

Chapter 17

Accessing the Sustainable Developments Principle of Protection of the Mekong River's Water Resources



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Abstract From 2009, the Mekong River's water quantity and quality have been significantly reduced. The phenomenon happened as a result of climate change and human activities. Activities to block the flow or build dams to construct hydroelectricity or diversion in upstream countries are either the direct cause or the risk of further deterioration of the water quality and quantity of the Mekong River. The current status of the Mekong River's water resources poses serious challenges for sustainable development of the Mekong River's Basin. To cope with the problems, Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin 1995 (Mekong Agreement) is the only multilateral treaty directly regulating the protection of water resources in the Mekong River. The principle of sustainable development, however, is not specified in a specific article, embodied in the Mekong Agreement through the contents of this treaty. Besides, the crucial obligations lacks an monitoring mechanism and has an unreasonable dispute solution.

Keywords Sustainable development principle · No—Harm rule · Reasonable and equitable utilisation · Mekong agreement

17.1 Introduction

The Mekong river basin in Vietnam is largely located downstream, accounting for about 8% of the basin area, including the upstream of the Nam Ron River (Dien Bien Province), the upstream of the Se Kong and Se Ba Hieng river, and the Se San and Srepok river basin and the Mekong Delta region. The Mekong River has a particularly

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important role, ensuring national food security and water resources for two significant regions, Mekong River Delta and Central Highlands, contributing nearly 60% of Vietnam's total annual water volume. Every year, the Mekong River transports over 420 billion m³ (including the Mekong river tributaries' water volume that Vietnam is upstream) into the Mekong Delta. In the Mekong Delta, the Mekong River brings the fertile delta alluvium and rich natural aquatic resources. In the Central Highlands region, the Sê San and Srepok river basins' water resources have been exploited to supply water for agricultural production, domestic and hydropower development in Vietnam. With the Mekong River's special role in Vietnam, ensuring the Mekong River's water resources' sustainable development is of utmost importance.

The issue of sustainable international water resources development was mentioned very early in many treaties relating to freshwater resources, such as the 1923 Convention on Hydropower Development, Convention on the protection of Lake Geneva water from pollution sources in 1962, the Convention on the withdrawal of water from Lake Constance in 1966 with contents such as the obligation of notification, consultation, environmental impact assessment, and dispute settlement (Botchway 1919). According to the International Law Association's approach to the Berlin Rule on water law in 2004, sustainable water development is "integrated management of resources to ensure efficient use and public access. with water resources for the benefit of present and future generations, while conserving renewable resources and maintaining non-renewable resources to the extent possible" (Clause 19, Article 3) (Ministry of Natural Resources and Environment 2018). In short, the sustainable development of international water resources means that the use of international water resources must ensure benefits for all riparian states, without prejudice to meeting their countries needs current and future water countries and suitable for the adequate protection of the quantity, quality, and ecology of transboundary water resources.

Due to the close relationship between the sub-regions' natural and socio-economic conditions and the broad Mekong basin, the Mekong River's upstream activities will lead to many impacts on the environment and society to Vietnam's downstream. It is undeniable that the hydroelectric dams built in the past are among the causes of negative impacts on the Mekong River's flow and water quality in the Mekong Delta. Failure to ensure the Mekong River's sustainable development directly damages this river and seriously affects the economic and social lives of many downstream countries, including Vietnam. From a legal perspective, the current legal framework of the Mekong River Commission reveals limitations in regulating the activities of member states in the protection of Mekong water resources.

17.2 Material and Methodology

In this article, the data about the Mekong River's water level and quality was collected at the Tan Chau and Chau Doc hydrological stations, published by the Mekong Commission on the organization's official website. The Mekong Delta

region's data on a saline intrusion is evaluated based on the Vietnamese Ministry of Natural Resources and Environment reports. The data on information related to hydropower projects and hydropower projects in the Mekong is based on the report on hydropower's strategic assessment on the Mekong River submitted by the International Center for Environmental Management and reports the Ministry of Natural Resources and Environment of Vietnam.

