

# Assessing the International Multi-Hazard Disaster Risk Governance In The Greater Mekong Sub-Region

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**Abstract.** The Mekong River Basin faces various interconnected hazards caused by climate risks and human development activities such as rapid hydropower dam construction that may increase disaster risks to downstream countries. Given its multi-hazards and transboundary impacts, it is imperative to create effective, regional-level disaster risk governance across the Mekong Sub-Region's countries. There are several established cooperation frameworks in the region including the Mekong River Commission (MRC) and the Lancang-Mekong Cooperation (LMC). However, the effectiveness of the regional platforms in governing disasters in the region remains to be understudied, especially in the context of addressing cascading, multihazard risks in the Mekong River Basin. Hence, this paper aims to assess the regional capacity and effectiveness as a regional platform for addressing multihazard and transboundary disaster risks. This paper will utilize a qualitative research method, including desk review and content analysis of relevant literature and policies. For the analytical approach, the paper will also examine how the region employs soft-political collaboration through the International Regime theory. By incorporating perspectives of disaster risk governance and international cooperation issues in the Mekong region, this interdisciplinary study provides a novel angle for the DRR field. Findings from this study are also expected to contribute to achieving the SFDRR Target F of enhancing international cooperation in DRR.

**Keywords:** Multi-Hazard, Disaster Governance, International Regime, Mekong River Basin, Risk Governance.

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## 1 Introduction

This paper aims to provide a holistic understanding of how the Lancang – Mekong Region is being managed and the effectiveness of these efforts especially in the context of its vulnerability to multi-hazard interactions. We employed the concepts of multihazard disaster governance and the international regime theory. By combining these two approaches, we can assess the regional effectiveness of disaster risk governance by factoring in the state actors' political interests, and perceptions of underlying regional commitments in Mekong Basin management through a set of norms, principles, rules, and procedures of the MRC and LMC.

The Mekong River otherwise known as the Lancang River is one of the largest and most important rivers in the world and the third largest in Asia. It goes through China, Myanmar, Laos, Vietnam, Cambodia, and Thailand, where approximately 65 million people depend on it for their livelihood. Since the late 1990s, several local state actors, such as China, Laos PDR, and Thailand have made use of the river's prowess to prepare for the upcoming energy needs of the modern world<sup>5</sup>. Its resources and projected potential have been the ultimate point of contention in the region, and many nations including those outside the Basin have discussed the best way to manage their resources in a just and sustainable manner.

The region is vulnerable to various levels of multi-hazard interactions, due to rising climate extremes and anthropogenic activities<sup>6</sup>. These compounding factors have escalated both in intensity and frequency, particularly linked to hydrometeorological, climatological, and water-related hazards — flooding, drought, landslides, pollution, and saltwater intrusion. For instance, the Lower Mekong Delta has experienced intensive rainfall during the wet season and drought during the dry season, disrupting livelihood, prone to food insecurity, and inducing involuntary climate migration<sup>7</sup>. Furthermore, other types of hazards are likely to increase due to higher exposure and increasing intensity of tropical cyclones, particularly in coastal areas of the Mekong River

Basin.<sup>8</sup> There are also many cases when the hydropower dam's failure creates fatal cascading disasters such as the Xe Nammoy, Laos, hydropower dam breaching in 2018 which resulted in catastrophic flooding; causing many losses, and fatalities and displaced thousands of individuals.<sup>9</sup> Uncontrolled and unbalanced resource management in the Mekong River Basin also gives rise to Natural Hazards Triggering Technological Disasters (Natech) risks. Nations, be it locals or outsiders have been shifting the blame amongst each other. Unfortunately, the states are predominantly focusing more on their national geopolitical interests in the region as opposed to giving any priority to disaster risk management in the region; let alone coordinated disaster risk mitigation efforts that address complex multi-hazards elements into the equation.

To mitigate the issue, numerous state actors have established regional organizations and frameworks to manage disaster risks. They can be divided into Mekong-led and outside-led initiatives in facilitating disaster risk governance in the region. These include the Mekong River Commission (MRC) jointly established by Cambodia, Laos PDR, Thailand, and Vietnam in 1995 and the Lancang Mekong Cooperation (LMC) of 2016 instigated by China. The MRC developed the Basin Development Strategy and Drought Management Strategy in order to manage disaster risks. Additionally, there are the Greater Mekong Sub-Region established by ADB in 1992; The Lower Mekong Initiative sponsored by the United States in 2009; The Green Mekong Forum established by Japan and Thailand in 2022; and the Mekong-Ganga Cooperation backed by India since 2002.

