



Research Article

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International Cooperation on Water Security in the Mekong River and Vietnam's Countermeasures

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Abstract

Water security is one of the significant challenges that many countries worldwide face. In the context of population growth, climate change, and environmental pollution today, the issue of water security is more urgent than ever for countries. In recent years, water security for countries in the Mekong River Basin has been facing great challenges, potentially leading to disputes and conflicts between the countries involved. From a regional perspective, the article clarifies the relationship between the lower Mekong countries in protecting water security and especially Vietnam's role in that relationship to clearly see the achievements that countries have achieved, as well as the challenges posed in the relationship on water security. From there, some policy suggestions are given to promote effective relations between countries in stabilizing the water security of the Mekong River, especially for Vietnam, a country located at the bottom of the Mekong River.

Keywords: Cooperation, Water security, Mekong sub-region, Vietnam

1. Introduction

Water is an essential resource, especially important for the sustainable development of each country. This is also a finite resource. Therefore, the issue of water security is the top concern of countries around the world. For water sources from transnational rivers, ensuring security is highly dependent on international cooperation between countries involved in the exploitation and use of this water source. The Mekong River is one of the 10 most significant rivers in the world, with a length of 4,880km, a basin area of 795,000 km², an total annual average flow of approximately 475 billion m³, an average annual flow of 15,000m³/s. The upstream of the Mekong River crosses China and Myanmar (accounting for 24% of the basin area); downstream areas of Laos, Thailand, Cambodia, and Vietnam (accounting for 76% of the basin area). The Mekong River has a rich resource and biodiversity, ranking second in the world (just behind the Mississippi River area), which is very convenient for economic development, especially irrigation, aquaculture, and hydropower development. However, the current flow of the Mekong River is being regulated and controlled by the construction of hydroelectric dams on the mainstream and tributaries (Thang, L,V, Thanh, N,H, Tuan, N,V., 2019). This river from time immemorial has created a large, fertile plain in mainland Southeast Asia. This river from time immemorial has made a large, fertile plain in mainland Southeast Asia. The Mekong Delta region has contributed to solving 50% of people's occupations, 60% of the region's main diet, and global exports, accounting for 20% of the world's rice production. In addition, the Mekong River provides more than 70% of the water supply for irrigation downstream. With the bounties of nature, the Mekong River is famous for its richest aquaculture, providing protein for the region and a source of livelihood for millions of residents through which it passes. Mekong river water is a valuable resource, currently being exploited and managed by 6 countries. Each country has different problems and interests, leading to instability in water security on this river, affecting the security of the lower Mekong region. Two upstream countries, China and Laos, are making the most of the exploitation of hydroelectricity for economic development; The country in the middle is Thailand to fully exploits irrigation to serve the delta in the northeast; Cambodia wants to maintain a large seafood resource in Tonle Sap. For downstream water, Vietnam is looking for solutions to prevent saltwater intrusion from becoming more and more serious, affecting food and seafood in the Mekong Delta (Thang, L,V, Thanh, N,H, Tuan, N,V., 2019). It can be seen that any adjustment in the exploitation and management of any country through which the river passes will affect the national security of the remaining countries. As a downstream country, Vietnam is facing the risk of having to bear many unforeseen impacts from development programs and projects on the mainstream upstream. With the prospect of development scenarios in neighboring countries, Vietnam urgently needs solutions to cope and minimize the risk of becoming a victim of calculations and arrangements contrary to the spirit of development cooperation development in the basin.

2. Literature Review

In recent years, water security in the Mekong River region is facing great challenges, potentially leading to disputes and conflicts between the countries involved. Some articles have studied from the perspective of international relations, water security can be explained through the main theoretical lines such as realism, liberalism, and theories of international relations (Nguyen Chung Thuy, 2018). Some researchers who follow the Copenhagen School of Security have emphasized and explained the process of securitization of water resources in the Mekong River from different angles (Duc Tam, 2016). When it comes to the challenges of water security in the Mekong River, researchers agree that countries in the Mekong River region (especially downstream countries) in recent years have been in a state of tension. serious water resources. Experts warn that the Mekong sub-region will face many risks of water insecurity in the coming years. Any changes related to flow, discharge, and water temperature in the Mekong River threaten the ecosystem in this area (Schaaf, C & Fifield, H., 1963). It

is also worrisome that countries along the Mekong region are implementing a policy of increasing the construction of hydropower dams in the mainstream to meet the growing energy demand of the region (Ministry of Natural Resources and Environment, 2021). In addition, some researchers also mentioned other urgent challenges, such as population pressure, economic growth, policies on water resource management, climate change, etc small to the water security of the Mekong River (Rasanen, A., 2017). From the challenges, many authors have proposed measures to stabilize water security in the Mekong River, especially in the downstream area. Some authors have made some policy suggestions on international cooperation to promote equitable, effective, and sustainable use of water resources in the Mekong region in terms of legal aspects, regional institutions, and policy coordination among countries (Thu, T,M & Ngan, V,T,T., 2020). For Vietnam, a downstream country where the Mekong River empties into the sea, fluctuations in the river's water source have had a profound impact on the socio-economic lives of millions of residents in the region. Mekong Delta region. The serious effects of climate change and the overexploitation of the river upstream have been warned by researchers and suggested measures to overcome.

3. Theory of Water Security and Current Situation of Water Security in the Greater Mekong Sub-Region

The term water security first appeared in the early 1990s in the context of increasing water tension in the Middle East region attention of many politicians, as well as scientists (Long,C, 2016). In 2013, the United Nations proposed a definition of water security as the basis for discussions on this issue in the "United Nations Water Program" (UN-water) system. Accordingly, water security is "The ability of people to have safe and sustainable access to an adequate quantity of water of acceptable quality for life assurance, socio-economic development, and protection of water resources. against water pollution and water-related disasters as well as to protect ecosystems in an environment of peace and political stability" (Ministry of Natural Resources and Environment, 2021). According to this definition, water security is emphasized on factors such as "safety", "development", "sustainability", "peace" and "stability".