17.2.1 The Construction of Hydroelectric Dams in the Mekong River

According to the report of MRC in July 2020, based on monitoring databases, in conjunction with other sources of monitoring, in addition to objective causes such as climate change, the performance of large hydropower dam in the mainstream, and also the tributaries of the Mekong River also contribute to reducing the volumetric flow (Ministry of Natural Resources and Environment 2020). Before that, as early as 2010, the Strategic Environmental Assessment of the Mekong mainstream hydroelectricity submitted to the Mekong River Commission indicated that when put into construction and operation, water development projects, The proposed electricity would be likely to cause transboundary impacts and international tensions in the Mekong Lower section in many ways, including the Mekong River volume water (International Law Association).

There are 13 hydropower dams in the MeKong mainstream in operation (11 upstream dams and 2 downstream dams) and 19 hydropower projects in the progress construction progress. In upstream, China's total water storage capacity of 11 dams in operation is 45,54 km³ (Eyler, Brian and Weatherby, Courtney, 2020). Only currently operating dams in upstream have stored nearly 10% of the total average annual flow of the Mekong. In downstream, the total water storage capacity of the two operating dams is 0,4 km³, in which the water storage capacity of the Xayaburi Dam is 0,37 km³ and the Don Sahong Dam is 0,03 km³ (International Centre for Environmental Management 2010). Nine other hydropower dam projects are planned, including five projects in Laos, two projects in Cambodia and two projects across the Laos-Thai border. The total water storage capacity of these nine hydropower dams and two current dams is 11,43 km³.

Water storage in hydropower dams with large reservoir capacity will potentially cause change in the Mekong River's water level. In fact, the Chinese dams in Yunnan Province have already induced noticeable changes in water levels at Chiang Saen at a daily time (International Centre for Environmental Management (ICEM) 2010). The retention times of these dam chains cause water to flow back to the Mekong Delta very late. During the rainy season, dams upstream will reduce runoff energy by 70–100%; some dams have the ability to block flows for 2–3 weeks in the dry season and 1–2 weeks in the wet season, some dams have a retention time of up to 1 month

during drought years like the Sanakham dam in Laos (Mekong River Commission 2020).

17.2.2 A Decline in Water Resources of the Mekong River in the Basin Part of Vietnam

From November 2020 to early February 2021, the Mekong River's water level measured at Tan Chau station was lower than the average water level in the period 1961-2019. Specifically, in the last two months of 2020, the lowest measured level is 1.32 m (7 December), while the average at the corresponding period 1961-2019 is 2.01 m. Similarly, in the first two months of 2021, the lowest measured level was 0.31 m (4 February), while the average water level at the corresponding period 1961-2019 was 0.98 m (Mekong River Commission 2018).

In 2020, the MRC's Hydrological Observation and Reports also showed that the Mekong River's water level was low in some areas. The water level in the dry season that flows on the Mekong mainstream in June and July 2020 is described as "exceptionally low." (Office of the National Assembly 2017). At Tan Chau and Chau Doc stations, the maximum water level at the end of September 2020 at Tan Chau station is still 1.2 m lower than the average and 1.25 m lower than the level 1 flood alarm. Tan Chau and Chau Doc's total water flow in the second half of September 2020 tend to decrease, reaching only 59% of the average and 37% lower than the same period in 2019. Water level and total flood volume to the Mekong Delta in the second half of September 2020 remained the lowest level in 10 years (Vietnam Mekong River Commission Standing Office 2020).

In 2019, due to the Mekong River's low flood peak at the Tan Chau 2.5 m and Chau Doc station of the low 2.2 m, the total flow in the Mekong River's upstream to the Mekong Delta region was much less than the average many years. The MRC data shows that the water level in Tan Chau in the last six months of 2019 and the first five months of 2020 is at a low level, nearly coinciding with the historical deadline of 2015–2016. Even in the period defined as the rainy season, the water level in 2019 is lower than in previous years (Table 17.3). At Tan Chau and Chau Doc stations, the water level started to drop lower than average from 18 June. In July, the water level at these two stations is usually 0.8–2.3 m lower than the average water level. Similarly, Tan Chau and Chau Doc's flow is also lower than the average flow by 14,000 m³/s, a 75% reduction in the average flow in the same period in July at these two stations.

