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Abbreviation

ADB : Asian Development Bank

AMBDC : ASEAN-Mekong Basin Development Cooperation

ASEAN : Association of Southeast Asian Nations

BRI : Belt and Road Initiative

CICOS : Commission Internationale du bassin Congo-Oubangui-Sangha

ECF : Economic Corridor Forum

EU : European Union

FAO : Food and Agriculture Organization

GIZ : Gesellschaft für Internationale Zusammenarbeit

GMS : Greater Mekong Subregion [Program]

GWP : Global Water Partnership

IBWC : International Boundary and Water Commission

IFAS: International Fund for Saving the Aral Sea

IWRM : Integrated Water Resources Management

IRBO : International River Basin Organization

LCBC : Lake Chad Basin Commission

LMB : Lower Mekong Basin

LMC : Lancang-Mekong Cooperation

LMEC : Lancang-Mekong Environmental Cooperation Center

LMWC : Lancang-Mekong Water Resources Cooperation Centre

MBI : Mekong Business Initiative

MRC : Mekong River Commission

NADB : North American Development Bank

NGO : Non-governmental organization

OKACOM : Permanent Okavango River Basin Water Commission

OMVS : Organisation pour la Mise en Valeur du Fleuve Sénégal

PNPCA : Procedures for Notification, Prior Consultation and Agreement

PRC : People's Republic of China

RBO : River Basin Organization

RMB : Renminbi (Chinese Yuan)

SEA : Southeast Asia

SOE : [Chinese] State-Owned Enterprise

TWM : Transboundary Water Management

UNECE : United Nations Economic Commission for Europe

UNESCAP : United Nations Economic and Social Commission for Asia and the Pacific

WWF : World Wildlife Fund

WB : World Bank

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1. Theoretical Part

1.1. Introduction

The Mekong River is one of the numerous transboundary rivers in the world which passes through multiple countries, akin to the Nile in Africa or the Danube in Europe. From the high Tibetan Plateau in the Qinghai province of China¹ to the South China Sea by the Mekong Delta of Vietnam, the Mekong River flows for 4'350 kilometers and its course transits through China, Myanmar, Lao, Thailand, Cambodia and Vietnam. The Mekong River brings numerous benefits to the countries aforementioned and its social and economic impacts are substantial. Much of the river's importance and its economic and social impacts are difficult to quantify, however it is believed that the Mekong brings overall positive benefits to the six riparian countries and its population. The transboundary mainstream river provides water, fish and resources for agriculture to approximately 70 million people in the Mekong Basin (Ribka and Perwita 2017, 27). Many households on the Mekong Basin depend on the river for subsistence; mostly for agricultural purposes but also for fishing and other activities (Baran and Myschowoda 2009, 227). The Mekong River gives direct and indirect economic benefits to the governments of Lower Mekong Basin (LMB) states, meaning Cambodia, Lao PDR, Thailand and Vietnam, as well as China and Myanmar, located in the Upper Mekong Basin; but it also provides immense benefits, economic and cultural, to the people living on its banks.

Governments of the countries in the Mekong Basin, although benefiting passively from the river, have shown strong interest into harnessing its flow in more economically viable ways. Governments have looked for solutions to use the underdeveloped Mekong River and its resources to boost their GDP and help develop their economies. One of these ways is the use of hydropower dams to produce electricity. Several countries such as China and Cambodia are already in the process of damming parts of the river in their territory and some such as Lao PDR have already received economic benefits from electricity produced by such dams (Yoshida et al. 2020, 3).

Hydropower dams are a source of energy and economic development but they have the potential to bring severe environmental degradation along the way (Campbell and Barlow 2020, 2). Hydropower projects are believed to influence negatively the fisheries of the Mekong River as the fish living in its waters are interconnected to its ecosystem

¹ China will refer to the People's Republic of China throughout the entire thesis

and environment. Hydropower dams can reduce the biodiversity of the river and that can negatively affect fisheries and the subsistence of the people depending on it (Yoshida et al. 2020, 3). This is especially relevant of the cascade model of hydropower dams used to maximize electricity yield which can bring increased detrimental effects to the environment (Campbell and Barlow 2020, 5). Therefore this creates dissensions and contentious interests. On one hand governments of several countries wish to reap benefits from the electricity produced by hydropower dams and on the other hand parts of the population of several countries use fisheries as a secondary source of subsistence and revenue (not often primarily). As Bouapao (2011, 106) and other researchers explain, catches on the local level are not entirely integrated into economic statistics of riparian countries and therefore are not systematically measured.

There is also a regional component. Indeed the Mekong River is shared among six countries and what upstream countries do affect downstream countries. There is therefore a need for entities able to organize, coordinate and synergize activities and efforts of the riparian countries. As China is not part of ASEAN the latter cannot fully coordinate efforts on the Mekong. One type of organizations that can have such authority on projects in the Mekong River and which will be the focus of analysis are River Basin Organizations (RBOs). Many RBOs exist in the region and three in particular have wide range in the Mekong River Basin and may have a role to play in regard of the fisheries: the Mekong River Commission (MRC), the Lancang-Mekong Cooperation (LMC) and the Greater Mekong Subregion Program (GMS) (Grünwald 2020, 70). Their influence over the development of hydropower dams in the Mekong basin and their ability to safeguard fisheries will be analyzed in this thesis.

1.2. Research Question and its Relevance

The topic of this Master thesis is the influence of RBOs on the damming of the Mekong River and its effects on fisheries. The research question is stated as followed: what has been the role of four River Basin Organizations over the damming of the Mekong River and the safeguarding of its fisheries? Can they bring unity or common synergies to solve regional issues in China, Lao PDR, Cambodia and Vietnam?

What places have regional organizations for river basins on aforementioned issues? Can they offer unity, common synergies and tools to solve them? In the case of River Basin Organizations in the Mekong Basin, the subject has received comparatively few debates. The potential influence of RBOs on fisheries of the Mekong has also not been extensively discussed. There is however a necessity to understand whether regional organizations can reach consensus on solutions for common transboundary

management of river basins, agreements on building dams and safeguarding fisheries. By focusing on River Basin Organizations and seeing their possible roles in the damming of the Mekong River between 2010 and 2020, a larger overview of the efficiency of such organizations can be assessed, as well as their capacity to connect countries and unite efforts for common goals in the region. The question will largely be answered on an international relations' lens.

Before explaining who can benefit from this research, the extent of the analysis must be stated. First of all, it will entirely be focused on the Mekong River and will not do any cross-analysis with other transnational rivers, excepted for the state-of-the-art. The focal point is indeed the Mekong River and the countries in which it flows. For this reason, the comparison will be done in a regional level. Secondly, not all countries will be assessed as Myanmar and Thailand will not be a part of the analysis. Thirdly, any water or energy security issues would be analyzed in the focal point of hydropower dams' influence on fisheries. Therefore there will not be any analysis on issues such as climate change, water pollution, deforestation, issues with artificial canals or any other forms of environmental degradation. There are two reasons for this choice, the first one being that the extent of the analysis has to be reduced to provide meaningful findings and the second being that, as the literature review will show more clearly, the impacts of hydropower dams on fisheries might be greater than other sources of environmental degradation in the Mekong River (Campbell and Barlow 2020, 1).

This thesis might eventually be valuable for several actors in policy-making, environmentalists, members of NGOs and researchers in various fields. The question of efficiency of RBOs in order to solve regional issues can be important for policy-makers as it can answer whether RBOs are relevant for transboundary river management. The same can hold true for government officials. Alongside the three RBOs (MRC, GMS and LMC) there are multiple other organizations and cooperation programs that integrate all or part of the Mekong River; for example Apisal Sunchindah lists 12 organizations of that type including the RBOs aforementioned (Sunchindah 2018, 12). Given the multiplicity of these organizations and the potential importance or lack thereof of some of them, it might be important for governments in the region or externally, to know which ones are important to focus on. Furthermore, some governments might benefit from knowing which RBOs has been founded by whom and is dependent on which donors for financing. As an example, the GMS was founded in 1992 by the Asian Development Bank and there is still the looming possibility that the former is influenced by the latter (Boer et al. 2016, 15). Foreign governments can also understand better the general positions of the RBOs studied in this thesis; indeed topics such as the importance of Western actors in the MRC or the LMC's contribution to China's Belt and Road Initiative will be reviewed here. Furthermore, members of the civil society and Non-Governmental Organizations (NGOs) could also use the insights of this thesis since the general attitude and the

interactions of RBOs with stakeholders will be evaluated. This might also bring light of the role of RBOs in involving local actors as well as provide knowledge on scope of action for activists concerned with issues of environmental protection or communities' livelihoods in the Mekong. This is especially relevant for this region as decision-making are marked by top-down approaches (Qi 2013, 282). Therefore the question of RBOs' mechanisms to involve stakeholders and which RBOs might be more sensible to involve non-governmental institutions could prove useful. Depending on the insights, local activists and actors could know which RBOs can be used as platforms to urge governments for changes, for example.

Furthermore, researchers from several fields can use the insights found in this thesis. Environmental experts can complement their technical knowledge with the IR lens of the analysis, which is almost considered as a necessity by Kittikhoun and Schmeier (2020), arguing that water diplomacy as a form of inter-countries relations must go along with technical management of river basins (Kittikhoun and Schmeier 2020, 4). This point is developed further in the state-of-the-art. Such approach could also be useful for scientists specialized in hydrology or those doing deep analysis on fisheries' transformation in the region. Furthermore, this thesis lays out a specific geopolitical arena in which many countries are part of ASEAN while having different interests on the Mekong River and where a growing regional power, under the Belt and Road Initiative, is powering state businesses to invest in the region (Biba 2018, 633). For this reason, researchers of International Relations studies can make use of the conclusions presented here, whether they adopt a liberalist point-of-view or are proponents of the realist theory. Experts on constructivism might also benefit from this thesis, albeit indirectly. The question of transboundary organizations' ability to solve regional issues can directly be useful for liberalist theorists. Authors of larger studies in the region could use the insights presented here. Finally, researchers on local community can better understand the situation of fisheries and the external conditions that can influence their safeguards and by extent how that can affect the livelihood of communities in the Mekong.

Finally, an explanatory addendum must be included to talk about the timeframe, and especially about the global pandemic that was first identified in Wuhan on December 2019. The impacts that the SARS-CoV-2 and global lockdowns had on global and national economies, on societies and local communities of the world and the Mekong region, as well as the concomitant impacts on the regional RBOs and their efforts to provide solutions for water management, is difficult to evaluate. A full understanding of the global pandemic, still ongoing at the time when the thesis was being written on spring 2021, might only be possible with the objective view that a certain length of time might provide. Therefore, while included, the year 2020 will overlook the impacts of lockdowns and virus' outbreaks. This might affect the accuracy of the present analysis,

but without a clearer picture of the pandemic's effects in the region, no other satisfying solutions were found.

1.3. State-of-the-art

1.3.1. Water diplomacy and River Basin Organizations

First of all the concepts surrounding river basin organizations will be examined. A River Basin Organization (thereby abbreviated as an RBO) is an organization with various capacities that prioritizes topics relevant to a specific river basin. Schmeier and Kittikhoun (2020) define RBOs as “international organizations tasked to manage designated basins on the basis of agreed-upon principles, norms, rules, and governance mechanisms” (Schmeier and Kittikhoun 2020, 3). Wingqvist and Nilsson (2015) argue they are “institutionalized forms of cooperation (...) covering the geographically defined area of international river or lake basins characterized by principles, norms, rules and governance mechanisms” (Wingqvist and Nilsson 2015, 3). RBOs do not operate at the national level but at the watershed or river basin level. That idea has been promoted with the concept of Integrated Water Resources Management (IWRM) which the Global Water Partnership defines as “a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems” (UN 2009). This definition is considered as widely accepted by UN organizations (Ibid.). However the concept of IWRM as an essential component of water management is still debated. Cook and Bakker (2012), who have done cross-analysis of water security debates, notice that while not all scientists consider IWRM as the only solutions to watershed management (Cook and Bakker 2012, 100), it is nonetheless seen as a dominant paradigm in that domain (Ibid. 98). McDonnell (2008) also confirms that an important shift has been made from isolated approaches to holistic approaches, based on IWRM, especially after the Dublin Statement of 1992 (Ibid. 132). Van Beek and Arriens (2016) argue in the same way that water governance and management is achieved with better results on a river basin scale and that IWRM can integrate aspects such as food and energy security (Van Beek and Arriens 2016, 27). They advocate as well for the use of RBOs to effectively manage issues on a river basin level (Ibid.). Some critics of IWRM argue that it is only a theoretical framework which is difficult to achieve in reality (Molle 2008) while others simply emphasizes the difficulty without denying the usefulness of IWRM as an encompassing framework (Watson 2007). Cook and Bakker (2012) are on the

opinion that water security should be included in IWRM to better frame end goals; indeed IWRM often seems to only consider aspects of simple integrated management and that facet can overlook important aspects of water security (Cook and Bakker 2012, 98). Using a holistic approach which includes social, economic and environmental aspects is seen as a jump ahead compared to previous approaches that saw the use of infrastructure as the main way of solving water security issues (Pahl-Wostl, Palmer and Richards 2013, 680). As an example, many scholars in the literature reviewed criticize the prominent status given to engineers in some RBOs, deploring that solutions based on infrastructure are preferred in several cases and that many aspects such as social ones are not considered (Huitema and Meijerink 2017), (Pahl-Wostl, Palmer, and Richards 2013), (Schlager and Blomquist 2008) (Williams 2018).

Therefore, many experts argue that IWRM has to be part of how countries and organizations should handle water security issues. Huitema and Meijerink (2017) take the approach of focusing on ecosystem management. From this standpoint, a “bioregional” vision has to be preferred and creating an RBO is an important step for possible implementation (Huitema and Meijerink 2017, 46). This fact has its own importance since close to 145 nations share an international basin and 19 basins worldwide are shared between five or more riparian states (UNDP 2006). Huitema and Meijerink take a regional stance which is supported by Schlager and Blomquist (2008). In their work, they demonstrate that “the watershed is the appropriate scale for water resource management” and that institutions have to be scaled accordingly rather than using national or other international organizations (Schlager and Blomquist 2008, 1). Indeed the latter two levels might be inappropriate as they do not rightly encompass geographical entities as lakes or river than can be part of several countries (Ibid.). The literature reviewed so far support a vision of water security which encompasses social, economic and environmental aspects and where river basin and watersheds are considered to be the appropriate scale.

Concepts of hydro-diplomacy, or water governance as those two terms are often used interchangeably (Schmeier 2018), are important as they intersect with possible guiding principles of River Basin Organizations and can shape their behaviors in river basins (ibid.). For the International Union for Conservation of Nature (IUCN), hydro-diplomacy is what “allow[s] countries to negotiate agreements on water management” (IUCN). Kittikhoun and Schmeier define hydro-diplomacy by dividing it between transboundary water management, water cooperation and water diplomacy (Kittikhoun and Schmeier 2020, 4). In this arrangement, water resources management focuses on achieving water-related outcomes through technical means, water cooperation aims to manage and develop water resources cooperatively and sharing common benefits of water basins; finally, water diplomacy focuses obtaining stability and finding peaceful resolutions for contentious interests and conflicts (Ibid.). The three are interrelated but water diplomacy and water cooperation relate to actors and

their relations while water resources management is more focused on scientific aspects and technical cooperation (Ibid.). Klimes (2019) also uses the division between water diplomacy and water cooperation (Klimes 2019, 1362). She represents water diplomacy as “an approach that enables a variety of stakeholders to assess ways to contribute to finding solutions for joint management of shared freshwater resources” (Ibid.) Furthermore, according to her opinion, governments often establish RBOs in order to strengthen water agreements and “furnish an institutionalized framework for long-term cooperation” (Ibid. 1364). RBOs and hydro-diplomacy are linked as the former are institutions offering several services for easing water diplomacy. Pohl et al. (2014) remind that “water governance remains largely a topic for technical and development cooperation”, that “this is often also the most appropriate setting” and that “any of the issues and challenges in water governance are technical” (Pohl et al. 2014, 2). However he also explains that “there are limits to what technical cooperation alone can achieve in conflictive political contexts” (Ibid.). According to these authors, management of transboundary waters can be limited by regional and international politics, especially in areas where power asymmetries are important (Ibid.). The Mekong River is shared among actors with different power abilities and interests that are not always complementary; therefore Pohl et al. (2014) conception of water diplomacy is appropriate for the topic of this thesis. This also confirms arguments seen above in Kittikhoun and Schmeier (2020) as well as Klimes (2019), explaining that scientific collaboration, although preponderant in river basin management, might not be enough in case of conflicts. Grech-Madin et al. (2018) explicit the need to consider politics’ dynamics in a water basin (Grech-Madin et al. 2018, 108). The authors notice the important relation between science and water cooperation exemplified with the collection of data to “help policy makers, NGOs, and local actors” (Ibid.). They also ask for multidisciplinary approaches to apply water diplomacy and “deeper understanding of water issues, such as by mapping out important political state and non-state actors, as well as the interaction between these actors and the international community” (Ibid.). Moreover, they emphasize the need to include several state actors and non-state actors in terms of water diplomacy and water resources management while the empirical data they surveyed tend to show that water diplomacy is rather “state-centric” (Ibid.). According to their point-of-views, such vision of water diplomacy is not possible if only technical water issues are considered; social and economic components need to be considered too. This is confirmed by Milman and Gerlak (2020) who explain that water diplomacy makes use of technical and social knowledge in order to produce good decision-making (Milman and Gerlak 2020, 137). Distinctions between water diplomacy, water cooperation and water resource managements, used by Schmeier and Kittikhoun (2020) will be retained for the thesis as the focus of analysis uses a lens of international relations. Considerations of political imbalances having an impact on water diplomacy and use of all stakeholders involved will be significant for the framework.

River Basin Organizations can be national or international depending on the river and as is the case for the Mekong River there can be several RBOs present in the same area (Sunchindah 2018, 12). The website of the Oregon State University references 120 RBOs in 110 countries (Oregon State University, 2020). Transboundary RBOs, sometimes referenced as International River Basin Organization (IRBO), are found in Asia as well as in Europe, Africa and the Americas. The Food and Agriculture Organization (FAO) states that “RBOs vary from joint commissions concerned with little more than water sharing to organizations that have major executive functions” (FAO 1995). Also important for the FAO is the ability of an RBO to carry out its stated mission as is it depending on political and financial commitment, clear definition of what member states require of the RBO, defined procedures that will guide interactions between RBOs and regional actors as well as “an organization, incentive structure and staff that are compatible with its responsibilities and its legal status” (FAO 1995). That last sentence is unclear and expresses the difficulty that authors and external actors find to measure or assess the efficiency of an RBO. Indeed, in general, its structure depends on what its member states require from it as well as clearly defined procedures and due commitment, however the FAO is still rather imprecise about what details can ensure the organizations’ successes to reach its objectives.

River Basin Organizations have different structure models depending on the guiding principles its member states give it. There is a first possible division, between RBOs implementing projects and RBOs in charge of water management (Schmeier 2010, 4). There is also, as Bakker (2006) analyzed, the possibility to separate RBOs (or rather International River Basin Institutions as she calls them) between organizations and committees (Bakker 2006, 88) depending on the extent of their executive powers. Lautze et al. (2013) make a clearer distinction between committees, commissions and authorities (Lautze et al. 2013, 39). Committees are found where states wish to preserve their sovereignty and aim for a loose form of cooperation, commissions are found when there is a need for basin identification and a higher level of coordination and harmonization and finally authorities are found where there are significant shared projects and where member states wish to reduce their own sovereignty for development or common goals (Lautze et al 2013, 40). The distinction of the authors is interesting as they mention RBOs in the Mekong River for which a process has been done from committees to commissions, which means towards a higher level of integration (Lautze et al. 2013, 40). Bakker also states that the main role of International River Basin Institutions are to prevent conflicts and that to obtain that goal there is a need for strong institutions (Bakker 2006, 88). However that aspect removes any goals that could concern common work on smaller socio-economic considerations (such as safeguarding fisheries) which go beyond simple conflict prevention. Furthermore she affirms that “where relatively strong, sustainable institutions are in place, international water disputes do get resolved” (Bakker 2006,

88). Nonetheless this raises the question in places where there is imbalance between states with potential conflicts, such as an economic imbalance between states in the Mekong area (China and Cambodia for example). In this regard, the empirical article of Olmestad (2014) should be mentioned. Olmestad and Sigman, in their study of conflicts and cooperation about dam building in international rivers, are more pessimistic about the ability of international organizations to mitigate disagreements about dam building as he reports “less conclusive” evidence that organizations have in “mitigating [...] incentives” in building dams (Olmestad and Sigman 2014, 23). They conclude by saying that “our results do not support optimism about the likelihood of cooperation over more complex or global resources”, meaning by this sentence that data do not support evidence of collaboration for complex issues in a complex environment (Ibid.). Lautze et al. (2013) in contrast, using their observation on the Mekong River Commission, argue that there have been changes towards greater integration (Lautze et al 2013, 40). It should also be mentioned that Bakker’s work, focusing mostly on RBOs’ role in flood prevention (Bakker 2006, 156), offers little support to assess the efficiency of these organizations, in which Lautze et al. (2013) share the same caveat.

Authors such as Sabatier (2005) have done great efforts to conceptualize collaboration around watersheds and have provided a clear step ahead in the literature of this field, however his analysis is based on US systems and are difficult to extrapolate in a complex geopolitical environment such as in the Mekong Basin. His perspective on RBOs is that rules allow for good environmental governance in the watershed level as well as allowing all involved stakeholders to be part of the decision-making (Sabatier 2005, 262). Sabatier rightly emphasizes the need to involve all parties concerned, echoing the necessity to consider water security as encompassing social, economic and social aspects; however is distinction between collective choice rule (who can participate in decision making, how decisions are made) and operation rules (who can use water resources and punishment in case of infraction) (Ibid.) are not sufficient to ensure efficiency in case of multiple stakeholders with contentious interests. Susanne Schmeier, who is also working for the Mekong River Commission, explains that the organizational structure of an RBO is fundamental for its efficiency in managing shared river basins (Schmeier 2010, 4). The organizational structure concerns four domains: the RBO's institutional design which defines how different bodies interact with each other, the connections between member states of the organization, how tasks are distributed between different governance levels and finally the question of financing (Ibid.). Wingqvist and Nilsson (2015) who use parts of Schmeier’s framework for her own analysis of African RBOs, say the following:

Schmeier is interesting due to the combination of two academic fields (hydropolitics and institutionalism), a broad evidence base (116 RBOs), depth (case studies), and the inclusion of both endogenous and

exogenous factors in the assessment of RBO effectiveness (Wingqvist and Nilsson 2015, 2).

This study focused on the endogenous aspects of RBO effectiveness. Schmeier's works on the Mekong River make her observations and conclusions relevant for the need of this thesis. In *Governing environmental change in international river basins: the role of river basin organizations* (Schulze and Schmeier 2012) the authors also insist on organizational structure as a basis for proper governance on the river basin level (Ibid. 229). Indeed, in the region where the analysis takes place, along the Mekong River, complex geopolitical events can make governance of river basins a challenge. Due to internal events (e.g. damming parts of the river) or external events (conflicts over the South China Sea between Vietnam and China as an example) difficulties can arise in reaching agreements over river basin issues. In such a context it is then important that RBOs have a level of "adaptability" (Ibid. 230) which the authors define as "ability of an organization to continue to function effectively despite the presence of external environmental stresses" (Ibid.), a necessary condition for RBOs to continue their activities in the long term and achieve outcomes. The first part of the analytical framework will be based on key points adapted from Schulze and Schmeier (2012) and Schmeier (2015). Specific criteria to be used are membership, guiding principles, international water law, organizational structure, financing and cooperation with external partners. These will be delineated further in the next few parts as this literature review will expand on what has been done in RBOs across the world. Distinction between "endogenous" and "exogenous" elements, i.e. the RBOs themselves and the geopolitical situation of the river basin, will also be used in the thesis.

1.3.2. Structure of River Basin Organizations

The criteria mentioned above were present in the literature reviewed and have been observed in RBOs around the world. This section will allow the possibility to assess how RBOs are structured in other countries, leaving most of the analysis of organizations in the Mekong in the analytical part. Elements mentioned here can give contrasts and a basis for comparison with transboundary RBOs in the Mekong Basin.

The presence of riparian states in the RBO can have various effects in a river basin, however there is a general consensus that including all riparian states is an important condition for reaching common decisions that can provide benefits to all members present. It is mainly question here of state entities, i.e. governments. Schmeier (2015) expresses that empirical data of non-inclusivity of states in the RBO "led to a number of problems", an issue that affects the quality of decisions that can be taken (Schmeier

2015, 54). Schmeier, Gerlak and Schulze (2013) reference several “governance principles” that are “most often reflected in the agreement or convention through which the RBO was established, generally in its Preamble” (Schmeier, Gerlak and Schulze 2013, 12). This can reflect adherence to water law principles (Ibid.) or could be the result of agreements at the funding of the RBO, such as is the case for the Lancang-Mekong Cooperation (Grünwald 2020, 79). The literature reviewed shows examples of RBOs in the Congo River and in the Nile River. On the case of the Congo River, Von Lossow (2020) mentioned the lack of “legitimacy” of the *Commission Internationale du bassin Congo-Oubangui-Sangha* (CICOS) due to the presence of only six states being actual members, out of the ten riparian states (Von Lossow 2020, 172). This created issue with CICOS’s objectives for 2017 which required the involvement of upstream states to apply the principles of IWRM (Ibid.). Even considering this fact, there have been few conflicts in the Congo River Basin due to low use of water resources and limited infrastructure building (Ibid. 165 - 167). The situation is slightly different in the Lake Chad Basin for the Lake Chad Basin Commission, (LCBC), the region’s main RBO, where the “core guiding principles”, in spite of “existing policies and legislation” could not be fulfilled, due to “an absence of institutional coordination on water resource management in the basin” (Galeazzi et al. 2017, 9). One of the reasons given was that the LCBC only has four out of eight riparian states as member states, even though security reasons are prevalent in the Lake Chad region (Ibid.) (Schmeier 2015, 55).

Guiding principles were important according to the literature reviewed. They depend on riparian states and their original purpose for the establishment of the organization (Lautze et al. 2013, 39). Klimes (2019) explains that initial discussions between riparian states define structural elements such as guiding principles (Klimes 2019, 1364). Schulze and Schmeier make a difference between RBOs with “number of substantive issues” and RBOs that only strive to apply basic principles of IWRM (Schulze and Schmeier 2012, 231) As Schmeier (2015) illustrates, guiding principles mainly concern the number and kind of issues taken care by the RBO (Schmeier 2015, 54). Giner and Eckstein (2020) present the role of two of the most important RBOs for the many rivers sharing the common border with Mexico and the United States, the International Boundary and Water Commission (IBWC) and the North American Development Bank (NADB) (Giner and Eckstein 2020, 75). The first institution, the IBWC, has been developed as an RBO with missions mostly related to science (Ibid. 80). It focused on maintaining “international boundary, water quantity and quality, border sanitation and emergency water supplies” (Ibid.) with results that most of its activities were technical and turned towards finding solutions through engineering (Ibid. 81). The IBWC mainly did water resources management (Ibid.). The NADB, on the contrary, received a “strict guiding principles related to development and implementation of environmental structure” which goes beyond water resources management to encompass social aspects (Ibid. 82). Its actions were encompassing important elements

of water diplomacy (Ibid.). For this reason, the NADB has been considered more able to handle complex issues than the IBWC and had higher positive impacts on border environment (Ibid.); it has also been named “one of the most consequential of NAFTA-generated institutions” (Ibid.). The OMVS (*Organisation pour la Mise en Valeur du Fleuve Senegal*) for the Senegal River has been praised for its internal procedural agreement for “common and indivisible ownership and management” (Paisley, Denoon and de Chaisemartin 2020, 114). This principle has been translated as countries managing commonly and equally a certain number of dams built on the Senegal River, such as the Manantali dam in Mali, managed by three countries (Ibid.) This has proved to have positive results and the OMVS who was established following the 1972 Convention on the Statute of the Senegal River (Ibid.), is seen as “an extraordinary framework of cooperation” (Ibid. 115). On another note, the International Fund for Saving the Aral Sea (IFAS) which status has been established between 1991 and 1999 (Sehring and Ibatullin 2020, 238) has seen its guiding principles favor downstream countries (Ibid.) and later changes were deemed “impossible”, weakening cooperation mechanisms (Ibid. 238-239). Guiding principles, often defined at the foundation of the RBO and dependent on member states’ original intent (Kittikhoun and Schmeier 2020, 6) are important in order to assess whether the RBO has provisions or prospects for hydropower development and safeguarding of fisheries.

