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Climate Change and Culture on the Mekong

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Abstract

The study focuses on the effects of climate change on the Mekong River Valley countries of China, Myanmar, Laos, Thailand, Cambodia, and Vietnam, and how fishing industry and culture and tradition is affected by climate change in these communities.

Keywords: Climate Change, Mekong River, Industry, Fishing, Culture

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Introduction

The Mekong River identities of indigenous peoples living along the coast of China, Myanmar Laos, Thailand, Cambodia, and Vietnam is a sense of place, as geographers describe it, that creates your cultural identity, (INTL 407, 2022) and for these populations along the Mekong and its tributaries, that identity actually begins north in Tibet, where the water is sacred and enters into what English speakers call the Mekong River, but in China it is known as Lancang Jiang ("turbulent river"); while in Thailand and Laos it is known as *Mae Kong* or *Mae Nam Kong*, meaning "mother water" whereas in Vietnam it is known as the Nine Dragons River, where it ends in the Mekong Delta. In Cambodia, its s known as the *Mékôngk* and in Myanmar it is referred to as native English speakers call it: The Mekong.

The place where you are from gives you an identity, and for those who live on the Mekong, those waters make them, as a community and culture, who they are in many ways (INTL 407, 2022). That identity is affirmed for the villagers who live, work, relate to traditions on the river as not only is happiness derived from these sacred waters, but the identity is also affirmed for these cultures living with the Mekong. Unfortunately, due climate change, human impact is changing the landscape of these sacred waters, and the communities suffer because of it, often with a cause of industrialization, urbanization, and pollution: all of which accelerates climate change for life in the Mekong. As Marxist theory illustrates, industrialization "alters the environment" (INTL 407, 2022) and affects production of labor. For those on the Mekong, economics aside, the water creates their identity, and without production, identity disappears, and

lives and livelihood lose its value (INTL 407, 2022). Prevention of further damage from human created climate change is essential to survival in the Mekong Region. Research must ask how has climate change affected livelihoods of traditional cultures in the Mekong River Valley from China to Vietnam? The below research explores the answer to the question by providing history of the Mekong, along with the implementation of hydro dams, and decades of research leading to projection models of how urbanization and climate change negatively impacts life in and along the Mekong.

Background

To summarize Osbourne (2010), the Mekong River winds 3,044 miles originating from a source in Tibet of 16,732 feet above sea level, and then proceeds through China, which is 44% of its waterway, and then through Myanmar, Laos, Thailand, Cambodia, and Vietnam. The Mekong Basin is home to over 350 million people. The Mekong changed very little from the mid-1800s when the French first explored it to the post 1980's building of hydro dams. Since the 1980s, and the advent of hydro dams and accelerated climate change, one can see in viewing of the film *Mekong Region: The Soul of Southeast Asia "Deep in the Tropical Forest* (2013), that urbanization is taking a toll, for example in China. The Mekong fights for survival against the rubber industry which affects the primary forest within the Mekong Region of China. Hope exists that authorities limit the space needed for rubber production, or the areas affected by the rubber industry will be overused and pollute the Mekong. The resulting damage caused by rubber production is alarming, but there is a way to prevent further damage to the forest surrounding the Mekong by allowing the land being

Figure 1(Milton, 2010)

used for rubber production to regain nutrients, as that nutrient seeps into the Mekong, providing nourishment for all that live within its waters.

What happens in China, does not stay in China, and flows south, down the Mekong, to the Lower Mekong Basin (LMB) countries of Laos, Thailand, Cambodia, and Vietnam (Myanmar is not considered part of the LMB). China ignores most environmental guidelines, and their actions flow into the LMB whose communities depend on the river for sustenance as well as agriculture and horticulture which affects their GDP (Osbourne, 2013).