Along with the decline in water volume, the river water level falls low, causing salt to penetrate deeply into the estuary. Specifically, since November 2019, drought is seriously affecting the Mekong Delta, increasing between March and April. Saline boundary 4‰ (4ppt) on Vam Co Tay river (at times over 125 km), Cua Tieu, Cua Dai, Ham Luong penetrated deeper than 2016 from 3 to 7 km, greatly affecting production and domestic of the Mekong Delta provinces. As of April 2020, the Mekong Delta's dry season has lasted for nearly six months, causing about 96,000 households in the

Table 17.1 Information on some of China's hydropower dams in the upper Mekong basin (Lancang River) (stage 1) (*From upstream to the China-Laos border*)

No.	Hydroelectric dam projects	Basin acreage (10 ³⁺ km ²)	Water reservoir acreage (ha)	Capacity (10 ⁶ m ³)	Output Capacity (MW)
1	Gongguoqiao Dam	97,2	343	120	750
2	Xiaowan Dam	113,3	3.712	9.900	4.200
3	Manwani Dam	114,5	415	250	1.500
4	Dachaoshan Dam	121,0	826	280	1.350
5	Nuozhadu Dam	144,7	4.518	12.300	5.500
6	Jinghong Dam	149,1	510	310	1.500
7	Guanglanba	151,8	12	110	150
8	Manson	160,0	58	140	600

Source Ministry of Natural Resources and Environment (2018), *Thematic Information - Water resources and issues in ensuring national security*

Table 17.2 Information on 11 Hydropower Projects in the Lower Mekong Basin

No.	Hydroelectric dam projects	Power capacity (MW)	Reservoir Area (km ²)	Length (m)	Height (m)
1	Pakbeng	1200	87	943	76
2	Luang Prabang	1,100	55.9	1,106	68
3	Xayaburi	1,280	55.9	810	32
4	Paklay	1,320	108	630	35
5	Sanakham	700	81	1,144	38
6	Pakchom	1,079	74	1,200	55
7	Ban Kum	1,872	74	780	53
8	Latsua	686	13	n/a	Na
9	Don Sahong	240	0.29	1,820-720-2,730	10.6-8.2-8.3
10	Stung Treng	900	211	10,884	22
11	Sambor	2,600	620.5	18,002	56

Source ICEM, *MeKong River Commission, Strategic environment assessment of hydropower on the MeKong mainstream*. https://icem.com.au/documents/envassessment/mrc_sea_hp/SEA_Final_Report_Oct_2010.pdf

Table 17.3 Water level of the Mekong River at Tan Chau and Chau Doc stations in the second half of June 2019 compared to some years ago

Name of stations	2016	2017	2018	2019
Tan Chau Station	1.05	9.18	6.53	0.38
Chau Doc Station	1.5	8.39	5.66	-0.25

Source Mekong River Commission- Regional Flood Management and Mitigation Centre, *Weekly Flood Situation Report for the Mekong River Basin*

area to lack domestic water, five provinces must publish natural disasters. The highest salinity intrusion level at saline intrusion points in the Mekong Delta from 1/1/2020 to 20/4/2020 are: (i) 7.3 g/l (Dong Tam), 1.9 g/l (Vinh Binh), 6.49 g/l (Monitoring station 285 Binh Dien), 20.13 g/l (New Ca Bridge – Binh Dien), 10.61 g/l (Vam Bon Bot), 13.56 g/l (Dai Ngai), 13.65 g/l (Outside Can Chong Gate), 23.51 g/l (Vam Don Chau), 22.64 g/l (Lang Chim Bridge), 27.2 g/l (Ban Trai), 13.5 g/l (Huong My), 29.5 g/l (An Thuan), 28.2 g/l (Son Doc), 29.2 g/l (Binh Dai), 25.4 g/l (Vam Kenh), 21.1 g/l (Cau Noi), 14.1 g/l (Ben Luc) (Can Tho University 2020). The damage of agricultural production is minimized due to seasonal adaptive measures, but lack of domestic water or water for irrigation for orchards and serious lack of freshwater has become the largest concern during the salty drought season (Ministry of Natural Resources and Environment 2020).