Basically, water security is about the quantity and quality of water for humans and the environment at a level that is safe for life, daily life and production. Causes of unsafety of water sources have many causes: they can come from nature such as climate change, the hydrological cycle causing floods or droughts; There can also be human-caused problems such as overexploitation and use of water resources, polluting production, changes in water flow and flow, etc., all of which affect the quality and security of water resources. Therefore, to ensure water security according to the United Nations, it is necessary to have a combination of factors: Good governance: ensuring institutional, and legal framework, and infrastructure; Cross-border cooperation: Coordinating actions to exploit, protect and respect the different interests of countries sharing the same water source; Finance: Complement and combine financial sources from the private and public sectors; Peace and political stability. From the above factors, it can be seen that water security is a topic related to many fields; Therefore, when studying water security, it can be approached from many different angles such as hydrological environment, international law, economy, history, security - politics... (Ribka,M & Perwita,A,B., 2017).

In this article, we approach water security from the perspective of the relationship between countries in the Mekong Sub-region in conserving and protecting water sources and jointly exploiting them effectively.

The Mekong Sub-region includes 5 countries: Cambodia, Laos, Myanmar, Thailand, and Vietnam. This area has a territorial area: of 1,937,000 km², about 240 million people, with a lot of potential for development and cooperation. This is also an area of dynamic economic growth in recent years. In 2015, the average growth rate of this region reached 6.1%, while the average growth of the world was 2.5% (Middleton, C & Allouche, J., 2016). In terms of geographical location, this is a hinge area, a crossroads between the three regions of Northeast Asia, Southeast Asia, and South Asia.

It can be said that the Mekong Subregion is among the most dynamic and developed regions of Asia in the next century. Especially, in the current international and regional context, when the competition for influence among major countries in Southeast Asia is taking place fiercely, the Mekong Sub-region is becoming more and more important in the region. Southeast Asia, as well as Asia.

In terms of cooperation potential, due to its wealth of natural and social resources, the Mekong Subregion is an area with great potential for international cooperation in many fields.

First of all, in terms of natural potential, it can be said that besides the wealth of land and mineral resources, this is a very rich area with potential for hydropower and fisheries. With the advantage of the Mekong River, the total annual volume of water flowing into the South China Sea is about 475 billion m³ and is ranked 8th in the world in terms of water volume. Therefore, the hydropower reserves of the Mekong River are abundant, with a capacity of 30,000 MW. In addition to hydropower potential, the potential for fishery reserves is also very large. According to research works, this is the "home" of more than 1,300 aquatic species (with about 240 species of fish, in which, the large catfish can be up to 3 meters long and weigh 300kg (scientific name is *Pagasianodon gisgas*); fish; The Irrawaddy pig, which can be 2.5m long and weighs 150kg, was listed as endangered by the World Union for Conservation of Nature (IUCN) in 2003). Therefore, every year, the Mekong River provides seafood production of more than 1.5 million tons (Phuong, H, 2017).

For Vietnam, the Mekong Delta region is located at the end of the Mekong River where the water divides into large tributaries into the East Sea. This delta is inherently rich and survives thanks to the continuous accumulation of alluvium and the abundant nutrients of the Mekong mother river, especially in the annual flood season. The mixed activities of rivers and seas have created a large plain, with an average elevation of only about 1.5m above sea level with ranges of sweet alluvium alternating between acid and saline soils. As a result, for decades, the Mekong Delta has become the largest rice bowl in Vietnam, accounting for not only two-thirds of Vietnam's agricultural exports but also a place where civilization is formed and nurtured. River - unique garden. In fact, the Mekong Delta with abundant biological resources has been the place to feed nearly 20 million people in the region, creating a large number of agricultural products supplied to many regions in the region and around the world (Mukand S. Babel, and Shahriar M. Wahid, 2009). Not only famous for its role in ensuring food security, but the Mekong Delta was also soon famous for its ecological value with many unique populations of organisms and many endemic species such as red-crowned cranes, oil pangasius, etc other... At the bottom of the Mekong River, Vietnam's Mekong Delta has contributed 27% of the GDP, 90% of rice exports, and 60% of seafood exports. Recently, the change in water source has made surface water of the Mekong Delta become scarce, and the arable land area is increasingly narrowed and less fertile. The increasing food depletion over time makes the Mekong Delta may no longer the rice field of Vietnam and seriously affects the food security of Vietnam. Currently, the amount of alluvium deposited in hydroelectric dams is no longer enough to supply this area. Hydroelectric dams in China retain 30% of the sediment, and dams built on the mainstream of Laos and Cambodia will retain about 5%; At least 50% of arable land in the Mekong Delta is affected by the loss of silt and nutrients from hydropower projects tributaries (Thang, L,V, Thanh, N,H, Tuan, N,V., 2019).

4. Causes of Insecurity of River Water Sources in the Lower Mekong River

4.1 The first is due to differences in the sharing of national interests

Each country in the Mekong River Basin has its own problems with water security: Laos needs to develop hydropower to solve energy problems; Thailand needs water to the northeastern plains; Cambodia needs to ensure biodiversity in Tonle Sap; The Mekong River's water source is very important to Vietnam. Because each country has the right to decide the use of the river through its territory, leading governments of countries to unilaterally implement plans and projects without

taking into account the common interests of the river and the interests of other countries, countries also cannot agree on a policy or guiding principle for ensuring the water security of the Mekong river. Currently, in the upper and middle reaches of the Mekong River, China, and Laos have been building many hydropower dams on the mainstream despite the objections of downstream countries and without taking into account the sustainable development of the river. As an upstream country, possessing nearly half of the Mekong's 4,909km total length, China has an absolute advantage in determining the river's destiny and controlling its access to sustainable water. downstream countries. In the thirst for energy to serve industrialization and maintain economic growth, the hydroelectric resources on 2,200km of Lancang River have been fully exploited by Beijing. Thus, only when there is a reasonable division of interests between upstream and downstream countries through binding agreements, can the security of Mekong water resources be ensured.