Research Findings

Research on the Mekong arises from peer reviewed journals and films, such as *Mekong Region: The Soul of Southeast Asia "In the Kingdom of Fish"*(2013). This film teaches that there are many indigenous people that rely on traditional fishing methods passed on from generation to generation, but pollution and hydro dams in the Mekong decreases the fish population. While some fishermen modernize their technique, such as Huang Liuqi, of China, who sold off his cormorants, birds used in traditional fishing, for money to modernize and build a tourist boat, much to the angst of his father and brother (*In the Kingdom of Fish*, 2013, 0:7:21) while others are steadfast on holding onto the traditional customs taught by their ancestors. Conflict between ancient and modern techniques comes to a head in this Chinese family and one from Cambodia, the family of Nimh Kimly, who fish in the Tonle Sap, and whose children likely may not continue the tradition, and there is already dwindling fish in the waters (*In the Kingdom of Fish*, 2013, 0: 21:13). While in Vietnam, Ah Liong invests his savings of 100 million Dongs to create a floating fish farm, which at first fails, but then becomes bountiful (*In the Kingdom of Fish*, 2013, 0: 24:2) . The peer reviewed research consulted for this paper shows not only thorough history

and projected future models for life on the Mekong, but also shows how human constructed hydro dams have led to negative affects within and around the Mekong.

Research in the history of control of the Mekong from Käkönen (2008) peer reviewed "Mekong delta at the crossroads: More control or adaptation?" states that as early as French Colonialism in Vietnam, westerners and others began to try and control the Mekong. Saltwater flowing into the fresh water of the Mekong led to early attempts to "hydro control" what is referred to as "brackish" water which affects agriculture and the fishing industry (Käkönen, 2008). Käkönen (2008)'s work provides historical introduction to how greenhouse gasses from man's attempt to control agricultural industry began to destroy the fishing industry of the Mekong. Käkönen (2008)'s research studied years of polluted waters in Cambodia as a result of hydro dams and uses of hydrology.

Also, four articles from the research of Arias et al (2013), Zhang, Feng, and Reznick (2013), Truong-Minh (2014), and Campbell and Barlow (2020), show how the effects of man-made hydro dam systems in order to control navigation of the Mekong waterways have led to pollution and greenhouse gas emissions and upset migration patterns of fish all leading to detrimental affects of traditional cultural life along and on the Mekong. Arias et al (2013) focuses on the changing of the flood pulse and water levels of the Mekong River part of the Tonle Sap in Cambodia based on the detrimental affects of the fishing industry from dams and urbanization resulting in negative results of the fishing migration system (Arias et al, 2013).

Zhang, Feng, and Reznick (2013) in "The influence of large dams building on resettlement in the Upper Mekong River" focus on the Upper Mekong area in China, and managed retreat to upper lands of fishing villagers due to the Nuozhadu Hydropower Project. The resettlement of members of the Lasa Village causes loss of cultural identity and way of life

for these individuals causing financial, emotional, psychological, and shared labor resources hardships for these displaced peoples. Zhang, Feng, and Reznick (2013) illustrate how development and climate change affect cultures and communities. Three years of research led to these discoveries by Zhang, Feng, and Reznick (2013).

In addition, Campbell and Barlow (2020)'s "Hydropower development and the loss of fisheries in the Mekong River basin" studies the interruption of fish migration as a result of the development of hydropower dams in the Mekong River area, and Laos, Vietnam, and Cambodia are at greater risk of losing fishing industry than China. Campbell and Barlow (2020) show that hydropower examples in North America were erroneously used as models for hydropower in the Mekong, and end up polluting the river and the nutrients it provides, and the models did not consider the different fishing migration routes of the Mekong. To provide ecologically sound energy to the region, Campbell and Barlow (2020) suggest the use of solar and wind energy instead (Campbell & Barlow, 2020).

As a final peer reviewed publication on the effects of hydro dams on the Mekong, Truong-Minh (2014) in "Between system maker and privileges taker: The role of China in the greater Mekong sub-region" highlights how China attempts to portray themselves as benevolent system makers of energy to their neighbors of the Mekong basin, but instead are privilege takers. Possibly the strongest research in this collection of peer reviewed articles, Truong-Minh (2014) paints a good picture of the roles China plays in negative impacts of climate change in the Greater Mekong Sub-Region, which pushes the Chinese pollutants down to neighboring countries. Truong-Minh (2014) ends their research by showing that the United States and Japan have begun to take an interest in balancing the power of the Mekong Basin. Finally, projection models of peer reviewed research will provide insight into the Mekong's future.