Concurrently, China which previously favored a bilateral approach, also changed its stance in 2016 with the creation of the LMC<sup>10</sup> and formulated the Five-Year Plan of Action 2018 - 2022 on flood and drought emergency preparedness, as well as the prevention and mitigation phases.<sup>11</sup> However, geopolitical distrust and tension consistently blocked efforts for more integrated

<sup>5</sup> Chen, X., Zheng, Y., Xu, B., Wang, L., Han, F., & Zhang, C. (2020). Balancing competing interests in the Mekong River Basin via the operation of cascade hydropower reservoirs in China: Insights from system modeling. *Journal of Cleaner Production*, 254, 119967.

<sup>6</sup> Lauzon, A. (2023). *River Sand Mining and Socio-Environmental Impacts: Parallel Case Studies Along the Red River in China and the Mekong River in Cambodia* (Doctoral dissertation, Université d'Ottawa/University of Ottawa).

<sup>7</sup> Nguyen, T. P. L., & Sean, C. (2021). Do climate uncertainties trigger farmers' out-migration in the Lower Mekong Region? *Current Research in Environmental Sustainability*, 3, 100087. <https://doi.org/10.1016/j.crsust.2021.100087>.

<sup>8</sup> Chen, A., Emanuel, K. A., Chen, D., Lin, C., & Zhang, F. (2020). Rising future tropical cyclone-induced extreme winds in the Mekong River Basin. *Science Bulletin*, 65(5), 419–424. <https://doi.org/10.1016/j.scib.2019.11.022>.

<sup>9</sup> Latrubesse, E. M., Park, E., Sieh, K., Dang, T., Lin, Y. N., & Yun, S.-H. (2020, August). *Dam failure and a catastrophic flood in the Mekong basin (Bolaven Plateau), southern Laos, 2018*. *Geomorphology*. Elsevier BV. <http://doi.org/10.1016/j.geomorph.2020.107221>.

<sup>10</sup> Yoshimatsu, H. (2015). The United States, China, and geopolitics in the Mekong region. *Asian Affairs: An American Review*, 42(4), 173-194.

<sup>11</sup> Five Year Plan of Action on Lancang Mekong Cooperation 2018 - 2022. Accessed on: <https://pressocm.gov.kh/wp-content/uploads/2018/01/ENG-Five-Year-Plan-of-Action-on-Lancang-Mekong-Cooperation-2018-2022.pdf>.

and effective disaster management. In the past, China as the sole upper-stream state often made use of its position to pressure the lower-stream state, causing grievances and distrust in its reliability as a just regional collaborator. Thailand, Vietnam, and Laos despite criticizing dam policies often have their own dam projects, making it hard for the lower-stream states to come to an agreement. Nowadays, the Mekong country's efforts in addressing the lack of trust in the region have started bearing fruit, especially after a renewed commitment from China to regionally manage the river together rather than using bilateral methods. However, more concentrated and collective efforts of the Mekong River states to manage disaster risks must be enhanced despite their national interests and rivalry.

## Theoretical Framework

### 1.1 Multihazard Disaster Risk Governance

Governance contains three important components: political, economic, and administrative authority. It is undertaken by multiple actors, across sectors and countries. On the same note, disaster governance is oriented towards the reduction of disaster risk and the enhancement of resilience. A notable accomplishment in disaster management within the country, as stated within the Sendai Framework Disaster Risk Reduction (SFDRR) 2015-2030 Priority 2 on strengthening disaster risk governance to manage disaster risk, is the successful reduction of the number of victims affected by disasters.

Increasingly, disaster governance is shifting towards reducing the risks arising from multi-hazard interactions. It recognizes that hazards often do not occur in isolation, and the interaction with other hazards can influence their impacts. Such an approach is crucial in effectively mitigating risks, enhancing resilience, and achieving sustainable development.

