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# UNDERWATER CULTURAL HERITAGE: POLICY SAFEGUARDS FOR SHIPWRECK AND IMPLICATIONS FOR PAKISTAN

Kanwar Muhammad Javed Iqbal<sup>1</sup>, Wajih ur Rehman<sup>2</sup>, Muhammad Irfan Khan<sup>3</sup>

<sup>1</sup>National Institute of Maritime Affairs, Bahria University, Islamabad

<sup>1,2,3</sup>Department of Environmental Science, International Islamic University, Islamabad,

Pakistan

E-mail: <sup>1</sup>kanwar.javediqbal@gmail.com

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## ABSTRACT

Underwater cultural heritages are termed as 'time capsules' due to their ability to effectively preserve history and materials of cultural and scientific significance. In addition to being a cradle of immense knowledge of history and culture, these sites are known to provide tremendous potential for underwater tourism. Along-with the repercussions of maritime pollution; climate change; and anthropogenic intrusions in the oceans, the integrity of these assets is in peril as the looting and pillage for valuables continue. The budding interest of people in securing the objects from shipwrecks and other UCH for their personal collection has led to the illicit looting through unethical means that destroy these resources. The historical worth of the artefacts and the treasures far exceeds their commercial value. Till the past century, the insufficient laws and regulation have proved futile to offer protection to these resources as illegal salvaging and looting continues worldwide as the demand for the valuable grows bigger.

Based on the content analysis of the global state of knowledge, this qualitative research aims to examine the threats faced by the UCH, along with the situation of policy safeguards and measures being taken globally for protection and preservation of shipwrecks. By comparing the global dynamics and perspectives, it has examined the adequacy of the policy safeguards and institutional arrangements for shipwrecks within the geographical boundaries of marine waters of Pakistan, and suggested a way forward.

# **INTRODUCTION**

Shipwrecks are a remarkable component of the marine archaeology or the underwater cultural heritage (UCH), which have long been a centre of human fascination. The increasing extraordinary discoveries by archaeologists have offered fascinating insight into the past in the form of history, artefacts, and the knowledge of tangible global linkages and losses (Chiricioiu, 2018; Fjordr, 2018; Rengifo Lozano & Castellanos Gómez, 2019; Ricca et al., 2020; UNESCO, 2020). Due to presence in the oceans and freshwaters, the UCH face a range of natural and human-induced threats that are, and continue to be, a reason for their deterioration and collapse. Shipwrecks are known as 'time capsules' since they effectively preserve history and materials of cultural and scientific significance, along with offering a unique habitat for the marine habitat (Manglis et al., 2021; Meyer et al., 2017; Mondal & Raghunathan, 2017; Pater, 2020). Marine pollution, climate change, and unethical development in the oceans have resulted in the deterioration of the UCH (Pater, 2020; Perez-alvaro, 2013). Most notably, the issue of pillage and illicit looting has triggered a rapid loss of structures and materials of scientific, historical and recreational importance (Edney, 2018; Michel L'Hour, 2015; Petrig & Stemmler, 2020).

Different sectors cover the multidimensional aspects of preservation and protection of these resources and the collaboration of these sectors do not always align, hence entailing distinct and complex issues. Recognition of the archaeological and historical value of shipwrecks is still a challenge, which further hinders their protection and preservation (Ferreira et al., 2021; Fjordr, 2018).

Until the past century, the lack of effective policy and legal framework targeting the preservation and protection of UCH had instigated a series of plundering events that demanded the attention of the world, and the existing laws did not have the capacity to ensure a proper protection of these resources (Finlay, 2018; Petrig & Stemmler, 2020). Currently, states have developed various regulations to safeguard the UCH in their maritime jurisdiction; the UNESCO Convention being the chief global instrument in this regard. Unfortunately, due to various factors such as the lack of will, technology, human and financial resources for the various facets of the preservation and protection of UCH, only 61 nations have ratified this convention as of 2020 (Rengifo Lozano & Castellanos Gómez, 2019; Trakadas et al., 2019).