There is also the necessity to look at the organizational structure of the River Basin Organization. Wingqvist and Nilsson (2015) are of the opinion that an RBO’s efficiency depends on exogenous elements (such as regional politics) and endogenous elements (RBO structure). Huitema and Meijerink (2017) partly use Ostrom (1982) framework, the latter stating that institutions are “nested sets of rules” (Huitema and Meijerink 2017, 47). While Ostrom’s analysis on institutions is too specific for the focus of this thesis, Huitema and Meijerink made use of her work to define five types of rules that can define institutional arrangements of river basin organizations (Ibid. 48). They make use of rules to define RBOs because, in their own words, the field of water governance has “few signs of convergence” (Ibid.). The use of rules as a framework is however difficult to implement without being too general and vague. Criteria developed by Schmeier (2015) and Schulze (Schulze and Schmeier 2012), taken from empirical evidences of RBO worldwide, are more accessible for an actionable analysis of RBOs in the Mekong region and are less subjects to interpretation. According to Schmeier (2015), most RBOs have a “threefold organizational set-up” which includes a high-level decision body, an intermediary group that implements programs and projects and a secretariat (Schmeier 2015, 57). She further argues that “RBOs without Secretariats tend to be RBOs of very limited institutionalization, often merely going beyond interstate coordination bodies” (Ibid. 58). From the same author comes the notion that this “infrastructure” is necessary for RBOs to fulfill their guiding principles.

How RBOs receive their funding is important and relevant for their operations. Schmeier (2015) argues that “empirical evidence [...] has shown that the lack of financial resources can considerably impede RBO’s work” (Schmeier 2015, 58). Therefore the question of whether a RBO receives enough financing, and from where, has to be answered in this thesis. As can be shown by the example of the Niger Basin Authority (NBA) in the 1990s, lack of funding from member states severely reduced the ability of the NBA’s Secretariat to operate and by the same token it “jeopardized” the organization’s entire working system (Ferrini 2020, 130). Lack of financing appeared also in the CICOS, even if its consequences were not detailed by the author (Von Lossow 2020, 173). Blumstein (2016) considered the question of external donors for an RBO. Indeed, a slight majority of RBOs worldwide mostly rely on member states’ donations for financing: Schmeier (2015) showed that for 77 RBOs which data for financing were public, 40 of them (52%) were funded by their member states (Schmeier 2015, 59), while 28 RBOs (36%) were funded by a mix of members and external donors (Ibid.). However, reliance on external donors can be problematic. Blumstein (2016) study of African RBOs showed that external donors could create issues if they failed to provide funding, for different reasons, but he also indicated that these actors could change the direction of the RBOs’ activities, possibly in favors of objectives closer to their interests, thereby creating issues of neutrality (Blumstein 2016, 23-24).

Finally, the question arises whether the RBO is cooperating with external actors, such as foreign governments, international organizations or regional organizations. As Schmeier (2015) explains, “in some cases, the activities of an RBO affect the activities of other regional institutions” (Schmeier 2015, 63). Some RBOs have mechanisms in place to cooperate with external actors (information sharing, consultations) (Ibid. 62). Huitema and Meijerink (2017) suggested that for concepts of IWRM to work, international collaboration should not be left aside (Huitema and Meijerink 2017, 43). Van Vierssen (2018) declared, for example, that the Global Water Partnership (GWP) was a key organization for the implementation of IWRM (Van Vierssen 2018, 109). Speaking further of collaboration on water management, in the context of the EU, he stated the need for “collaboration at multiple levels” including on international level (Ibid. 108). Nkonya et al. (2011) reminded that “United Nations system plays an important and unique role in international cooperation in regard to the management of land and water resources” and argues that international organizations, with the help of international water laws, are important actors for supporting water and land management (Nkonya et al. 2011, 7-8). In the Congo River, examples of collaboration with foreign organizations are shown, especially exemplified between the RBO International Commission for the Congo-Oubangui-Sangha Basin (CICOS) and the German *Gesellschaft für Internationale Zusammenarbeit* (GIZ) for collaboration about water management and water transport infrastructure (Von Lossow 2020, 169) as well

as cooperation between the CICOS and the World Meteorological Organization to build monitoring stations, both with positive results (Ibid. 170). Literature reviewed for the Mekong also shows examples of international collaboration with external entities which will be presented further (Frauke et al. 2018) (Grünwald 2020) (Hortle and Bamrungrach 2015) (Qi 2013).

1.3.3. Situation in the Mekong River and Damming

The second cluster will be about the situation for the Mekong River such as the benefits that countries obtain from the river, the development of hydropower dams as well as the effects of damming on fisheries. They are part of the so-called “exogenous situation”. Reviews of articles such as Wingqvist and Nilsson (2015) as well as Olmestad and Sigman (2014) prompted the necessity of adding this part of the state-of-the-art. Indeed, the former included “endogenous” and “exogenous” parts into their study on African RBOs, meaning the institutional aspects of the RBOS as well as the network of relations of countries and other socio-economic conditions (Wingqvist and Nilsson 2015, 2). Olmestad and Sigman (2014), on the other hand, brought several insights in their empirical study of cooperation on dam building. The first that is relevant for this thesis is that countries engage in more intensive dam construction in areas “that are some distance upstream of international borders” (Olmestad and Sigman 2014, 23). This observation was confirmed in the Mekong Basin as China, located upstream, built most of the dams in the mainstream river (Baiyinbaoligao et al. 2020, 20). The second insight following the “weak support” that river basin treaties provide in order to mitigate damming in international rivers (Ibid.), and the third, that “countries do typically take advantage of opportunities to free ride in water development decisions” (Ibid.). This prompted the need to evaluate “exogenous” elements, pertaining to the political landscape and infrastructure development of the Mekong Basin. Reviews of the literature at large show that five themes are relevant for the damming of the Mekong River and its effects on safeguarding fisheries. First of all the general state of relations between riparian countries. Secondly, how the Mekong River figures in the Belt and Road Initiative (BRI) (Biba 2018, 633) (Feng et al. 2019, 66). This allows a better understanding of Chinese relations in the region and as the BRI is linked to hydropower development (Urban, Siciliano and Nordensvard 2018, 752), it will be important to determine the place of the Lower and Greater Mekong Sub-basin in that initiative and what are the last projects related in the region. Thirdly, whether the four countries previously mentioned (Lao, Cambodia, Vietnam and China) have plans to build hydropower projects. This part will also reference existing hydropower dams. Fourthly, benefits that riparian states derive from the Mekong River which are mostly divided between agriculture, fisheries, navigation and hydropower development (Baran

2009) Campbell et al. (2009) (Intralawan et al. 2019) (Sarkkula et al. 2009) (WWF 2016). Last and not least, known issues with dams and their effects on fisheries must be assessed. All these criteria will provide needed precisions about the exogenous situation of the Mekong River.

The situation between countries will use general literature on relationships between Southeast Asian countries. Concerning the role of China and the Belt and Road Initiative in the development of hydropower dams in Southeast Asia, important works that have been included in the literature reviewed about that topic are made by Biba (2019), Urban, Siciliano and Nordensvard (2018), Jessica Williams (2018), Feng et al. (2019), Middleton, Garcia and Foran (2009), Magee (2012) and Michael Richardson (2013). Urban, Siciliano and Nordensvard (2018) argue that the development of hydropower dam projects in SEA has been the result of the “Going Out” strategy of the Belt and Road Initiative (BRI) and the saturated market for hydropower dams in mainland China. The same reasoning can be found in Williams’ article (2018) with a link between BRI and Chinese state-owned enterprises (SOE) desiring to find markets abroad. Jessica Williams also argues that China’s approach of water management, which is mostly under the control of engineers and technicians, has shifted the country’s position towards greater emphasis on infrastructure and large projects (Williams 2018, 2) which reflects on its activities in the Mekong River, in the Chinese part of the river (which is denominated as the Lancang river) as well as in other countries (Ibid. 3). On the contrary, Feng et al. (2019) argue that hydropower development “will not be one of the future priorities” (Feng et al. 2019, 67) and that the BRI, upon which the RBO LMC has been launched, will mark “an era for enhanced cooperation” on water cooperation (Ibid. 66). Biba (2019) is of the opinion that the LMC is part of the BRI and that both take part in “China’s neighbourhood diplomacy through joint development and enhancing regional integration centered on China” (Biba 2019, 633). Middleton, Garcia and Foran (2009) state that hydropower built by Chinese SOEs could provide countries in SEA the opportunity to produce their own electricity without “burdensome environmental and social dilemmas” (Ibid. 24). And indeed it seems that all countries along the Mekong River seek to increase their hydropower production over time (Ibid. 24-25). Many researchers believe that Chinese companies have fed on SEA countries’ needs to expand their hydropower capabilities and that the BRI has provided them a platform for building projects in the region. The case of Lao PDR is an very good example, as the country was convinced to become the “Battery of Southeast Asia” by China and other countries, in order to produce electricity that could then be exported to neighbor countries (Middleton, Garcia and Foran 2009), (Ribka and Perwita 2017), (Richardson 2013), (Williams 2018), (Yoshida et al. 2020).

Plans for development of the Mekong River are discussed in Baiyinbaoligao et al. (2020) Matthews and Geheb (2018), Urban, Siciliano and Nordensvard (2018), Ribka and

Perwita (2017) as well as Sahid, Tan and Goh (2019). The literature show that in many countries along the Mekong River there is a certain lack of energy sources (Urban, Siciliano and Nordensvard 2018) (EIA 2019) (Sahid, Tan and Goh 2019) with Myanmar, Vietnam and China being exceptions (Sahid, Tan and Goh 2019) (ADB 2016) (EIA 2020). Sahid, Tan and Goh (2019) have listed energy dependences of ASEAN countries and have argued that many governments have the double objectives to not only reduce energy supply gaps due to increased demand but also to reduce import of fossil fuels (Sahid, Tan and Goh 2019, 6) Therefore hydropower development is central to attain these objectives, as argue Urban, Siciliano and Nordensvard (2018) and one of the reason why countries such as Cambodia have ramped up the construction of hydropower dams (Urban, Siciliano and Nordensvard 2018, 755). Ribka and Perwita (2017) show that hydropower development is one of the main source of environmental degradation (Ribka and Perwita 2017, 29). This is one of the reasons for which hydropower development will be the main focus of analysis of this thesis, as other sources of environmental degradation will not be assessed. Ribka and Perwita (2017) argue that the region faces several non-traditional issues and that failure in water management in the river Mekong might lead to dissensions (Ibid. 27). The article links these non-traditional issues with projects development in the Mekong basin and references them countries by countries. Baiyinbaoligao et al. (2020) provide current state of hydropower development in the Mekong River as introductory remarks, even though many parts of their overview come from MRC's previous assessments (Baiyinbaoligao et al. 2020, 19-21). The book "Hydropower Development in the Mekong Region: Politics, Socio-economic and environmental perspectives" from Matthews and Geheb (2018) also gives several authors' positions about political and economic aspects of hydropower developments.

Concerning the benefits that riparian states receive from the Mekong River, Campbell et al. (2009), Campbell and Barlow (2020), Coates (2003), Intralawan et al. (2019), MRC (2019), Taniguchi (2017), Sarkkula et al. (2009) and WWF (2016) summarize the main findings in the domain. Campbell et al. (2009) give technical information about the river as an environmental entity (Campbell et al. 2009, 9). They are fairly thorough in their approaches and provide information for discussions about sediment loads of the river and fish variety as a source of food. The report from the WWF made in 2016 in collaboration with the British bank HSBC highlights the different benefits provided by the river. Mentioning the agriculture, fisheries and construction, it is also mentions navigation as the river serve as a pass way for food and manufactured goods (WWF 2016, 1). The report emphasizes important trade-offs between existing benefits (agricultural, fishing) and hydropower developments, a theme that has been seen in other articles (Ibid. 13). The WWF might not be entirely neutral in their analysis, as it is an organization advocating for environmental protection, but it summarizes in a clear and efficient way the diverse benefits, especially in terms of agriculture, fisheries,

aquaculture, construction and navigation (Ibid.). The MRC establishes frequent “State of the Basin Report”, the latest being published in 2019 for the year 2018. The report presents diverse benefits from the river, among them hydropower, fisheries, agriculture (rice) and tourism (MRC 2019, 10). The data and figures therein are often quoted in various publications and news’ stories (Hunt 2016). Coates’ article (2003), albeit slightly dated, argues that biodiversity for fisheries is important as a source of food production for local population (Coates 2003, 12) and that it is “crucial” for local and regional food security (Ibid. 14). Sarkkula et al. (2009) argue that fish, with rice, form the foundation of food security “in practically all riparian countries” (Sarkkula et al. 2009, 227) and that sediment are nourishing floodplains (Ibid. 238). Sarkkula et al. (2009) analyze mostly the lack of sediment in the river caused by hydropower dams and the effects on local fisheries. Concerning benefits obtained from hydropower projects, in the Mekong River, they are not easy to assess properly as only two hydropower dams have recently achieved construction in 2020 in the mainstream river of the Lower Mekong Basin and many others are planned (Eyler and Weatherby 2020). So, as it might be too early to measure and assess their energy output, this thesis will still use secondary literature that are based on models and predictions for hydropower energy. Many works exist in this aspect and Costanza et al. (2011), Kubiszewski et al. (2013) and Intralawan et al. (2019) are commonly quoted as they estimate the energy output of hydropower, the latter criticizing MRCs reports on hydropower development. Campbell and Barlow (2020) also speak of a negative trade-off between benefits of hydropower and loss of ecosystem services (Campbell et al. 2020, 4). They do not provide new methods but are relevant for this part as it summarizes previous researches and is current. Last but not least, the article from Taniguchi, Masuhara and Burnett (2017) provides important aspects of energy security and food security in the Asia Pacific.

Finally, the literature about fisheries in Southeast Asia has to be evaluated. General information can be obtained from Hortle (2009), Van Brakel, Hambrey and Bunting (2011) and MRC (2019). Hortle’s (2009) chapter on fisheries in the book *The Mekong* (Campbell et al. 2009) provides general information about fisheries in the Mekong River. The book itself is a known reference that compiles thorough information about the characteristics of the Mekong River (geographical, hydrological and so forth) and is an important source for such information. Van Brakel gives more detailed explanation about economic aspects and presents different potential future about the region using scenarios from the United Nations Environment Programme (Van Brakel, Hambrey and Bunting 2011, VI) with an “optimal choice” being the sustainable framework proposed by the authors. This contrasts with the report developed by the MRC in 2019 where hydropower development is considered a necessary endeavor for the countries along the Mekong Basin (MRC 2019, XXII). This opinion contradicts so far most scholarly opinions seen in the literature review concerning hydropower infrastructure

in the Mekong Basin and it raises questions about the position of the Mekong River Commission, an RBO in the Mekong Basin. Overwhelmingly the literature presents a negative outlook of so-called “damming” of the Mekong River. According to Intralawan et al. (2019) there were still many knowledge gaps especially concerning trade-offs in economic aspects (Ibid. 34). Nonetheless, the report by the MRC is recent (2019) and gives a very good overview of the necessary information needed to comprehend the basin.

Concerning more related topics, *Biodiversity and Fisheries in the Mekong Basin* by Coates et al. (2003) presents facts and concepts which are relevant for the analysis of dams’ impacts on fisheries. Although the article is slightly outdated (written in 2003), it presents information still true nowadays, such as the fact that most fishers in the Mekong area are fishing in complement of their main activity (Ibid. 1) and that the economic value of Mekong fisheries are undervalued by local governments (Ibid. 12). Coates et al. (2003) also mention the main threats to fisheries divided into fishery activities (such as the use of destructive methods) and external factors. They mention hydropower dams as they create barriers and cause loss of sediment in the river among other external factors such as pollution, destruction of spawning grounds and so forth (Ibid.). As mentioned earlier, the effects of pollution on fisheries in the Mekong River will not be discussed, but it is significant that many authors mention hydropower development as the main cause of fisheries degradation (Anthony et al. 2015) (Baran 2009) (Campbell and Barlow 2020), (Intralawan et al. 2018), (Sarkkula et al. 2009) (Yoshida et al. 2020). Concerning sediment loss, Baran, Guerin and Nasielski (2015) and Anthony et al. (2015) are among the most comprehensive in the literature reviewed as the former explain in detail the role of sediment and nutrients for fish generation in the Mekong River while Anthony et al. (2015) review the lack of sediment in the Mekong Delta using satellite images. Campbell and Barlow (2020) explain well the effect of barriers for migratory fish and the effects it could have on biodiversity in the Mekong River. Other authors use specific approaches or methodologies to grasp the effect of hydropower dams for fisheries. Sarkkula et al. (2009) use the Finnish modeling project Water Utilization Programme with “hydrological and hydrodynamic modeling, scenario simulations, socio-economic and policy analyses, and integrated assessment of ecosystem and socio-economic impacts” (Sarkkula et al. 2009, 229). Interestingly they divide the effects of hydropower dams as barrier effects and effects on water quality and quantity (Ibid. 227). Campbell and Barlow (2020) prefer to talk about a “failure of planning and design” (Campbell and Barlow 2020, 5) criticizing a lack of holistic assessment on basin-wide scale and denouncing the “cascade” method of hydropower dams where a dam spills directly into another dam’s reservoir (Ibid.). Some studies also challenge the potential economic benefits that hydropower production could bring about, especially if local fisheries are threatened. Such are the views of Baran and Myschowoda (2009), Campbell and Barlow (2020), Yoshida et al.

(2020), Intralawan et al. (2018). The authors Baran and Myschowoda (2009) also believe that there are potential trade-offs between hydropower dams and fisheries based on the analysis of secondary literature and states that “advantages of hydropower development are often exaggerated and its disadvantages underestimated” (Ibid. 231-232). Data, however, seemed to be insufficient when the article was written (Ibid.). Yoshida et al. (2020) conducted a trade-off analysis indicating that due to the damming of the Mekong River the loss of ecosystem could result in an economic loss of 10% compared to economic benefits obtained by hydropower production (Ibid. 14). Campbell and Barlow (2020) use secondary literature to measure the loss of biodiversity and ecosystems that might degrade fisheries. Their arguments focus on hydropower dams, debating that they would be rapidly obsolete compared to other renewable energy sources, not viable in the long-term and that short-term economic benefits will be dwarfed by long-term environmental degradation (Ibid, 7). Intralawan et al. (2018), who conducted comprehensive analysis of costs and benefits of the 11 planned hydropower dams in the Mekong River, found “revised” benefits of USD 6,65 bn while overall costs could be close to USD 18 bn (Ibid. 34). In 2019, Apisom Intralawan with other authors made various assessments of the existing literature in term of benefits and costs for the Lower Mekong Basin, showing great variation in term of numbers for estimated benefits and costs (Intralawan et al. 2019). Reviewing other articles, useful studies have been found for that specific issue such as Fluet-Chouinard, Funge-Smith, and McIntyre (2018) which have surveyed household consumption patterns of 42 countries between 1997 and 2014. They included four in the Mekong River (Cambodia, Myanmar, Lao and Thailand) and concluded that many countries severely underestimate freshwater catches, the countries of the LMB being no exception (Fluet-Chouinard, Funge-Smith, and McIntyre 2018, 7624). Hortle and Bamrungrach (2015) made estimations by dividing areas of the Lower Mekong Basin into major flood zones, rainfed zones as well as permanent waterbodies and they used GIS methods to measure the potential fish yield of these areas (Hortle and Bamrungrach 2015). It is important to notice that this paper is commissioned by the MRC. Articles such as Baran, Jantunen and Chong (2007) divide valuation of fisheries into several salient points while using government statistics and scientific data obtained from older articles (as Baran, Jantunen and Chong 2007, 229).

1.3.4. Role of River Basin Organizations in finding common solutions for the damming of the Mekong River and the safeguard of fisheries

In this part of the state-of-the-art, the literature about the role of RBOs will be reviewed based on the elements taken from the first part of the state-of-the-art, mostly from Schmeier (2015 and 2010) and Schulze and Schmeier (2012). Sources and books that have been read and been analyzed show that RBO can use various tools and methods to promote common actions and solutions when the environment and relations between countries allow it. Schmeier (2010) argues that in many cases RBOs have been successful in “bringing together riparian states and providing them with forums for negotiation, data and information for decision-making or mechanisms for solving disputes” (Schmeier 2010, 51). Milman and Gerlak (2020) argue that RBOs provide salient mechanisms for hydrodiplomacy (Milman and Gerlak 2020, 137) as forums for mediation and negotiation, as well as platform for “producing, analyzing, and disseminating data, information, and knowledge” (Ibid.). Pohl et al. (2014) argue that water diplomacy, represented on regional levels by RBOs, “remains a topic for technical (...) cooperation (Pohl et al. 2014, 2). RBOs worldwide such as the Nile Basin Initiative (Cascão et al. 2020, 155), the CICOS (Von Lossow 2020, 171) and the IBWC (Giner and Eckstein 2020, 78) have ramped up collaboration on data-sharing mechanisms, making it one of the main functions of their organizations. These elements of the literature review show that knowledge exchange is paramount for water diplomacy within RBOs and therefore must be assessed in the Mekong Basin.

In their study, Lautze et al. (2013) present several functions of RBOs depending on their level of engagement as some among them procure a “framework” for “monitoring, coordination and some degree of regulation” (Lautze et al. 2013, 41). They indicate that many RBOs are used not only as platforms for technical tools but also as entities providing support for mediation and collaboration (Ibid.). Klimes (2019) argues that many RBOs can be considered as “anchors for collaboration” and that they can “play crucial roles in conflict resolution, data collection and analysis and managing processes such as prior notification or impact assessment” (Klimes 2019, 1364), thereby stressing their functions as forums for mediation and data sharing. In many articles on RBOs, there are occurrences that these organizations can act as places for riparian states for discussion, mediation and dispute resolution (Klimes 2019) (Lautze et al. 2013) (Milman and Gerlak 2020) (Schmeier 2010) (Schmeier 2015) (Schulze and Schmeier 2012). While mediation seems common, cases of dispute resolution are less preponderant in the literature, a fact that Blumstein and Schmeier (2017) try to explain, arguing that riparian states sharing common water resources have a tendency to

cooperate (Blumstein and Schmeier 2017, 192). Nonetheless, conflicts or disagreements can occur, as shows the case of the Xayaburi dam in the Mekong Basin (Qi 2013, 285-286) which will be exemplified in a later part of the thesis. Qi Gao (2013) and Boer et al. (2016) have made consequent reviews of the literature on the Xayaburi case and they will be used for this instance. Other examples can be presented, such as the case of African RBOs that have adopted dispute-resolution mechanisms due to previous conflicts or contentious relations (Blumstein and Schmeier 2017, 197) notably the Niger Basin Authority (NBA) in the Senegal River Basin (Ferrini 2020, 132). Indeed the NBA's member states agreed that, if mediation is unsuccessful, conflictual cases can be referred to the African Union (Paisley, Denoon and de Chaisemartin 2020, 117). Many conflicts over water resources in shared transboundary river basins seem to follow a two-instances process (Blumstein and Schmeier 2017, 198). During the first instance bilateral negotiations, RBO-internal mechanisms and external actors' involvement are common tools of conflict negotiation, while bilateral negotiations is the most used method across RBOs worldwide (Ibid.). Second instances mostly focus on the involvement of external parties and RBO-internal mechanisms (Ibid. 199). In the case of the Mekong River, the disagreement over the Xayaburi Dam that will be explained in part 2.3.2. shows that contention can exist in the region and that dispute-settlement mechanisms are important. Therefore this criterion is included in the framework.

Many sources in the literature reviewed bring the concept of stakeholders and civil society. For definition purposes, a stakeholder is an "individual or group that has an interest in any decision or activity of an organization" according to the international standard on social responsibility ISO 26000 (International Standard Organization, 2010). This definition include members of the civil society, local communities, the private sector, NGOs and the academia (UN Sustainable Development Knowledge Platform, 2021). This thesis will use these categories with the exception of academia; instead, media will be privileged instead as their presence can be an indication of transparency, by informing the civil society of RBOs' activities for example. Qi Gao (2013) reminds that IWRM brings decentralization and bottom-up processes (Qi 2013, 282), therefore involving local stakeholders is a part of the process. As it has been discussed earlier, IWRM and management of river basins are linked and can be integrated by RBOs or not (Cook and Bakker 2012) (Molle 2008) (Pahl-Wostl, Palmer and Richards 2013) (Van Beek and Arriens 2016). Furthermore, IWRM can integrate social components (Pahl-Wostl, Palmer and Richards 2013, 680). Klimes (2019) argues that water diplomacy involves not only government but also non-state-actors (Klimes 2019, 1362). However, despite this, water management in the Mekong Basin tends to be hierarchical and dominated by governments (Grünwald 2020, 79) notably in the case of hydropower development (Boer et al. 2015, 165). This can be problematic as fishers, farmers and members of the population living on the Mekong River are directly affected by the impact of hydropower development (Ibid.) (Campbell and Barlow 2020, 2) (Anthony et

al. 2015, 2). As many actors in the region push for hydropower development (Urban, Siciliano and Nordensvard 2018, 752) the role of local NGOs and civil society is important. As this thesis focuses more on the role of RBOs, the question is whether the four RBOs that are analyzed have integrated mechanisms to represent NGOs and civil society, also called “multi-level stakeholders” (Grünwald 2020, 71). The Niger Basin Authority integrated a place for debate for the civil society (Ferrini 2020, 136) while the Nile Basin initiative organized several meetings for “stakeholders at different levels” including civil society through media coverage (Cascao et al. 2020, 151). In this thesis, the goal is to establish whether the RBOs integrate the civil society and other stakeholders (other than governments’ ministers and offices) in discussions.

Finally, RBOs’ projects have to be assessed, especially those concerning hydropower development and fisheries. Lautze et al. (2011) argue that while some RBOs provide development at project level, others take care of “development and implementation” (Lautze et al. 2011, 41). Schmeier (2010) indicates that many RBOs are divided between implementation-oriented RBOs which coordinates and implements projects, “often having development focus and going beyond pure water resources management” (Schmeier 2010, 4) and RBOs in charge of coordinating water resources management (Ibid.). An RBO such as the International Commission for the Protection of the Danube River does little project implementation and occupies a regulatory function in European transboundary water management (Schmeier and Zadasky 2020, 289). In the Congo Basin, the CICOS is in charge of facilitating the implementation of joint projects (Von Lossow 2020, 163). The Executive Committee of the IFAS manages the “preparation and implementation of projects and programs relating to Aral Sea Basin problems” (Sehring and Ibatullin 2020, 227). Under the Aral Sea Basin Program, these projects can be on environmental protection, interstate environmental monitoring, and engineering for a total of 90 projects scheduled after 2015 (Ibid. 229-230). As said earlier, while some RBOs are active in project implementation, others are supervising and providing legal support for projects of member states. Seeing what projects are being implemented or supported by the RBO can give an indication of its actual mission, as well as provide useful insights of RBOs’ actual realizations. Therefore, they will be assessed in this thesis.

1.4. Analytical Framework

1.4.1. Introduction and Table

The analytical framework that is going to be used in this Master thesis has its components derived from elements of the literature review. Indeed, the research question aims to identify the possible roles of River Basin Organizations on building consensus and finding common solutions for the damming of the mainstream river and safeguarding of fisheries in the Mekong Basin. The framework, in the same manner as the research question, will be divided into three parts. Firstly, the analysis will pertain to the internal elements of the RBO, the so-called “endogenous” environment. As was seen on the literature review, the river basin level is the most appropriate scale to manage different issues on a transboundary river. Furthermore, there is a need for an organization to synergize efforts between several riparian states and coordinate projects being built in the mainstream river. For these reasons, it makes sense to look first at existing RBOs for the Mekong River and assess whether they have the internal capacity to coordinate different countries on different socio-economic goals. A mix between frameworks developed by Schulze and Schmeier (2012) and Schmeier (2015) will be used in this first part. This will allow the assessment of the ability of RBOs in the Mekong River to bring member states to take common actions and whether they are limited by internal issues or not. In the second part of the analytical framework, the external conditions on which the RBO’s successes depend will be analyzed. This pertains to the political conditions in the Mekong Basin, the benefits that countries receive from the Mekong River, the role of China in the region and the damming situation in the Mekong Basin. This part is necessary to assess the political environment of the region, the state of hydropower development as well as the effects of dams on fisheries. Thirdly, the toolset of the RBOs for damming and safeguarding will be assessed. Following what has been reviewed in the literature, these tools can provide an environment for negotiation and mediation, mechanisms for data-sharing and technical collaboration as well as programs for development and reaching out to local communities.