Second, the exploitation and use of water resources of the Mekong River, especially the construction and operation of hydroelectric dams, is a major threat to the river's water security. And yet, the fact that dams upstream (whether of any river), if released in the right... flood season, or stored in the right dry season, will be a terrible disaster for the downstream region. All countries simultaneously develop hydroelectricity to meet the increased energy demand, serve economic development, and create a hydroelectric race in the sub-region.

China is the country with the largest upstream hydropower potential in the world. Since 1986, the Upstream Hydropower Development Program has outlined a plan to build 15 large hydropower dams on the Mainstream, of which half have been built and put into operation. The total amount of water stored in the reservoirs of 15 dams is about 55 billion m³; The total capacity of China's hydropower plants under this program is about 24 GW. In the lower Mekong, countries are also implementing many projects. Which, there are 10 hydropower dam projects on the mainstream flowing through Laos - Thailand and 2 projects in Cambodia. Among the downstream countries, Laos has the largest hydropower potential and the largest number of hydropower projects. Laos currently has 16 dams on tributaries of the Mekong, of which nine are under construction; Another 23 dams are under construction, of which five are on the mainstream Mekong (especially the Don Sahong and Xyaburi dams). The largest hydroelectric dam in Laos is Xyaburi, 32m high, with a capacity of 1260MW, with a cost of 3.5 billion USD. (Evelyn. Goh, 2004). Vietnam also has hydropower projects on the Mekong tributaries (Sesan, Srepok, and Sekong rivers (3S)). The construction of hydroelectric dams on the Mekong mainstream from China, Laos, Thailand, and Myanmar has caused a disturbance. concerns of countries in the sub-region, especially when the Tieu Loan dam with a height of 292m and a capacity of 4200MW has been put into operation (in 2009). In order to fully store this 15 billion m³ dam, it will be necessary to use half of the water flow in the upper Mekong for 5-10 consecutive years. The construction of dams by China and Laos upstream of the Mekong tributaries is probably purely for the pure purpose of exploiting water resources for their own country. However, if their existing advantages are used to exert some political or economic pressure on downstream countries, that is very easy. If there is a shortage of water for agricultural production, a rice powerhouse like Thailand or Vietnam will not find a replacement water source for the Mekong River, and the consequences will be incalculable... It is estimated that each year Thailand and Vietnam produce produces over 20 million tons of rice and other cereal products, 90% of this food comes from the Mekong Delta. It supplies the world through exports. If this supply is depleted, the problem of hunger will affect dozens of countries that are dependent on food supplies from the Mekong Delta. It can be said that the issue of water security in the Mekong River is an issue of regional and international significance, not just the story of Vietnam, Thailand, and Laos... the Lao government built a hydroelectric dam with a capacity of 1,285 MW has been proposed to start construction right in Xayaburi, seriously affecting the security of Mekong river water. The seduction of economic growth and development has shifted the state's outlook towards modern industry and energy as the export commodity as if ignoring that the region is chained to the rice and fish from the river they share (Ribka, M & Perwita, A.P., 2017).

In addition to building hydroelectric dams, countries also regulate the flow of the Mekong River

to serve their own interests. With the advantage of being upstream of the Mekong River, water is also used by some countries as a "weapon" in international relations. In recent years, the Mekong Delta of Vietnam has always experienced historical droughts. The situation is more severe when saltwater penetrates deep into the mainland, causing serious harm to agricultural production, fisheries, and ecological environment, deforming the living environment, and threatening the livelihoods of nearly 20 million people in the Mekong Delta. The cause, in addition to climate change, is mainly due to the accumulation of water by dams upstream. To be frank, it is the countries located upstream of the Mekong that have the most dams to prevent water. This is a significant cause of water changes downstream. Therefore, it is necessary to recognize the impact of dams in the upper Mekong River as a non-traditional security issue that causes social and political instability.

Third, the cooperation mechanisms in the Mekong sub-region have improved in recent years, but the effectiveness is still not high.

On 5 April 1995, Cambodia, Lao PDR, Thailand, and Viet Nam signed the Agreement on Cooperation for Sustainable Development of the Mekong River Basin (the 1995 Mekong Agreement), in Chiang Rai, Thailand. The Mekong Agreement, which established the Mekong River Commission (MRC), was a coming-of-age for the river basin agency. No longer under the umbrella of other organizations, the Commission has since then been in the hands of its four Member Countries. Since its establishment, the MRC has adopted many regulations and processes as well as become an institution. advisory agency, providing information for many areas such as fisheries, waterways, flood and drought management, environment, and hydropower development. However, the activities of this mechanism are not really effective, because this is not a decision-making organization and has no enforcement power; regulations that the MRC makes are not binding on member states... The main reason for the ineffectiveness of institutions comes from the divergent interests of countries in integrating into institutions. regime. China and Myanmar are not yet full members of the MRC. Although China has upgraded from a partner country to an observer and has begun to cooperate on some issues, its willingness to increase the level of cooperation has not improved much. Vietnam and Cambodia want multilateral mechanisms to play a bigger role in controlling the actions of upstream countries that cause harm to the downstream. While Thailand, and Laos - the countries in the middle of the source will continue to fight for common rules that can be applied to all countries in the river basin.