One of the biggest challenges for underwater cultural heritage protection is the inaccessibility of most of the UCH sites. Globally, a trend has been observed that some of the commercial salvors express willingness to follow good archaeological practices, but many archaeologists are convinced that archaeological standards will inevitably be compromised by the need to make a profit. It should not be the case in Pakistan, where UCH potential is untapped. Clear policy guidance, along with institutional arrangement is necessary, which appears to be a missing link at moment in attaining a winwin relationship between archaeologists and commercial salvors.

Considering the economic, cultural, and maritime history of the sub-continent, it is likely that the oceans in the dominion of Pakistan are teeming with UCH from pre and post-colonial era. Awareness of relevant authorities and the public is being generally considered lacking in this regard, along-with the matter of effective allocation of resources and institutional capacity building to incorporate relevant regulations; and suitable training of the human resource specially trained for the protection of these invaluable resources. There is confusion and overlaps in the existing governance mechanism vis-a-vis federal and provincial arrangements prior to regulate and govern the marine archaeology, particularly the UCH component in Pakistan.

In the context, this paper is aimed to examine the adequacy of the policy safeguards and institutional arrangements for the protection and preservation measures of shipwrecks within the geographical boundaries of marine waters of Pakistan, by comparing the global dynamics and perspectives.

#### METHODOLOGY

This is a qualitative research paper that employed content analysis and situational analysis techniques which are widely practiced (Borgatti et al., 2009; Elo & Kyngäs, 2008; Lindgren et al., 2020). The analysis was clubbed with situational analysis model developed with the help of network diagram tool, and by employing cause and effect analysis technique. Firstly, an account of relevant analysis and views were reviewed and analysed, which were generated by experts, and found in relevant documents in the form of different peer reviewed publications. At next stage, a general cause and effect model was developed in order to understand the implications of policy safeguards for shipwrecks. This network diagram-based modelling was finalized as an outcome of three consecutive consultation sessions with experts' groups held at Islamabad. Flip charts were used for exercise purpose on widely practiced Situational Analysis technique (Borgatti et al., 2009; Hovland, 2005; Wellman, 1983), prior to examine and deepen the understanding. At the third and the last stage, the paper has generated discussion based on cause and effect modelling and listing down the key issues with by employing thematic and content analysis technique. The content analysis was done for the explored relevant literature on the stock of account regarding UCH, shipwrecks and policy safeguards vis-a-vis other factors involved and their implications for Pakistan.

#### **RESULTS AND DISCUSSION**

#### Situational Analysis Model for Implications

Figure 1 illustrates the various factors vis-a-vis policy safeguards/institutional framework that have impact on the aesthetic value of the UCH especially the shipwrecks. The study of these factors has led to a conceptual understanding of the relationship of these factors that affect the preservation and protection of these resources. It is apparent that, except for sporadic extreme oceanic events such as hurricanes, rest of the components affecting the shipwrecks have human influences. Climate change and marine pollution has been

gradually degrading these historical structures; while the maritime traffic and increasing development in the oceans pose another devastating threat. On the other hand, the institutional and policy gaps have proven to be a major menace in the protection and preservation of UCH.

The increasing demand of historic valuables from shipwrecks has increased the looting by recreational and organized plunderers manifolds. Due to the lack of appropriate regulations regarding the protection of shipwrecks, the discontinuation of the looting events was a challenge until recently. Still, with the UNESCO Convention 2001, many countries have not been able to ratify it due to the lack of awareness, which in turn, leads to institutional incompetence and lack of resources to effectively mitigate the aforementioned issues. This network model can be used to identify areas necessitating immediate response and to prioritize protection and mitigation measures by different nations according to their needs.