Table 1: Analytical Framework

Criterion	What to measure
Structure of River Basin Organizations	

Membership structure	Does the RBO have every riparian actor as a member states?
Guiding principles	What are the guiding principles of the RBO? Do they include clauses for damming and fisheries safeguarding?
Organizational Structure	How is the RBO organized? Does it have a secretariat and the two other structures common for RBOs?
Financing	How is the RBO financed?
Cooperation with International Actors	Does the RBO cooperates with international actors (countries, international organizations and so forth)?
Situation in the Mekong River Basin	
Relations between countries	What are the relations between riparian states of the Mekong Basin?
Belt and Road Initiative	How does the Mekong figures in the BRI? How much projects have been built by Chinese actors in the Mekong Basin?
Hydropower development and projects in the Mekong	What are the hydropower dams that have been built in the last 10 years, and which ones are planned?
Benefits of the Mekong River	What are the benefits of the riparian states on the Mekong, especially in terms of energy, agriculture and fisheries?
Known effects of dams on fisheries	What are the known effects of damming for fisheries? Has the output changed in the last 10 years?
Tools of River Basin Organizations	
Data-sharing mechanisms	Are there mechanisms to share data to member states?
Platform for negotiation, mediation and dispute-resolutions	Does the RBO provide a platform for negotiation and mediation? Are there any tools for dispute resolutions?
Stakeholder involvement	Are there stakeholder involvement mechanisms such as programs or public outreach?
Projects that concern hydropower development and/or fishery safeguarding	Are there any projects that concern hydropower development and/or fisheries? What are the concrete events or activities undertaken by the RBO?

Source: (Schulze and Schmeier 2012) (Schmeier 2015). Own design.

1.4.2. Structure of River Basin Organizations

This first part of the framework is divided into five criteria: membership structure, RBO's guiding principles, financing and possible cooperation with external actors. The first criterion, membership structure, checks whether all riparian states concerned are members of the RBO. This criterion is needed to assess the possible range of actions of the RBO. If it doesn't integrate all countries, then the RBO will have limited abilities to make any change in the management of water resources. The second criterion analyses what are the guiding principles of the organization, whether given by a member state or by an external institution such as the Asian Development Bank in the case of the GMS (Grünwald 2020, 75). For this thesis, specific mentions of common consensus mechanisms in relations to hydropower development or safeguarding of fisheries will be especially looked for, however it will also allow the possibility to have a better understanding of the RBO. The third criterion will take a look at the RBOs' organizational structure and whether it has the usual structures common for this type of organization: a high-level decision body, or frequent ministerial meetings, a project-driven intermediary group and a secretariat. There is also the question of how the RBOs are financed, the subject of the fourth criterion. Many RBOs have a Secretariat and therefore need constant funding to be able to execute necessary tasks. It can come from member states, from external donors or from both (Schmeier 2010, 39). Financing can affect the efficiency of the RBO as well as its level of independence. It is therefore important to have a look on how the RBO is financed. Finally, there is also the question of whether the RBO collaborates with external actors, such as international organizations and external countries but also regional organizations and NGOs. These collaborations might harbor specific programs for fisheries or development; the example of the CICOS in Africa collaborating with the German agency GiZ shows that international collaboration can lead to concrete projects (Von Lossow 2020, 169). Therefore looking at this criterion might give insights about existing programs and willingness to have projects concerning the regional issues that are analyzed in this thesis.

1.4.3. Situation in the Mekong River Basin

In the second part, exogenous elements of the Mekong Basin will be assessed. As mentioned earlier, this part will analyze the political situation of the region and what countries have been doing along the River Mekong. Five criteria have been defined for this part: relations between countries, the situation of the Belt and Road Initiative for the Mekong Basin, existing plans for development on the mainstream river and

tributaries focusing mostly on hydropower development, current benefits of the Mekong River for riparian states, and known effects of the damming for fisheries. The first criterion is necessary as it might explain countries' behaviors during meetings in RBOs as well as patterns of hydropower development in the Mekong River. What will be measured here is whether countries have good or contentious relations. The second criterion logically follows the second as it explains the role of the Belt and Road Initiative in the Mekong River, crucial to understand the question of China in the Mekong region and its relations with other countries. Indeed, BRI and dam-building have existing links as it has been shown in the literature review. Therefore, this criterion will assess how the BRI interacts with the Mekong River Basin and how hydropower development might be related to this situation. The third criterion assesses the plans for development in the Mekong River Basin, while the fourth measures the benefits received by the river itself. The latter is needed in order to make a contrast with potential benefits that riparian states might get from hydropower development. The literature reviewed shows that riparian countries benefit most from the river in four different areas: agriculture, fisheries, construction and navigation. The analysis will focus on the first two. Finally, the fifth criterion will present the effects of dam building on fisheries. Based on secondary literature and in the last few years, this criterion will measure output of fisheries or try to give a rough appraisal if real numbers are not found.

1.4.4. Tools of River Basin Organizations

The third and final part of the empirical part will analyze elements relevant to the ability of RBOs to bring unity, consensus and tools for managing water resources. In this specific instance, tools related to consensus on hydropower development and safeguarding of fisheries will be especially examined. According to the literature reviewed, RBOs have limited abilities to bring countries to adopt common solutions and a large part of these abilities depend on the guiding principles agreed by member states (Schmeier 2010, 27). The tools that will be discussed later in the thesis are rather unbinding and based on soft governance, some of them being rather technical. The first criterion will evaluate whether RBOs provide mechanisms for data-sharing between member states and/or external actors. This is an important part of RBOs' abilities to offer common solutions to regional issues and that will be measured here. The second criterion will analyze whether the RBO provides a platform for mediation and negotiation, as well as dispute resolutions mechanisms. These elements are lumped together as only one RBO in the Mekong Basin can be considered to have proper dispute-resolutions mechanisms among the 12 existing in the region. The third one will verify whether the organizations analyzed here provide stakeholder

involvement tools, such as a platform for local organizations to express their opinion or the ability for the media to follow the RBO's activities. Finally, the fourth criterion will analyze the existing projects directed by the RBO concerning fisheries or hydropower development. This will not only allow the possibility to understand how the RBO can affect the two aforementioned aspects but also enhance the reader's understanding of what the RBO actually does, rather than just relying on expressed intentions.

1.5. River Basin Organizations

Several River Basin Organizations exist for the Mekong River. Some are focused on a part of the river and some on its whole length. Vietnam, as an example, has three RBOs and one that focuses on the Mekong River while others manage different rivers in this country (Du et al. 2016, 252). Suchindah (2018) lists 12 organizations and cooperation frameworks that concern three or more countries for the Mekong Basin.

Table 2: River Basin Organizations present in the Mekong Basin (non-exhaustive)

FRAMEWORK	YEAR ESTABLISHED	MEMBERSHIP	LEVEL OF INTERACTION
Mekong River Commission (MRC)	1957 as Mekong Committee; became MRC in 1995	ASEAN4*; China and Myanmar are observers; plus numerous donor partners	C/SO, Ministerial & Leaders
Greater Mekong Sub-regional Economic Cooperation Program (GMS)	1992; initiated by the Asian Development Bank (ADB)	ASEAN5 + China	C/SO, Ministerial & Leaders
ASEAN-led initiatives with China such as the ASEAN Mekong Basin Development Cooperation (AMBDC)	Since the 1990s	ASEAN10 + China	C/SO, Ministerial & Leaders (latter only for ASEAN-China Summit)
Cambodia, Lao PDR and Viet Nam (CLV) Development Triangle Area	1999	ASEAN3*	C/SO, Ministerial & Leaders
Agreement on Commercial Navigation on Lancang-Mekong River	2000	ASEAN3** + China	C/SO
Mekong-Ganga Cooperation (MGC)	2000	ASEAN5 + India	C/SO & Ministerial

Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS)	2003	ASEAN5	C/SO, Ministerial & Leaders
Cambodia, Lao PDR, Myanmar and Viet Nam (CLMV) Cooperation	2003	ASEAN4**	C/SO, Ministerial & Leaders
Mekong – Japan Cooperation	2007	ASEAN5 + Japan	C/SO, Ministerial & Leaders
Lower Mekong Initiative (LMI) & Friends of LMI (FLMI)	2009	ASEAN5 +US, and including several other external partners for FLMI	C/SO & Ministerial
Mekong – Republic of Korea (ROK) Cooperation	2011	ASEAN5 + ROK	C/SO & Ministerial
Lancang-Mekong Cooperation (LMC)	2015	ASEAN5 + China	C/SO, Ministerial & Leaders

Key

ASEAN3*: Cambodia, Lao PDR, Viet Nam
ASEAN-3**: Lao PDR, Myanmar, Thailand
ASEAN4*: Cambodia, Lao PDR, Thailand, Viet Nam
ASEAN4**: Cambodia, Lao PDR, Myanmar, Viet Nam

ASEAN5: Cambodia, Lao PDR, Myanmar, Thailand, Viet Nam

ASEAN10: All ten ASEAN Member Countries

C/SO: Committee/Senior Officials

MS: Mekong Sub-Region

LMRB: Lancang-Mekong River Basin

Source: (Sunchindah 2018, 12) Own modifications

Many of the RBOs and cooperation mechanisms present in this table were not considered relevant for the analysis. Some of them, such as the Cambodia-Lao-Vietnam Development Triangle Area, comprise only a handful of countries in the region. Others are framework dedicated for cooperation with other external powers (Japan, USA) and are also not going to be analyzed in this text as the interest of this thesis lies on transboundary RBOs that only include countries present in the Mekong Basin. This is done in order to limit the factor of external influence in the organization, an aspect that cannot be removed but should be controlled if possible. Some of the river basin organizations have been not been seen sufficiently, in the literature reviewed, to warrant analysis such as the CLMV Cooperation or the Ayeyawady-Chao Phraya Mekong Economic Cooperation Strategy (Sunchindah 2018, 12). Another cooperation framework, the Agreement on Commercial Navigation, cannot be considered as an RBO (Qi 2013, 246). An important regional organism established by ASEAN, the ASEAN-Mekong Basin Development Cooperation (AMBDC), had an important presence in the LMB and comprised all countries along the Mekong River, including China, but also Brunei, Indonesia, Malaysia, Philippines and Singapore (ASEAN 1996). Started in 1996, the AMBDC was known for its flagship project, the Singapore-Kunming Rail Link, still unfinished as of now (Ho and Pitakdumrongkit 2019). Lack of financing, due to the 2008 Asian Financial Crisis, brought a halt to most of the RBO's funding (Yoshimatsu 2008, 119) and many projects were stopped since that period. The last event of the AMBDC was the 2014 ministerial meeting, and no events happened for the next seven years (Zawacki 2019, 2). With many high-speed train lines being built by regional organizations in the Mekong River Basin (Ibid. 7-8), the unending construction of the Singapore-Kunming Rail Link brought the project

into obsolescence. For all of these reasons, the AMBDC was not added to the RBOs analyzed, as was previously intended.

According to the articles and books read for the literature review, there are three River Basin Organizations that are significant for the Mekong River: the Mekong River Commission (MRC), the Greater Mekong Subregion Program (GMS) and the Lancang-Mekong Cooperation (LMC) (Grünwald 2020, 75). Each RBO has been founded by a different organization and therefore has different motives and goals depending on the founding organization, which in some cases provide significant amounts of funds (Ibid.).

The first one, the MRC, is rather active in the Mekong River and has appeared frequently in the literature. It is also the oldest present on the region, being established in 1957 as the Mekong Committee (Sunchindah 2018, 12). The organization changed over time and in 1995 the Committee became the Mekong River Commission (Ibid.). The mission of the MRC is to “promote cooperation in the basin in all fields of sustainable development, utilization, management and conservation of the water and related resources”, a mission that is still relevant nowadays (Gerlak and Haefner 2017, 2).

The second RBO, the GMS, was started by the Asian Development Bank in 1992 (Grünwald 2020, 73) and its stated mission is “help[ing] identify and implement high-priority subregional projects in a wide range of sectors” (ADB 2015). The GMS focuses more on economic relations than other RBOs (Ibid.). It has been very active since its inception by integrating all six riparian states in various projects and has received consequent support and engagement from all countries of the Mekong Basin (Grünwald 2020, 73).

The third RBO is relatively recent. A search (made in December 2020) on the RBO database offered by the Oregon State University brought no answers (it showed however the three other RBOs) (Oregon State University 2020). The Lancang Mekong Cooperation Program is an initiative launched in 2015 by the People’s Republic of China (Grünwald 2020, 78). Besides being relatively new, it has been fairly active since its creation with 11 activities and events in the year 2018 alone (Devlaeminck 2021). It is sometimes seen, among researchers, as being part of the Belt and Road Initiative (BRI), previously known as the OBOR Initiative (Middleton and Allouche 2016, 111).

1.6. Fisheries

Fisheries are part of the local economy in countries of the Lower Mekong Basin (Cambodia, Lao, Thailand and Vietnam) and the Upper Mekong Basin (China and Myanmar). They are also important for the lifestyle of the basin's inhabitants. To understand better how they affect the region and its populations, as this would not be covered elsewhere in the thesis, an introduction is necessary. This part will mainly reference the chapter "Fisheries" written by Kent Hortle, from the book edited by Ian Campbell (2009).

Fisheries are found in a variety of geographic areas in the Mekong Basin: large river-floodplain systems, rice-fields, manmade reservoirs, estuaries and brackish-water zones (Hortle 2009, 21). The Mekong nurtures floodplains and paddies as two thirds of the basin is considered a "low-land system" (Ibid. 198). Almost 60% of the LMB is made of tropical low-land (Ibid.) while in China it alternates with warm to temperate low-land, used for rice paddies among other, and very high-altitude and cold biomes in the Tibetan Autonomous Region (Ibid. 231) (this region will not be covered in this thesis, due to the lack of data and low relevance for the analysis). In the LMB, the flow of water is very predictable and the annual interchange between dry and wet seasons creates ideal conditions for agriculture and fishing (Ibid.). Close to 900 species have been found in catches of the LMB but only 10 species make up 60 to 70 percent of the total yield (Ibid. 202). The fishes present in the LMB can be divided between "white" (frequently moving between floodplains and rivers) "black" (stay in floodplains, can be found in rice paddies and stagnant pools of water), "gray" (migrating between floodplains and dry-season refuges), and "residents" (staying permanently in rivers. (Ibid. 202). Furthermore, while fishes account for most of the catches, other aquatic life forms are also fished by local populations, such as shrimps, mollusks and frogs (Ibid.). For the sake of simplicity, this thesis will only look at fishes when it would be needed to compare fishers' and aquaculture's yields. In the Chinese Mekong (Lancang), only 140 species have been referenced but the local fisheries are nonetheless considered to be highly productive (Ibid. 232). A very important aspect of fishes in the Mekong, in the upper and lower parts, is the number of species **that need to migrate** between different points in the river, whether laterally (between the river and floodplain for example) or upstream and downstream (Ibid. 202). This part will be crucial for discussions about hydropower projects in the Mekong Basin.

In the LMB, where more than 70 million people live, fisheries are part of the everyday food intake as well as an additional source of income (Ibid. 197). Fishing is only a full-time activity for approximately 10% of the basin's population (Ibid. 203), most of the families living in the basin consume aquatic wildlife and sell part of the catch in local

markets, sometimes informally (Ibid. 203). For these households, activities such as agriculture are the main source of income, not fishing (Ibid.). Nonetheless, fish and other aquatic life forms are essential for protein intake and even for nutrients such as calcium or iron (Ibid. 210). In China, information of local fishers' relations with the Mekong River were harder to assess, and there is no certainty whether the population use fisheries as a source of food supplement and side-income, as is the case in the LMB (Ibid. 233). Finally, for most of the countries of the Mekong Basin, local fishers' catch are not well represented in national GDP as well as in many existing official statistics (Ibid. 207).

2. Empiric Part

2.1. Structure of River Basin Organizations

2.1.1. Membership Structure

In this part, the analysis will focus on whether the RBO studied in the thesis (the Mekong River Commission, the Greater Mekong Subregion and the Lancang-Mekong Cooperation) have included all riparian states as member of their organizations. As was mentioned in the literature review, the presence of countries as active members of the RBO or lack thereof, can have an important impact in the efficiency and relevance of the institution. Schmeier insists that the non-inclusivity of riparian states in an organization leads to several problems (Schmeier 2015, 54). Milman and Gerlak argue that the role of RBOs is to bring about “capacity-building between members” (Milman and Gerlak 2020, 137) and as was seen earlier, an RBO’s legitimacy depends on its members (Von Lossow 2020, 172). In that regards, knowing whether the three RBOs studied in this thesis encompass all countries present in the Mekong River. Nonetheless, the impacts and effects will be left for later analyses.

2.1.1.1. Mekong River Commission

The very first RBO reviewed, the Mekong River Commission, oldest present in the region (Sunchindah 2018, 12), does not have all six riparian countries present as member states. Considered by some as an important actor for the Mekong River Basin (Sarkkula et al. 2009, 245), “under considerable pressure to act in a manner befitting a river basin organization with a guiding principles in transboundary governance” (Boer et al. 2015, 15), the MRC only has four members states (Schulze and Schmeier 2012, 237). China and Myanmar are not members but are considered as dialogue partners (Zaręba 2020, 2). This dynamics dates from the signing of the Agreement on the Cooperation for the Sustainable Development of the Mekong Basin, the document that changed the MRC to its present form (Schulze and Schmeier 2012, 236-237). Since China launched its own water governance organization, the LMC, and as it regards the MRC as

influenced by external actors (Lei and Zha 2020, 266), it is not likely that the PRC would join the RBO as member state at the moment of the thesis' writing.

2.1.1.2. Greater Mekong Subregion Program

The Greater Mekong Subregion Program, started in 1992 by the Asian Development Bank, (Sunchindah 2018, 12), encompasses all riparian countries including China, the province of Yunnan and the Guangxi Zhuang Autonomous Region to be precise (GMS website). The GMS is also expected to be more “possessed” by its member states and detach itself from the ADB (Qi 2013, 294).

2.1.1.3. Lancang-Mekong Cooperation

The same is valid for the China-launched LMC. Officially launched during a meeting of leaders in the city of Sanya in 2016, the LMC secured membership of all six riparian states of the Mekong after the foreign ministers of these countries signed an agreement in November 2015 (Biba 2018, 632).

2.1.2. Guiding Principles

In this part, the guiding principle of the RBO will be assessed and the focus will be on specific mentions of hydropower development, environmental protection and fisheries safeguarding. River Basin Organizations operate under general guiding principles (Klimes 2019, 1364) (Schmeier 2017, 268). As presented earlier in the literature review, Schmeier explained that “guiding principles mainly concern the number and kind of issues taken care by the RBO” (Schmeier 2015, 54). Guiding principles can follow “governance principles [that] reflect general principles of international water law and can be found “in the agreement or convention through which the RBO was established, generally in its Preamble” (Schmeier, Gerlak and Schulze 2013, 12). For this reason, in this part the preambles or the document that gives the basic principles for the RBO in question will be reviewed in order to extract its guiding principles. What will be specifically looked here is whether there exist specific mentions of hydropower development or fisheries (and possible safeguarding).

2.1.2.1. Mekong River Commission

The history of the Mekong River Commission has been fraught with political shifts in the region and it adopted different forms over time. At its inception, in 1957, the MRC was known under the name of Committee for Coordination of Investigations on the Lower Mekong River Basin, also known as the Mekong Committee (Mekong River Commission, History). Started under the direction of the United Nations as it was the first time that the UN was involved in the “planning and development of an international river basin” (Jacobs 1995, 139), future plans of the Mekong Committee were adopted from three different reports, *Development of Water Resources in the Lower Mekong Basin* made in 1958 by the Economic Commission for Asia and the Far East (ECAFE, now known as the ESCAP, the United Nations Economic and Social Commission for Asia and the Pacific), a program of studies and investigation made by the UN and a development report sponsored by Ford (Ibid.). The Mekong Committee initially was brought together by these reports, notably the ECAFE’s one, to develop the river under the name “Mekong Project” (Ratner 2003, 66). The Mekong Agreement adopted in 1995 changed the Mekong Committee into the Mekong River Commission and gave it an unprecedented legal framework. According to Kittikhoun and Staubli (2020), “[n]o other developing basins have such comprehensive rules for the management of their transboundary rivers” (Kittikhoun and Staubli 2020, 246). That situation, unprecedented in the Mekong Basin, gave the MRC a unique framework, “ahead of [its] time” and showcased the “countries commitments to work together”, even if only four of them ratified the document (Ibid.).

The 1995 Mekong Agreement, available on the website of the MRC, gives the basis for the work of the RBOs’ various committees and its Secretariat. Guiding principles are presented on Chapter 3 of the Agreement. Articles relevant for the analysis are presented and highlighted as follow:

- Article 1: To cooperate in all fields of sustainable development, utilization, management and conservation of the water and related resources of the Mekong River Basin **including, but not limited to** irrigation, **hydro-power**, navigation, flood control, **fisheries**, timber floating, recreation and tourism (...)
- Article 2: To promote, support, cooperate and coordinate the development of the full potential of sustainable benefits to all riparian States (...) with emphasis and **preference on joint and/or basin-wide development projects** and basin programs through the formulation of a basin development plan (...)
- Article 3: **To protect the environment, natural resources, aquatic life** and conditions, and ecological balance of the Mekong River Basin from pollution or **other harmful effects resulting from any development plans** and uses of water and related resources in the Basin.

- Article 7: **To make every effort to avoid, minimize and mitigate harmful effects that might occur to the environment**, especially the water quantity and quality, **the aquatic (eco-system) conditions**, and ecological balance of the river system, from the development and use of the Mekong River Basin water resources or discharge of wastes and return flows
- Article 8: Where harmful effects cause substantial damage to one or more riparians from the use of and/or discharge to waters of the Mekong River by any riparian State, **the party(ies) concerned shall determine all relative factors, the cause, extent of damage and responsibility for damages caused by that State** in conformity with the principles of international law relating to state responsibility, and to **address and resolve all issues, differences and disputes in an amicable and timely manner** by peaceful means as provided in Articles 34 and 35 of this Agreement, and in conformity with the Charter of the United Nations.

As it can be seen in the articles presented here (there are ten in total in this chapter), the Agreement makes mentions of the necessity to protect local environments, fisheries and spots for natural wildlife in the Mekong River. The document also advocates the necessity to cooperate on hydropower development and puts this point on a level of equality with environmental protection, prompting the possibility for electricity generation to be on par with environmental protection. Article 2 insists that benefits should be shared among states through joint programs. Finally, Article 8 insists that damages caused by one state should be addressed and resolved, a condition difficult to apply since not all countries of the Mekong are members of the MRC.

2.1.2.2. Greater Mekong Subregion Program

The Greater Mekong Subregion Program (GMS) was founded in 1992 under the patronage of the Asian Development Bank (GMS website), based on the perception that economic interdependency could unite countries of the Mekong Basin despite stringent political differences (Ratner 2003, 67). It should not come as a surprise that the GMS heavily focuses on economic cooperation and development (Grünwald 2020, 75) as well as infrastructure, notably shared between countries (Boer et al. 2016, 15).

The GMS agrees on a working document every ten years, so-called *Greater Mekong Subregion Economic Cooperation Program Strategic Framework*. The last one was adopted in December 2011 at the 4th GMS Summit of Leaders. The 2011-2022 Framework states the following:

The GMS member countries envisioned that the GMS Program should help link their countries through improvements in infrastructure, and thereby promote trade and investment and stimulate economic growth (..) (ADB 2011, 2).

The same document mentions the necessity to address common issues of “human resources development and environmental management”. In 2002, the GMS Strategic Framework had several objectives including: “**strengthening infrastructure linkages**; facilitating cross-border trade and investment, and tourism, enhancing private sector participation and competitiveness; developing human resources; and **protecting the environment and promoting the sustainable use of shared natural resources**” (Ibid.). Further in the document, the 2011’s document declares that the six riparian countries “confirm the validity of the program’s vision and goals” (Ibid. 3) and that they “wish to maintain the overall direction of the GMS Program” (Ibid. 4), thereby stating their aspiration to continue with the vision stated in 2002 for the decade 2012-2022. The Strategic Framework mentions both to the ideas of promoting infrastructure building for the Mekong region as well as the necessity to protect the environment. A closer look at its focus on infrastructure and environmental protection through its “Strategic Thrusts” shows several mentions of progress made in “improved physical connectivity”, “power interconnection projects” and the realization of “a number of major hydropower projects” (Ibid.). This implies also that further achievements in building hydropower projects are part of the vision of the GMS. Concerning environmental protection, in the 5th Thrust, the GMS expresses the intent that “environmental concerns are adequately addressed in cross-border initiatives and properly integrated into the subregion’s economic development efforts” (Ibid. 6). The document is more specific and refers to the “Core Environment Program and Biodiversity Corridors Initiative (CEP-BCI)” as one of its program for biodiversity protection, even if the text itself makes reference to “improve land-use management and sustainable finance mechanisms in rural communities” and using environmental assessments to help member states (Ibid. 6). Further even in the Strategic Framework, the mention of the CEP-BCI specifies that climate change, weather variability and biomass destruction in forests are important aspects that should be considered and states the importance “to expand the biodiversity conservation and pro-poor activities of the CEP-BCI” without precision of the tools that could be employed (Ibid. 17). Promotion of hydropower development is however specifically mentioned (Ibid. 14). No specific mentions of fisheries were seen and as this document reveals, infrastructure development is an important part of the GMS, a point that has stayed consistent over time (Grünwald 2020) (Krongkaew 2004).

2.1.2.3. Lancang-Mekong Cooperation

The Lancang-Mekong Cooperation came to fruition at the Sanya Declaration (shorter for *Sanya Declaration of the First Lancang-Mekong Cooperation Leaders' Meeting*) made in March 2016. The Declaration “formulated a comprehensive framework for TWM [Transboundary Water Management]” (Grünwald 2020, 12-13). In January 2018, the Five-Year Plan of Action on the Lancang-Mekong Cooperation was adopted by LMC’s member states (Ibid. 13). These two documents will give the basis of the RBO’s guiding principles.

The Sanya Declaration, found for this thesis on the website of China’s Ministry of Foreign Affairs, contains 26 points of cooperation following the “five key priority areas”, namely: “connectivity, production capacity, cross-border economic cooperation, **water resources**, agriculture and poverty reduction” (Ministry of Foreign Affairs 2016). Among the points of interests for this part, the following can be presented:

- (4) Enhance cooperation against non-traditional security threats, including (...) natural disasters; promote cooperation in addressing climate change impacts, (...) **ensuring food, water and energy security** (...)
- (8) Expand production capacity cooperation in areas such as engineering, (...), power, **renewable energy** to build a sub-regional comprehensive industrial link (...)
- (10) Enhance cooperation among LMC countries in sustainable water resources management (...)
- (11) (...) strengthen cooperation in **fishery** and animal husbandry, and food security and elevate the level of agricultural development;
- (15) Encourage sustainable and green development, **enhance environmental protection and natural resources management**; develop and **utilize sustainably and efficiently clean energy sources**, develop regional power market, and enhance **exchange and transfer of clean energy technologies**;

A closer look on January 2018’s Five-Year Plan of Action on the Lancang-Mekong Cooperation (Open Development Mekong 2018) shows that general principles of the Sanya Declaration apply, as the introduction states that “this Plan of Action is formulated in accordance with documents including the Sanya Declaration” (Five-Year Plan of Action on Lancang-Mekong Cooperation (2018-2022) (1)). More information are given on chapter IV “Practical Cooperation” such as in point 20 when the document refers to the need of “enhance[ing] cooperation in the fields of disaster prevention and mitigation as well as humanitarian assistance, ensuring food, water and energy security (Ibid. 4), point 53 which specifically mentions fisheries:

Establish the mechanism of exchange and cooperation on **ecological conservation** along the Lancang-Mekong River and jointly **set up wild fish breeding and rescue centers for information sharing**, for example, **information on fish diversity, fish abundance and fish migration**, etc. as well as possibility and opportunity on fishery cooperation, such as strengthening capacity building in aquaculture development.