17.3 Discussion on the Legal Framework of Protection Mekong's Water Resource

There are currently more than ten cooperation mechanisms in the Mekong region, such as the Mekong River Commission (MRC), the Mekong-Trade Cooperation (LMC), the Lower Mekong Initiative (LMI), the Mekong-Japan Cooperation. One of the most prominent cooperation mechanisms is the Mekong Commission, which was established based on the 1995 Agreement on Cooperation for the Sustainable Development of the Mekong River Basin (the Mekong River Agreement) and the Protocol for Implementation, which has the functions of an international agency in the protection of Mekong water resources, including implementing the contents of the Agreement. The Mekong Agreement is the only regional multilateral treaty directly regulating legal issues related to the Mekong River water resources' use and protection. The goal of sustainable development of the Mekong water resource, as stated in the Mekong Agreement, together with Procedures and several Technical Guidelines adopted by the Mekong River Commission, is expressed through the legal contents of the obligation to maintain minimal flow, management of water transfer between basins, monitoring of water used in the Mekong River, monitoring of water quality of the Mekong River, environmental impact assessment, no - harm obligation.

The situation as mentioned above of the Mekong River's water source shows that the exploitation and use of the Mekong River water resource of other countries, particularly hydropower activities, do not ensure the principle of sustainable development in the protection of Mekong water resources while being and will cause adverse effects on the quantity and quality of the Mekong water. Water loss, in addition to saline intrusion, is affecting agricultural activities in the Mekong Delta region. At least 50% of arable land in the Mekong Delta will be affected by the loss of sediment and nutrients from hydroelectric facilities. If adding the cascade effect of 11 mainstream hydroelectric projects downstream of the river basin and the Mekong river tributary hydropower projects, the total annual sediment and sediment volume decreases by 80%. A preliminary calculation of a hydropower project's cumulative impact on the mainstream and the Mekong River's main river hydropower steps could reduce nutrient sources (nitrogen and phosphorus) by 6–10% of the delta. Accordingly, crop yield is forecasted to decrease by 0.6–1 ton/ha (Ministry of Natural Resources 2020). Nowadays, only four of six Mekong riparian states are part of the Mekong Agreement. In the legal aspect, since China and Myanmar are not members of this Agreement, there is no legal obligation to comply with the Agreement's provisions and other documents adopted by the MRC, especially the regulations on prior consultation before building hydropower dams. Moreover, the Mekong Agreement still has many shortcomings in terms of implementation mechanism towards this goal of sustainable development of global water resources.

First of all, the inconsistency of member states on the minimum natural flow determination. The regulation of minimum natural flow on the mainstream ensures the Mekong River water quantity on these flows, thereby preventing water resources degradation and depletion. However, the member countries have not yet agreed with each other in determining minimum natural flow on the mainstream. Although the Mekong Agreement provides for three levels of natural flow maintenance on mainstream, the hydrological thresholds for determining the behavior need to be taken is still for reference only to member states.

Secondly, the undetailed provision on obligation of reasonable and equitable utilization. The obligation to Reasonable and equitable utilization is briefly defined by the Article 5. But, The Mekong Agreement and other MRC documents do not define or list what factors are considered "relevant circumstances and conditions". Article 6 of the 1997 Convention on the Law of the Non-Navigational Uses of International Watercourses recognizes many factors influencing reasonable and equitable uses. However, only Vietnam joined this Convention, so it is impossible to invoke the Convention to explain which factors are the circumstances and conditions involved in fair and equitable use of the Mekong River water resources.

Thirdly, non-legally binding regulations on environmental impact assessments. Within the MRC's cooperation framework, the Draft Guidelines for transboundary environmental impact assessment in the lower Mekong River are the only documents that directly document the contents related to environmental impact assessment in the Mekong basin. After the MRC submitted the latest draft on 25 September, 2018, the member states continue to affirm that this document is not legally binding,

so even if the final guidance is passed, the environmental impact assessment content will only bring recommendations for the parties.

Fourthly, lack of specific provisions on prior consultation obligation. Provisions on consultation obligation before undertaking operations on main stream, including dam construction, are covered in the Notification, Prior Consultation and Agreement Procedures (PNPCA) and Guidelines. However, the current content of this obligation still has a number of issues that have not been clearly specified, including time to notify, “available” and “relevant” data and information on project must be submitted to other parties and time to conduct consultation. For example, regarding to time to notify, the MeKong Agreement only stipulates such notification should be “timely”. Although PNPCA Guidelines further suggested that submission to the MRC Joint Committee must be at least six months prior to commencement of project implementation, it also regulated that: “In actual practice, it is likely that projects for proposed water use falling within the ‘prior consultation’ category would be submitted far in advance of the intended start-up date because they are long-term large scale projects requiring considerable technical, economic, social and impact analysis”. The lack of specific regulations makes the implementation this obligation heavily depend on the country where the project is going to be implemented.