Figure 1: Situational Analysis Model for Implications of Policy Safeguards

# Global Perspective on Shipwreck's Policy

From an archaeological viewpoint, a place where a ship has sunk is called a 'site' and covers the area where the components of structure, riggings and artefacts may have ended up after the wreckage, containing valuable information (Fjordr, 2018). A pre-established framework is employed to accurately register and record the locations of these elements to trace their associations. Market demand, auction houses and historical events such as Titanic have triggered the interest of people in historical objects of value (Meyer et al., 2017). But, the indiscriminate extraction of commercially valuable objects by salvors and treasure hunters with disregard for the site and the objects destroys all possibilities of an archaeological analysis and an interpretation. The potential value of cargo calculated by slavors is usually based on market anticipated value of the valuables and the number of artefacts expected. These speculative assumptions about the worth of cargo cannot be substantiated without a comprehensive archaeological examination (Zamora,

2008). In many cases, financial interests of salvaging investors overtake the cultural significance of the discovery. Any isolated, out of context object forever loses its potential to provide information, and hence, loses its value. Despite the claim of the modern commercial salvors to comply with the appropriate archaeological practices, the standards are frequently compromised by the swift profit operating art market (Zamora, 2008).

The increasing discoveries of shipwrecks and other UCH pose the challenge of preserving these structures in accordance with the archaeological standards (Martin & Gane, 2020; Mughal, 2017; Ricca & La Russa, 2020). Colossal amount of economic and human resources is required to conserve these resources, whether it is *in-situ* or *ex-situ*. Excavation and relocation of these resources is cumbersome and destructive to the heritage, as well as the marine environment. Considering the implications, the UNESCO Conservation for the Protection of the Underwater Heritage considers in-situ preservation as the priority option (Aznar, 2018; Björdal et al., 2012). With in-situ preservation, physiochemical and biological processes have an effect on the heritage resources. Wave action, sedimentation remobilization and accumulation, metal corrosion, stone degradation, and other metrological and chemical actions pose a threat of deterioration over time (Björdal et al., 2012; Cámara et al., 2017; Khakzad & Van Balen, 2012; MacLeod et al., 2017). Wrecks made of metal serve as an exceptional habitat for marine life as they offer a hard substrate and localised topography that is distinct from the surrounding seabed; giving birth to a global practice of sinking decommissioned vessels in the ocean to provide a unique habitat for the flora and fauna (Mondal & Raghunathan, 2017).

Eventually, bio-erosion and the formation of reefs could also impact the integrity of the cultural heritage (Meyer et al., 2017; Renzi et al., 2017; Ricca & La Russa, 2020). Moreover, these fragile resources are vulnerable to the impacts of climate change and the increasing marine pollution (Spezzano, 2021). Reburial technique is frequently used by refilling excavated materials or by installing various forms of obstacles and encouraging on site sediment deposition to slow down physiochemical and biological modifications (Khakzad & Van Balen, 2012). Continuous monitoring is vital in order to follow the state of preservation and protection of these resources.

Anthropogenic influences in the marine environments also impact the integrity of the UCH. Since the new uses of oceans are being constantly evolving, quite recently, the ocean bed has been used to lay submarine cables carrying telephonic and internet data. Contrary to the popular belief, up until now, approximately 95 percent of the global telecommunications are established via fibre-optic submarine cables. Due to the current state of freedom, the industry in question spreads these huge networks of cables without breaking any law, possibly impacting the underwater cultural heritage in doing so (Perez-alvaro, 2013). Moreover, the advance commercial fishing heavy towed gear pulled by powerful vessels is likely to influence the shipwrecks at the seabed, especially when the fishermen are seeking to target specie that favours such locations. Similarly, the unprofessional efforts for the removal of ghost nets and gear tangled in the wrecks could affect the structures. Shipwrecks, especially in shallow waters or during low tide, pose a risk to the safe passage of ships and other vessels (Fjordr, 2018). Accidents could arise if the effective management of shipwrecks is not done, affecting both the maritime traffic and the UCH (Khalaf, 2020). Ironically, archaeological activities could also have an impact of the UCH but the footprint has been examined to be negligible (Mugge et al., 2019).