The Greater Mekong Subregion (GMS) is a development cooperation organization established with the active support of Japan, specifically the Asian Development Bank (ADB). In 1992, the six countries of the Greater Mekong Subregion (GMS), supported by the Asian Development Bank (ADB) and on the basis of historical and cultural commonalities, initiated the Program. The Greater Mekong Subregion Economic Cooperation program aims to strengthen economic ties with each other. The Greater Mekong Subregion includes Cambodia, the People's Republic of China (PRC, especially Yunnan Province and Zhuang Autonomous Region, Guangxi Province), the Republic of Lao People's Democratic Republic (Laos People's Democratic Republic), Myanmar, Thailand, and Vietnam. The Greater Mekong Subregion is a natural economic region bound together by the Mekong River, covering an area of 2.6 million square kilometers and a combined population of 333.8 million (Mekong River Commission, 1995). Although consisting of six countries with the aim of building trust and promoting regional cooperation, the GMS does not really have many activities directly related to ensuring water security.

On July 23, 2009, the United States - Lower Mekong Cooperation Initiative (LMI) was officially launched during the meeting between US Secretary of State Hillary Clinton and the foreign ministers of Cambodia, Laos, Thailand, and Vietnam. in Thailand. The introduction of LMI helps lower Mekong countries strengthen cooperation and improve their capacity to deal with non-traditional security challenges or cross-border issues, especially water security in the Mekong River. The three main areas of cooperation that the US has proposed are those that the US has been carrying out bilaterally with the Mekong countries: environment, education, and health. In addition, the US raised a twinning initiative between the Mekong River Commission and the Mississippi River Commission to enhance

the exchange of experiences and cooperation between the two sides (Tinh, L. D., 2011). However, with the obstacles of geographical distance and cooperation mechanism, it is difficult for LMI to directly prevent other countries from building dams and ensuring the water security of the Mekong River because this mechanism is not related to other countries. upstream country - China. Lancang-Mekong River Cooperation (LMC) is a new model sub-regional cooperation platform, jointly initiated and built by China and the five Mekong countries, aiming to deepen the friendly neighborly cooperation between China and the Mekong River Delta. 6 countries; promote the socio-economic development of the sub-region; narrow the development gap between countries in the region; conducive to the process of ASEAN integration and regional integration; contributing to South-South cooperation, implementing the 2030 agenda for sustainable development of the United Nations. The parties will work together to build a community of common destiny for the Lancang - Mekong countries, making LMC a "golden brand" for building an Asian community of common destiny and an important foundation for building an Asian community of common destiny. "Belt and Road" construction. The Lancang-Mekong basin is one of the regions with the most development potential in Asia and in the world. Lancang River and Mekong River is a river with two names, an important transnational flow between China and the Indochina Peninsula. This river originates from the Tibetan Plateau of China, its source is located in the territory of Yushu, Qinghai China with the name Lancang River. When leaving Yunnan, the downstream countries call it the Mekong River, flowing through Myanmar, Laos, Thailand, Cambodia, and Vietnam, respectively. The total length of the river is 4,880 km, the basin area is 795,000 km², and the population living in the river basin is 326 million people. Five countries in the Mekong River region have a total population of 230 million people, a GDP of more than 600 billion USD, and an average annual growth rate of nearly 7%. The six countries of Lancang - Mekong River Delta are interrelated, their cultures are interrelated, and they have a long history of attachment (China Secretariat for the Lancang - Mekong Cooperation). At the 5th MLC Ministerial Meeting in Vientiane (Laos) in February 2020, the Ministers proposed the upcoming priorities of the MLC including (i) Accelerating the development and implementation of action plans on regional connectivity, production capacity, water resources, trade, agriculture; strengthen cooperation in response to natural disasters, epidemics and cross-border crimes; (ii) Promote exchanges and dialogues between local authorities and border gate management agencies; (iii) Improve the operational efficiency of the MLC Special Fund. The MLC will also strengthen the MLC's coherence and complementarity with relevant regional cooperation mechanisms such as the Association of Southeast Asian Nations (ASEAN), the Greater Mekong Subregion Cooperation (GMS), and the Greater Mekong Subregion Cooperation (GMS), and the ASEAN Economic Community. Mekong River (MRC), and the Ayeyawady - Chao Phraya - Mekong Three Rivers Economic Cooperation Strategy (ACMECS). Since the establishment of the MLC mechanism, Vietnam has actively promoted the MLC to strengthen cooperation in the protection, management, and efficient and sustainable use of water resources and considers this a focus of cooperation among the six countries. During the process of joining the MLC, Vietnam has proposed a number of cooperation projects related to water security, given specific initiatives such as establishing a communication channel (hotline) in treatment cooperation. emergency situations on the Mekong River, supported by countries and put into practice. Vietnam also supports the construction of a financial mechanism for disaster risk insurance and support for reconstruction and recovery, joint scientific research cooperation through the Mekong - Lancang Water Resources Cooperation Center. However, the results of Mekong - Lancang cooperation are not commensurate with the potential; The list of projects is many, but the implementation is small. In addition, there is a potential risk of unsustainability, mainly relying on Chinese funding, and ASEAN countries have not been proactive. Meanwhile, national and local connectivity is still weak. Up to now, there is still a lack of key projects with the unique characteristics of the Mekong-Lancang cooperation (MLC).

Connecting ASEAN with the MRC, in the future, ASEAN needs to consider the issue of water security in the Mekong River as an issue of special concern and focus more resources on this issue. Because, currently, about 65 million citizens of ASEAN member countries are living on the water

source of the Mekong River. ASEAN has two mechanisms to support the less developed economies in the Mekong region, namely the ASEAN-Mekong Basin Development Cooperation (AMBDC) and the Initiative for ASEAN Integration (IAI) which is concerned with the development and poverty reduction through investing in infrastructure development, agriculture, human resources, and energy. The initiative also aims to protect the environment and promote tourism, trade, and investment. ASEAN has two mechanisms to support the less developed economies in the Mekong region, namely the ASEAN-Mekong Basin Development Cooperation (AMBDC) and the Initiative for ASEAN Integration (IAI) which is concerned with development and poverty reduction through investing in infrastructure development, agriculture, human resources, and energy. The initiative also aims to protect the environment and promote tourism, trade, and investment. However, these initiatives lack synergies and coordination with the MRC (Vannarith, C, 2019).