Fifthly, the limitation of current regulation on dispute settlement mechanism. Article 35 of the Mekong Agreement only recognizes that dispute settlement measures include direct negotiations and a third party through a country or an organization to which the disputing parties mutually agree. In other words, the Mekong Agreement excludes the application of dispute settlement mechanism through international tribunals. If the parties cannot resolve the dispute through direct negotiation, an action through a third party provided in Article 35 cannot fully resolve the conflict since the third parties’ opinions are also only recommendations. Furthermore, this Article stipulates that if disputes cannot be settled within a certain time by agencies regulated in the Mekong Agreement, the disputes will be directly resolved by the parties. But, it does not specify how long is “certain time”. Due to the lack of specific deadline, this can affect the promptness and timeliness of the dispute settlement process when a member of above agencies intentionally delay in resolving dispute.

Lastly, regarding the implementation assurance mechanism, the Mekong Agreement and the documents passed by the MRC do not provide a legal means to ensure the implementation. As for water use procedures, there is no standard mechanism to guarantee the fulfillment of an obligation to modify, minimize or suspend inter-basin water transfers for a specified period during the dry season to meet the requirements of MRC procedures when required by the Joint Committee. There is no mechanism for the notification and consultation procedures to guarantee the performance of obligations if the MRC fails to fulfill the Joint Committee’s notification obligation. Similarly, for maintaining minimum flows, there is no mechanism to ensure the fulfillment of the obligation to report flow data to Member States’ MRC Secretariat. For the post-dispute settlement phase, the Mekong Agreement stipulates member states’ commitment to directly notify the Council’s results for this agency to take the necessary action. Still, it does not specify the mechanism to supervise the compliance of dispute settlement methods.

17.4 Recommendation and Conclusion

Over the past decade, water resources have become increasingly scarce. The shortage of water will lead to a medical crisis, an agricultural crisis, an economic crisis, and even a political crisis. The above potential catastrophic phenomenon underscores the importance of establishing legal frameworks at different levels, from regional to global, to regulate countries' behavior of exploitation and to use international water resources in a sustainable, reasonable, and equitable manner. The protection of international water resources towards sustainable development ensures that all countries, especially downstream countries, can enjoy international water sources' benefits equally. Therefore, the Mekong Agreement's legal contents must create a complete legal framework to maintain the Mekong River's water resources for the next generations' supply.

Some legal solutions to improve the international legal basis for sustainable development in the protection of Mekong water resources are recommended by the authors as follows:

Firstly, enact minimum natural flow rules on main streams. This rule serves as a basis for determining the "threshold" for legal interventions to be conducted against the causes of water degradation and depletion. Violation of the obligation to maintain minimum flow is a violation of the obligation to use the Mekong River's equitable and fair use of water resources as a basis for the dispute settlement process among member states. Secondly, define the factors affecting to reasonable and equitable utilization of the Mekong River. The parties may refer the 1997 Convention on the Law of the Non-navigational uses of International watercourse to list these factor, such as geography, hydrology, ecology and the country's economic and social needs.

Thirdly, unify the regulations on transboundary environmental impact assessment the Mekong River's downstream, recognizing the binding legal validity for these guidelines in place of the only recommendation.

Fourthly, guide on specific prior consultation obligation regarding notification timing, the threshold for specifying "available" and "relevant" of information on project and grounds for the country having project to eliminate the consultation process.

Fifthly, amend the dispute settlement regulations. The dispute settlement clauses should be re-defined to supplement dispute settlement through international tribunals, including courts and arbitration. This content may include recognizing the settlement of disputes by international tribunals in general international law. In the future, the parties may agree in detail on establishing separate arbitral tribunals to resolve disputes arising from the Agreement's implementation.

Lastly, Supplement the provisions on mechanisms to ensure the fulfillment of obligations related to water use, notification, consultation and reporting flow data. Accordly, Member States should regulate the MRC to impose the enforced measures in the event that a concerned state fails to fulfill its obligations under the Agreement.

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