Security of the UCH remains a concern as these resources are exposed and accessible to anyone, without proper surveillance (Jing & Li, 2019; Pozdnakova, 2018; Rengifo Lozano & Castellanos Gómez, 2019; Secci, 2017). Since there is still a lack of effective inventorial framework to document objects from various sites; and the objects can neither be identified nor traced in case of disappearance. The manifold looting of the UCH ranges from mere removal of an object from a shipwreck for market purposes to organized pillage by motivated groups of treasure hunters. Some recreational divers indulge in picking up materials as souvenirs (Edney, 2018). These cumulative repeated intrusions cause significant damage to the heritage resource. In 2007, DRASSM archaeologist recovered 2,700 items of cultural significance from the residences of networking divers (Michel L'Hour, 2015). Lack of awareness, appropriate regulations, and insufficient exemplary penalties are the gaps that allow the theft of the invaluable UCH globally. China has taken effective measures to safeguard its heritage from the historic maritime silk route as a part of One Belt and One Road initiative (Guo, 2017; Jing, 2019; Jing & Li, 2019; Li & Chang, 2019; Lu & Zhou, 2016; Zhong, 2020a, 2020b). Similarly, countries like Canada and France are the few examples of countries which have developed legislations to protect cultural heritage in their territorial waters. Since looting is an international issue, the coalition of governments, archaeologists, markets and curators is imperative to reinstate and further preserve these resources to effusively benefit from their cultural and scientific value.

Conservation and preservation of UCH resources has been characterized as a participatory undertaking (Papageorgiou, 2018). The aforementioned goal can be accomplished by the application of co-operative programs, development and capacity building initiatives, and through the lobbying of politicians for the formation of a legislative structure (Finlay, 2018; Michel L'Hour, 2015; Sharfman et al., 2012). The capacity building programs in particular could benefit from professional and academic stakeholders to address the capacity deficiencies of learning and skills, from elementary archaeological knowledge to advanced proficiency trainings. In order to ensure the preservation and protection of UCH in the contemporary world, there is a need for the practitioners to incorporate government policies and economic development with it (Rey da Silva & Herrera Tovar, 2017). This could be achieved through introducing an inclusive approach by addressing environmental concerns, tourism opportunities, skill development, employment creation, and learning, thus stimulating widespread involvement and interest from government, private and management institutions (Dionisia & Stratigea, 2020; Petriaggi et al., 2019; Sharfman et al., 2017). Among other aspects, public awareness is vital since it can change people's behaviours that previously tended to loot and destroy the invaluable cultural resources i.e., nautical heritage, towards a

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society that takes the ownership and commits towards the preservation of them. Involvement of communities in the preservation efforts can prove to be a win-win situation (Risvas, 2013; Viduka, 2020). The indigenous knowledge and protection offered by the locals could help the governments, archaeologists and marine scientists in conceiving preservation strategies; while the effective preservation can make these UCH scientific and tourism hotspots - in turn providing steady earning opportunities to the locals. The wreckage site of USAT Liberty in Indonesia is a prominent example of this symbiotic relationship, offering major livelihood prospects to the local communities of east Bali in the form of lodging, diving resorts, restaurants, guides and porter services among others (Naelul & Ridwan, 2018). The local customary laws by the villagers are evident of the UCH public awareness efforts. Similarly, a poll conducted in the UK indicated that people believed that maritime heritage was worth saving, more than parks, gardens or industrial heritage, which is a proof of the importance of awareness and activism campaigns (Fjordr, 2018). This democratization of the preservation and protection process - where a larger role is given to the people - helps in inducing ownership of the UCH, along with allowing the communities to sustain it as their source of revenue, along with offering various psychological and socio-cultural motivations (Jeffery et al., 2013; Martin, 2021).