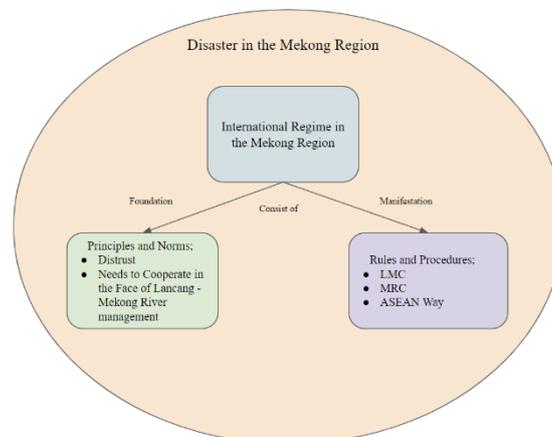
Multi-hazards governance is increasingly recognized as a critical component of disaster risk reduction and climate change adaptation. Given the increasing complexity and interdependence of risks in our globalized world, a multi-hazards approach can enhance our ability to manage risks and build resilience. The Mekong Region represents a geopolitical space that is threatened by existing and exacerbated vulnerabilities due to agricultural expansion, deforestation, river damming, urbanization, and especially by the existence of industrial forest plantations. Nonetheless, there has been little study on its governance despite decades-old literature defining disaster risks and threats there.

### 1.2 International Regime Theory

This theory dictates how sets of principles, norms, rules, and procedures be they informal or formalized

into an institution affect state behavior in addressing a certain issue.<sup>12</sup> The concept was popularized from the neo-liberal tradition in International Relations to explain the possibility of cooperation between state actors.<sup>13</sup> An example of the international regime can refer to the international trade regime in the form of the World Trade Organization. In the Mekong basin, the proliferation of treaties and institutions represents efforts to establish a regional regime, however, with multiple institutions serving a similar purpose with no clear hierarchy — its effectiveness remains a question.

There are four concepts that govern an international regime, that are: **(i) principles, (ii) norms, (iii) rules, and (iv) procedures**. They made the regime larger than a formalized institution, encompassing traditions and intersubjective understandings upheld among the actors in the region when dealing with a specific issue. Principles and norms form the basis of the regime, the set of ideas and beliefs that dictate the underlying logic of the actors inside of it, while rules and procedures are the expression of these ideas in the form of standardization and formal institutions.<sup>14</sup> Regimes fundamentally changes when the principle and norms undergo a change, while variation in rules and procedures are changes within how the surrounding actors understand the regime. In this research, we examined the existence of these principles, norms, rules, and procedures governing disaster risk management in the Mekong region.



**Fig. 1.** Disaster Governance in the Mekong Region (Authors, 2023)

## 2 Methodology

We have employed desk research which is also known as a secondary data review or literature review, it involves the process of reviewing, analyzing, and synthesizing existing information on a particular topic

<sup>12</sup> Krasner, S. D. (Ed.). (1983). *International regimes*. Cornell University Press.

<sup>13</sup> Keohane, R. O. (1982). The demand for international regimes. *International organization*, 36(2), 325-355.

<sup>14</sup> *Ibid*, 330-346.

or research question from academic articles, reports, statistical data, books, policy papers, and other published materials. A desk review ensures a throughout understanding of the topic and concepts that we are using in this research. This was done from March of 2023 until September 2023.

To complement the desk review we utilized content analysis a research technique used to make valid and replicable inferences by interpreting and coding textual material. This includes written or visual communication such as journal articles, book chapters, grey literature, and to some extent, online articles relevant to the cases. By systematically evaluating texts, a content analysis seeks to quantify phenomena in terms of predefined categories and constructs. The texts reviewed encompass the following: 32 peer-reviewed journals and six government websites.

### 3 Results and Discussion

#### 3.1 Understanding the Actors: The Six-State Political Dynamics and Interests

The region is made up of six different states and the river often functions as their natural border as well as the source of important materials. For example, China as the sole upstream state possesses half of the river's length, stretching across the Yunnan province. The residents depend on the upper half of the Mekong (also known as Lancang in China) for their livelihood. Nowadays China has explicitly stated their plan to use hydro-powered dams to prepare for the future energy crisis. Laos one of the northernmost downstream states echoed similar ambition, referring to their plan to be the battery of South East Asia.<sup>15</sup> While Myanmar's Shan state uses its resources for food and farming. Thailand, Cambodia, and Southern Vietnam are greatly dependent on the basin for food sources, and over cultivation as well as dam construction has made deforestation, salination, and drought a common problem.<sup>16,17</sup> Although they ended up investing and building their own dams in the river tributaries to deal with drought and provide energy to their population.