Hydropower development itself is not mentioned by name. A part called “Water Resources” explain the importance of managing water resources but is specific mostly on climate change and flood-related incidents (Ibid. 7-8). Interestingly, the LMC website mentions the “3+5 Cooperation Framework”, which gives priority to three domains while adding five other areas of development. The three main domains are: “political and security issues”, “economic and sustainable development” as well as “social, cultural and people-to-people exchanges”. The five other areas are: “agriculture and poverty reduction”, “water resources”, “production capacity”, “cross-border economic cooperation” as well as “connectivity”. In sharp contrast with traditional RBOs such as the MRC, the LMC only presents water resources management as one part of a sub-priority area. Issues of security, economic development and social connectivity seem to have prevalence over environmental issues. This is confirmed by Biba (2018) who explains that “China has clearly sought to establish a comprehensive cooperation mechanism that combines the agendas of the MRC and the GMS” while adding elements such as non-traditional security issues (Biba 2018, 634), leaving water resources management as one element among many others. According to the Sanya Declaration and the 2018 Five Year Plan, it seems nonetheless that fishery safeguarding is part of the objectives declared of the LMC alongside water resources management, environmental protection and renewable energy development.

2.1.3. Organizational Structure

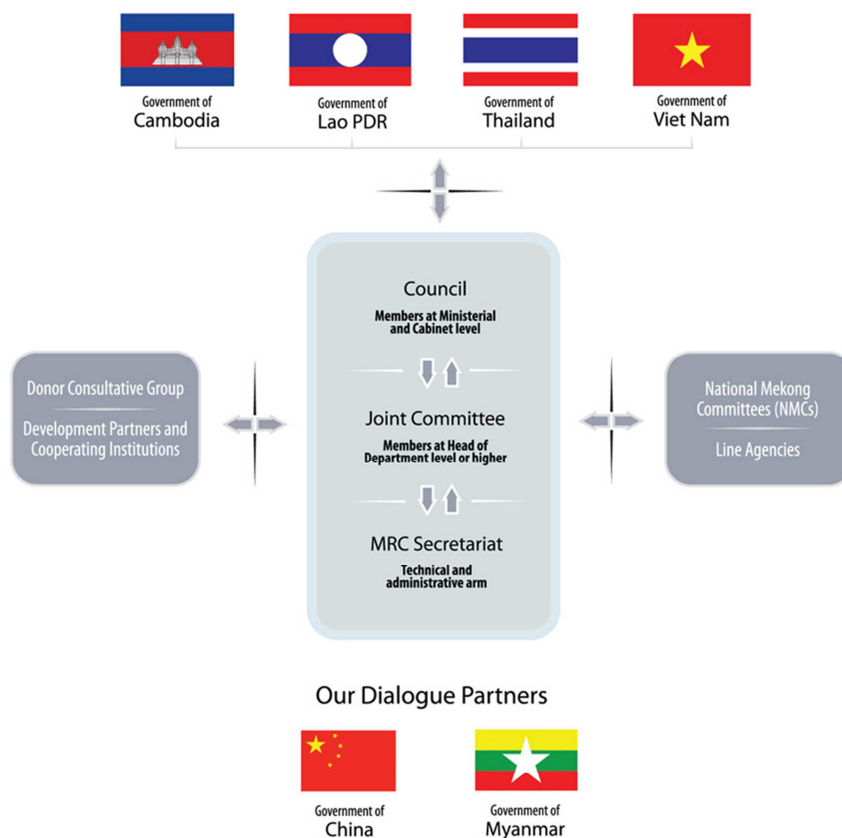
Each RBO has a different organizational structure, however Schmeier (2015) argues that most RBOs with a complete structure have a high-level body for decisions, an intermediary group for programs and projects implementation and a secretariat, which means a tripartite organizational structure (Schmeier 2015, 57). According from the same author, high-level decision bodies are necessary for “making long-term strategic decisions on water resources governance in the respective basins” (Ibid.). The intermediary level are found on different bodies such as Committees which “operationalizes the political decisions taken at higher levels into specific programmes, projects and activities” (Ibid.) or experts (working groups responsible of technical

cooperation (Ibid.). Finally, Secretariats operate administrative tasks which are necessary for the RBO's work, whereas "RBOs without Secretariats tend to be RBOs of very limited institutionalization". The objective of this part is to identify whether the RBO has bodies in these three different levels. If not, it remains to see which bodies are present, in order to understand better the reach that each of the four RBOS in the Mekong region have.

2.1.3.1. Mekong River Commission

The MRC showcased its organizational structure on its website (MRC Governance and Organisational Structure). According to its chart and the explanation present there, the MRC has three organizational bodies: the Council, the Joint Committee and the Secretariat.

Figure 1: MRC Organizational Structure



Source: (MRC Governance and Organizational Structure) Own modifications

The same website shows the following functions and attributes for each bodies:

- MRC Council of Ministers: Its role is to give approval to the MRC Strategic Plan and gives the general direction of the MRC works, “including organisational policies, basin-wide strategies and plans, strategic cooperation partnerships, and resolution of differences”
- Joint Committee: Conducts the implementation of the Strategic Plan, “assisted by task forces, working groups, committees, expert groups that provide technical input and advice on institutional, technical and policy related issue”
- Secretariat: Conducts administrative tasks, organizes meetings and serve as liaison with national Committees.

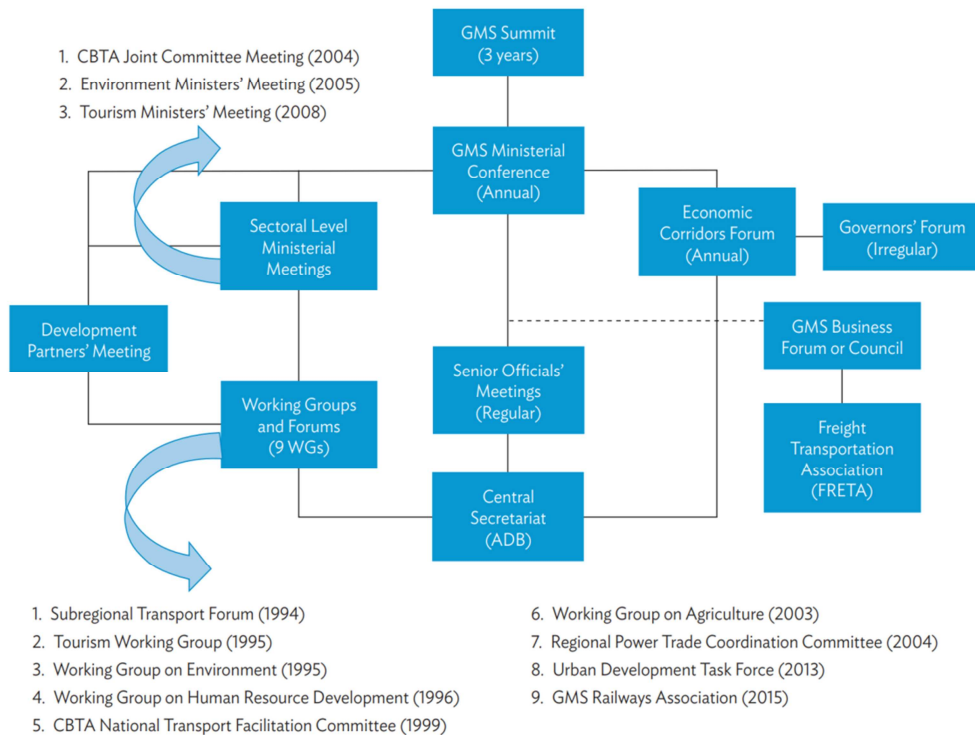
Furthermore, aforementioned National Mekong Committees are agencies present in each Member states, responsible to coordinate water, planning and cooperation affairs with the MRC. Each Committee has its own secretariat. Schulze and Schmeier (2012) further clarifies saying that National Committees “link[...] national water resource management policies and regional cooperation efforts in an efficient way” (Schulze and Schmeier 2012, 237). Adding a Donor Consultative Group who coordinates activities of donors (Ibid.) gives the MRC a rather advanced and developed organizational structure who goes beyond the “normative” structure described in these pages.

2.1.3.2. Greater Mekong Subregion Program

The GMS, as said earlier, is an organization linked to the Asian Development Bank. For this reason, the GMS website references the GMS Secretariat in the Regional Cooperation and Operations Coordination Division, Southeast Asia Department of the Asian Development Bank (GMS website). This fact is confirmed by Schmeier (2015) who explains that the ADB “provides the entire organizational and administrative framework” for the GMS (Schmeier 2015, 58).

A study directed by the ADB on November 2016 gives a detailed overview of the organizational structure from 2012 onwards, as shown below:

Figure 2: GMS Structure from 2012



CBTA: =Cross-Border Transport Agreement

Source: (ADB 2016, 7)

The structure of the GMS has been made ever more complex over time (ADB 2016, V). The current structure reflects the current trend of RBOs worldwide with an annual Ministerial Conference, groups at the mid-level such as the Working Groups and Forums and the ADB-managed Secretariat (ADB 2016, 7). Entities such as Working Groups and multiple Forums consolidate the organization and participate in implementation on the operational level (Ibid. 5 and 7). As it seems, the structure has the three layers that are looked for in this part of the thesis. However, the fact that its secretariat is managed by the ADB raises questions of the independence and maneuverability of the GMS.

2.1.3.3. Lancang-Mekong Cooperation

The LMC differs from the two previously mentioned RBOs. The website of the LMC only mentions three mechanisms: the “3+5 Cooperation Framework”, high-level meetings and “Joint Working Groups” for area of developments (LMC, 3+5 Cooperation Framework). The contact address refers to China’s LMC Secretariat, so does the email address. Further in the website (Ibid.) succinct explanations are given of “leaders’

meeting, foreign ministers' meeting, senior officials' meeting (SOM), and working group meetings (WGMs) in various fields". The Joint Press Communiqué of the Second Lancang-Mekong Cooperation (LMC) Foreign Ministers' Meeting published on December 2016 speaks about the RBO's secretariat and explains that the LMC "establish a coordination unit/national secretariat within the Ministry of Foreign Affairs or as appropriate to each country", meaning that each country has its own unit, a fact confirmed by Biba (2018, 634). Therefore the secretariat of the LMC is decentralized. At the moment when the thesis was written, the website only shows the contact for the Chinese unit. Frequent joint press release and statements of Leaders' Meetings and Foreign Ministers' Meetings (LMC, Documents) shows the presence of high-level decision body mechanisms. The website also references "six diplomatic working group meetings" as well as "joint working groups for all priority areas [that] have been set up and put into operation" (LMC, 3+5 Cooperation Framework). *A priori*, the three-layered organizational structure is present, even if the Secretariat seems decentralized. In practice the literature reviewed expresses how "loose" is the institutional backbone of the LMC (Biba 2018, 634). Grünwald (2020) mentions the Lancang-Mekong Water Resources Cooperation Center and the Lancang-Mekong Environmental Cooperation Center, two mid-level bodies important for implementation of the five-year plan, cooperation between LMC partners, questions of environmental protection and discussion with external entities on environmental issues (Grünwald 2020, 79-80).

2.1.4. Financing

This part will take a closer look to the different possible sources of funding of the RBOs studied. Due to the possible confidentiality and secrecy behind some of the RBOs' finances, secondary literature will be mostly used. It is not expected that complete information will be retrieved about funding methods of all RBOs studied.

2.1.4.1. Mekong River Commission

The MRC is rather transparent about his budget. Published online, they can be accessed by the general public. A document found on the MRC website, called "Consolidated Financial Statements 2019", displays key funding information through audits made by external auditors (MRC Consolidated Statement, 2019). Revenues for 2019 are presented as follows: 3'420'348 USD were paid by members states as contributions. Vietnam and Thailand both paid 991'901 USD while Cambodia and Lao

PDR contributed the amount of 718'273 USD each. The contributions of 14 external partners, country partners and financial institutions, reached 8'174'995 USD for that year. Those partners are the following, by descending order of sums donated in 2019: the European Union, Switzerland, GIZ, Japan, Australia, the World Bank, the *Kreditstand für Wiederaubau* (a German development bank), France, the Netherlands, Luxembourg, the USA, the Mekong Region Future Institute, China and a pool funding. These donors indicate a clear involvement of Western countries and institutions in the MRC and it can be implied that the RBO has close links with Western countries or institutions, without being at the same level as the US-led Lower Mekong Initiative (Zawacki 2019, 1). Among them, some contributions are striking. The EU gave more than three million USD (only 68'717 USD in 2018), Switzerland more than 1.375 million USD and the German GiZ more than 767'000 USD. China, being only a dialogue partners, contributed a meager 30'000 USD in 2019 and gave nothing in 2018. Myanmar is not mentioned, possibly having not contributed. Besides, contributions changed drastically from some donors between 2018 and 2019. As the MRC funding might be affected by the global pandemic of COVID-19 and the related recession, no definite conclusions will be made about the funding of 2020. However, general facts can be assessed from this financial statement. First of all, the MRC is more dependent on external donors rather than on its member states. In 2019 member states' contribution made up only **29% of the MRC's budget**. In 2018 they made up **38% of its budget**. The reliance on external actors can have detrimental effects on the political decisions made for the Mekong River which can be influenced by partners outside of the Mekong River. This situation is far from the self-proclaimed decision of the MRC to shift finances back to the riparian states in order to make the organization "fully self-sustained through funding from the Member Countries by 2030" (Fast Facts on the Mekong River Commission). The variation of funding from many contributors between 2018 and 2019 is also worrying and prompt the question of the future of the MRC in case of withdrawal of key partners, as riparian states' contributions are steady but too limited for the MRC's needs.

2.1.4.2. Greater Mekong Subregion Program

It should not come as a surprise that an important part of the GMS' finances comes from the ADB. The development bank was described as a "key financier" of the GMS Program during a speech of the Fifth GMS Summit in 2014 (ADB 2016, 12). The ADB said it contributed 300'000 USD for events and meetings in 2015 with the same amount being given throughout the year by "GMS governments and development partners" (Ibid.). This indicated that at least for 2015 the ADB was on an equal footing with GMS members and external partners. The Oregon RBO Database mentions that the GMS is

mostly funded by the ADB (Oregon State University 2020). On 2012, a third of the total amount of funding for infrastructure projects were provided by the ADB and two third by GMS countries (Tan 2014, 386). Without much detail, it is nonetheless reasonable to believe that the ADB has a large impact on GMS' financing and consequently on its functioning, even if member states bring their contribution, especially to sectorial programs and activities.

2.1.4.3. Lancang-Mekong Cooperation

Concerning the LMC, very little knowledge is available on its funding. Reading throughout the literature on LMC, no information has been found about its finances. The LMC did not publicly reveal its budget, neither where its finances came from. Secondary literature showed the example of the LMC Special Fund that “appears to be the most important supporting body that reserves funding for LMC members” (Po and Primiano 2020, 14). This fund, although not part of LMC Secretariats, showcase Chinese investments for the LMC. As the authors of the studies explained, “during the first LMC summit, China pledged to offer \$300 million to the LMC Special Fund” (Po and Primiano 2020, 14). This can be an indication that a large part of the LMC funding is paid by China, although it is not yet possible to conclude in that aspect.

2.1.5. Cooperation with External Actors

In this part, RBOs' existing cooperation with external partners will be overviewed. Links with members of the civil society are exempt from this section, as stakeholder engagement will be assessed in part 2.3.3. This segment will especially look for regional organizations, international organizations (such as UN entities), financial organizations, countries and supranational entities such as the EU.

2.1.5.1. Mekong River Commission

Several external actors interact and cooperate with the MRC, some of them have been already presented in the previous pages. As was said previously in the thesis, China and Myanmar have dialogue partners' status within the commission (Kitthikoun and Staubli 2020, 247). Several partners are donating important sums of money to the MRC as was explained in part 2.1.4.1. and a majority of them are Western countries and

institutions. The MRC's website mentions several of these donors as development partners (MRC Development Partners and Partner Organisations). A few countries were not mentioned such as Finland and Sweden who did not appear in the list of donors for the years 2018-2019 (MRC Development Partners and Partner Organisations) (MRC Consolidated Statement, 2019). The MRC also works with other partner organizations "through jointly funded projects, under Memoranda of Understanding or in a research capacity" (MRC Development Partners and Partner Organisations). The following are mentioned: ADB, ASEAN, the International Union for the Conservation of Nature, the United Nations, the UN Development Programme, the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), the World Wildlife Fund (WWF), and the World Bank (WB) (Ibid.).

Several workshops happened between the MRC and its partners between 2010 and 2020. In 2015 the International Union for the Conservation of Nature and Mekong NGO Forum on Cambodia had a workshop for collaboration on two water conventions with the MRC's Cambodian National Mekong Committee (Kinna and Rieu-Clarke 2017, 63). The Commission also collaborated with the UNECE on 2015 concerning the UNECE Policy Guidance Note on the Benefits of Transboundary Water Cooperation as well as the UNECE Water Convention (Ibid. 64). In the 3rd International Conference of the MRC, on April 2018, many partners of the MRC actively participated during the two-days event, including the Water and Peace association, the World Bank, China, the International Center for Environment Management and the Stockholm Environment Institute Asia Center (SEI) among others (MRC 2018, 4-5). At the same time, the MRC announced two new partnerships with the United Nations Office for Project Services, and the UNESCAP (Ibid. 2). On June 2018, the MRC collaborated with the RBO *Compagnie National du Rhône* (MRC 2018) while the 4th Regional Stakeholder Forum on the Basin Development Strategy of November 2014 received support from the Swiss Agency for Development and Cooperation, the Danish International Development Agency and the Swedish International Development Cooperation Agency (MRC 2014). All of these examples, coupled with the existence of donors as well as the existing partnership, exemplify dynamic relations with the MRC and external partners.

2.1.5.2. Greater Mekong Subregion Program

The GMS lists several partners in its website, including the ADB, the Mekong Business Initiative (MBI), the Mekong Tourism Coordinating Office, the Central Asia Regional Economic Cooperation Program, the South Asia Economic Cooperation and the South

Asia Association for Regional Cooperation (GMS Main Page). That list of partners indicates a very strong regional focus. Indeed, the Mekong Business Initiative is a “development partnership” between the ADB and the Australian government that focuses on Cambodia, Laos, Myanmar and Vietnam (Mekong Business Initiative 2021) while the Mekong Tourism Coordinating Office (MTCO) is established in Bangkok, promoting sustainable tourism for the six riparian countries, “operat[ing] on annual financial contributions from each GMS country” (Mekong Tourism Coordinating Office 2021). The three other partners are South-Asians and one is a Central Asian organization. This showcases an interest in partnerships that are not only grounded in Asia but that are also mainly centered on economic development and business. The importance of the ADB on the GMS Program can partly explain the nature of these partnerships; one can infer that the development bank would create a network of associations that are like-minded or that have collaborated with the ADB previously.

The GMS cooperates with other external organizations. Indeed the 6th GMS Summit indicated the willingness of GMS’ members to collaborate with the “ASEAN Community, the Belt and Road Initiative, the Mekong-Lancang Cooperation mechanism, the Cambodia-Lao PDR-Myanmar-Viet Nam Cooperation, and the Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy and other regional cooperation frameworks” (GMS Main Page). This is in line with the GMS’ proclaimed goal to be “regionally integrated and globally connected” (Ibid.). It presented also collaborations with the Greater Mekong Railway Association (GMS Main Page). The RBO manifested a certain willingness to partner with associations supporting private companies, indicating that “the private sector is increasingly important in a partnership that began formally with the GMS Business Forum (now Council) in 2000, and expanded with the Mekong Business Initiative, the Freight Transport Association, forums for agriculture and tourism, the e-Commerce Platform and the recent Finance Sector and Trade Finance Conference” (GMS Main Page). Furthermore, it said that the GMS’ success depended on “strong, deep and broad partnerships” with governments as well as “partnerships among other **stakeholders** including **private sector, local administrations and communities**, academia and media”. A study by the GMS Secretariat (managed by the ADB) says that “ADB, the European Union, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and the United Nations Economic and Social Commission for Asia and the Pacific have provided support to either GMS-BC, GMS Freight and Transport Association, or related activities to encourage private sector growth” (ADB 2016, 11). Finally, the GMS officially committed to the UN 2030 Agenda for Sustainable Development and the Paris Agreement, which indicates prospects for collaboration with international organizations as well as environmental protection entities, even if little evidence of collaborations with these entities were found. The GMS therefore has important collaborations with regional

and external partners as well as several forums and platforms for common endeavors, even if the GMS partnerships mostly focus on economic and business areas, and has a strong regional focus.

2.1.5.3. Lancang-Mekong Cooperation

The LMC website itself does not show collaborations with external partners. A website hyperlink, called “Bilateral Cooperation”, rather wishes to showcase evidence of collaboration between riparian states of the Mekong by presenting news’ stories (most of them from Chinese newspapers such as Xinhua News Agency or China Daily) with China and other riparian countries collaborating on diverse aspects such as high-speed railway building, bridge construction as well as distribution of Chinese vaccines for COVID-19 (LMC Bilateral Cooperation). Examples of external collaboration exist, nonetheless. According to Grünwald (2020), the Lancang-Mekong Water Resources Cooperation Center helps to “develop[...] new alternatives for further regional water cooperation” (Grünwald 2020, 79-80) while the Lancang-Mekong Environmental Cooperation Center “eases negotiations between local governments, environmental specialists, and environmental NGOs” (Ibid. 80). These two cooperation mechanisms offer the possibility for collaboration with external partners, while the Lancang-Mekong Water Resources Cooperation Center also provides potential conditions for stakeholder involvement (Ibid.) The Lancang-Mekong Environmental Cooperation Center indicates several partnerships, with the UN Environment, Conservation International, the WWF, The Nature Conservancy, Environmental Defense Fund and Global Infrastructure Basel, the latter five being NGOs (LMC Environmental Cooperation Center). Lei and Zha (2020) also give interesting arguments about the role of China in international water institutions and some insights can be inferred from this article, since the LMC is mostly a China-driven RBO (Biba 2018, 632). First of all, China is wary of organizations such as the MRC; indeed it considers the latter to be governed by external entities such as the EU and Japan (Lei and Zha 2020, 266). Nonetheless, China holds annual meetings with the MRC (Ibid. 267) and supports collaboration between the MRC and the LMC (Ibid. 269). The same goes for the GMS; according to Lei and Zha (2020), the RBO didn’t completely win the PRC’s trust due to the importance of the ADB in the GMS, as the former is seen as a Japanese entity (Ibid. 258). However, China engaged actively with the GMS, more than it ever did with the MRC (Biba 2018, 629). In general China seems suspicious of influence from Western countries as well as Japan, and it certainly possible that the LMC’s collaboration with any Japanese or Western entities will stay limited. China also cooperates with ASEAN institutions (Ibid. 264) and the LMC probably follows the same path. In March 2017 the

Global Water Partnership officially announced collaboration with the LMC, and the press statement states that “since [2017], several cooperation activities have taken place, including joint technical training, meetings, and study visits” (IISD 2017). This represents a quite isolated example of collaboration with a Western and international organization. The nature of the GWP, a global network which is decentralized, “neutral”, divided in several Regional Water Partnerships that govern themselves (GWP What is the Network?), might have given incentives for the LMC to initiate closer relations, as the decentralized nature of the GWP reduces its ability to be “controlled” by external powers. In February 2021, the United Nations Economic Commission for Europe (UNECE) made a webinar on data-sharing in which the Lancang-Mekong Water Center participated, exemplifying pathways for future cooperation with UN Organizations. Many collaborative events might not be public and/or are limited to the riparian governments of the Mekong and RBOs in the region, meaning that other partnerships might exist.

2.2. Situation in the Mekong Basin

2.2.1. Relations between Countries

The Mekong region is the theater of complex and sometimes conflicting relationships between states. Multiple issues can unite and divide the six riparian countries, such as droughts, pollution, natural disasters, border conflicts and trans-national crime among many others. These issues are made more complicated by the different political regimes of the countries along the Mekong River, as well as the framework of the “ASEAN way” which favors national sovereignty and non-infringement (Qi 2013, 289). The presence of China complicates the situation, as this country is disproportionately more powerful and richer than other riparian states such as Cambodia and Lao PDR; as of 2019, China’s GDP, of 14,28 tn USD, was respectively 527 and 785 times higher than Cambodia’s GDP (27 bn USD) and Lao’s (18 bn USD) (World Bank Database). Furthermore, People’s Republic of China launched the Belt and Road Initiative in 2013, a move that has brought significant Chinese investments in the Mekong Region (Siciliano 2018, 752). The BRI will however be analyzed in a later part of the thesis. In this part, the relations between the four countries that are objects of the analysis (Cambodia, China, Lao PDR and Vietnam) will be assessed.

Lao’s relations with other countries are heavily influenced by its position as an upstream country as well as being China’s neighbor (Pang 2017, 3). It is also influenced

by its history as part of Indochina, a characteristic that it shares with Cambodia (Ibid.). Finally, its position as a relatively poor country heavily impacts its decisions and relations (World Bank 2020). Two events are preponderant for analysis and will be presented in priority. Firstly, in order to reduce its poverty rate, which still stands at 18 percent in 2020 but was at 46 percent in 1993 (ibid.), Lao accepted strong infrastructure investments to become the “Battery of Asia” (Urban, Siciliano and Nordensvard 2018, 748) and has diversified its economy by exporting electricity to neighbor countries (Ribka and Perwita 2020, 30). This bears consequences not only due to the importance of Chinese investment in that regard (Ibid.) but also concerning hydropower dams, as Lao went ahead with the construction of the Xayaburi Dam to generate electricity and income, breaching the consultation process required by the MRC for dam-building (Boer 2016, 107). This situation created contentions with downstream countries such as Vietnam (Ibid. 109) (Williams 2018, 11). Concerning bilateral relations, Lao usually enjoys relatively good relations with its neighbor Cambodia as they share a common history as French colonies and 527 km of borders (Parameswaran 2019). Relations are sometimes strained by events such as border disputes but frequent high-level dialogues have alleviated these issues (Ibid.). Both countries also share a common attitude towards China, both accepting Chinese investments towards their countries (Pang 2017, 2). In 2016 China invested 6 bn USD for infrastructure (Ibid.), 12 bn in 2020 (Thanabouasy 2020) and dams were part of this investment (Urban, Siciliano and Nordensvard 2018, 748). However Lao engaged in a more subtle “balancing act” by also turning to Japan and South Korea for economic development and giving prominence to the ASEAN centrality (Pang 2017, 3). Laos and Vietnam also had relatively good relationships with each other, especially due to historical ties and similar political systems (Ibid. 5), however, the close proximity of Lao PDR to China, which contrasts with Vietnam’s rivalry with the PRC, has somewhat strained Laotian-Vietnamese relationship (Ibid.). Lao’s dams are also a source of contention, for the present but also in the future (Parameswaran 2014).

Cambodia is one of the poorest countries in the region. In 2019, it was the country in the region, not including China, with the lowest GDP per capita PPP: 4’583 USD, lower than Myanmar’s 5’369 USD and Lao’s 8’172 USD (World Bank Database). As mentioned earlier, Lao and Cambodia’s relations are relatively satisfactory. Nonetheless, Cambodia was opposed to Lao’s breach of the prior consultation for the Xayaburi Dam (Boer 2016, 111). Relations between China and Cambodia are very close, to the point that the latter was said to have “bandwagoned” with the PRC by some experts (Po and Primiano 2020, 444-445). Over time, China also has become Cambodia’s biggest trading partner, foreign investor and provider of aid (Ibid. 452). The PRC invested 12.6 bn USD in the Cambodian economy between 1994 and 2019 (Nachemson 2019). Cambodia has been even more direct and vocal in its support of China than Lao PDR, branding the PRC its “most trustworthy friend” (Pang 2017, 4). The monarchy also

followed a political approach of “economic pragmatism” in order to attract foreign direct investments (Chheang 2021), a possible explanation for its “bandwagoning” with China. Because of Sino-Cambodian close cooperation, Vietnam and Cambodia’s relationship further soured, according to Edgar Pang (Pang 2017, 5). The Kingdom’s interactions with Vietnam were already strained because of historical reasons (Ibid.). Vietnam’s attacks on Kampuchea and the subsequent invasion of Cambodia are still vivid in the population (Ibid.), to the point that anti-Vietnamese sentiments are used in Cambodian politics (Ibid. 6). As a result, some Cambodian parties have called for even closer ties with China (Ibid. 6). Cambodian politics are therefore influenced by domestic attitude towards Vietnam and China. Raksmei and Heng argue that despite many high-level visits, praises of friendships and economic relations (5 bn USD in trade between countries in 2019), border disputes frequently damage relations between Vietnam and China (Raksmei and Heng 2020, 1-2) as well as “inherited negative sentiments and prejudice” (Ibid. 2) due to historical reasons. The two countries share a similar situation as being downstream countries in the Mekong River but their relations remain tainted by aforementioned factors.