An effective capacity building program can envisage the future of the valuable MUCH, and the involvement of various political, academic and bureaucratic stakeholders and their mutual alliance is imperative in this regard (Ferreira et al., 2021). Although the sustainable preservation of MUCH is underway in many countries, there is still an immense potential to adopt holistic approach globally (Blue & Breen, 2019; Guo, 2017; Jeffery et al., 2013; Jing, 2019; Naelul & Ridwan, 2018; Pearson, 2019; Rey da Silva & Herrera Tovar, 2017; Sharfman et al., 2012; Viduka, 2020). An expanding body of research shows that the involvement and governance of non-state actors in the preservation and protection of MUCH is effective, whether it is in the form of community buy-in, community incentivization, or collaborative governance. Moreover, other approaches including public-private partnership, commercial association, and professional capacity building of maritime archaeology can prove to be beneficial in addressing the gap that hinders the sustainable management of MUCH (Pearson, 2019).

National and international legal frameworks play a significant role in prompting efforts and protective measures in case of heritage resources. The laws on the preservation and protection of UCH is a consolidation of three distinct law branches namely admiralty/maritime law, the law of the sea, and the cultural heritage law (Dromgoole, 2013). The hybrid character of the UCH protection laws and regulations means that the matters of ocean governance and geopolitical nature take precedence over the protection of valuable underwater heritage (Risvas, 2013). This elucidates the lack of effective laws and regulations on the protection of UCH, along with the time delay and associated their formulation, controversies with adaptation and implementation. Similarly, a number of concerns need to be addressed by if a legal document is envisioned to attain an acceptable outcome worldwide. For instance, the issue of defining UCH, keeping in view the varying characterizations of different nations on the subject. State's coastal jurisdiction and the issue of the relevance of existing salvage regulations are some key problems that make the creation of international treaties to preserve UCH challenging (Dromgoole, 2013; Sharfman et al., 2017).

The complications of regulations pertinent to UCH have not diminished in the recent years, but the developing discourse on the topic, especially shipwrecks has resulted in the acknowledgement of their value. The past legal frameworks have faced obstacles that have resulted in the futile protection of the UCH. The UNCLOS consisted of only two articles concerning the aforementioned issue due of the lack of interest and outright dismissal by some state actors. This treaty also faced arguments on the issue of the age of the UCH, and the archaeological nature of these resources (Finlay, 2018).

# **UNESCO's Rules and Policy Safeguards for Shipwreck**

Considering the shortcomings of the UNCLOS, the UNESCO's Convention on Underwater Cultural Heritage presented an expansive definition of the UCH. The basic principles of the Convention included the preservation of UCH for the benefit of humanity; in-situ preservation as the priority option; commitment against the commercial exploitation, and the responsibility of training and information sharing (Cogliati-Bantz & Forrest, 2013). At the time of formulation, the technological advancements were increasing and the treasure hunting and looting of the UCH without proper archaeological excavation protocol by the savlors was becoming common. General cultural protection laws in some states existed but those regulations did not promote restraining of these valuable resources, rather it promoted their recovery by setting rewards (Björdal et al., 2012; Razavirad & Blake, 2019). There are known incidents of pillage by treasure hunters that have resulted in the destruction of colossal amount of cultural heritage. The private treasure hunting done by recreational divers and organized commercial groups can have destructive effects on the integrity of the UCH, rendering them useless for cultural, scientific and recreational practices. There have been incidents where the deliberate damage of valuable items was done to escalate the market value of the preserved objects (Aznar, 2018; Razavirad & Blake, 2019). The law of salvage is a prominent example of regulations that promoted recovery of UCH, dispersed assemblages and introduced a profit motive that encourages potentially destructive methods to recover commercially valuable materials from the wrecks - a practice that undermines the actual objective of the law (Clément, 2017). This way, this law is deemed incompatible with aim of preserving and protecting the UCH and the exclusion of its application has been ensured in the Convention, except in some circumstances.