These state actors have distinct relationships with one another with different dynamics in bilateral and multilateral dialogue. China has a tendency to forms benign relations with Laos, Myanmar, and Cambodia,

<sup>15</sup> Laungaramsri, P. (2019). China in Laos: Enclave spaces and the transformation of borders in the Mekong Region. *The Australian Journal of Anthropology*, 30(2), 195-211.

<sup>16</sup> Han, P., To, M. T., & Thim, L. (2020). Sustainable water resource development scenarios and water diplomacy in the lower Mekong basin: Policy implications.

<sup>17</sup> Soukhaphon, A., Baird, I. G., & Hogan, Z. S. (2021). The impacts of hydropower dams in the Mekong River Basin: A review. *Water*, 13(3), 265.

while Thailand and Vietnam maintain vigilant semi-cooperative behaviors.<sup>18</sup> Relations between downstream states are also complicated, especially due to Vietnam and Thailand vying to be the dominant state in the region.

Despite the aforementioned differences, these states have a common interest in having a responsible and just water and disaster risk management in the region; decades of mismanagement have started showing its toll in the basin, with increasing frequency of multi-hazard disasters. All states are in consensus with managing the region by utilizing dams to mitigate the effect of disasters while also using them to produce energy. The problem stems in who get to manage the dams, the division of profits and how to ensure they will not be used to coerce each other in the political arena.

#### 3.2 MRC Low-stream backed initiative 1995 to effectively manage the River

In 1995, Thailand, Vietnam, Laos, and Cambodia jointly established the Mekong River Commission (MRC) to facilitate dialogue between the low-stream states and how to manage the region better together.<sup>19</sup> Unfortunately, China and Myanmar were excluded in its formulation, they ended up becoming dialogue partners in the following years, however, this quasi-member status ultimately hinders more comprehensive cooperation. The MRC has been pivotal in developing strategic plans, policies, and guidelines to manage and utilize the Mekong River system in conducting research, facilitating dialogue, and sharing information on water resources, fisheries, navigation, hydropower, and climate change. However, the issue of China and Myanmar's membership status continues to affect its efforts to provide effective governance leading to some actors questioning its impact.<sup>20</sup>

In response to the MRC's issue, China sponsored the establishment of the LMC which includes all six Mekong states in 2016.<sup>21</sup> It can be considered a step forward in regional collaboration to facilitate better

<sup>18</sup> Le Huy, B., Xuan, H. N., Van, N. T., & Le, H. (2021). The dangers of the construction of hydroelectric dams upstream of the Mekong River adversely effect on the ecosystems and livelihoods of people in the Mekong delta, Viet Nam. *Environmental Challenges*, 5, 100349.

<sup>19</sup> Feng, Y., Wang, W., Suman, D., Yu, S., & He, D. (2019). Water cooperation priorities in the Lancang-Mekong River basin based on cooperative events since the Mekong River Commission establishment. *Chinese geographical science*, 29, 58-69.

<sup>20</sup> Ibid, 69.

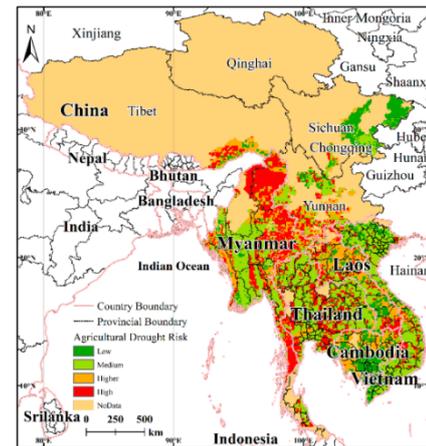
<sup>21</sup> Biba, S. (2020). China's 'old' and 'new' Mekong River politics: the Lancang-Mekong Cooperation from a comparative benefit-sharing perspective. In *A River Flows Through It* (pp. 47-66). Routledge.

governance in the basin. The LMC seeks to become more than a facilitator of dialogue, but also an active actor that can promote regional cooperation and build a norm of shared destiny<sup>22</sup>, placating the region's historical distrust. In its effort to do so, it has facilitated numerous high-level diplomatic meetings. It shares a similar focus with the MRC, however, it differs in the inclusion of political-security issues and a renewed focus on poverty eradication. Nowadays, both the MRC and LMC co-exist without any clear division of duties on the issues that they address.