Looking to models for the future of the Mekong River and region, Gilbert, (2011) in *Climate Change in Southeast Asia and the Pacific Islands* models predictions of what the affects of climate change on the Mekong River in the year 2030 will look like. Gilbert (2011) predicts that saltwater will become more prevalent in the freshwater areas of the Mekong. This report sponsored by the National Intelligence Commission shows the impact of climate change causes high flood and increase in temperature, and their predicted negative impact on the aqua systems, ecosystems, and humans in the Mekong River and region. The research results focus on human impact as opposed to multiple tables of mathematical equations which shows the loss to those on the Mekong in regard to financial loss and loss of access to food.

In contrast to Gilbert (2011), Khoi et al (2021) use statistical modeling to perform research analysis instead of field studies to compare whether land use change or climate change more affects the quality and quantity of water ways in the Sesan, Sekong, and Srepok River Basins of the Mekong River located in Laos, Cambodia, and Vietnam. Khoi et al (2021)'s "The effects of climate variability and land-use change on streamflow and nutrient loadings in the Sesan, Sekong, and Srepok (3S) River Basin of the Lower Mekong Basin" study shows after 30 years of research that climate change has a more significant impact than land use change, but their study ends before actual affects from the dams are observed. In contrast to Khoi et al (2021) Sridhar, Syed, and Sample, (2021)'s "Systems analysis of coupled natural and human processes in the Mekong River basin" studies the future effects from 2021-2099 of high flow and low flow cycles in the Mekong River Basin. Sridhar, Syed, and Sample (2021)'s research shows that dam operations will need to be continually updated in order to affectively keep track of flow cycles in the Lower Mekong Basin and this matters (Sridhar, Syed, & Sample, 2021) because as seen in the floods in places like Florida and Louisiana, outdated dam and levee management systems

lead to catastrophic events. All of the peer reviewed research contributes to the future knowledge of how to protect the environment of the Mekong River Basin.

Conclusion

The peer reviewed research on the effects of human made climate change and pollutants stemming from urbanization and development solidly show that climate change affects livelihoods of traditional cultures in the Mekong River Valley from China to Vietnam and puts local and global and aquatic populations at risk; thus, answering the original research question as posed in the introduction. Further illustration comes from Kaplan's final film in their Mekong Documentary series: *Mekong Region: The Soul of Southeast Asia "An Uncertain Future"* (2013) which primarily focuses on economies and communities within the Mekong region; describing education in the 21st century as the way to change the environmental impacts affecting all of the Mekong River region. For example, Somsak, a durian farmer in Rayong, Thailand creates a natural fertilizer from pineapples and encourages his community to use it over pesticides, when possible. Somsak teaches his neighbors that if the durians on their farms grow normally without pesticides, then fertilizer and pesticides should be avoided to protect the shores and the water of their Mekong region. That moment of environmental cooperation touches and encourages all to use eco-friendly products whenever possible (*An Uncertain Future*, 2013, 0: 39:01).

As of 2022, projects, such as the Wonders of the Mekong River, an NGO out of the University of Nevada Water Center, use applied research to build and develop outreach to support economic, ecological, and cultural values of biodiversity and ecosystem services along the Lower Mekong Basin (Hogan, 2017). Their most recent activities are featured in the May 18, 2022, edition of *The New York Times* in which the NGO assisted community members in Cambodia with release of a giant stingray. The coordinator of this project Chea Seila showed the

impact of educating the communities of the Mekong: “And during the release, she watched as he [a local villager] spoke with two young boys…She said she heard him identify the animal to them and say, ‘you should protect it so your kids in the future will also know that we have a giant stingray in our village’” (Bittel, 2022).

The Mekong River matters globally because the Mekong provides the majority source of protein for the countries it flows through with its home to 850 species of fish, and the nutrients of the Mekong Region provide the “world’s vegetable garden.” If urbanization and climate change along the Mekong are not environmentally reigned in, global food shortage will occur. Future research will involve studying food accessibility and shortage along the Mekong River Basin.

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