water" in his book "Water in the Middle East: A Geographical Perspective".
- **1998:** The first international conference on virtual water trade is held in Delft, Netherlands.
- **2002:** The Water Footprint Network was founded to promote awareness of virtual water trade and to develop tools for measuring virtual water flows.

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- **2008:** Professor Tony Allan receives the Stockholm Water Prize for his work on virtual water trade.
- **2012:** The United Nations Food and Agriculture Organization (FAO) publishes a report on virtual water trade, which provides a comprehensive overview of the concept and its implications for water security.

Virtual water trade has grown significantly in recent decades. In 2008, the total global virtual water trade was estimated to be 1,600 billion cubic meters yearly. This is more than the annual flow of all the world's rivers combined. The main virtual water exporters are agricultural countries with abundant water resources, such as the United States, India, China, and Brazil. The main importers of virtual water are industrial countries with water-scarce economies, such as Japan, Saudi Arabia, and Mexico.

Status of virtual water trade in India

India is a major importer of virtual water. India's trade balance has turned positive in recent years (export > import). The trade balance (export-import) was negative until 1990 and turned positive since 1990. In terms of quantity, the net virtual water export was 1.0 billion cubic meters in 1960–70. Then it has become around 32 billion cubic meters in the year 2018, equivalent to about 10 million population water demand. In, 2021, India imported an estimated 65 billion cubic meters of virtual water, mainly in the form of food and fodder. This is equivalent to about 18% of India's annual renewable water resources. India's virtual water imports have been relatively stable in recent years. This is despite the country's growing population and demand for food. This is likely due to a number of factors, including:

- Increased water efficiency in agriculture.
- Increased crop production on irrigated land.
- Increased imports of low-water-intensive food products.

Regulation of virtual water trade in India

India does not have any specific laws or regulations that govern virtual water trade. However, there are a number of indirect measures that the government takes to manage virtual water imports. One important measure is the import tariff on agricultural products. The government uses import tariffs to protect domestic agriculture and to discourage the import of water-intensive goods. Another important measure is the promotion of water-efficient

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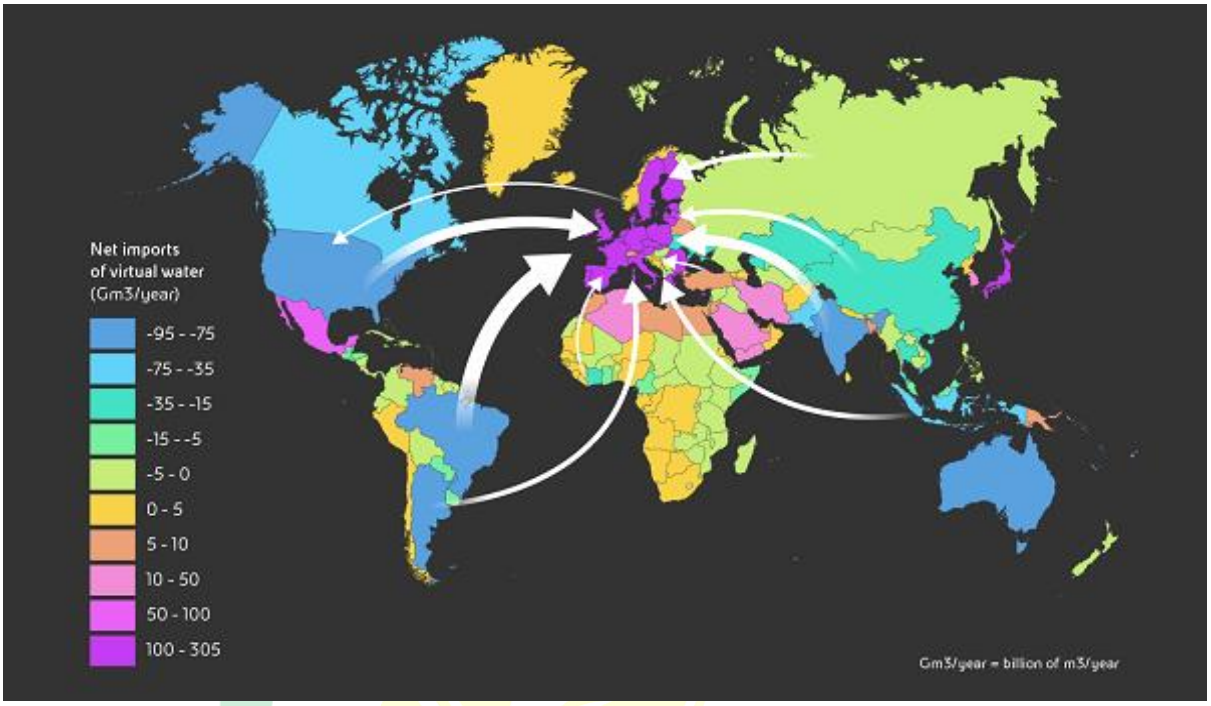
agriculture. The government provides subsidies and technical assistance to farmers to help them reduce their water consumption.



Source: IAS Express

Current steps to manage virtual water trade in India in 2023

The Indian government is currently taking a number of steps to manage virtual water trade and to improve water security. These steps include:

- Developing a national water policy that takes into account the implications of virtual water trade.
- Investing in water-efficient irrigation technologies.
- Promoting the production of high-value crops that require less water.
- Reducing food waste.
- Imposing a virtual water tax on imported goods.
- Providing incentives to exporters of low-water-intensive goods.
- Developing a virtual water accounting system to track the flow of virtual water into and out of the country.

The Indian government is also working with other countries to develop international rules and norms for virtual water trade. This is important because virtual water trade is a global issue that requires global solutions. One of the main challenges to managing virtual water trade in

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India is the lack of data and information on virtual water flows. The government needs better data to understand the scale and impact of virtual water imports. Another challenge is the resistance of some farmers to adopt water-efficient agricultural practices. Farmers may be reluctant to change their practices if they believe it will reduce their yields. Finally, the Indian government will need to cooperate with other countries to develop international rules and norms for virtual water trade. This will be a complex process, but it is essential if virtual water trade is to be managed in a sustainable way.

Benefits of virtual water trade

Virtual water trade can have a number of benefits for both exporting and importing countries. For exporting countries, virtual water trade can help to:

- Generate income and create jobs.
- Reduce water consumption in water-stressed areas.
- Improve water security.

For importing countries, virtual water trade can help to:

- Reduce water consumption and improve water security.
- Gain access to food and other goods and services that would be difficult or impossible to produce domestically.

Challenges of virtual water trade

- The risk of water pollution and environmental damage in exporting countries.
- The potential for food insecurity in importing countries if there are disruptions to the global food supply.
- The need for better data and information on virtual water flows.

Conclusion

Thus, virtual water trade is a complex issue with both benefits and challenges. It has the potential to help countries to improve their water security and to meet their growing demand for food and other goods and services. In the landscape of global trade and water resource management, virtual water trade has emerged as a significant paradigm, with milestone years marking its recognition and understanding. As of 2023, India finds itself both a participant and a stakeholder in this dynamic arena. With a growing population and increasing demands on water resources, the status of virtual water trade in India has become a pivotal consideration. The regulation of this trade, while essential, is a complex endeavor, requiring thoughtful

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policies and strategies. However, India has taken current steps to manage virtual water trade, recognizing its potential benefits such as improved water use efficiency and alleviating water stress. Yet, it is not without its challenges, from the impact on domestic agricultural practices to questions of equitable distribution. As India navigates the waters of virtual water trade, it faces both opportunities and dilemmas, ultimately highlighting the critical importance of balancing economic growth with sustainable water resource management in the years to come.