The LMC has been surrounded by controversies since its inception<sup>23</sup>. China and Thailand had a disagreement on who first had the idea of establishing the LMC. Some actors outside the region have also criticized LMC as a China-dominated initiative, raising fear that China will use it to control the region effectively. Another criticism points out at the lack of non-governmental actors and transparency in the decision-making process. The LMC is an exclusively governmental organization that facilitates dialogue between government-level actors. Some have demanded the inclusion of non-state actors such as NGOs as well as the community dependent on the Lancang – Mekong River. These issues represent the traditional distrust prevalent in the region. For the LMC to succeed, it would need to navigate the turbulent issues in the backdrop of regional rivalries as well as international rivalries between China and the United States.

### 3.3 Multihazard Disaster Risk in the Mekong River Basin Area

Floods and droughts pose substantial risks to the well-being of communities residing in the Mekong River Basin region, with their severity heightened by the construction of hydropower dams across various countries. Furthermore, deforestation contributes to land deterioration, saltwater infiltration, and alterations in the environmental scenery, leading to both direct natural calamities and subsequent far-reaching consequences.



**Fig. 2.** Distribution of drought risk in the LMR (Zhang, et.al, 2020)

According to the drought risk assessment, the map for the whole of the LMR indicates a distribution pattern of high-risk areas in the central region, low-risk areas in the regions adjoining the central region, high-risk in southern areas, and low-risk in northern areas around Cambodia, Myanmar, Laos, and Thailand. The agricultural productivity in drought-affected provinces situated in the southeastern regions of Cambodia showed diminished yields, as indicated by the increasing drought indices, this highlights how the drought has impacted the condition of crops on a provincial scale.<sup>24</sup> The development of the hydropower dam caused cascading impacts on the downstream level of the Mekong River Basin, the drought has escalated the acidification and salination around the area threatening the lives of 20 million people, loss of arable land, damaged infrastructures and houses, and displaced thousands of people.<sup>25</sup> Furthermore, Mekong countries also experienced tropical cyclones such as Nargis (2008) and Ketsana (2009). Tropical cyclones around the Mekong River Basin will increase in 2081 - 2100, it shows a consistently shorter return period of TC-induced extreme wind particularly in coastal areas, which will disrupt food supply, and aggravate conflicts in the region<sup>26</sup>.

<sup>22</sup> Peng, W., Jiyan, W., Guochuan, D., & Wenjie, Y. (2021). Connotation and Construction of “Lancang-Mekong Community of Shared Future” through Sports Cooperation. *Tobacco Regulatory Science*, 7(6), 5836-5847.

<sup>23</sup> Po, S., & Primiano, C. B. (2021). Explaining China’s Lancang-Mekong cooperation as an institutional balancing strategy: dragon guarding the water. *Australian Journal of International Affairs*, 75(3), 323-340.

<sup>24</sup> Abhishek, A., Das, N. N., Ines, A. V. M., Andreadis, K. M., Jayasinghe, S., Granger, S., Ellenburg, W. L., Dutta, R., Hanh Quyen, N., Markert, A. M., Mishra, V., & Phanikumar, M. S. (2021). Evaluating the impacts of drought on rice productivity over Cambodia in the Lower Mekong Basin. *Journal of Hydrology*, 599(December 2020), 126291. <https://doi.org/10.1016/j.jhydrol.2021.126291>.

<sup>25</sup> Huy, B. Le, Xuan, H. N., Van, N. T., & Le, Hh. H. (2021). The dangers of the construction of hydroelectric dams upstream of the Mekong River adversely effect on the ecosystems and livelihoods of people in the Mekong Delta, Viet Nam. *Environmental Challenges*, 5(March), 100349. <https://doi.org/10.1016/j.envc.2021.100349>.