Vietnam’s relations with Lao PDR are relatively good, as mentioned above, and fraught with contentious issues with Cambodia. Once again, the Xayaburi Dam represented a change in Cambodian-Vietnamese diplomatic relations as they both opposed Lao’s decision to build the dam on the mainstream (Giovaninni 2018, 87). Vietnam, as it seems, has been rather active to rekindle relationships in the Mekong and take a leading position, as it hosted the Summit of the GMS, the 2018’s Summit of the Vietnam-Laos-Cambodia Development Triangle Area and helped organize the Friends of the Mekong Policy Dialogue with the US in January 2021 (Dung 2021). Vietnam’s recent developments are correlated with its vulnerable position as a downstream country, as it tries to unite countries in the Mekong as well as develop stronger ties with outside powers (Urban, Siciliano and Nordensvard 2018, 763). Vietnam’s disagreements with China on several issues, notably on dams located upstream, are also linked with its geographical location, as it is the end-receiver of the Mekong’s water and its sediment (Ibid.). In addition, the two socialist republics can be considered as being “at each other’s throats” on the topic of the South China Sea (Le and To 2020, 5). Vietnam’s contentious relations with China on these conflicts did not prevent it to join the LMC (Grünwald 2020, 79), neither did they stopped collaborating on Mekong-related issues such as data exchanges (Feng et al. 2019, 62) or to collaborate on other matters such as normalizing cross-border trade after stricter procedures put into place due to the COVID-19 pandemic (GMS 2020). Vietnam and China’s relations are still ambivalent, as explains Hong Le Thu from the think-tank Carnegie (Huong 2020). Besides having similar political regimes and even if “the Vietnamese government has kept diplomatic channels with Beijing open”, Vietnam

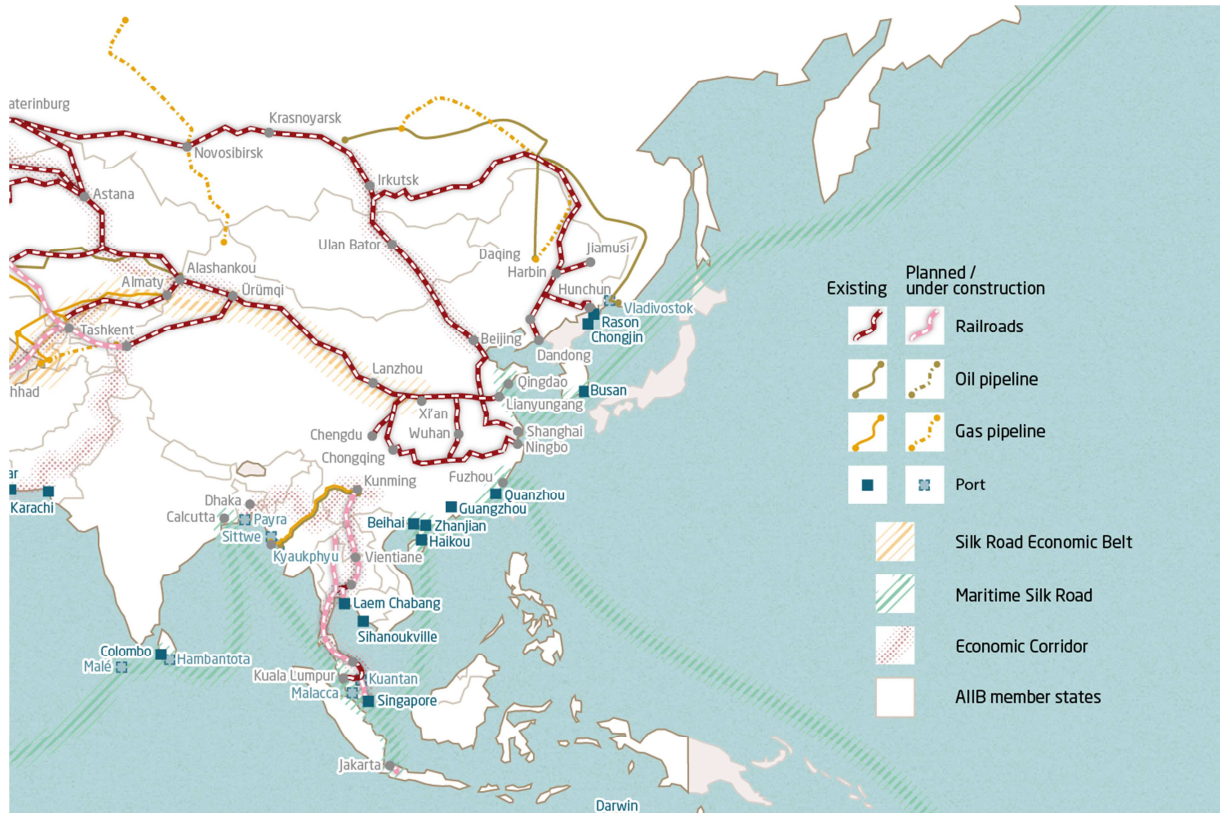
still has to maintain a “delicate balancing act” and diversify its partnership with other powers to counter the PRC’s influence in the region (Ibid.)

The PRC’s relations with other riparian states have been laid out previously. A large part of China’s focus on the Mekong region is linked with the Belt and Road Initiative, which will be explained in the next chapter. China’s relations with other countries and its growing influence in the region have the potential to shape up regional politics, in an unprecedented way, one might say.

2.2.2. Belt and Road Initiative

The Belt and Road Initiative was started in 2013 by China as a global initiative to increase China’s domestic economic growth (Huang 2016, 320), play an active part in external relations through infrastructure investments (Ibid.) and the creation of an “economic integration” of neighbor countries and beyond (Cai 2017, 5-6). Many other explanation for the BRI’s existence have been presented, such as developing the Western and Eastern part of China (Ibid. 6), exporting excess capacities (Ibid. 11) (Huang 2016, 321), policy and cultural exchanges (Ibid. 319) or increasing Chinese influence abroad (MERICS 2018) (Cai 2017, 11). The Belt and Road Initiative, added in 2017 in the CCP’s Constitution (Hillman and Sacks 2021) is made of a terrestrial “Silk Road Economic Belt” and a maritime “21st-Century Maritime Silk Road” (Cai 2017, 2) (MERICS 2018). The former goes through Eurasia and Central Asia towards Europe while the maritime road goes through Southeast Asia and then westwards through ports on the Indian Ocean, then continuing towards Eastern Africa. The Maritime Silk Road passes through countries in the Mekong region (MERICS 2018) (Biba 2018, 633). The rest of the analysis will focus on the mainland Southeast Asian part of the BRI.

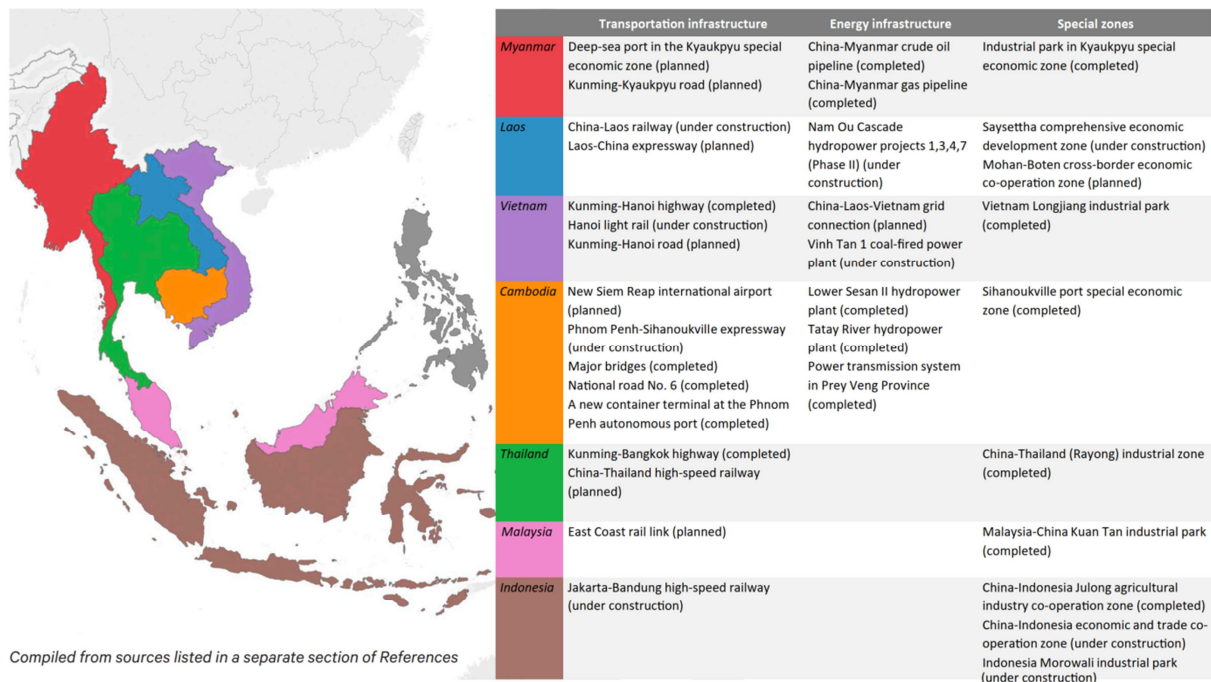
Figure 3: Eastern part of the Belt and Road Initiative



Source: (MERICS 2018), own modifications

The MERICS map of the BRI, as shown in figure 3, shows the planned railroads that are intended to connect Kunming to Singapore, passing by the Laotian capital Vientiane (MERICS 2018). An important element that this map exemplifies is the importance of the province of Yunnan, neighboring the countries of the Mekong region. Yunnan's prevalence for the BRI in the Mekong region was highlighted by Zhang and Li (2020), mainly due to the province's close relations with neighboring countries and the several infrastructure projects that linked Yunnan and Southeast Asian countries even before the BRI (Zhang and Li 2020, 8). According to Urban, Siciliano and Nordensvard (2018), two parts of the Maritime Silk Road cross mainland Southeast Asia: the China-Indo-China Peninsula Economic Corridor and the Bangladesh-China-India-Myanmar Economic Corridor (Urban, Siciliano and Nordensvard 2018, 752). Railroads are not the BRI's only projects south of Yunnan, however. At least two other programs are related to the BRI: hydropower dams (Urban, Siciliano and Nordensvard 2018) (Hong and Johnson 2018) and the Lancang-Mekong Cooperation (Biba 2018) (Feng et al. 2019). Figure 4 shows different BRI projects in riparian states of the Mekong which include hydropower dams in Lao and Cambodia.

Figure 4: Belt and Road Initiative projects in Southeast Asia (2018)



Source: (Hong and Johnson 2018, 2) own modifications

According to Hong and Johnson (2018), more than 20 dams in Cambodia and Lao PDR were built under the BRI, by Chinese companies/investors or with their support (Hong and Johnson 2018, 2). The same authors claim that most of the dams built in the context of the BRI are located in the Mekong region (ibid.). This is confirmed by Urban, Siciliano and Nordensvard (2018) who declared that by 2018, 38% of the 350 hydropower projects were built in SEA by Chinese State-Owned Enterprises (Urban, Siciliano and Nordensvard 2018, 748). They also confirmed that 30 dams were completed, out of 120 planned projects (Ibid.). The question of exporting China's "excess capacities" was mentioned earlier in this text, being one of the possible objectives of the BRI. This is also the opinion of Urban, Siciliano and Nordensvard (2018) who argue that Chinese SOE specialized in dam-building made use of the BRI to stimulate the development of hydropower projects abroad as the Chinese domestic dam market was considered as "saturated" (Ibid. 748). They reference several actors involved in building dams in the region: China Datang Overseas Investment Company, Gezhouba International, China Huadian Corporation, China Huaneng Group, PowerChina Resources Limited Sinohydro Corporation and China Three Gorges Corporation (Ibid. 752). Furthermore, several banks were also involved in financing hydropower projects, such as the Export-Import Bank of China, the Chinese Development Bank and the Industrial and Commercial Bank of China among many others (Ibid.). Not unexpectedly, non-Chinese actors also built hydropower projects in the region. Boer et al. (2016) mentions several Thai dam-builders involved in many projects in the LMB (Boer et al. 2016, 16). The above-mentioned Xayaburi Dam is

among them, as both its developers and investors (five different development banks) were Thai companies (Ibid. 17). Vietnamese actors were also involved in the region (Ibid.). Even if they were not involved in all existing projects, Chinese actors were and are still considered as “attractive partners” by many countries in the region and abroad due to “low costs, access to finance (and at times cheap loans) and a big portfolio of domestic projects” (Urban, Siciliano and Nordensvard 2018, 753). Chinese ministries were involved in many of these projects, with the example of China’s State Council which approval is required for infrastructure costing more than 2 bn USD (Ibid.). Other ministries involved are the Ministry of Commerce, “the main institution that approves and manages overseas investment by SOEs” (Ibid.), the National Development and Reform Commission approving projects costing less than 2 bn USD and the Ministry of Environmental Protection providing suggestions and advice about environmental protections and environmental impact assessments (Ibid.). Therefore, as is shown by many of the aforementioned phenomena, dam-building in the Mekong region and the BRI are linked.

The opening document of the Lancang-Mekong Cooperation, the Sanya Declaration, references the BRI in part 6, saying it “encourage[s] synergy between China’s Belt and Road Initiative and LMC activities and projects” (Ministry of Foreign Affairs 2016). It also references bodies often associated with the BRI such as the Asian Infrastructure Investment Bank (Ibid.) (Huang 2016, 315). Chinese media such as China Global Television Network (CGTN) have stated that “[t]he LMC is an important component of the Belt and Road Initiative” (Song 2018). Feng et al. (2019) also suggest that the LMC is “under” the BRI (Feng et al. 2019, 66). Biba (2018) explains that the founding of the LMC “has fit very well into China’s much bigger and still unfolding major foreign policy vehicles – that is, the Belt and Road Initiative and the Asian Infrastructure Investment Bank” (Biba 2018, 633). According to him, one of the aims of the LMC is to “promote synergy” with the BRI and use funding of the AIIB (Ibid.). These elements suggest that the LMC is therefore part of China’s “new Mekong politics” in the region which include regional development and transnational economic cooperation (Ibid. 632-633) and can either be considered as a component of the BRI or as having close interlinks with the initiative.

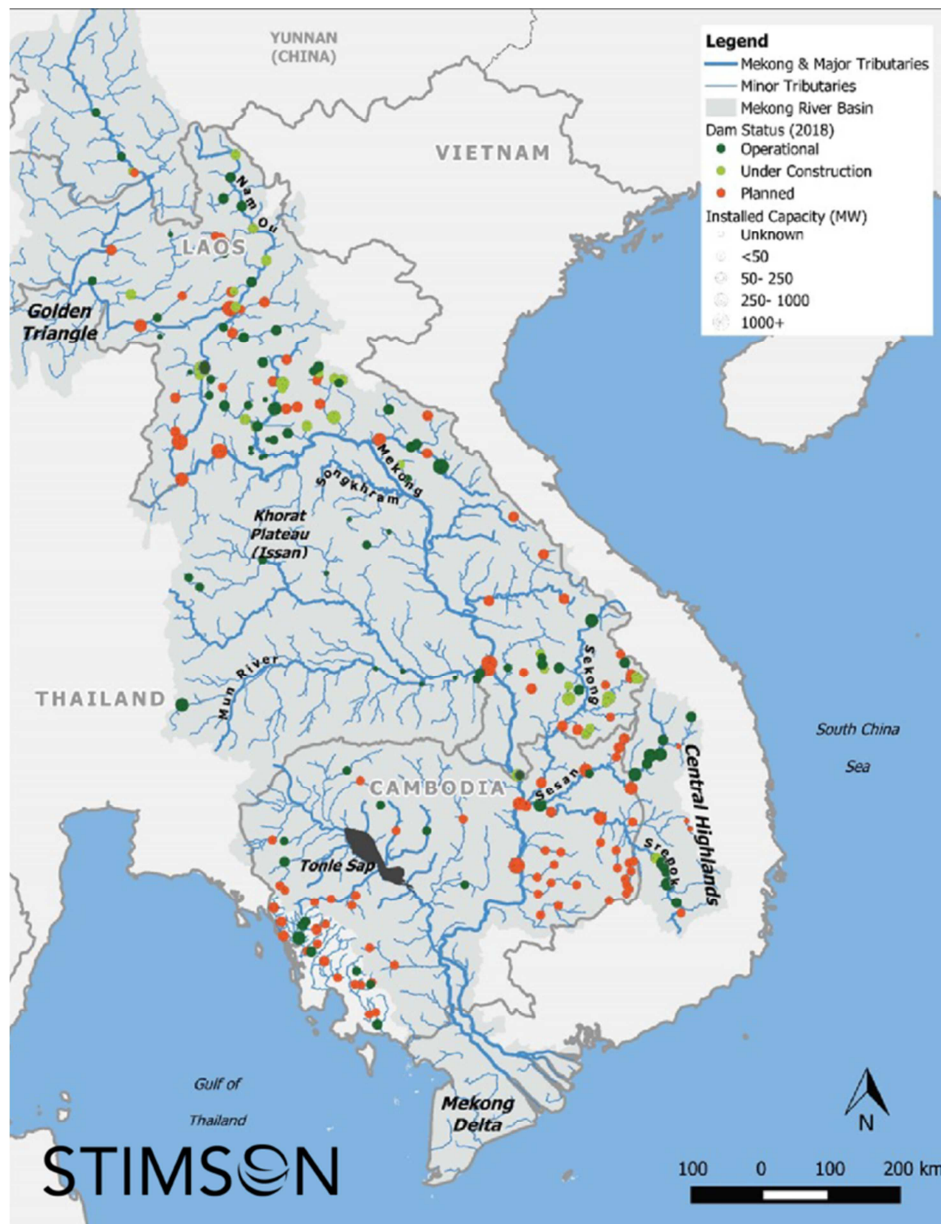
2.2.3. Plans for Development of the Mekong River

As presented earlier, 20 dams were built in Lao PDR and Cambodia by Chinese companies or with the help of Chinese financiers (Hong and Johnson 2018, 2). However, none of these dams were built in the Mekong River itself, rather in its tributaries (Ibid.). It is however important to know how many dams were built in the mainstream

river, as it is the focus of this Master thesis. After assessing the approximate number of dams built in the entire region of the Mekong, the focal point will be centered on the dams built and planned in the Mekong mainstream river.

An assessment made in January 2020 by the Stimson Center mentions “200 dams (larger than 15 MW) planned, under construction or completed in the Lower Mekong Basin portions of Thailand, Vietnam, Cambodia, and Laos” (Eyler 2020). Among them, “more than [a] 100” were completed on tributaries of the Mekong (Ibid.). Urban, Siciliano and Nordensvard (2018) argue that Vietnam might not be likely to build a significant number of new dams as the existing ones already supply 40% of its domestic electricity (Urban, Siciliano and Nordensvard 2018, 760). However, in Cambodia, the dam market is “underdeveloped” and might therefore accept larger capacities for hydropower development (Ibid. 758) as in 2018 it had an electrification rate of 31% and 90% of its energy consumption came from fossil fuels (Ibid. 755). Similar conclusions can be drawn from the situation in Lao. The map in figure 5 shows that most of the dams built on tributaries are present in Lao PDR and Cambodia (Eyler 2020). Close to 250 dams with less than 15 MW capacity were built or planned in Lao (Ibid.). In the Chinese part of the Mekong (the Lancang), 95 dams were identified on tributaries (Eyler, Kwan and Weatherby 2020). As of 2020, “the Mekong could produce over 30,000 MW of electricity, however, only about 10% of this potential has been developed so far” (Yoshida 2020, 2).

Figure 5 : Dams in the Mekong River Basin



Source : (Eyler 2020)

Concerning the mainstream river of the Mekong, 11 dams exist on the Chinese part of the river (Eyler and Weatherby 2020). Only two dams have been completed in the LMB, in Lao PDR: Xayaburi, already mentioned earlier, and Don Sahong, completed in 2020 (Ibid.). Yoshida et al. (2020) reference 11 hydropower projects in the Mekong, the two finished dams mentioned above and 9 others that are being built (Yoshida et al. 2020, 5). Seven dams are planned in the Laotian part of the mainstream (among them two shared with Thailand), three in Thailand (including the two shared with Lao) and two in Cambodia (Ibid.). Among these 11 dams, four were proposed by Chinese developers, three by Thai dam-builders (including the Xayaburi) and two by Vietnamese companies while the Don Sahong was constructed by a Malaysian developer, leaving a

project without proposed developer (Ibid.). According to the Stimson Center, three dams in Lao could start construction “in any moment” (Eyler and Weatherby 2020). The two projects in Cambodia were postponed until 2030, following official announcements in March 2020 (Ibid.). Vietnam does not intend to build more dams on the mainstream as existing hydropower infrastructures seem to satisfy its energy requirements (Urban, Siciliano and Nordensvard 2018, 760).

Figure 6: Dams in Mainstream Mekong



Source : (Eyler and Weatherby 2020)

2.2.4. Benefits of the river

According to MRC (2019) and WWF (2016) the Mekong River brings many benefits to the six riparian countries and their population, among them are water resources for domestic uses and irrigation, agriculture, fisheries, aquaculture, materials for construction (such as sand), hydropower, transport through navigation and tourism (MRC 2019, 10) (WWF 2016, 1). In this thesis agriculture, fisheries, aquaculture and hydropower will be overviewed.

Ribka and Perwita (2020) declared that the river brings “agriculture irrigation which contributes to 50% of the populations’ profession, 60% of the region’s staple diet as well as exported globally accounts for 20% of world’s rice production” (Ribka and Perwita 2020, 27). Agriculture accounts for 7.7 billion USD per year in the Mekong region, according to the MRC (MRC 2019, 7). The Mekong irrigates many paddies and rice fields along the countries of the river, for a total of 13.4 km³ per year (Campbell et al. 2009, 67). The river is therefore linked to the agricultural practices of many countries. The MRC also presented numbers for the rice output of the Lower Mekong Basin, meaning the part of the country irrigated directly or indirectly by the Mekong River. As such, 84% of Cambodia’s rice was produced in the LMB in 2015, for the same year the share was 69% of Lao’s rice production and 51% of Vietnam’s (Ibid.). The river basin economic output of agriculture for Cambodia, Lao and Vietnam was respectively of 2.4 bn USD, 816 m USD and 6.9 bn USD in 2015 (Ibid.). In 2019 the total output of agriculture accounted for 21% of Cambodia’s total GDP, 15% of Lao’s, 14% of Vietnam’s and 7% of mainland China’s (World Bank “World Development Indicators”). The International Rice Research Institute reported in 2017 that countries in the LMB produced 109 m tons of rice in 2017 (Open Development Mekong 2019). Many countries such as Vietnam and Cambodia are also big exporters of rice as in 2019 they exported the 3rd and 8th largest volumes of rice globally (Ibid.) Coffee beans and natural rubber also account for an important part of the primary sector of the LMB countries (Ibid.) In China, for the province of Yunnan only, the Yunnan Statistical Yearbook reported that the gross output of all agricultural products amounted to 223.47 trillion RMB for the year 2018 and 268 trillion RMB for 2019 (Yunnan Statistical Yearbook 2020, 155). In the Chinese regions in which the Lancang-Mekong River flows, Diqing, Nujiang, Dali, Baoshan, Lincang, Puer and Xishuangbanna, the agricultural output was of 94.3 tn RMB for 2019 (Ibid.). The Mekong is therefore instrumental for the GDP of these countries as it helps irrigates many sectors of LMB countries’ agriculture.

Fisheries and aquaculture are also part of the GDP of LMB countries. From the three countries analyzed here and part of the LMB (excluding China), the combined output

of capture fisheries was about 4.9 bn USD in 2018, Cambodia having the highest share with 2.8 bn annually (MRC 2019, 7). Aquaculture was in 2015 of 4.8 bn USD for Thailand, Cambodia, Lao and Vietnam, with the latter accounting for 86% of its production (Ibid.). However, these numbers do not depict the complete picture of fisheries in the LMB countries as many people in Lao and Cambodia, for example, use fish as part of their daily meal and therefore do not sell it (Sarkkula et al. 2009, 239-240). As was seen earlier in the thesis, the Mekong is among the richest rivers in term of fish variety with 850 species living in its waters, second in term of biodiversity after the Amazon River (Campbell and Barlow 2020, 2). Concerning its fish yield, it is considered to give 17% of the global inland fish consumed worldwide (Ibid.). Figure 7 gives an idea of the yield of captured freshwater fish between 2015 and 2018. Figure 8, for comparison, shows the yield from aquaculture only.

Figure 7: Capture of freshwater fish (metric ton) in countries of the LMB

	2015	2016	2017	2018
Cambodia	487'400	508'800	527'943	535'005
Lao	62'635	70'915	70'900	70'900
Vietnam	127'709	130'242	140'698	140'042

Source : (FAO FishStatJ)

Figure 8: Aquaculture yield of freshwater fish (metric ton) in countries of the LMB

	2015	2016	2017	2018
Cambodia	139'560	159'598	194'200	238'510
Lao	95'915	99'950	103'950	108'120
Vietnam	2'339'452	2'398'655	2'535'850	2'791'350

Source : (FAO FishStatJ)

As that can be seen, in Vietnam and Lao PDR, the yield of fish farmed in aquaculture outweighs the yield of fisheries, while the opposite trend can be seen in Cambodia. In the case of Vietnam, the astronomical number of fish farmed can partially be attributed to the mass farming of the specie *Pangasianodon hypophthalmus* (Iridescent shark) of which 1.6 million tons was farmed in 2018 (FAO FishStatJ). It is also important to notice a general increase in catches whether in capture fish or farmed fish, with the exception of capture fish in Lao and Vietnam.

However, as seen in the literature review, there is evidence that capture fish are underreported in the official statistics, which might have an impact in the statistics of the FAO. In the article of Fluet-Chouinard, Funge-Smith, and McIntyre (2018), the authors present some insights of LMB's countries based on estimation of the hidden

number of harvested freshwater fish. Cambodia, for example, is presumed to have fished between 100% to 150% more than reported for 2009 (Fluet-Chouinard, Funge-Smith, and McIntyre 2018, 7624) while Lao is supposed, for 2008, to have underreported by 200% to 400% (Ibid.). Those numbers, obtained by comparing surveys with official numbers, indicated that at least for these two countries fish catches from fisheries is much higher. Hortle and Barumgrach (2015) estimate that fisheries might yield 1.3 to 2.7 m tons per year, higher than the estimates of the FAO, even when adding Thailand (Hortle and Barumgrach 2015, 53). Finally fisheries contribute to an important amount of the food security of the region. Yoshida et al. (2020) declared that “[f]ish is the principal source of protein for the local people, accounting for 49% to 82% of animal protein consumed” (Yoshida et al. 2020, 2) while Bouapao (2011) assessed that in certain cases, fish contribute up to 80% of the daily calorie intake (Bouapao 2011, 171). Furthermore, in Lao and Cambodia, fisheries provide an important source of income to supplement the revenues of many farmers (Ibid.). Bouapao’s studies showed that various range of farmers and fishers would see their income fall or their food security threatened if fish were to be reduced in numbers (Ibid. 171-172). For China, the Yunnan Statistics Yearbook provide an economic output of fisheries of close to 6 bn RMB for the seven regions in which the Mekong River flows (Yunnan Statistical Yearbook 2020, 152). The same source provides the number of 424’800 tons of fish in aquaculture in 2019 for the seven concerned regions and 72’900 tons of fish “naturally grown”, which means they come possibly from natural fisheries (Ibid. 172). As was said earlier, official numbers do not exactly reflect the situation of fisheries in Mekong countries and that is valid for China; however, few studies exist on the Chinese Lancang’s fisheries. To conclude, fisheries and aquaculture are not only an important source of income; they are also a part of the food security and livelihood of local populations.