It can be seen that many different cooperation mechanisms have been born, but due to the difference in interests and the weak binding mechanism, the effectiveness of cooperation is not really high. Many issues of water security arise between countries (especially between countries upstream and downstream of the Mekong River that have not been fully resolved).

5. Impacts of Water Insecurity on the Mekong River on the Region and Vietnam

5.1 *The river's ecology is changed*

Objectively, the impact of climate change is making floods, droughts, water resource depletion, and salt marsh worse. In many parts of the river basin, it is forecasted that by 2030, the temperature will increase by about 0.8°C, and rainfall will decrease in the dry season, along with drought and water shortage.

Subjectively, the series of dams by China and some downstream countries are posing a significant challenge to the river and its natural resources. Mainstream projects reduce the vertical integrity and connectivity of the Mekong ecosystem. Large dams have changed the flow, directly affecting the downstream area. Dams on tributaries can negatively affect the duration and length of seasonal flow regimes. The change of flow will lead to the aquatic environment, and the large ecosystem of the Mekong River will be seriously threatened. According to statistics, more than 100 species of creatures will be in danger. The loss of river biodiversity will be permanent and irreplaceable. Mainstream projects are likely to create severe terrestrial environmental damage, affecting wetlands. Nearly 40% of the Mekong River's wetlands are located within the river sections at the project sites and 17% will be permanently inundated by mainstream projects in the downstream region (Evelyn, G, 2004).

5.2 *Influence economic and social development*

The threatened water security has affected not only the ecosystem but more seriously, also affects the socio-economic of the countries sharing the common benefits of the river. First, this is an area where food security and livelihoods are largely dependent on the river and its natural resources. The risks and losses to the aquatic and terrestrial ecosystems of the Mekong River will directly lead to threats to the livelihoods of millions of people and lead food insecurity. More specifically, agricultural losses caused by floods from reservoirs can amount to more than 5 million USD per year, while the amount of fertile alluvium is predicted to be reduced by more than 50%, leading to an increase in the amount of manure fertilizer, costing an additional \$24 million per year (Vannarith,C, 2019). The construction of hydropower plants on the mainstream of the Mekong River will negatively affect aquaculture production, which has been reduced by flow changes and water quality deterioration. The accumulation of water in the upstream and middle Mekong hydropower dams in the dry season causes the amount of water to decrease. In addition, dams block fish migration routes, reducing wetlands and changing the environment needed for fisheries there. These changes will cause an

estimated 26-42% fish loss, worth about \$500 million per year; moreover, mainstream hydropower projects increase inequality in the lower Mekong countries (Ribka, M & Perwita, A,B., 2017). While China and Laos have enjoyed the energy benefits, Vietnam and Cambodia have suffered enormous losses in fisheries and agriculture. In the short and medium term, the problem of poverty will be exacerbated by any mainstream hydropower project, especially for the poor in rural and urban areas along the river. Fishermen who make up the majority of the poor and vulnerable communities downstream will be affected by the loss of fisheries. Poor households are also negatively affected by the direct impacts of hydropower development, including displacement, land loss, and construction impacts.

5.3 *The issue of water security in the Mekong River affects Vietnam*

The Mekong River flows through Vietnam's territory in the Mekong Delta before emptying into the East Sea. The Mekong Delta is the largest delta in Vietnam with an area of 40,000 square kilometers. This is the place that provides more than 50% of rice production, 65% of aquatic products, 70% of fruit production, 95% of rice exports, and 60% of fish exports of Vietnam. With an important strategic position, the Mekong Delta is convenient for trade with ASEAN countries and the Mekong sub-region (Thuy, N,C., 2018). However, the change in water source has made the surface water of the Mekong Delta become scarce, and the arable land area is increasingly narrowed and less fertile. Food decline is increasing over time, making the Mekong Delta may no longer the rice field of Vietnam and seriously affecting the food security of Vietnam (Thang, L,V, Thanh, N,H, Tuan, N,V., 2019).

According to a study by the Mekong Freedom Network (Thailand), eight hydroelectric dams across the Mekong River (Lancang) on Chinese territory have retained a total of more than 40 billion cubic meters of water for power generation purposes. irrigation..., changing the flow of the Mekong River downstream. Besides, experts also pointed out three main reasons for the low water level in the Mekong River in Thailand, Laos, Cambodia, and Vietnam, the Canh Hong hydropower plant (Jinghong - China) discharges less water; Xayaburi hydroelectricity in Laos operates.

Also according to the report of the Mekong River Commission, if all three hydropower projects in Laos including Xayaburi, Don Sahong, and Pak Beng come into operation, the total flow volume will decrease by 6.2%/month and the intrusion The salinity on the Tien and Hau rivers penetrates from 2.8 to 3.8 km deep. And with the near future, when the whole chain of 11 hydroelectric dams in Laos and Cambodia is in operation, the total flow volume will decrease by more than 27%/month, saltwater intrusion will go deep into the Tien and Hau rivers for about 10 minutes. - 18 kilometers. Furthermore, fresh water is likely to be degraded and become an increasingly pressing issue due to hydropower development on the Mekong mainstream (Hoach, N,H., 2022). Meanwhile, the Mekong River basin is 65% white fish and 35% blackfish.

The above impacts make it impossible for people to live in mangrove fields, dry up fishing activities on the river, and difficult to live in houses at risk of landslides, affecting the social problems of people in the area.