<sup>26</sup> Chen, A., Emanuel, K. A., Chen, D., Lin, C., & Zhang, F. (2020). Rising future tropical cyclone-induced extreme winds in the Mekong River

Worsening environmental conditions in the Lower Mekong Basin (LMB) pose incremental threats to the community and infrastructures, especially the agriculture and aquaculture systems. Recurring hydrometeorological coupled with climatic factors cause more unpredictable and frequent flooding and droughts in the LMB. In addition to hydrometeorological and climatological hazards, anthropogenic actions, such as infrastructure development, river damming, pollution, and encroachment are further pushing the LMB toward the risk zone. Mekong wetlands that is home to biodiversity hotspots that influence the region's economy society, and culture are also under threat due to increased regional anthropogenic activities, global climate change, and slow-onset climate change impacts such as sea-level rise.

Lately, there are also growing concerns of Natch, particularly related to the hydropower dam's failure in creating disastrous catastrophic events due to mismanagement. The most notable transboundary case happened on July 23, 2018, when Saddle Dam D of the Xe Pian–Xe Namnoy reservoir, failed and released a deluge of water into agricultural lands, forests, and settlements along the Vang Ngao River in both, Laos and Cambodia, producing significant material damage and claiming lives. The magnitude of the disaster occurred due to several factors including: (i) poor project design of the dam that used permeable materials; (ii) a lack of consideration of the possibility that such a dam failure could occur; and (iii) a lack of preparation for such an event<sup>27</sup>.

Furthermore, there was not any risk mitigation and appropriate emergency response effort in sight to establish the infrastructure in case of such emergencies. A study by Latrubesse, et.al in 2020 concluded through their research that the downstream communities could have been evacuated at least hours earlier if the region had incorporated a sufficient early warning system to warn them of the dam breach. This should have become critical lessons learned for the institutional level governance in mitigating the multihazard risks in the region by incorporating various types of hazards into the region's disaster management efforts instead of only focusing on climate change and ecological issues without taking into account potential manmade risks such as technological and infrastructure failures.

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Basin. *Science Bulletin*, 65(5), 419–424.

<https://doi.org/10.1016/j.scib.2019.11.022>

<sup>27</sup> Latrubesse, E. M., Park, E., Sieh, K., Dang, T., Lin, Y. N., & Yun, S. H. (2020). Dam failure and a catastrophic flood in the Mekong basin (Bolaven Plateau), southern Laos, 2018. *Geomorphology*, 362, 107221.

<https://doi.org/10.1016/j.geomorph.2020.107221>

### 3.4 Mekong Region Disaster Risk Management: International Regime Theory Analysis

We can dissect the MRC, the LMC, and the region's efforts in managing its resources using the regime theory components to determine whether or not a functioning international regime existed in the Lancang – Mekong Basin. Should they exist, we will be able to understand the principles, norms, rules, and regulations that guide its operation. Despite the region's tradition of conflicts and distrust, local actors have remained consistent in making progress toward a more stable management that can facilitate effective and just disaster governance. The analysis can be explored below:

#### a. Principles and norms: ASEAN Principles, norms of effective disaster governance and distrust

Principle is the most abstract notion of a regime, it guides the very foundation of the regime's existence and the logic of its operation — In the basin, everyone operates under the basic principle that the river needs to be regionally managed in order to prevent the aggravation of existing multi-hazard disasters in the face of climate change. This motivates the lower steam countries to establish the MRC and participate in various multinational dialogues concerning its management. It is also the main reason China switched its previous bilateral approach into a more proactive multilateral method with the establishment of the LMC. Adherence to this basic principle can be easily found in the joint statements and speeches of various government officials.

The shared expectation of what is appropriate and acceptable constitutes the norm; the regional behaviors generally coincide with ASEAN. The Lancang–Mekong states often adopt a top-down approach and primarily focus on joint local efforts rather than the primacy of outside Lancang-Mekong states. Understanding the norm in the region can be quite difficult due to the vague position China and Myanmar hold. Despite being part of the Lancang – Mekong basin, China is a massive country that historically either dominates or is indifferent toward the region, while Myanmar's cultural proximity with South Asia also plays a part in its alienation. This is part of the reason why the MRC did not include China and Myanmar as their members. The LMC seeks to change that, however, whether it has succeeded or not remains to be seen.