Finally, the mainstream and tributaries can also be a source of hydropower energy for the countries of the Mekong Basin. The MRC (2019) indicates that Lao PDR produces 100% of its electricity from hydropower dams in the Lower Mekong Basin (MRC 2019, 10). That ratio falls for Cambodia, for which only 32% of its hydropower energy production came from dams in the LMB, and even lower for Vietnam which receives only 8% of its hydropower production from the LMB (Ibid.). Lao had hydropower capacities of 3’894 megawatts (MW) by 2015, 15% of the possible energy output of 26,000 MW that the region could produce, according to the MRC’s estimations (ERIA 2020, 3). 65.7% of that energy was sold to neighbor countries Cambodia, Thailand and Vietnam. Those numbers, dating back to the year 2015, are outdated. The estimated 1280 MW of energy generated by the Xayaburi Dam and the 240 MW energy output of the Don Sahong Dam, both built in 2020 (Yoshida et al. 2020, 5), provide a more updated outlook of the energy output of Laotian dams. The sheer energy output of the Xayaburi also brings into light the potential, in terms of electricity for domestic use as

well as for source of currency, of massive hydropower projects in the mainstream. Cambodia in 2015 generated 1'657 MW, among which 56.1% (930 MW) came from hydropower dams (ERIA 2019, 55). Estimates from the Ministry for Industry, Mines and Energy and the Cambodian National Mekong Committee in 2006 showed that 10,000 MW could be generated from hydropower dams in the country (Ibid.) Cambodia aims to use 55% of hydropower as part of its energy mix (ERIA 2019, XVIII) even if the monarchy delayed until 2030 the construction of two dams on the mainstream (Eyler and Weatherby 2020). Vietnam had 38.5 gigawatt of installed electricity capacity and 39.5% (15.2 GW) came from hydropower (Nguyen 2019, 316). Nonetheless, Vietnam does not intend to build hydropower dams on the mainstream river. Its reliance on the Mekong River, as said earlier, is related to fisheries and especially agriculture in the Mekong Delta (Yoshida et al. 2020, 11).

2.2.5. Known Effects of Dams on Fisheries

In this part, the known effects of dams on the mainstream river will be identified, based on secondary literature. It might be impossible to get a full and proper picture of the effects of hydropower dams on fisheries of the Mekong Basin, but the literature reviewed on the state-of-the-art showed several trends and hypotheses on this issue. It is important to know that when this thesis was being written (spring 2021) the Xayaburi and Don Sahong dams were recently finished, in 2020 (Eyler and Weatherby 2020) and their impacts on Mekong fisheries might take time to be assessed. Therefore, as is the case for many articles presented here, dams' effects on fisheries are still hypothetical; how the two Laotian dams can modify the ecosystems and biomes of the mainstream as yet to be measured and can only be estimated for the moment.

As mentioned in part 1.4.3., hydropower development might be one of the biggest cause of damage for fisheries in the Mekong, if not the biggest (Anthony et al. 2015) (Baran 2009) (Campbell and Barlow 2020), (Intralawan et al. 2018), (Sarkkula et al. 2009) (Yoshida et al. 2020). Other causes such as pollution and climate change might have significant effects but the literature showed salient arguments indicating that hydropower dams in the Mekong River Basin and especially in the mainstream could be more detrimental for fisheries. The reasons are multifold. According to Baran, Guerin and Nasielski (2015), sediment have a large part to play in the natural development of fisheries, as they provide nutrients for freshwater species, especially fish (Baran, Guerin and Nasielski 2015, 34). Sediment are therefore an essential part of the preservation of algae and other life forms in the Mekong River (Ibid.). However, dams can obstruct sediment, "trapping" them into the dams' reservoirs (Campbell and Barlow 2020, 2-4). Due to the numerous dams built and planned in the Mekong River,

the effect of sediment retention would be cumulative, to the point where the most radical estimations predict 96% of nutrient loss in the river (Ibid. 2). According to the simulation of Sarkkula et al. (2009), the Tonle Sap, a lake in Cambodia dependent on the Mekong for 60% of its water flow (Sarkkula et al. 2009, 233), might have less sediment if hydropower development continues and, as a consequence, could face a reduction of 25% of its neighboring floodplain's productivity (Ibid. 238). Anthony et al. (2015) reveal another side-effect of sediment reduction in the Mekong River, which is the damage done to the Mekong Delta due to the lack of mud supply flowing downstream. As less sediment flow down the delta, located in Vietnam, the coast is eroding (Anthony et al. 2015, 9). Hydropower development and reduction of mud coming from the river, as well as sand extraction, are quoted as the main drivers for this phenomenon (Ibid.). As a result, saltwater is gaining on the delta, affecting fisheries and rice fields in the area and further affecting the food security of inhabitants and the local economy (Ibid. 2). This situation explains partly why Vietnam is wary of hydropower construction upstream and is concerned about Chinese development on the mainstream (Urban, Siciliano and Nordensvard 2018, 760).

Another side effect of dam building on the mainstream is the impediment to fish's migration. Indeed, many species in the Mekong River are migratory, going either upstream, such as coastal and estuary varieties, or going to refuges during the dry season, such as "gray fish" species (Hortle 2009, 202). Campbell and Barlow (2020) estimate that 38.5% of the total weight of fish captured belong to migratory species (Campbell and Barlow 2020, 4). Therefore, the Mekong River hosts many species that need to go freely along the mainstream. However, hydropower development seems to create obstacles for migratory water life forms, hindering aquatic movements upstream and downstream (Ibid. 2). Sarkkula et al. (2009) consider that the obstruction that dams would create for these species is one of the two main causes of impacts for fisheries in the LMB (Sarkkula et al. 2009, 228). Yoshida et al. (2020) also share the opinion, saying that "mainstream hydropower development would affect fish migration, spawn distribution and downstream drift of larval and juvenile fish" (Yoshida et al. 2020, 7). Nonetheless, many dams have been built on important rivers in the world and some of them use fishways (also called fish ladders) to allow upstream and downstream movements for water life forms. This is also the case in the Mekong region. "Considerable efforts" have been made to allow free passage for aquatic ecosystems in the Xayaburi and Don Sahong projects, according to Campbell and Barlow (2020, 6). However, fishways would not be sufficient to allow all species to flow upstream. Indeed, fish such as salmonids might have the abilities to effectively use fish ladders but many species living in tropical waters such as the Mekong might not be able to go through them as effectively (Ibid.). Therefore, only a certain percentage of fish might be able to go through each fishway. However, Campbell and Barlow (2020) argue that the main issue with these ladders is the fact that many dams are being built

in succession in the Mekong River, thereby reducing each time the proportion of water life forms “going up”. If the success rate of going through each fish ladder is of 50%, then 1.6% of them would be able to reach the uppermost dam (Ibid.). The authors do not present a calculated percentage of fish being able to pass through, but they precise that larger adult fish populations might be “susceptible to mortality when migrating downstream through turbines or over spillway” (Ibid.). Campbell and Barlow argue further that hydropower development in the mainstream follow a pattern of “cascade dams”, in which each dam spills water directly into the reservoir of the next, which has increased negative consequences for the environment (Campbell and Barlow 2020, 7). This model, made for maximizing electricity yield, might create further problems for migration (Ibid.).

Another issue that hydropower dams cause for fisheries is the change in water flow. Indeed, dams release water during the dry season and keep it in reservoirs during the wet season. For that reason, eggs and larvae are impacted negatively as they grow during the dry period, when water levels are low, in order to not be drifted away when water levels are higher (Campbell and Barlow 2020, 2-3). Yoshida et al. (2020) argue that flow dynamics influence the breeding process of aquatic life forms and changes can modify their behaviors, presenting as an example the fact that flow changes “might force the fish to move on to the alluvial plains and fishers intercept these fish during their migration” (Yoshida et al. 2020, 7). Another example of negative effect of water flow change is hydro peaking, which designates a process where “different discharge and downstream water heights due to the release of water retained in the storage basin to generate electricity for market demand” (Ibid. 8). Water flow increases when the demand for electricity is high and diminishes when the demand is low (Ibid.). Hydro peaking is believed to be detrimental for aquatic ecosystems by “slashing the species number, biomass and diversity” (Ibid.).

Overall, the literature showed that hydropower dams were predominantly negative for fisheries in the Mekong. Many newspapers seen during the writing process were not shy of calling the doom of the Mekong River, with titles such as “The Last Farewell to the Mighty Mekong” (Fawthrop 2020) or “More dams would devastate the ailing Mekong River” (Cross 2020). However, consequences for the river ecosystems were also pessimistic in the academic literature. Campbell and Barlow (2020) warn that if the model of cascade dams continues to be brought forward, “the fisheries invariably decline to production levels less than the river fisheries which they replaced” (Campbell and Barlow 2020, 4). Using the lake Tonle Sap as an example, Sarkkula et al. (2009) measured that the inundated floodplain would be reduced by 15-20%, inundation period would be shortened by 1-2 weeks, flooded forests might be completely inundated and oxygen in the lake would dissolve less easily due to a combination of factors (Sarkkula et al. 2009, 237-238). With the addition of diminishing nutrients in the lake and reduction of migration fish, these elements

brought the aforementioned 25% decrease in Tonle Sap floodplain productivity, “even with rather conservative estimates” (Ibid. 238). A 2010 study commissioned by the MRC and reported by Intralawan et al. (2018), stated that only 10% of migratory fish would adapt to the construction of 11 dams in the LMB part of the mainstream river and that 90% would then be at risk of disappearing (Intralawan et al. 2018, 31). Yoshida et al. (2020) say that 103 species could be affected by hydropower development and that for each terawatt-hour per year produced, the biomass might be reduced by 0.3% (Yoshida et al. 2020, 7). They specify that the “total reduction in fish production for the Mekong Delta, Cambodian alluvial plains, and Tonle Sap is about 1’206 ton, 2’572 ton, and 56 ton annually, respectively” (Ibid.). In the case of an 80% decrease of sediment, fisheries in the whole of the Mekong might see a reduction of fish production by 36% (Ibid. 8). They also state that if the 11 planned dams were built, 50% of the river ecosystems might be trapped in the reservoirs and 35% of fisheries might have to adapt (Ibid. 11). Yoshida et al. (2020) also mention that the impacts have not been studied enough (Ibid. 3). The difficulty to assess impacts is higher now, as two dams have been recently completed in the mainstream. Further studies might be needed to analyze the loss of biomass after the completion of the Xayaburi and Don Sahong dams in 2020, and further even concerning dams that are planned in the Mekong. More studies of economic consequences are also needed as some authors such as Campbell and Barlow (2020) argue that the loss of ecosystem services created by hydropower development will result in economic trade-offs, which means the energy created by hydropower, whether used domestically or exported to neighbor countries, will not reap enough benefits to counter the loss of services provided by fisheries and other ecosystems (Barlow and Campbell 2020, 4). As the MRC published an article stating the opposite (Ibid.), further studies might be needed on that aspect.

2.3. Tools and Positions of River Basin Organizations in the Mekong

2.3.1. Data-Sharing Mechanisms

As seen in the literature review, many RBOs in the world are platforms for sharing data and information to member states and other actors (Kittikhoun and Schmeier 2020, 8). Tools and platforms for data-sharing are also important for the RBO’s role as “water diplomat” and its ability to provide information to defuse conflicts and offer basin-wide solutions (Ibid. 7). In this part, data-sharing mechanisms of the studied RBOs will

be assessed and their relations with fisheries and hydropower development will be overviewed if they indeed exist.

2.3.1.1. Mekong River Commission

Among the RBOs of the Mekong River Basin, the MRC has probably the most advanced data-sharing mechanisms. The existence of those tools is partly guaranteed by the 1995 Mekong Agreement. The latter mentions, in Article 24 part C. that the Joint Committee of the MRC aims at “regularly obtain, update and exchange information and data necessary to implement this Agreement” (1995 Agreement, 7). Part D. indicates that another function is to conduct “studies and assessments” which can be considered as a form of data collecting and exchange of information with member states and external actors such as the academia (Ibid.). The formulation of the Basin Development Plan, that has to be frequently revised and submitted to the Council, also requires exchange of data and information for coordination between MRC and member states (Ibid.). Finally, the Secretariat has to “[m]aintain databases of information as directed”. Some of the objectives of the MRC, written in the Agreement, also require exchange of information, especially notification and prior consultation on “intra-basin use” as well as the necessity to maintain minimum flow levels on dry and wet seasons (Ibid. 4). Notably, notifications on planned projects in the mainstream and tributaries require exchange of information about said plans. Therefore, exchange of information on hydropower development has all the appearance of a requirement as expressed by the 1995 Mekong Agreement. As was mentioned in part 2.1.2.1. the MRC asks for cooperation about fisheries and environmental protection but that does not imply that data and information about fisheries are shared within and outside of the RBO.

According to Qi Gao (2013), the Procedures for Data and Information Exchange and Sharing and the Procedures for Water Use, signed in 2001 and 2003, are among the mechanisms that apply on more concrete terms the principles of the Agreement (Qi 2013, 85). Furthermore, several guidelines approved later on, such as the Guidelines for Management of the MRC Hydrometeorological Network, the Guidelines on Implementation of the Procedures for Water Use Monitoring and the Guidelines on Custodianship and Management of the MRC Information System are other ways to create frameworks for information exchanges (Ibid.). Qi Gao explains that “guidelines are more action oriented, focusing on providing and promoting more detailed technical arrangements regarding information gathering and exchange” (Ibid. 86). A programme established in 2006, the Information and Knowledge Management

Programme, was set with the help of foreign countries (donors such as Australia, Finland and France) for data collection and analysis for the LMB (Ibid. 87).

The MRC website itself has an Information and Knowledge Management Programme which provides a gateway link to the data portal of the MRC. According to the website, the organization collects data from 58 automated telemetry hydro-meteorological stations, 139 traditional stations for rainfall or water level monitoring, 48 water quality sampling stations, 41 active ecology health sampling sites and over 100 fisheries monitoring sites (MRC Data and Information Systems and Services). On the website, the monitoring of water levels is shown on real time, which means that the 64 stations located in the four member states' territory as well as two more stations in China send water flow data on real time to the MRC (MRC Near Real-time Hydrometeorological Monitoring), every 15 minutes from MRC member states and every hour from Chinese stations (Ibid.). Many other topics have data updated frequently such as flood forecasting and drought monitoring (weekly). Others, however, are closed to the public and were not freely accessible by externals, such as the fisheries monitoring. About the latter, the MRC website mentions that three different kinds exist for local fisheries: fish abundance and diversity monitoring, fish larvae drift monitoring and dai fishery monitoring (referencing the 140-years-old inland fishery in Tonle Sap lake, Cambodia) (MRC Fisheries Monitoring). Not many studies using this specific data were found, and the literature reviewed seemed to use other methods rather than using the MRC data (Campbell and Barlow 2020) (Fluet-Chouinard, Funge-Smith, and McIntyre 2018) (Sarkkula 2009) (Yoshida et al. 2020). A study by Halls et al. (2013) focused on integrated analysis of the data from the MRC fisheries monitoring (Halls et al. 2013). Interestingly, their findings was that fisheries did not report significant drop in volumes and diversity, a rather opposite trends that was seen in the literature reviewed for this thesis (Ibid. 95). The older date of this study or possible issues with MRC monitoring (including missing data) could be possible reasons for that divergence. Nonetheless, the monitoring is useful for the MRC's Basin Development Plan (MRC Fisheries Monitoring) and is possibly useful for member states. Collaboration between states on fishery monitoring exist, such as the pilot test between Lao PDR and Cambodia on the Joint Environment Monitoring, where "[i]n terms of fisheries, the pilot test foresees monitoring of the three channels, which play a key role in the project design to have reliable data and information on fish species, their migration patterns, catches, and values" (Kittikhoun and Staubli 2020, 253). Collaboration for fish monitoring exists and might enhance the already consequent effort on data collection and sharing about fisheries. However with the exception of the Basin Development Plan and the study mentioned above, the data provided by the MRC does not seem to have been used in many articles present in the present literature review. This leaves questions about the validity and completeness of the

MRC's data, although that issue could have come from the lack of public access of the RBO's databases.

One last word has to be said about the data exchange cooperation between the MRC and China, one of its dialogue partners. As the PRC is not a member state of the RBO, it is not bound to share data with other member states. China and the MRC have therefore negotiated to exchange data, which came to fruition in 2002 as the two parties signed the Agreement on the Provision of Hydrological Information on the Lancang/Mekong River, upon which the PRC shared data on water levels with the RBO “during each year's flood season” (Biba 2018, 627). This factor is important due to the country's position as an upstream state, having consequent control on the river flow: indeed the upstream part of the river provides between 50% and 75% of the river flow around Vientiane, while that proportion is reduced to only 15 to 40% further downstream as tributaries provide an important amount of water flow (Hortle 2009, 56-57). The most striking example of the MRC-China cooperation happened in 2019, when the Mekong experienced severe droughts and China was accused of “hoarding waters” (Hunt 2020). The PRC has denied the claim (Ibid.) and has ramped up its efforts to share data on river flow (Reuters 2020). It acted in a similar manner in 2010 (MRC 2010). Basist and Williams (2020) indicates that China has shared data for the last 16 years, during the flood season and from two stations, Jinhong and Ma'an (Basist and Williams 2020, 12). The authors suggest that information exchanges could be improved to include dry season data and that more stations should be added (Ibid.). Therefore not only the mechanisms, but also instances of real data exchange between China and the MRC exist. The situation of 2019, where the PRC was accused by other countries of causing low water levels, and the points mentioned above, indicate that certain gaps on information sharing between the two entities exist and that the cooperation could be improved.

2.3.1.2. Greater Mekong Subregion Program

Concerning the Greater Mekong Subregion Program, its data transfer mechanisms are less advanced than the MRC's. The joint declaration of the 6th GMS Summit of Leaders made in 2018 explains that “knowledge exchanges under the GMS Program have contributed in practical ways to this transformation” (GMS Joint Summit Declaration: 6th GMS Summit of Leaders), mentioning that “GMS initiatives” received 21 bn USD in term of funding, without mentioning how much was invested into data-sharing mechanisms (Ibid.). No other mentions of these mechanisms are made in the rest of the text. The GMS website has several databases that it updates frequently, such as a statistical database, several map libraries and an interactive map of existing projects

(GMS website). Many of these seem to be primarily uploaded for the general public and the academia but they do also provide practical knowledge for riparian states and concerned actors. The statistical database has sections for energy productions by countries (including the Yunnan and Guangxi provinces of the PRC) and value-added for fishing (aggregated with agriculture and forestry). However, not only are these data sets limited, they also come from outside sources (GMS statistical database), showing that this database might be used to share information from the GMS to its members, but that the opposite is not true.

The 2016 ADB study on “strengthening the GMS Program” mentions that the GMS’s Economic Corridor Forum (ECF) should be promoted as a “flexible and substantive forum for government officials, private sector representatives, and development partners for knowledge sharing” (ADB 2016, V). Indeed knowledge-sharing, can also take place during forums, meetings and summit. This form of knowledge exchange is more limited, due to having a more “informal” setting and being less systematic, but can still be useful for concerned actors. Therefore Forums such as the ECF, the Governor’s Forum (meeting between officials on the provincial level) and the Working Groups and Forums, “the key operational apparatus of the GMS Program” (Ibid. 9) are also places to exchange and receive information and data. Grünwald (2020) explains that “[the]GMS has been recently more active in TWM [Transboundary Water Management] by supporting the “GMS Core Environment Program” (CEP), and through information and communication exchanges which together boost regional water cooperation” (Grünwald 2020, 75). The *modus operandi* of this Core Environment Program is through Environment Ministers’ Meeting and the GMS Working Group on Environment (ADB 2016, 22). Therefore exchanges and communication exist on environmental issues, but are limited on their scope. The 2016 ADB study hints that cooperation and data transfer is rather bilateral and dependent on existing projects (Ibid. 9-10). This severely limits its ability to create a platform for data exchange and, as Qi Gao explains, “the loose structure of the GMS itself poses challenges” including on incorporating data-transfer mechanisms (Qi 2013, 294).

2.3.1.3. Lancang-Mekong Cooperation

The LMC mentions information transfer in the Sanya Declaration. Indeed it indicates, on paragraph 10, that it aims to “[e]nhance cooperation among LMC countries in sustainable water resources management and utilization through certain activities (Ministry of Foreign Affairs 2016). Among these activities, the LMC mentions the establishment of a center in China for Lancang-Mekong water resources cooperation to serve as a platform for LMC members (Ibid.). The RBO argues that the Lancang-

Mekong Water Resources Cooperation Centre can be used “to strengthen comprehensive cooperation in technical exchanges, capacity building, drought and flood management, **data and information sharing**, conducting joint research and **analysis related to Lancang-Mekong river resources**” (Ibid.). References in the Sanya Declaration indicate that the LMC uses knowledge transfer in the similar manner of many other RBOs. A striking aspect of the declaration is the emphasis on paragraph 3 for exchange of information and cooperation in the context of “law enforcement and security cooperation”, exemplifying the importance of security issues for the LMC and the multi-facet objectives of the organization. Moreover, as said in part 2.1.2.3., the RBO envisions that its member states collaborate in hydropower development, fisheries and environmental protection. It is therefore possible that data transfer exist in these aspects.

The LMC website communicates mostly on the RBO’s activities, giving summaries of important meetings in the recent years, documents related to joint collaborations and declarations as well as news related to riparian states of the Mekong (Lancang Mekong Cooperation). The Chinese website differs little on that aspect, giving more details about certain events and having more recent news (Ibid.). Some of these news come from the internal communication team of the LMC while others come from news outlets such as Xinhua or China Daily, as mentioned earlier (Ibid.). However, those would constitute communication channels to the external public and not especially for LMC member states. As mentioned in the GMS example, meetings and forums can also be places for knowledge transfer, albeit limited. Between 2020 and 2018, 13 joint working group meetings happened, in online format for 2020 (LMC Chronicle of Events), a Water Resources Cooperation Forum happening in Kunming in November 2018 and a Roundtable Dialogue on Water Environmental Management happening in March the same year, in the same city (Ibid.). Several of the joint working group meetings happened in 2019 and 2020 and were translated as “special meeting” on water cooperation (Ibid.). It is possible to see the effect of the 2019 drought and the exchanges happening between China, the MRC and riparian states, leading to data transfer of water flow levels between the former and the Mekong River Commission in 2020, which are also mentioned in the LMC website.

On November 30, 2020, the LMC launched a website in order to communicate on water flow levels: the Lancang-Mekong Water Resources Cooperation Information Sharing Platform (LMC Water, 2021). This website has up-to-date hydrological data coming from the two stations in the Chinese upper Mekong River Basin, the Jinhong and the Ma’an stations. Up to now, the data shared in this website is the same as the data presented in the MRC hydrological monitoring, coming from the same stations. The LMC water sharing platform also notifies in case of special events. However, with the signing of the exchange cooperation with the MRC on water levels, the platform of the LMC is redundant and does not bring much more information that is available on

the MRC, besides documents such as updated Chinese water regulations. Another website, the Lancang-Mekong Environmental Cooperation Center, showcases different green strategies and plans but there is little indication that this is used as platform for knowledge transfer (LMC Environmental Cooperation Center). The Lao National Water Information Center, set up in the context of the LMC in 2018 (Ibid.), could also represent a source of knowledge transfer, however very little information has been found on that center. Therefore, as it can be seen, the data-sharing mechanisms of the LMC are very limited and have sprung recently due to external events. However it seems that basic structures exist and could be improved in the future.

2.3.2. Platform for Negotiation, Mediation and Dispute-Resolutions

Many RBOs worldwide can act as platforms for negotiation, mediation and dispute-resolutions. As seen in the literature review, transboundary rivers can harbor contentions and frictions as they share common resources, are necessary for food and water security and can be unequally distributed from a country to another (Milman and Gerlak 2020, 137). For the Mekong River Basin, the MRC represents the best this aspect common for some RBOs worldwide, even if others can provide useful tools for mediation and dispute resolutions.

2.3.2.1. Mekong River Commission

Among all the RBOs studied here, the MRC has the most advanced tools in term of mediation and dispute resolutions. The 1995 Mekong Agreement guarantees cooperation in “all fields of sustainable development” (article 1), respect of sovereignty and territorial integrity (article 4), mitigation of detrimental effects in the river and its banks (article 7), state responsibility in case of damages (article 8) and freedom of navigation (article 9). However, as argue Boer et al. (2016), the existing procedure for dispute resolution is better represented by the article 5, which requires prior notification for important projects in tributaries of the Mekong and consultation for projects on the mainstream (Boer et al. 2016, 96-97). As it stands, the Procedures for Notification, Prior Consultation and Agreement (PNPCA) is the main tool for mediation of contentions as it allows the four member states to discuss planned projects in the Mekong. This belongs to what Boer et al. (2016) call “soft cooperation”, even if they also argue that the PNCPA, alongside other procedures (five in total, none

of the others concern dispute resolutions) are the main regulatory instruments of the MRC (Ibid. 103). According to the MRC:

“Prior consultation is a process for the MRC Member Countries to discuss and evaluate benefits and risks of any proposed **water-use project which may have significant impacts on the Mekong River** mainstream’s flow regimes, water quality and other environmental and socio-economic conditions. Any Member Country that intends to implement a project **is required to notify** the other countries and provide them with available data and information. The process enables the other countries to **assess** possible impacts on their territories and **comment** on the proposed water use” (MRC, Procedures).

The soft approach of the PNPCA as well as a certain lack of “hard” enforcement measures go in pair with the respect of national sovereignty advocated by the MRC (Qi 2013, 289). It also represents the general principle of the “ASEAN Way”, which tends to favors processes at the national level, sovereignty and consensus between Southeast Asian countries (Ibid.). Qi (2013) also argues that even if the 1995 Mekong Agreement might be considered as the only form of “hard law” existing in the Mekong Basin, the approach of the MRC is nonetheless tied to softer forms of regulations (Ibid, 290). Boer et al. (2016) interviewed several officials from MRC’s member states, receiving the clear message that the RBO is “not a regulatory body” and cannot enforce rules that overshadow national governance and countries’ own regulations (Boer et al. 2016, 104). This leaves the RBO with the mandate of an organization that can facilitate mediations, find compromises and obtain consensus from its members (Ibid. 105). This point is important to understand better the processes and outcomes of the few PNPCA cases that are presented thereafter.

Among a handful of hydropower projects presented before the MRC that passed through the PNPCA process, two were highly debated and became study cases: the Xayaburi Dam in 2010-2011 (Kittikhoun and Staubli 2020, 249) and the Don Sahong Dam between 2014 and 2015 (Ibid. 251). In September 2010, the Lao National Mekong Committee presented the Xayaburi project for consultation, as required by article 5 of the Mekong Agreement (Boer et al. 2016, 107). Two actions were done during the six-months consultation as a part of the PNPCA process. The first one was the creation of a report based on the documents received from the Committee, combining an internal task force and external experts on topics related to the impacts of the dam, especially on sediment and fisheries (Ibid. 107). The second action was a number of sessions in Cambodia, Vietnam and Thailand (not in Lao) among external stakeholders such as members of the civil society and local communities (Ibid. 108). Those two activities provided inputs for the six-months consultation that finished in April 2011, where countries would have given their agreement or not. Cambodia and Vietnam declared

that the consultation process should continue, partly due to the “substandard documentation” given by the developers (a Thai company, as seen in part 2.2.3.), but Lao declared the procedure to be over (Ibid. 109). The PNPCA was finished without consensus and the project went ahead. The question still prevails whether Lao PDR was willing to accept compromises on the first place, as construction continued during the process (Ibid.). Concerns raised in the report, such as issues for passage of fish and sediment were addressed (Ibid. 111) but the PNPCA was nonetheless incomplete in its application. The Don Sahong Dam, also present in Lao, had similar outcomes (Kittikhoun and Staubli 2020, 251). For this project, the PNPCA process started in July 2014 although it was submitted for notification in September 2013. As it was a mainstream project, the MRC and other countries declared that the project has to be submitted for consultation. After the six months required for the consultation period, no alternative solutions and agreements were found and governments were asked to use diplomatic channels to solve the issue (Ibid. 252). Similarly, stakeholders were consulted and a task group worked on a Technical Review (Ibid.) which improved communications and documentation about the project but could not help countries to find a consensus during the PNPCA (Ibid.).