6. **Vietnam's Policies and Actions in Protecting the Water Security of the Mekong River**

Vietnam is located at the end in the Mekong River, the country most deeply affected by the changes of the river. In recent years, due to the serious effects of climate change and the problem of over-exploitation of water resources in the Mekong River, the Mekong Delta of Vietnam has suffered heavy losses. Typically, in 2016, the Mekong Delta suffered the most severe drought and saltwater intrusion in the past 90 years, causing a water shortage in the basin of 20-50% compared to the average of many years. To overcome the situation, the Vietnamese government proposed that the Chinese side increase water discharge downstream, which was agreed by the Chinese side and continuously discharged for nearly a month, contributing to solving the urgent problem of the Mekong Delta (Jacobs, J,W., 2002).

To be more specific about Vietnam's guidelines and policies in response to and relations with countries sharing the same river, the Vietnamese Government issued Resolution 120 in 2017 to orient and implement the country's external activities. Vietnam towards other countries to protect the water security of the Mekong River. According to Resolution 120, Vietnam's Mekong River diplomacy has three main operational directions. Firstly, Vietnam strengthens bilateral and multilateral cooperation with countries upstream of the Mekong River, as well as with major river basins and deltas in the world. Secondly, the Government of Vietnam actively participates in proposing initiatives and implementing measures proposed by the Mekong River Commission (MRC); actively participates in existing cooperation mechanisms of countries in the Mekong River Basin and cooperation mechanisms between countries in the Mekong River basin, as well as between countries in the bloc and outside. Third, develop strategic partnerships with countries and international development partners to mobilize external resources (financial capital, knowledge, and technology) to tackle climate change. and promote sustainable development in the Mekong Delta. With positive approaches, Vietnam constantly implements strongly its diplomacy on water resources of the Mekong River, serving its development as well as that of other countries in the region (Thuy, N,C., 2018).

As a country in the group of more developed countries in the GMS and with many impressive achievements in growth and international economic integration, Vietnam needs to continue to affirm its political determination in the GMS Cooperation through participation in specific activities. In the coming time, non-traditional security issues, such as food security, human security, water security, and environmental security will be the focus of many regional and international linkage programs, including GMS. Along with that, the importance of the GMS region is increasing, attracting the attention of many powers, so there will be many good opportunities for Vietnam as well as other countries in the Sub-region to take advantage of more resources. external support in many ways. In the coming time, Vietnam needs to proactively propose and flexibly deploy many initiatives such as forums, exhibitions, tourism, cultural exchanges, education, sports, food, performance time, and time. site...etc., both at the national level and at the relevant localities of the country. The government should promote international communication to raise awareness of people in Mekong River countries in general and Vietnam in particular about the importance of water security; urges GMS countries to place a higher priority on water security in national plans and budgets; with many policies to attract countries to participate in initiatives on food security, energy security, health, and climate change, serving the common development (International Center for Environmental Management, 2010).

In the coming time, Vietnam needs to take advantage of existing cooperation mechanisms in the region, especially the Mekong River Commission (MRC) and the Association of Southeast Asian Nations (ASEAN) and bring development cooperation to the forefront. development as well as water security of the Mekong River on the agenda of forums and conferences of these organizations.

For ASEAN: ASEAN has a leading important geo-strategic role in the region. As a large-scale country in ASEAN with the third largest population and fourth largest area in ASEAN, Vietnam needs to strengthen its role in ASEAN. Without ASEAN, it would be much more difficult for Vietnam in its relations with major countries, especially in the struggle to protect its sovereignty over seas and islands and increase development cooperation within the framework of the GMS. Therefore, building a strong ASEAN Community and expanding GMS must continue to be one of the top priorities in Vietnam's foreign policy in the current period with a great orientation of solidarity and high consensus. , and at the same time take measures to strengthen national internal capacity to shoulder greater responsibilities for common issues of the region and sub-region. Accordingly, Vietnam should consider the realization and consolidation of the ASEAN Community as one of its important tasks and one of the main pillars of its foreign policy. Currently, the Mekong River water management as well as a number of other mechanisms are being undertaken by the ASEAN Socio-Cultural Community, but due to the problem related to different aspects, especially in the field of security. Non-traditional, Vietnam needs to promote this issue with the participation of the ASEAN Political-

Security Community.

For the MRC: The most important intergovernmental organization in the management of the Mekong River's water resources: Vietnam needs to actively promote MRC member countries to fully participate in basin arrangements and organizations. Countries such as China and Myanmar should soon become full members of the MRC, the most comprehensive institution to date, in the process of managing common issues of the Mekong River. Currently, the MRC does not include all the countries in the basin, while China and Myanmar, as two upstream countries, play an important role in jointly managing the river in the spirit of the 1995 Agreement. If more powers are delegated from sovereign states, the MRC has the potential to play a larger role in reconciling the diverse interests of countries in the basin through the development of strategies and programs toward equity and sustainability. In the immediate future, Vietnam needs to promote prior consultation processes and continue to advocate for the cessation of hydroelectric dam construction projects in other countries (especially in Laos) within 10 years in order to thoroughly re-evaluate the issues. impact. It is essential to call for consensus among the four MRC member countries for the common good of the river and to use it in a sustainable, fair, and reasonable manner.

Vietnam should proactively propose to other governments and the MRC to study the construction of a new institution, expand the current MRC, including 6 member countries and a new agreement, or improve the Mekong Agreement 1995 on the basis of lessons learned about what is positive as well as what has happened in reality; research and develop a Code of Conduct (COC) as a "soft" law governing the behavior of riparian countries as well as other relevant entities (organizations, businesses, people...). This Code of Conduct will outline the do's and don'ts for stakeholders, most importantly the role of governments in the basin, in order to ensure the safe exploitation and use of the river. reasonable way. These will be useful tools for formal decision-making if clearly defined binding responsibilities and benefit sharing among stakeholders.