#### b. Rules and regulation: the establishment of regional organizations and how actors adhere to these organizations' decisions

On the other hand, rules and regulations are the formal expression of principles and norms — they manifest in procedural guidelines and written laws that guide and constrain actions. The formulation of organizations and their relevance portray whether or not the regime is strong or weak. The Lancang – Mekong basin

possesses numerous organizations that sometimes interact with each other. The institutional complexities make it hard for any one organization to claim primacy. The complicated and distorted interpretation of the guiding principles and norms ultimately gives birth to competing regimes.

The six states all share the same principles and to a certain extent norms; however, they can not settle on a primary means of expression for these ideas. Different actors come up with different interpretations of the regional guiding principles in disaster governance in gives birth to competing institutions that ultimately make cooperation harder not easier. The effective international regime can be seen from how authoritative its representing organization is the international trade regime adheres to the WTO, and the European regime to the EU and South East Asia despite its non-interference policy gives a face to ASEAN centrality. The same cannot be said in the Lancang – Mekong region, the MRC and LMC works separately from each other, each promoting similar yet different mechanism of cooperation and adjudication. This condition resembles institutional overflow in Latin America, where multiple organizations serve the same purpose, crippling the decision-making process and its legitimacy.<sup>28</sup>

The lack of a primary organization means that the regional regime is still in nascent form. It is still combating the inherent distrust and tradition of conflict prevalent between states. The regime is capable of setting the agenda and facilitating discussion amongst states. However, it falls short of delivering a legitimate and regionally accepted mechanism to provide water management and multi-hazard management. Should a state disagrees with one organization, it will move to another organization. In the future, these competing institutions might establish a clear relationship between them and how they are part of the same regime, nonetheless, at the moment these institutional rivalries fell short in a properly established international regime.

## Conclusion

The deteriorating environmental conditions in the Lower Mekong Basin (LMB) pose increasing threats to local communities and infrastructures, especially agriculture and aquaculture systems. Recurrent hydrometeorological events coupled with climate factors led to more frequent and unpredictable flooding and droughts in the LMB. It is further exacerbated by human activities such as infrastructure development, dam construction, pollution, and encroachments. This also applies to the Mekong wetlands — vital for biodiversity and the economy — as it is also endangered by regional anthropogenic actions and climate change impacts. A significant concern is the

potential for Natech disasters, particularly related to hydropower dam failures. The failure of Saddle Dam D in the Xe Pian–Xe Namnoy reservoir in 2018 highlighted the lack of risk mitigation and emergency response, resulting in material damage and loss of life. This event emphasized the need for comprehensive disaster management that considers a multi-hazards risk governance approach; including addressing the technological and infrastructure hazards.

The analysis examines the efforts of the MRC, LMC, and regional actors in managing resources using regime theory components. Principles and norms guide the foundation of a regime, with the shared principle of regional management to manage disaster risks associated with multi-hazard interactions. Norms align with ASEAN behaviors, but China's historical dominance and Myanmar's cultural proximity create complexities. Rules and regulations manifest in organizational structures, and the presence of multiple competing institutions in the region hinders effective cooperation. The lack of a primary organization indicates an evolving and immature regime, struggling with distrust and conflicts among states. The regime sets agendas and facilitates discussions but lacks a legitimate mechanism for water and multi-hazard management. Lastly, institutional rivalries impede the establishment of a robust international regime in the Lancang-Mekong region.

Future research can include a deep dive into the regional complexities. Technically the Mekong Basin is part of South East Asia, under the jurisdiction of ASEAN which has a robust disaster framework and agreement. Several formal ASEAN documents (e.g ASEAN Socio-Cultural Community, ASEAN Agreement on Disaster Management on Emergency Response) on disaster management also emphasize international cooperation and coordination to address disaster risks collectively. Despite those tools and the importance of responsible disaster governance in the Basin, ASEAN has remained relatively quiet in comparison with its stance in the South China Sea as well as archipelagic South East Asia. Consequently, many questions remain unanswered regarding the difference between MRC and LMC as well as their approach toward facilitating disaster governance. China is a major world power, it has made itself different from traditional rivals such as The United States and Japan; this translates into the regional organizations it has helped establish.

<sup>28</sup> Gómez-Mera, L. (2015). International regime complexity and regional governance: Evidence from the Americas. *Global Governance*, 21, 19.