For those cases, the PNPCA did not fulfill its mission. For fairness, it would be important to present a third case, the Pak Beng hydropower dam, located in Lao just like the previous two cases. According to Kittikhoun and Staubli (2020), this proved to be a better test for the PNPCA as countries’ expectations were clearer (Kittikhoun and Staubli 2020, 253), more lessons were learned for the consultation process and a clearer goal was envisioned by all countries (Ibid. 253-254). However, while the procedure was working on that instance, it was unsuccessful on previous cases and the PNPCA was not able to reach agreements when there were contentious interests. This raises the question of the ability to find consensus when countries are not agreeing on the first place. In this aspect, the PNPCA might fit the “ASEAN Way” of conducting relations between countries but do not perform well in a context of disagreements. In the Xayaburi and Don Sahong cases, nothing did prevent Lao to finish the construction, which was achieved in 2020 for both (Yoshida et al. 2020, 5). Issues were not fully addressed (Ibid. 8). These two examples showcase the difficulties to reach agreement between MRC’s member states and by extension the obstacles of the MRC to properly function as a regulatory institution and as a platform for mediation (Qi 2013, 283) (Kittikhoun and Staubli 2020, 245). Furthermore, as China is only a dialogue partner, the MRC’s position as a platform for mediation is made even more complicated. Indeed several issues limit the possibility for dispute-resolutions with China, one of them being that the PRC is against mandatory fact-finding missions to help with dispute resolutions in the case of transboundary water issues (Lei and Xia 2020, 262). The MRC is therefore not well equipped to help in disputes between mainland Southeast Asian countries and China.

2.3.2.2. Greater Mekong Subregion Program

Concerning the GMS, it has fundamentally less resources than the MRC to function as a mediation platform. It does not reference any institutional tools to settle disputes and mediate disagreements between its member states. Due to the rather loose institutional organization of the GMS, the best tools that the RBO has up its sleeve are the different leaders' summits, the "meeting of senior officials at the policy level" and the sector forums and working groups (ADB 2011, 7). The GMS Leaders' Summit meets every three year, providing a "plenary meeting and an informal retreat of leaders" (ADB 2016, 8). Some cases in the literature reviewed show that informal meetings between leaders can bring about dispute settlements and mediation, such as in the Niger Basin (Ferrini 2020, 135). Working Groups and regional Forums are often based on specific topics such as the Working Group on Human Resource Development, Environment Working Group, Agriculture Working Group, the Economic Corridors Forum (ECF) and Governors' Forum (Ibid. 10). Among them, the ECF has proven to be an annual "discussion forum" that can bring about debates and negotiation between several actors (Ibid.). The Governors' Forum who brings together officials from provinces and cities can also be a platform for discussions (Ibid.). However, they do not account for fully developed mechanisms of dispute-resolution and, in that aspect, the GMS is rather a platform for development projects with private companies, governmental officials, among others, rather than a place to solve conflicts.

2.3.2.3. Lancang-Mekong Cooperation

Similar to the GMS, the LMC has very limited abilities to manage disputes between its member states. No actual mechanisms for mediation and dispute resolutions are referenced by the LMC itself. Similarly to the GMS, summits, meetings and forums can be a place for discussions between member states. Furthermore, according to Grünwald (2020), the Lancang-Mekong Water Resources Cooperation Center and the Lancang-Mekong Environmental Cooperation Center are also platforms for "dispute management, shared vision planning and consensus building" (Grünwald 2020, 80). The same author argues that the frequency of LMC's meetings has helped to "provide useful coordination" between government officials (Ibid. 82). However, these centers themselves are rather platforms to discuss issues, share knowledge and build capacity between countries. Without clear mechanisms, it is difficult to see how dispute-resolution and cooperation take place in the LMC. Feng et al. (2019) argue that "full cooperation" are hard to achieve and bilateral as well as multilateral collaboration mechanisms are easier pathways for collaboration and mediation (Feng et al. 2019, 58).

They also declare that “hydropower development is controversial, and [...] water cooperation is avoided by most existing regional cooperation mechanisms due to its complexity” (Ibid.). China tends to favor diplomatic tools for dispute settlement, “case-by-case rather than rule-based” (Lei and Xia 2020, 269), a practice that is very similar to the bilateral, non-interfering, “quiet diplomat[ic]” dispute-settlement convention of the “ASEAN Way” (Woon 2016, 1). As this practice is prevalent in the Mekong region (Ibid.), and as the PRC has arguably a leading position in the LMC (Zhang and Li 2020, 9), then it is possible that China does favor and pushes forwards bilateral mediation and conflict-resolution in the LMC itself. It might also be possible that disagreements are solved bilaterally. The presence of so-called “Diplomatic Joint Working Group Meeting” (LMC Events) can also help to favor multilateral dispute-settlement. However, as no procedure exists in case of disagreements, the ability of the LMC to act as a water diplomat is diminished.

2.3.3. Stakeholder Involvement

Stakeholder involvement is important to obtain inputs from concerned actors in the region and provide good practices on water resources management. This part will assess the mechanisms for stakeholder involvement on the RBOs of the Mekong River Basin.

2.3.3.1. Mekong River Commission

In the Mekong River Basin, the MRC is among the few RBOs in the region with existing stakeholder mechanisms, notably since it aimed to adopt IWRM (Boer et al. 2016, 103), which involves greater participation from stakeholders (Huiteima and Meijerink 2017, 43). The MRC presents several tools for this aspect, all of them guaranteed by the 1995 Mekong Agreement. Among them are many of the procedures established by the RBO, the Basin Development Strategies and the Strategic Plans (MRC, Stakeholder Engagement and Communication). The most prominent aspects of stakeholder involvements by the MRC are the Procedures for Water Quality which favors the participation of the general public in assessing the quality of the water, the priority set up by the Basin Development Strategies to “strengthen[...] cooperation with partners and stakeholders” (Ibid.) as well as a handbook created by the Secretariat to help external actors to participate in the decision-making processes (Ibid.). According to the handbook, the main ways of stakeholder’s methods of involvement are divided into **information gathering, communication, consultation and collaboration** (MRC

Handbook for Stakeholder Engagement 2020, 18). MRC Summits, various meetings and the Regional Stakeholder Forums are the main tools presented by the RBO (Ibid.). According to Kittikhoun and Staubli (2020), the MRC “has established regional stakeholder engagement in the form of regular Regional Stakeholder Forums and specific forums for certain issues or groups [...] including NGOs, civil society organizations, the private sector, and others” (Kittikhoun and Staubli 2020, 248).

Figure 9: MRC events welcoming stakeholder engagement

		Member Countries	Dialogue partners	Development Partners	Other Partners	Non-state bodies	Media
MRC Summit (every 4 years)		X	X	X	X	By Invitation	X During opening
MRC International Conference (every 2 years)		X	X	X	X	X	X
MRC Council Meeting (once per year)		X	X	X	X	By Invitation	X
MRC Joint Committee Meeting (twice per year)		X	By Invitation as observers	-	-	-	-
MRC Dialogue Meeting (once per year)		X	X	-	-	-	-
MRC Informal Development Partner meeting (once per year)		X	-	X	By Invitation	-	-
MRC Regional Stakeholder Forums (at least twice per year)		X	X	X	X	X	X
MRC Expert Group Meetings (several)		X	By Invitation as observers	By Invitation as observers	By Invitation as observers	By Invitation as observers	-
Joint workshops, seminars, technical forums, secondment of experts/exchange of staff, technical and reciprocal visits, and experience exchange.		-	By exchange	By exchange	By exchange	By exchange	By exchange

Source : (MRC Handbook for Stakeholder Engagement 2020, 20)

Adding to these tools, the PNPCA has also changed to become a tool for stakeholders. Indeed, according to Boer et al. (2016), consultations and discussions around the building of the Xayaburi Dam involved many external actors including the general public, the civil society, NGOs and other entities (Boer et al. 2016, 112). Kittikhoun and Staubli also argue that “stakeholders could submit their comments about the project

and process itself via the MRC website on the Xayaburi project” and that “[a]fter the official process, there was limited interaction and data and information exchange between Laos, its developer, and the MRCS [MRC Secretariat]” (Kittikhoun and Staubli 2020, 250). Therefore the PNPCA also moved to include external inputs, even if that process was not firstly institutionalized. The question of whether stakeholder inputs were used during the PNPCA is an entirely different matter and was discussed in part 2.3.2.1.. The criticism that was made earlier of the PNPCA raises doubts about its usefulness. More studies are needed to establish if stakeholder’s involvement do make a difference the RBO’s decisions, but the cases of the Xayaburi and Don Sahong dams show they had limited effects at best.

2.3.3.2. Greater Mekong Subregion Program

The GMS, unlike the MRC, has no mentioned institutional mechanisms for stakeholder involvement. The organization still involves stakeholders, but it does it in a limited way. As a matter of fact, forums can bring in local actors to provide inputs for the GMS’ projects. Among the most important aspects of the GMS are the so-called economic corridors, “areas, usually along major roadways, that host a variety of economic and social activities” (GMS Economic Corridors). Economic corridors are mainly focused on infrastructure and establishing frameworks to support economic growth and trade, such as more lenient laws and regulations (Ibid.). That might explain why the GMS especially mentions the private sector in its texts. In the 2012-2022 strategic framework, the RBO explains that it has “recognized the critical role of the private sector as an engine of GMS development and understood the need for its perspectives and concerns to be well integrated into all of the program’s initiatives” (ADB 2011, 22). For infrastructure development, the framework also mentions that the GMS “needs to become more effective at raising private sector resources” (Ibid.). The Business Forum is seen as an important platform to raise concerns from private entities and that its function should be improved “to ensure that private sector perspectives are well reflected in the deliberations of all the GMS sector forums and working groups” (Ibid.). The 2012 framework also alludes to “other concerned stakeholders” with emphasis that the GMS’ program should be communicated “more widely, [...] using local languages” (Ibid.). I also says that the RBO needs “to continue to pursue consultative mechanisms in the design, implementation, and monitoring of GMS projects” (Ibid.) but no specific mentions of these mechanisms are made in the rest of the document. It is possible that the mechanisms themselves are forums and participatory events. The Economic Corridors Forum, as presented by the 2016 report from the ADB, “facilitate knowledge sharing among GMS countries, development partners, private sector representatives, and governors” (ADB 2016, 9), which means that development partners such as the

ADB itself and the Mekong Business Initiative, for example, as well as the private sector should use these venues to exchange point of views and possible concerns with governmental officials. However, there seems to be very few other ways to involve members of the civil society, NGOs and people involved in the building of infrastructure and possible environmental degradation.

2.3.3.3. Lancang-Mekong Cooperation

The LMC does not reference any mechanism to cooperate with stakeholders. Nonetheless, as seen in part 2.1.5.3. of this thesis, the Lancang-Mekong Environmental Cooperation Center (LMEC) does reference several partners, including international NGOs such as the WWF, Conservation International, The Nature Conservancy as well as UN Environment and Global Water Partnership (LMEC Partners). These existing collaborations can provide a platform for stakeholders to raise concerns. In November 2017, the International Workshop for Lancang-Mekong Freshwater Management was held in Beijing, where “nearly 100 people from [...] research institutes, local environmental protection departments, international organizations, enterprises and the media attended the meeting” (LMEC International Workshop for Lancang-Mekong Freshwater Ecosystem Management). As the workshop did not happen in a country of the LMB, neither in the Chinese provinces located in the Upper Mekong Basin (Yunnan and Guangxi), doubts can be raised whether representative of local communities could express their positions. The Lancang-Mekong Water Resources Cooperation Forum, held in Kunming in November 2018 for the LMC Water Center, says it integrated member of the civil society, “representatives of international organizations, civil society, the scientific community, and the business sector” (LMC Water Center, Kunming Recommendations), but little information was found whether stakeholders could raise their voices. On March 2018, the LMC launched a roundtable dialogue in Kunming (Yunnan province), the Roundtable Dialogue on Water Environmental Management with 100 participants including from “research institutions, local environmental protection departments, international organizations, enterprises and media” (LMC Roundtable Dialogue on Lancang-Mekong Water Environment Treatment). There is little indication that any stakeholder could raise concerns and constructive remarks in this roundtable. In July 2020, the LMEC another organized a roundtable dialogue on “Biodiversity and Sustainable Infrastructure” (LMEC Roundtable Dialogue). Happening online, the event brought personalities from the LMC, the Ministry of Natural Resources and Environment of Lao, the Department of Ecology and Environment of Yunnan Province, the Asian Development Bank and the United Nations Children’s Emergency Fund (UNICEF). During the dialogue, UNICEF advocated for the construction of drinking water infrastructure and

sanitations systems for impoverished populations (Ibid.). According to the LMEC's website, "international organizations, research institutes and enterprises" attended the event, as well as representatives of the media (Ibid.). Very little information has been found on the roundtable by external sources of the LMC, as well as from media sources. Therefore doubt still subsides whether external stakeholders have been able to give inputs to this roundtable, outside of those represented by the UNICEF. Grünwald (2020) argues that the LMC is mostly centered around governments and that there is "limited participation from multi-level stakeholders" (Grünwald 2020, 79). Middleton (2018) argues that the "LMC's state-centric approach has afforded little opportunity for public deliberation about its overall policy principles and direction" (Middleton 2018) while arguing later that "the LMC and its proposition of reciprocity appears to be an invitation to negotiate basin-wide water cooperation on the Lancang-Mekong River", suggesting possibilities for wider involvement of stakeholders on LMC's processes (Ibid.). A survey done by the Stockholm International Water Institute shows that stakeholders in the Mekong Basin are not well represented and existing water organizations have few formalized ways to engage with regional actors, quoting the GMS and the LMC (Chandrapanya et al. 2017, 2). The findings in this part show that indeed the LMC has limited methods to engage with stakeholders. It might be interesting to follow developments of the United Nations Climate Change Conference (COP 15) which will meet in Kunming on October 2021, for example, to see if the LMC can integrate stakeholders' debates, if they integrate events linked to the LMB.

2.3.4. Projects concerning fisheries and hydropower development

As it is important to go beyond words and speeches, this part might provide the possibility to have a better understanding of the RBO's activities. Projects will be assessed here, and specifically projects that are related to hydropower development and fisheries safeguarding.

2.3.4.1. Mekong River Commission

The MRC references several projects on its website for the decade 2010-2020, mainly for the implementation of Integrated Water Resources Management (IWRM) (MRC Mekong Integrated Water Resources Management Project). In 2009, the Mekong IWRM Project was created "to finalise the pending procedures for water utilization and technical guidelines", "facilitate the implementation of the procedures and guidelines"

and “promote[] IWRM practices of coordinated planning and management” (Ibid.). The most important part of this initiative from the MRC was the establishment of five “bilateral” projects between member states of the RBO. Among them, three are relevant for the analysis of this thesis and are presented here: the *Sesan and Srepok River Basins Water Resources Management Project* (2014-2019), the *Mekong and Sekong Rivers Fisheries Management Project* (2014-2019), and the *Mekong Delta Water Resources Management Project* (2014-2019). Another series of transboundary projects, some of them following the previously-mentioned projects, are currently being implemented, among them two that are relevant here, the *Cross-border water resources development and management, including environmental impact monitoring of the Don Sahong hydropower project* and the *Sustainable water resources development and management in the Sekong, Sesan and Srepok river basins* (Ibid.).

The *Sesan and Srepok River Basins Water Resources Management Project*, started in 2014, was initiated by the MRC between Cambodia and Vietnam “to institutionalize bilateral mechanisms” for several issues, including hydropower development (Ibid.). The main outcome of this project was to improve bilateral dialogue on water resources management (Ibid.). The Sesan and Srepok rivers constitute an important part of the Lower Mekong River Basin and are shared between Lao, Cambodia and Vietnam (MRC 2017, 3). The application of IWRM dialogue during more than five years have showed a lack of “transboundary cooperation mechanism” as well as “weak implementation of the MRC procedures” and “limited capacity of the government and local communities” (Ibid. 11). The MRC also admitted that reconciling differences in development between the two countries was difficult, as Vietnam had more hydropower and irrigation uses than Cambodia, and that “[a]pplying IWRM principles has proved a challenge” (Ibid.). The paper concluded that bilateral cooperation should be reinforced (Ibid.).

The *Mekong Delta Water Resources Management Project* launched also between 2014 and 2019, is interesting as it focuses on the Mekong Delta, which is heavily endangered by over-extraction of sand and lack of sediment coming from the Mekong River (Anthony et al. 2015, 9). The objectives of this project are rather to develop data-sharing mechanisms and improving dialogue between Vietnam and Cambodia on several issues (MRC 2017, 1). The expected outcomes of the project were to identify common issues between the two countries and the actual state of data-sharing, improve existing methods of information-sharing and establish a “Joint Action Plan to implement coordination mechanisms” (Ibid. 1). The main issues identified were the lack of understanding of the hydrological state of the Mekong Delta, “[e]nsuring operation rules for upstream reservoirs and irrigation infrastructure deliver the required water needed for both countries in the [Delta]”, “[i]dentifying and implementing changes to the flow, water level and hydrological regime necessary in the flood season and the drought season”, use appropriate measure to address low flow during dry seasons and prevent intrusion of salinity as well as

improving relations on subjects such as water resources and navigation (Ibid. 12). Those points are indeed related to the subject of this thesis and it is very interesting to notice that the MRC has proposed projects to address issues mentioned earlier in this paper.

The *Mekong and Sekong Rivers Fisheries Management Project*, likewise started in 2014 and ended in 2019, was launched in the basis of improving management of fisheries in Cambodia (Stung Treng and Kratie provinces) and Lao PDR (Champasak and Attapeu provinces), as well as addressing the progressive decline in numbers of whitefish species (MRC Mekong Integrated Water Resources Management Project). The project adopted a three-pronged approach: firstly, it aimed at creating a joint fishery monitoring program to understand better the status of fisheries. Secondly, it decided to hold dialogues with fisheries' stakeholders to launch a joint fisheries management plan. Thirdly, the MRC intended to strengthen existing collaborations in fisheries management (MRC 2014, 6). From 2014 onwards, the MRC took several steps to create the program: reviewing institutional documents related to fisheries management in national and regional levels (MRC 2017, 9), consultations with governmental entities and local stakeholders, interviews with concerned actors, both actions leading to the creation of a joint Laotian-Cambodian National Issues Papers on the Transboundary Fisheries Management on the Mekong and Sekong Rivers (Ibid.). Then a general review of water status in the sector concerned and identification of issues and obstacles for management of fisheries was done. Between May and August 2016, several workshops were organized to identify obstacles for transboundary fisheries management and identify five fish species that would receive priority in the fisheries management plan (Ibid.). Finally, a last meeting was held to agree on methods and next steps to implement the Joint Fisheries Monitoring Programme (Ibid. 10). According to the MRC, the project, which ended with the creation of a Fisheries Management Plan (Ibid. 10), the identification of five priority species (Ibid. 19) and a Joint Fisheries Monitoring Programme (Ibid. 22) between the two countries, was successful in many aspects. Firstly, it gave the MRC the opportunity to collect information at the local level and the possibility to understand the main obstacles for fisheries management (Ibid. 24). Important issues were identified: "increasing fishing effort; illegal fishing gear use; habitat degradation; decreasing fish catch and changing species catch composition; joint transboundary fisheries management mechanisms; limited fisheries data and information; and limited capacity and resources for fisheries management" (Ibid.). The five priority species "will form the basis of the Transboundary Fisheries Management Plan" (Ibid.). Finally, steps might have been made to ensure that the functions of the project continue in the future, but no definitive conclusions have been made on that aspect by the MRC (Ibid.). The project, on a rather small scale, seems to have brought together two countries and many actors

to collaborate on fisheries and identify areas to improve. However these efforts, even if they are laudable, can only bring true results if they continue over time.

It is very important to notice that beyond 2017, data are missing for these three projects. The 2019 and 2018 annual reports of the MRC (MRC Annual Reports) do not mention them anymore. However, the MRC mentions that among the five bilateral projects that started in 2014 and ended between 2018 and 2019, three of them, which are the ones presented above, were used for transboundary projects (MRC April 2017, 14). For example, findings and results of the *Mekong and Sekong Rivers Fisheries Management Project* are used for the monitoring project of the Don Sahong dam (Ibid. 15). The two last mentioned projects, both established in 2016 are the *Cross-border water resources development and management, including environmental impact monitoring of the Don Sahong hydropower project* and the *Sustainable water resources development and management in the Sekong, Sesan and Srepok river basins* and are among five other transboundary projects that are currently being implemented (MRC Mekong Integrated Water Resources Management Project). The Don Sahong monitoring project was established due to local fears of the damaging effects of the planned hydropower dam of the same name, which construction finished in 2020 (Yoshida et al. 2020, 5). The goals of this project were to “inform mitigation and adaptive management measures at the Don Sahong HPP [Hydro Power Plant] and Cambodia Upper Mekong” (MRC April 2017, 17), create a longer-term outlook for the Khone Phapheng Falls located in the mainstream and organize projects and activities “that generate benefits in both countries” (Ibid.). One of the goals of this project is to collaborate with the Don Sahong developer to improve hydrological and monitoring systems for fisheries (Ibid. 39). It also aims at creating several water activities for the Khone Falls such as a transboundary park, improvement of existing regulations and management at the border as well as joint eco-tourism development (Ibid. 40). Finally, the last component is to establish an environmental impact monitoring system that should be operationalized in 2017 and implemented in 2025. A budget was already set up for this component, which is 100’000 USD per year with a total cost of 1.5 million USD (Ibid. 46). The second transboundary project, the *Sustainable water resources development and management in the Sekong, Sesan and Srepok river basins*, follows the previously-mentioned *Sesan and Srepok River Basins Water Resources Management Project* (Ibid. 15). The project includes now three countries, as Lao PDR was added (Ibid. 20). As more and more hydropower dams are being planned in these regions, the project is intended to coordinate water management between countries, create joint investments for “further improvement of hydro-meteorological systems, flood and drought forecasting and associated services, transboundary operational water management, and water resources development infrastructure” (Ibid. 19). Including the water resources management agencies of the three countries (Ibid. 20), the project objectives are the following: a) create an assessment program to analyze the pros and

cons of “hydropower, irrigation, flood and drought management, environment, climate change etc.” (Ibid. 64), in order to find further common plans that give benefits to all countries concerned (Ibid.) b) improve of transboundary management for the Sesan-Srepok regions by improving hydro-meteorological systems for better monitoring including weather, flood and drought forecasting (Ibid. 66) and better coordination on regional water resources cooperation between the countries (Ibid. 67) c) improving water resources management on Sekong Basin between Lao and Cambodia (Ibid. 68) in a similar manner as the point b) above (Ibid. 69). The MRC indicates that for this project, synergies will be made with the Joint Investment Framework of the GMS (Ibid.). As we can see from the two aforementioned initiatives, the MRC is able to coordinate regional and small-scale activities mostly for monitoring purposes of fisheries and hydrological level, impact assessment, easing of existing regulations and outreach to stakeholders. Qi Gao provided useful insights in her article of 2013 when she argued that the MRC is more able to provide technical support rather than endorsing the authority of a regulatory agency (Qi 2013, 283). Indeed the projects present here are more useful for obtaining information to act on small-scale rather than acting on a wider level. Nonetheless, the MRC’s ability to pull together riparian states, improve their existing collaboration and find synergies on the local level is still significant.

2.3.4.2. Greater Mekong Subregion Program

While the MRC is a platform for data-sharing, providing technical support and has aspects of a water diplomat, as argues Kittikhoun and Staubli (2020, 256), the GMS is a RBO driven by projects. Linked by the concepts of economic corridors, it mentions that 21 bn USD were invested in projects of “agriculture, energy, environment, health and human resource development, information and communication technology, tourism, transport, transport and trade facilitation, and urban development” (GMS Projects). As for spring 2021, the GMS website referenced 552 projects between 2010 and 2020 (GMS project list). Among them, 83 were listed under “Energy” as well as “Water, Other Urban Infrastructure and Services” (Ibid.). Three of them were presented under the mention “hydropower projects”, and referred to loans to the Nam Ngum Dam, the Nam Ngiep 1 and the Nam Theun 2, all of them located in tributaries of the Mekong in Lao (Ibid.). The projects around Nam Ngum Dam were cancelled but the loans to the Nam Ngiep 1 were attributed and the dam was mentioned as being active (ibid.). The Nam Theun 2 loan was granted in 2011 (Ibid.) and the dam itself finished construction in 2019, coined by the ADB as one of the “good dams”, “those that address environmental and social impacts, and steer revenue toward the country’s neediest people” (ADB Lao People’s Democratic Republic: GMS Nam Theun 2

Hydroelectric Project). Adding concrete steps to support these claims, the GMS launched a second project related to the Nam Theun 2, “Social Safeguards Monitoring”, a series of impact assessment on livelihoods of people living near the dam, ending in 2016 (GMS project list). Another project was implemented in order to popularize the GMS and ADB’s activities for renewable energies, called “Promoting Renewable Energy, Clean Fuels, and Energy Efficiency in the Greater Mekong Subregion” (Ibid.). This outreach program was established to provide “direct support” for the *Road Map for Expanded Cooperation in the Energy Sector* (ADB Regional: Promoting Renewable Energy), GMS’ plan to enhance energy access for poor populations, develop renewable resources and promote private-public partnerships and private partnerships for renewable energies, mentioned in the GMS Framework 2012-2022 (GMS Road Map for Expanded Energy Cooperation). The outreach project is among a few others in that roadmap, such as the “Deployment of Coherent Renewable Energy Action Plans Across the Subregion” (Cancelled) (GMS project list). The project “Ensuring Sustainability of Greater Mekong Subregion Regional Power Development” which provided a sustainable environmental assessment (SEA) for the deployment of renewable energy supply and power planning in the GMS region, was completely financed by the *Agence Française de Développement* and was only partly successful at applying SEA in all countries of the GMS, between the years 2010 and 2015 (ADB Ensuring Sustainability of Greater Mekong Subregion). These projects represent well the GMS’ focus on development and sustainable energy. It is therefore of little surprise that, through the ADB, the RBO funded several hydropower projects in the LMB. After substantial researches, no projects that concern fisheries and their safeguarding were found, raising doubts of the GMS’ ability and willingness to protect local fisheries.

2.3.4.3. Lancang-Mekong Cooperation

The LMC has been very active in terms of projects and events. Many of them were not related to hydropower or fisheries, but were rather focused on security issues with joint naval and military exercises, for example, agriculture, poverty alleviation and cultural bridging events such as youth meeting. During 2020, many activities were on hold following the global outbreak of COVID-19 and the LMC websites showcased several COVID-19 relief actions. In spite of the pandemic, however, the LMC had renewed activities in 2021, which will not be presented here. Projects for the RBO are not entirely laid out on the different websites available. In order to write this part, comprehensive researches have been done on the LMC, the Lancang-Mekong Environmental Cooperation Center (LMEC) and the Lancang-Mekong Water Resources Cooperation Centre (LMWC). Projects section and news were reviewed, with focus on existing projects and events with concrete elements, if possible. Some

projects, still being implemented, are presented here due to their relevance to the topic at hand. All information presented in the annex 1 was taken from the Chinese version of the websites of the three centers. Not accounted in this list of projects are several roundtable dialogues, that were found to have little relevance, and many construction projects that were not listed but which could potentially be linked to the LMC. These cases will be discussed later in this part.

On the 18 events and projects analyzed for this part, four were simple seminars, three were short-term trainings, six were long-term trainings with possibility to obtain a certificate or even a Master degree and five were general projects encompassing multiple components. Five of the 19 items concerned hydropower development, four concerned flood and drought management, five were about water resources in general, three about environmental protection and development and two were about watershed management. Most of them had relations with countries of the Mekong Basin and were reported as having participants from the LMB countries. However, most of the events happened in mainland China, whether in the capital city Beijing, in Nanjing or Wuhan, two other Chinese cities, as well as in the two Chinese provinces close to the Mekong River, Yunnan and Guangxi. The LMC was in some cases the initiator of the event; in other cases, it was a facilitator, such as in the case of the Master programs with the Wuhan University and with the Hohai University (in Nanjing). The overbearing presence of trainings, seminars and long-term trainings show that the LMC is set to share Chinese knowledge, know-how and technical practices to students of the LMB countries. This trend does make sense, as China has higher experience and expertise in many aspects of hydropower and other hydraulic projects (Urban, Siciliano and Nordensvard 2018, 759). It could also be seen as a way to promote Chinese soft-power in the region and facilitate the building of Chinese projects such as hydropower dams. Cambodia and Lao are more represented than other LMB countries (including Thailand and Myanmar, not part of the analysis). The lack of development of these two countries and the added-value that Chinese technology and know-how can bring make these countries great partners for cooperation within the LMC. This can definitely be a win-win situation for both China and the two aforementioned countries. Nonetheless, it can also promote Chinese projects and standards, with the effects that environmental concerns might possibly be less important than with the MRC, as an example. There is indeed, as Williams (2018) noticed, a focus on “engineering” to solve environmental issues, or what could be called “hydraulic bureaucracy”. The presence of several events on environmental topics suggests that these aspects are not ignored and were discussed. Nonetheless, industrial and economic developments seem to be important concerns, as topics of hydropower are preponderant among these events. No projects of safeguarding fisheries were found.