For sensitive issues related to the management and sharing of water resources, in the spirit of construction, cooperation, and concern for the interests of stakeholders, Vietnam needs to persevere in advocating, fighting, and at the same time. has skillful and flexible handling in each cooperation framework. Due to economic development pressure, countries in the basin are trying to fully exploit the potential of hydropower development from the Mekong River. China, Laos, and Cambodia have planned more than 20 hydropower dams, of which China has built 8 dams upstream. Laos and Cambodia plan to build 11 dams downstream. Most recently, Laos announced the construction of the Pak Beng Dam - the 11 largest hydroelectric dam, after the Xayaburi and Don Sahong dams on the mainstream of the Mekong River (Schaaf, C,H & Fifield, R, H., 1963).

Hydropower projects are forecasted to have profound impacts on people's lives, the environment, food security, and regional stability. From the above impacts, when put into construction and operation, these projects are forecasted to have the potential to cause transboundary impacts and cause international tension in the lower Mekong region. In addition, the damage from a geo-political point of view also needs to be taken into account, including national and ethnic interests; the relationship between countries downstream; dependence as well as the ability to control water resources upstream... (International Center for Environmental Management, 2010).

As a watershed country, Vietnam (specifically the Mekong Delta region) will often face enormous challenges in terms of water resources, livelihoods, food security, environment, and society due to the impact of environmental and social impacts. cumulative, transboundary dynamics of the construction and operation of hydropower projects on the mainstream. This risk will be greater when compounded by the impacts of climate change due to sea level rise. Water security is also related to many different aspects such as human security, food security, energy security, environment, climate change, and epidemics... a comprehensive, interconnected, multi-layered solution between countries, donors, ministries, branches, localities, and organizations in each country. In particular, the role of people living in the basins must be placed at the center of policy-making processes because the river is the source of life, one of the sources that create the culture and way of life of the people. surname. The lives of more than 60 million people in the Mekong Basin depend heavily on the water, fish

(worth billions of US dollars), navigation, and many other resources of this precious river (Anitta Phommahaxay & Bounlert Vanhnalat, 2015). Therefore, the Government of Vietnam needs to take specific actions so that stakeholders in Mekong cooperation are responsible for complying with existing commitments while continuing to seek alternative solutions, including establishing mechanisms for sharing rights and responsibilities in the Mekong water resource issue. Specifically, negotiate with the governments of the lower Mekong countries to consider suspending hydropower projects in the region to conduct a comprehensive, independent and transparent assessment; simultaneously with the search for alternative energy solutions and sustainable development policies, because promoting new energy solutions and sustainable development initiatives will contribute to strengthening the resilience of the whole continent. Southeast Asia. The National Assembly of Vietnam needs to play an active role in monitoring the implementation of the country's consistent policy in the management and exploitation of water resources in the Mekong River. Accordingly, the National Assembly and its committees need to have specific monitoring programs to ensure the consistent implementation of Vietnam's policy related to regional water resource management.

For the key issue of hydropower construction upstream, Vietnam needs to take measures to express its views openly and strongly, requiring countries to comply with the commitments in the "Agreement on Cooperation in Development and Development." sustainable development of the Mekong River". At the same time, Vietnam needs to take full advantage of the initiatives of the US, Japan, India, Korea, Australia, and EU... for sustainable development in this region. To do so, Vietnam needs to firmly base itself on international law and step up the implementation of the 1997 United Nations Convention on the Law on the Use of International Water Resources for Non-Navigation Purposes, which Vietnam ratified in 2014. This is the first global convention that quite comprehensively regulates the relations between countries in the transnational use of water resources with the aim of ensuring the safe and secure use of water resources upstream and downstream. fair and reasonable manner. Although in the Sub-region, besides Vietnam, there is no other country along the Mekong River that has joined the Convention, Vietnam can still use the Convention to negotiate and resolve arising issues related to water resources between the two countries. Countries. Finally, Vietnam needs to actively mobilize countries in the region to join the Convention so that the principle of the fair and reasonable use of water is applied as a common basis in exploiting the Mekong River's water resources (Que, N,T & Anh, M,H., 2019).

Actively and actively promote regional cooperation in using the benefits of the Mekong River with major countries. Vietnam should proactively propose the necessary support to develop a cooperative strategy for the effective and sustainable use, management, and development of transboundary water resources. In addition, Vietnam needs to take advantage of its position in the Lancang-Mekong Cooperation mechanism to negotiate on an equal footing with China. Because in contrast to the MRC, where China does not participate, the Lancang-Mekong Cooperation is a multilateral platform in which Vietnam is on an equal footing with China Lancang - Mekong cooperation is considered a forum for Beijing to promote economic cooperation dialogues and expand infrastructure with countries in the region. Together with the cooperation in the One Belt One Road (OBOR) initiative, the Lancang-Mekong Cooperation will quickly shape China's strong position of influence in the entire Mekong Sub-region. In that scenario, Vietnam needs a flexible foreign policy to ensure its interests and political position in traditional markets, such as Laos and Cambodia, in light of the fact that in recent years, investment and China's aid to Laos and Cambodia have continuously increased sharply and has now surpassed Vietnam to become the largest digital investor in these two countries.

In addition, Vietnam needs to further promote relations with major countries in solving water security issues.

For the US, Vietnam needs to further promote its role as a bridge. It is necessary to cement the relationship between the US and the GMS in all fields, promote strengthening and broaden the scope of coordination between the US and the Sub-regional countries in handling international and regional issues. of mutual interest through improving the effectiveness of the US-Mekong strategic

dialogue mechanism. Economically, Vietnam needs to promote its position as an economic bridge and promote US investment in the region. In terms of security and defense, Vietnam needs to cooperate with the US to improve its defense military power. In terms of culture - society, in the future, the US - Vietnam cooperation relationship needs to be strengthened. Although currently, the level of US investment in the Mekong - Lancang cooperation initiative (LMI) is not really large, it is still increasing year by year.