Other projects concerning hydropower development and ecological protection might exist. A batch of projects, numbering 19, between China and Cambodia were signed on

the 14th of February 2019 for a value of 7.66 million USD, “covering education, tourism, poverty alleviation, environmental protection and other fields” (Xinhua 14 February 2019). These projects followed already-existing “first batch of 16 projects of the Lancang-Mekong Cooperation Special Fund Cambodia” for 7.3 million USD (Ibid.). There were few specifics on the batch of projects. Some of them could be among the aforementioned events and projects found in the previous table. Others could be construction projects that were not mentioned in the LMC websites, and others were not relevant for this part. The Lancang-Mekong Cooperation Five-Year Action Plan (2018-2022) mentions the necessity of implementing a “Green Lancang-Mekong Plan” with focus on “water pollution and ecosystem management”, as well as the importance of “strengthen[ing] environmental protection capacity building and cooperation in information promulgation and education, and raise public awareness on environmental protection” (LMC Five Years Program). It also mentioned, in the same text, that it aims to do “exchange and cooperation on ecological conservation along the Lancang-Mekong River and jointly set up wild fish breeding and rescue centers for information sharing, for example, information on fish diversity, fish abundance and fish migration, etc. as well as possibility and opportunity on fishery cooperation, such as strengthening capacity building in aquaculture development” (Ibid.). However, no specific projects were identified on these specific aspects. It is debatable that actual hydropower dam construction would be part of the LMC’s agenda, however due to the convergence between the LMC and the Belt and Road Initiative (BRI), seen in part 2.2.2., as well as the fact that hydropower dams have been built under the BRI as was shown in part 2.2.3., that hypothesis cannot be so easily ruled out.

3. Findings

3.1. Situation in the Mekong Basin

The relations between countries, analyzed in this thesis, show a fragmented network of relations in the Mekong Basin. There are no clear blocks or alliances between the four countries presented in the thesis (Cambodia, China, Lao PDR and Vietnam). Cambodia and Lao have been closer to China in order to hasten their economic development, with Cambodia having almost “bandwagoned” with China. Lao PDR has used more balanced diplomatic relations in order to find support with other ASEAN countries, however it has been extremely active in its activities with China, as multiple instance have shown in the thesis. Vietnam has a conflictual relationship with China and has ramped up its efforts to find external support against the regional hegemon. Countries in the Lower Mekong Basin, all part of ASEAN, do collaborate on several domains but their relationship is strained by frequent discords. The “ASEAN Way” of conflict resolution continues to prevail in the region, with focus on consensus and national sovereignty. However, neither China nor ASEAN can provide unity of action in the region, making multilateral actions in the Mekong Basin difficult to coordinate and common agreements difficult to reach. Bilateral diplomacy seems to prevail in the LMB.

The map of the Belt and Road Initiative shows several projects in the Mekong Basin and Yunnan is closely linked to many BRI’s activities happening in mainland Southeast Asia. As was seen in the analysis, hydropower dam development is also a component of the BRI in the Mekong River Basin. This further complicates the issue, as the BRI also provides development opportunities for many countries, providing more possibility for damming. Some Chinese SOEs have been using the BRI to build hydropower dams abroad; however, they are only partially responsible for the damming of the Mekong River and its tributaries, as many other developers from other countries are building dams in the mainstream river. The BRI is not directly responsible for the many dams being built in the LMB but it is nonetheless an important factor for the multiplication of hydropower projects in the region. More than a hundred dams have been built in tributaries of the LMB, close to 200 are planned in the same region and 95 were identified in the Chinese part of the Upper Mekong Basin. Concerning the mainstream river, 13 hydropower dams have been completed, 11 in the Chinese part of the Lancang-Mekong and two on the Laotian part of the Mekong River.

As was seen in part 2.2.4. the mainstream river provides consequent benefits for the six riparian states. Economic benefits were mostly overviewed, but the cultural and social

benefits also exist and have their importance. In terms of economic benefits, they have been presented in agriculture, aquaculture, fisheries and hydropower, but there are also economic benefits originating from tourism, navigation and construction (sand extracted from the Mekong Delta, for example). Countries situated in mainland Southeast Asia also benefit from energy generated by hydropower projects. Indeed the economic benefits of hydropower development are consequent and have prompted countries such as Lao to export electricity as an important source of cash flow, which explains why this country is involved to such a degree in this endeavor. Part 2.2.5. developed the effects of hydropower development on local fisheries, showing the threat that such projects on the mainstream river would have on the aquatic ecosystem in the region; the example of the Tonle Sap lake exemplifies that biomes depending on the main river are also affected by hydropower projects. Negative trade-off between energy generated and loss of ecosystem services were mentioned but further research are needed to establish a link of causal effect. The findings for this part are that hydropower projects do indeed threaten local fisheries. Furthermore, consequent economic trade-offs might happen if the loss of ecosystems are confirmed, which would provide a net loss if hydropower development continue at this rate. This does not account with issues of food security and threats for the livelihood of local communities.

3.2. River Basin Organizations

In the next part of the findings, endogenous elements of the three RBOs studied will be presented. They will focus on an organization at a time, to evaluate their range of actions.

3.2.1. Mekong River Commission

The Mekong River Commission, the oldest and most advanced River Basin Organization in the region, has also the most advanced tools to act as a water diplomat and foster good practices of water resources management. However, its practical abilities to safeguard fisheries and prevent the damming of the river are limited at best. One of the MRC's major issues is the lack of inclusiveness, as only four of the six riparian states are MRC members while China and Myanmar are only dialogue partners. This diminishes the ability of the RBO to find agreements between all countries of the Mekong Basin. The chart of the MRC, the 1995 Agreement, incorporates articles for environmental protection and safeguarding of fisheries but also a mandatory period of

notification for projects on tributaries and a process of consultation for any project on the mainstream river which was codified as a complete procedure, the PNPCA. Concerning finances, a third only come from member states, while two thirds are provided by external partners, mostly Western countries and organizations. This situation can create several issues, one of them is the risk of underfunding if external donors, many of them not present in the Asia-Pacific, decide to pull out of the MRC. The other possible issue is that it contributed to the “Westernization” the MRC. This situation has positive and negative effects: the positive being that the MRC can benefit from Western standards for water resources management and can receive expertise from highly-developed countries as well as several development agencies such as the German GiZ or the World Bank. The negative effects are the fact that it keeps China (and possibly Myanmar) away from the MRC, as the PRC sees the organization as being “Westernized” and dominated by external actors. Another possible effect would be that the MRC could be steered to favor the interests of its main donors, but that situation has not been encountered during the analysis and requires further research. Concerning collaboration, the MRC works with most of its “external” donors (non-member states) but also with several UN agencies, environmental NGOs and local partners such as ASEAN, GMS and LMC.

Speaking about the tools related to the present topic, the MRC has advanced data-sharing tools, including a procedure on knowledge transfer, a Basin Development Plan that requires frequent exchange of information between member states, several databases and real-time water monitoring data. The MRC also has advanced collaboration with China on this aspect. As it is one the most important function of an RBO, the fact that the MRC has advanced capacities on data-transfer is a manifestation of the importance of the RBO in the region. This is also proven by the MRC’s ability to provide a platform for consultation and dispute-settlement. The Procedures for Notification, Prior Consultation and Agreement (PNPCA) is the most advanced procedure for discussing issues, as it requires consultation before any project is built in the mainstream. However, the PNPCA has shown its weaknesses in being unable to reach an agreement on the issue of the Xayaburi Dam. Some sources have argued that the processes of the PNPCA have “matured” over time. Nonetheless, the PNPCA has not resisted in front of conflictual interests and is therefore not able to successfully contain the development of hydropower dams even in case of member states’ disapprovals (such as the Vietnamese’s). The PNPCA however provides a platform for discussions and exchange of ideas and concerns. It is not enough to provide regulatory powers to the MRC and the RBO has not the option to refer to a higher entity for dispute-settlement, in comparison with other RBOs around the world.

The MRC also has mechanisms to involve stakeholders’ discussions. Standardized into a handbook, the processes for the involvement of the civil society, regional actors and the media were harmonized using a four dimensions’ approach (information collecting,

communication, consultation and collaboration) and by allowing media and local actors to join several events. Collaboration seems limited to a few projects. Stakeholder Forums allow many actors to express their concerns. Overall, mechanisms exist but are limited to a few tools. Nonetheless their presence is an advantage, considering that the two other RBOs analyzed here have few ways to engage with local stakeholders. Finally, the presence of projects related to this topic is a positive. They were few in numbers but proved relevant, with one of them used to gather information and inform the local population about the Don Sahong Dam on the Mekong River, while another sought to improve collaboration between the member states over fisheries management. Those projects were few in number and of relatively small-scale but they involved the local populations and addressed some of the issues highlighted in this thesis.

In light of all elements presented above, the MRC is unfortunately unable to create the conditions necessary to prevent the multiplication of hydropower dams on the mainstream or the safeguarding of fisheries. Its limitations in the area of regulations diminish its ability to enforce any ruling on its member states. The fact that it does not integrate China or Myanmar limits its reach and the source of its financing might need reassessment in order for the MRC to be “owned” by its members. It should do more to integrate stakeholders and organize large-scale projects. Qi Gao’s assessment can be repeated here, as the findings confirm her opinion that “compared to its regulatory role, the MRC does a much better job at providing technical support and information services” (Qi 2013, 283).

3.2.2. Greater Mekong Subregion Program

The Greater Mekong Subregion Program, due to its close links to the Asian Development Bank, caters more to businesses and economic development in the Mekong Region. Its declared focus is on “strengthening infrastructure linkages” is eye-opening; nonetheless the GMS also promotes environmental protection and the sustainable of shared natural resources including water resources. The GMS’ interrelations with the ADB are apparent as the latter manages the former’s Secretariat. Therefore the question of the GMS’ independence can be doubted and by extension its ability to do activities not related to development. The ADB covers more than a third of the GMS’ finances, leaving the bank with more weight than the member states. Nonetheless, the GMS has proven to be very active and harbored a great number of projects since 1992. Not only does it include all riparian states but most of them were very active in many of the RBO’s endeavors, including China. The GMS collaborates mostly with regional organizations and especially on areas such as business and development.

Concerning tools that could be used for fisheries' safeguarding, the GMS is poorly equipped to provide effectiveness in that aspect. The GMS has few data-mechanisms that are not related to concrete projects and the latter are not public. There is the possibility that the GMS' Secretariat provide information to its member states, as many of the RBO's projects are financed by the ADB, but little indications point to that direction. Furthermore, the GMS provide little support for mediation and dispute-resolution, excepted meetings and forums that can provide places for discussions on issues. The same is valid for stakeholders' involvement, which can happen in limited sessions such as the Development Partners' Meeting and the annual Economic Corridors' Forum and is likely limited to the private sector only. This situation limits the ability of the civil society and local populations affected by projects to address their concerns. Finally, looking for projects related to hydropower development and fisheries presented very interesting insights. The GMS has been very active during the almost three decades of its creation and has initiated several hundred development projects, in which the ADB was often involved (GMS Projects). Concerning the topic of this thesis, the GMS had several projects that promoted renewable energy and hydropower development, among them a few that concerned environmental impact of the dams the sustainable environmental assessment for LMB dams being an example as well as the outreach project to promote greener energy in the region. These instances show a certain level of involvement for the environmental impact of proposed project. Nonetheless, most of the reviewed projects rather support hydropower development and the possible negative effects on the river's ecosystems. Furthermore, no specific projects for fisheries' safeguarding were proposed. This aspect exemplifies the fact that the GMS is more concerned with infrastructure and economic development rather than environmental protection, concerning the Mekong River.

3.2.3. Lancang-Mekong Cooperation

The Lancang-Mekong Cooperation Mechanism is the most recent and has probably more opportunities to mature and develop stronger tools to protect fisheries in the Mekong, but so far has acted in a different way. The Sanya Declaration and the Five-Year Plan of Action mention "environmental protection", "sustainable water resources management", "cooperation in fishery" ", enhance[ing] environmental protection and natural resources management" (Sanya Declaration) but also "[e]xpand production capacity cooperation in [...] renewable energy", "utilize sustainably and efficiently clean energy sources" and "develop regional power market" (Ibid.). The Five-Year plan mentioned the possibility of setting fishery centers, but that was not observed in the projects reviewed. Concerning its structure, the LMC has the three bodies seen in other RBOs but its Secretariat is decentralized, as each member states has its own

secretariat, for which little information has been found. The LMC is inclusive in that aspect as all six riparian states are members. Information on finances are rather opaque. The LMC collaborates with several partners, including environmental NGOs and international organization through its two centers, the Lancang-Mekong Environmental Cooperation Center and the Lancang-Mekong Water Resources Cooperation Center. It also collaborates with the MRC and GMS as well as with several development-centered partners and many actors from mainland China.

Concerning the tools, they are also much more limited than an advanced RBO such as the MRC. The LMC does not have advanced mechanisms for data-sharing or is not transparent about them. The LMWC shares water flow charts updated every day but these data are identical with the one it shares with the MRC. Without clear mechanisms it is possible that information and knowledge are shared between member states bilaterally. A similar situation can be observed with the LMC as a platform for mediation and dispute-resolution. High-level and medium-level meetings such as Working Groups can also provide a place for discussions and mediation, a similar situation that was observed with the GMS. A hypothesis mentioned in this part is that conflicts and disagreements are solved bilaterally; this point also deserves further research. Stakeholder involvement is also extremely limited. Many events, meetings and forums happen in China itself, which reduces the ability of stakeholders living in other riparian states to participate in discussions. Environmental NGOs have been involved in a few isolated events but the lack of systematization of their participation limits their impacts. Finally, the review of projects directed by the LMC or where the LMC participated showed a great emphasis on training sessions and events that led to a certificate. These activities can strengthen relations and capacities between technical experts on water resources management as well as providing Chinese expertise and “standards” on several areas. They can also contribute to the damming of the Mekong River, as Chinese SOEs have been very active in the region and that hydropower development is supported by the LMC. Events of that kind can provide better, “greener” and more sustainable infrastructure-building in the Mekong Region but they can also be at risk for environmental protection. The focus of the LMC on infrastructure building and the lack of specific protection program for fisheries exemplify that the LMC might not do enough to safeguard fisheries.

3.3. Conclusion

The findings so far support that RBOs present in the region are not well-suited to protect fisheries and prevent further damming of the Mekong River. The need of economic development for several countries in the region, especially Cambodia and

Lao, seems stronger than the will to protect local fisheries. The regulatory weaknesses of the MRC, coupled with the traditional ASEAN Way of consensus-reaching, gives little leeway for the RBO to obtain agreement of its members in case of conflicting interests. The GMS and LMC's focus on infrastructure is going in the opposite direction from a reduction in hydropower development in the region. Furthermore, the closeness of the Belt and Road Initiative and the LMC gives impetus for more hydropower dams to be built in the region, even if Chinese developers are not the only actors engaged in these endeavors. RBOs of the Mekong River Basin should extend their regulatory powers, be more involved in environmental protection and create more conditions for the safeguard of fisheries in their projects. Otherwise, the need for economic development will prevail over the river's ecosystems and might create negative economic trade-offs, in the best-case scenario.

In 2014, Sheila Olmestad and Hilary Sigman made an empirical study of collaboration around the damming of rivers worldwide (Olmestad 2014). They argued that "our results do not support optimism about the likelihood of cooperation over more complex or global resources" (Ibid. 23). The findings of this thesis tend to agree with this assessment. The RBOs analyzed in the Mekong region cannot bring enough tools and synergies to prevent excessive damming and safeguard fisheries. The weak regulatory role of the MRC, and the lack thereof for other RBOs, is a major issue to prevent the construction of hydropower dams in the mainstream. Furthermore, economic development of countries of the LMB might take precedence over environmental protection and the ecosystems of the Mekong River might pay a heavy price. The same would occur for populations of the LMB who depend on local fisheries. As the multilateral river organizations of the Mekong Basin might not be efficient enough to provide common solutions, bilateral cooperation between countries could take over. However, there are solutions to prevent further issues. Strengthening existing RBOs might be one. The MRC and LMC could extend their existing regulatory systems and adapt it to the situation of the Mekong Basin. That would also require the LMC to detach itself from the BRI and adopt stricter rules and procedures for water resources management. The GMS could adopt more environmental-friendly infrastructure projects or use stricter rules. The three RBOs could adopt better practices such as better data-sharing, and more involvement of local stakeholders. It might also be possible that other regional and international organizations could also provide synergies and unite countries in order to find solutions for economic development and safeguarding of local fisheries. China itself, as a regional hegemon, could provide tools to protect fisheries in the river Mekong even though it needs to focus less on infrastructure and more on providing frameworks and using good practices for proper water resources management. Finally, ASEAN might provide unity among countries of the LMB even though it has a mixed track record, as the failure of the ASEAN Mekong Basin Development Cooperation showcases.

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Annexes

Annex 1. Projects and events of the LMC and affiliated centers

Entity	Time	Event/Project	Details
LMC, Ministry of Natural Resources and Environment of Lao	January 2017 – December 2019 (reported on 31.05.2017)	Comprehensive planning for key rivers in Lao	Develop a comprehensive management plan, including issues of hydropower, flood control, irrigation and water resources protection for Nanwu River and Nantun River Basin
LMC, Ministry of Environmental Protection of China, UNEP, Conservation International, WWF	30-31 March 2017	Seminar on Capacity Building of Water Quality Monitoring in Mekong Countries	Discussions about cooperation in building water quality monitoring capacity
LMWC, School of Water Resources and Hydropower of Wuhan University	10 June 2017 (start)	Watershed and Water Resources Comprehensive Planning Water Conservancy Engineering Master's Program, in Wuhan University	One-year systematic study and training in Wuhan University for 11 official from water management departments in Lao and Cambodia, 9 months theory, 3 months practice, Master degree diploma if completion
LMWC	23 November – 2 December 2017	Flood Prevention Technology Training Course, held in Wuhan	Participation of 31 experts and officials from all 6 riparian states and Bangladesh
LMWC, Nanjing Hydraulic Research Institute. China's Dam Safety Management Center, Lao's	2018 – 2019 (reported on September 8, 2020)	Technology Sharing and Capacity Building on Lancang-Mekong Hydropower Stations and Dam Safety Management	Trainings, workshops and joint researches on safe construction and management of dams. Visits in China, Lao and Vietnam's dams

Ministry of Energy and Mines, Vietnam's Institute of Hydropower and Renewable Energy			
LMWC, of Lao's Ministry of Natural Resources and Environment, Cambodia's Ministry of Water Resources and Meteorology	January 2018 – December 2020 (reported on September 3, 2018)	China-ASEAN on Cooperation Flood Control, Drought Relief and Emergency Management	Cooperation on flood, drought and emergency management. Visits of China's Three Gorges Dam and Gezhouba Dam. Under this project, the "Planning Report on Laos National Water Resources Information Data Center" and 25 monitoring stations in LMB countries were completed.
LMWC, water conservancy experts and government official from riparian states	14-18 May 2018	Training Course on Chinese Water Conservancy and Hydropower Technical Standard, in Beijing and Tianjin	Lectures on Chinese water conservancy and hydropower engineering, on-site inspections for trainees
LMC, experts from riparian states, MRC and Global Water Partnership	17-21 December 2018	Seminar on Flood and Drought Control	Seminar on flood and drought with objective to formulate a common vision
LMEC, China Institute of Water Resources and Hydropower Research, MRC, officials and experts from 6 riparian countries	12 – 18 August 2018	Advanced technology exchange meeting for comprehensive management of small watersheds, in Beijing	Seminar, part of 60 th anniversary of China Institute of Water Resources and Hydropower Research

LMEC	5 – 10 November 2018	Research activities in Lao, focus on environmental sustainable development	Objectives were to identify issues on environmental development and reach consensus on areas such as air quality monitoring, the promotion of environmental education and environmental capacity building. Both sides agreed on collaboration in specific areas, staying vague on the details.
LMWC	2019 (reported on October 12, 2020)	Senior Level Officials Seminar on Integrated Water Resources Management in Asian Countries	Train 30 high-level government officials and technical experts on IWRM practices, 14-day training course, 4 special seminars and inspection of 3 water conservancy projects. Participants came from LMB countries and others (SEA, Sri Lanka etc...)
LMEC, Bossco Co. (博世科)	23 March – 1 April 2019	Scholarship program for Industrial Environmental Governance and Water Environments' Monitoring Capacity in Guangxi	Scholarship given by Bossco (company in Guangxi specialized in environmental industrial solutions) for 9 days of lessons and 16 on-site visits in Guangxi
LMEC	17 – 20 July 2019	Seminar on Wetland Protection in Kunming	Focus on wetland protection, management, , restoration as well as ecological protection in the Mekong River Basin, visits in Yunnan's lakes and local environmental management
LMWC, International Water Management Institute Global Water Partnership, MRC, experts from 6 riparian states, Indonesia and	25 July – 1 st August 2019	Technical training on Flood Control and Drought Relief, happening in Wuhan and Kunming	Training on IWRM, flood and drought relief with certificate at the end

China			
LMEC and Hohai University (Nanjing)	2020 (news reported on July 10)	Water Resources Talent Program	Collaboration between the LMEC, LMC and Hohai University to recruit experts from LMB countries and enroll students to study Master in Masters in hydraulic engineering, environmental science and engineering, among others, at Hohai University
LMWC	2020-2021 (reported on July 6, 2020)	Hydropower Green Development Technology Sharing and Capacity Building	Whole-approach training course on “green” hydropower development and teach effects of hydropower development on water resources protection, energy supply and ecological environment protection to trainees of the Mekong Basin countries. Video and on-site trainings.
LMC, Dam Safety Management Center under China’s Ministry of Water Resources	2020-2021 (reported on June 26, 2020)	"Lanmei Dam Health Checkup" Action Plan	Batch of projects for 2 years. Development of methods, evaluation guidelines and trainings on dam safety. On-site inspections and other activities at 6 dams in Lao, Thailand and Vietnam.
LMWC	2020-2022 (reported on July 02, 2020)	Compilation of Guideline and Standards for Water Conservancy in the Lancang-Mekong	Develop guidelines and standards for reservoirs, dams, irrigation, flood control and other water-related areas.

Source: (LMC) (LMEC) (LMWC) own translations from Chinese

Abstract

Recent developments in the Mekong River Basin have highlighted that more and more hydropower dams are being built in the region, on the mainstream river and its tributaries. These dams can provide important sources of renewable energy and may help the countries of the Mekong Basin to develop their own economies; however they also bring several environmental issues along the way. Dams built on the mainstream river can have negative impacts on local fisheries as they block the passage of migratory fish and reduce the amount of sediment and nutrient in the river. Not only dangerous for the biodiversity of the region, dams built on the mainstream can threaten the livelihood of local populations as many people still depend on daily catches to survive. Local organizations might be able to provide support in order to reduce the scale of the damming and provide solutions for safeguarding fisheries. Among them are the River Basin Organizations of the Mekong Basin. This thesis analyses three of these organizations, the Mekong River Commission, the Greater Mekong Subregion Programme and the Lancang-Mekong Cooperation Mechanism to assess whether they can provide tools, solutions and synergies to the aforementioned issues.

The findings of the thesis show that local River Basin Organizations do not have enough capabilities to prevent the damming of the Mekong River. Compared with many river organizations in the world, only the Mekong River Commission has regulatory tools that can provide a framework for conflict-resolution. However these tools have not proven effective in case of contentious interests or in a lack of consensus between countries. The Mekong River Commission is the most advanced River Basin Organizations of the region but fails to provide effective solutions to prevent excessive damming and safeguard fisheries. The Greater Mekong Subregion Programme tends to promote economic development between its riparian states through its economic development and provide little solutions for the issues raised in this thesis. The China-led Lancang-Mekong Cooperation Mechanism, linked to the Belt and Road Initiative, favors hydropower development and has not yet developed mature regulatory tools as many River Basin Organizations in the world. The analysis showcased that the Lancang-Mekong Cooperation Mechanism also promoted Chinese soft-power in the region and was used to improve relations between China and countries in the Mekong. The conclusion of the thesis is that the three River Basin Organizations were not able to provide unity and common solutions to prevent the damming and the river and the damages that this situation creates to the local fisheries.

Die jüngsten Entwicklungen im Mekong-Becken haben gezeigt, dass in der Region am Hauptstrom und seinen Nebenflüssen immer mehr Staudämme für Wasserkraft gebaut werden. Diese Dämme können wichtige erneuerbare Energiequellen liefern und den Ländern des Mekong-Beckens helfen, ihre eigene Wirtschaft zu entwickeln. Sie bringen jedoch auch mehrere Umweltprobleme mit sich. Staudämme, die am Hauptstrom gebaut werden, können negative Auswirkungen auf die lokale Fischerei haben, da sie den Durchgang von Wanderfischen blockieren und die Menge an Sedimenten und Nährstoffen im Fluss reduzieren. Staudämme, die am Hauptstrom gebaut werden, sind nicht nur gefährlich für die Biodiversität der Region, sondern können auch die Lebensgrundlage der lokalen Bevölkerung bedrohen, da viele Menschen immer noch auf den täglichen Fang angewiesen sind, um zu überleben. Lokale Organisationen können möglicherweise Unterstützung leisten, um das Ausmaß der Stauung zu verringern und Lösungen zum Schutz der Fischerei bereitzustellen. Unter ihnen sind die River Basin Organizations des Mekong-Beckens. Diese Dissertation analysiert drei dieser Organisationen, die Mekong River Commission, das Greater Mekong Subregion Program und der Lancang-Mekong Cooperation Mechanism, um zu beurteilen, ob sie Werkzeuge, Lösungen und Synergien für die oben genannten Probleme bereitstellen können.

Die Ergebnisse der Dissertation zeigen, dass lokale Flusseinzugsgebietsorganisationen nicht über genügend Fähigkeiten verfügen, um das Aufstauen des Mekong zu verhindern. Im Vergleich zu vielen Flussorganisationen weltweit verfügt nur die Mekong River Commission über Regulierungsinstrumente, die einen Rahmen für die Konfliktlösung bieten können. Bei strittigen Interessen oder fehlendem Konsens zwischen den Ländern haben sich diese Instrumente jedoch nicht als wirksam erwiesen. Die Mekong River Commission ist die fortschrittlichste Flussgebietsorganisation der Region, sie bietet jedoch keine wirksamen Lösungen, um übermäßige Stauungen zu verhindern und die Fischerei zu schützen. Das Greater Mekong Subregion Program tendiert dazu, die wirtschaftliche Entwicklung zwischen seinen Anrainerstaaten durch seine wirtschaftliche Entwicklung zu fördern und bietet kaum Lösungen für die in dieser Arbeit aufgeworfenen Probleme. Der von China angeführte Lancang-Mekong-Cooperation Mechanism, der mit der Belt-and-Road-Initiative verbunden ist, begünstigt den Ausbau der Wasserkraft und hat noch keine ausgereiften Regulierungsinstrumente entwickelt, wie viele Flusseinzugsgebietsorganisationen weltweit. Die Analyse zeigte, dass die Lancang-Mekong Cooperation auch die chinesische Soft Power in der Region förderte und zur Verbesserung der Beziehungen zwischen China und den Ländern, welche der Mekong durchfließt, eingesetzt wurde. Die Schlussfolgerung der Dissertation ist, dass die drei Flusseinzugsgebietsorganisationen nicht in der Lage waren, einheitliche und gemeinsame Lösungen zu finden, um das Aufstauen und den Fluss und die Schäden, die diese Situation für die lokale Fischerei verursacht, zu verhindern.