For China, in terms of economy, under the influence of China's economic policy on the GMS, Vietnam needs to clearly define the motto, the policy of cooperation, and be proactive in discussing with the Chinese side about the issues. issues related to sub-regional cooperation in particular and with the Belt and Road initiative in general. Therefore, in order to be able to cooperate comprehensively, and to seize good investment opportunities from China, Vietnam should be proactive in proposing cooperation contents that are beneficial for development. Vietnam economy. In addition, actively capture information, exchange information, research and analyze economic cooperation programs and projects with China within the framework of GMS cooperation and the Belt and Road initiative to have a basis. science makes decisions on cooperation, roadmap for scientific economic development. With inappropriate projects, Vietnam also needs to have a clear and decisive attitude. In cooperation in various fields, in addition to showing their willingness to cooperate for mutual development, local government agencies - localities directly involved in GMS cooperation need to take actions and measures. resolute and reasonable solutions to pressing issues for the people (such as labor rights, environmental issues, etc.). Protecting people's rights and national sovereignty is a top priority. Government agencies need to focus on the long-term strategic interests of the future when engaging in cooperation with China. For non-traditional security issues such as transnational crime, goods and drug smuggling, epidemic prevention, etc. China and Vietnam need to further strengthen cooperation, with many creative forms of exchange. exchange information, transfer scientific and technological knowledge, organize seminars, exchange talks between departments, between senior officials of the two sides... These activities will strengthen the close cooperation between countries. and at the same time increase mutual understanding and trust between the two countries. Especially at present, the two countries still have many disagreements in the settlement of disputes over exploitation of the Mekong River. Vietnam needs to build a close relationship with China to fully update on the situation of hydropower stations on the upper Lancang-Mekong river so that it can respond flexibly to fluctuations in economic activities. economy, environment and people's daily life. Vietnam also needs to have research activities on the consequences of the construction of hydropower dams on the Mekong River. It is necessary to develop plans to deal with possible negative situations (International Center for Environmental Management, 2010).

For Japan, Vietnam needs to continue implementing the policy of "multilateralizing and diversifying" its foreign relations, strengthening relations with all countries, being neutral and not siding with any country to reduce minimize competition among major countries, create a balance of forces, and help the region stabilize and develop more prosperously. On the contrary, if not handled well, it will increase competition and confrontation between major countries, increase the possibility of separation and negatively affect the development of Vietnam in the coming years. Vietnam needs to effectively use Japan's aid capital, and link ODA to build socio-economic infrastructure by attracting foreign direct investment (FDI) and key industries. serving the country's industrialization such as the manufacturing industry and supporting industries. Vietnam needs to take advantage of the opportunity to be a concurrent participant in the ASEAN Regional Comprehensive Economic Cooperation (RCEP) and the only Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) in the sub-region. to attract investment from Japan. Regarding security and defense, Vietnam needs to take advantage of Japan's support and strengthen cooperation with Japan in the field of security and defense to improve its defense potential. Japan considers "green growth" to be a keyword in Japan-Mekong cooperation in the next decade. Therefore, Vietnam needs to effectively use ODA loans and Japan's technical cooperation capital in this field to improve the

capacity of the apparatus, reform health, and social welfare policies, and provide health care. community health, improving people's quality of life. Along with that, Vietnam needs to learn from Japan's experience in environmental protection, build cities using "green and clean" technology for sustainable development and take advantage of Japan's support. Ban, call for, and propose projects related to environmental protection and water resources protection along the Mekong River. As a country located at the end of the Mekong River, Vietnam welcomes the cooperative and constructive connection of all countries and partners in the Sub-Region. Given the importance of this issue, Vietnam has taken an increasingly proactive approach as it has made clear contributions to the common issues of the Sub-region by assuming the role of the country in diplomatic support multilateralism, and partner connection.

As a specialized area of development and water security, strengthening cooperation in the Mekong Sub-region is in line with the orientation of Vietnam's pioneering role in foreign affairs.

Although there are similarities in approaches to the Mekong Sub-region, there are differences between these countries. Foreign policy analysis requires close study at the unit level, not just at the system level, to see the nuances of differences. This is true of observing the behavior of middle powers in the sub-region.

Active and proactive participation of Vietnam: Vietnam has actively participated in the GMS sub-regional economic cooperation since the first day of the GMS Initiative was established in 1992. The Vietnamese government has always been aware of the importance of the GMS. of sub-regional economic cooperation and international economic integration in realizing its socioeconomic development goals (Long, C, 2016).

Over the years, Vietnam has actively and actively contributed to most of GMS' cooperation initiatives in the fields of transportation, energy, investment, information and communication, and agriculture; actively coordinate with member countries, ADB, and development partners to mobilize resources for the implementation of GMS cooperation projects.

7. Conclusion

In short, the water source of the Mekong River is a very important issue affecting the development and national security of the countries of the Greater Mekong Sub-region. In addition, the Mekong sub-region presents itself as an important link in the global supply chain, and regional transport network and is considered one of the most dynamic sub-regions in ASEAN, as well as a bridge connecting the mainland. between the Indian Ocean and the Pacific Ocean. In recent years, the over-exploitation of the Mekong River's water resources, especially the construction of many large hydroelectric dams by upstream and middle-class countries, has been posing great challenges to water security. At the end of the river, Vietnam (directly in the Mekong Delta) is greatly affected by the change in flow and the water security of the Mekong River. With the aim of maintaining the largest food production center in the country. To ensure the lives of more than 20 million people in the region, as well as to ensure the food security of the whole country, Vietnam has made great efforts to join with other countries in the region to share benefits and keep the source security secure the water of the mother river Mekong.

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