Along with the territorial waters – on which the state enjoys sovereignty, treasure hunting also happens in other maritime zones such as continental shelf, and in these zones, it is challenging to control illegitimate hunting of UCH since the states cannot exercise their power (Chiricioiu, 2018; Dromgoole, 2013). In this case, the article 16 of the UNESCO convention commands the state to ensure measures that allows no national or a vessel carrying its flag to engage in activities directed at the UCH (Petrig &

Stemmler, 2020). The state parties are obliged to adopt prohibition of certain activities in their domestic laws, along with their observation, and establishment of criminal jurisdiction over offenses. A drawback of this Convention is that the maritime zones 12 miles from the baseline are not subjected to the provisions of the UNESCO Convention and thus fall under the general provisions of the 1982 UNCLOS, hence making the preservation and protection efforts problematic (Clément, 2017).

Since entering into force in 2009, 61 countries have ratified the Convention as of 2020 (UNESCO, 2020). The key reason for this could be the fact that many countries has not prioritized the ratification of the Convention due to the lack of technology, human and financial resources for the various facets of the preservation and protection of UCH (Chiricioiu, 2018; Martin & Gane, 2020; Papageorgiou, 2018). Some of these developing countries also lack in archaeologists who specialize in underwater archaeology. The UCH, regardless of its geographic location, is a resource of global significance, and each country needs to protect the UCH falling in their geographical jurisdiction from illicit commercial uses and degradation in order to preserve them for their cultural and scientific value (Forrest, 2019; Reap, 2017; Roberts, 2018; Staniforth, 2017; Victoria Browne, 2017). Increasing momentum concerning the preservation of these resources is anticipated as the UN has named the current decade of 2021-2030 the Decade of Ocean Science for Sustainable Development (Trakadas, 2020). As UCH represents various kinds of connections of humans to oceans, this initiative could prove to be a breakthrough in creating a sustainable future of these resources (Lee, 2019). To make the preservation measures effective, the adaptation of relevant treaties and regulations such as the aforementioned convention through international coalition with an exchange of knowledge, skills, and resources is crucial (Argyropoulos & Stratigea, 2019; Leshikar-Denton, 2010; Parthesius, 2011; Risvas, 2013).

## Implications for The Case of Pakistan

The development of archaeology, discovery, preservation and protection of cultural heritage in the sub-continent, especially in Pakistan dates back to the early British colonial period (Mughal, 2017). Sites of cultural importance from the Islamic, Hindu, and prehistoric Buddhist and Jain civilizations were effectively conserved by applying preservation techniques, along with the development of regulations for their future protection; the current policies are also an extension of these regulation with trivial amendments to cater for the national, cultural and environmental changes.

Unlike the terrestrial heritage, the richness of the UCH is relatively unidentified and thus, challenging to discover and protect. Over a thousandkilometre-long coastal stretch provides an outlet for the essential economic, commercial and cultural activities of Pakistan. Harbouring economically and geopolitically significant ports of the greater south Asian region, the coasts of Pakistan have been a part of the ancient Silk Route; along with being noteworthy sites for the Muslim and colonial invaders (Manders, 2010; Mughal, 2017). It is probable that the coastal waters of Pakistan adjacent to

the Arabian Sea are home to numerous valuable UCH, including shipwrecks. Despite the efforts being targeted towards the preservation of the terrestrial heritage, the known UCH of Pakistan is in shambles. The lack of interest and knowledge about the significance of the UCH in the country has resulted in a deficiency of relevant effective legislations and protective measures on a national level. Similarly, the absence of archaeologists and marine scientists focused on the UCH, and lack of technologies and relevant skills are some reasons that these resources are deteriorating. Some known shipwrecks such as the Regal Sun, the Abasin, Nanda Devi, Aquamarine and the Issabani in the jurisdiction of Pakistan have been ravaged by the extreme human intrusion and salvaging (EHAR, 2014). Moreover, various other anthropogenic activities, along with the repercussions of climate change are causing these resources to degrade. The dumping of contaminant-rich untreated effluents in the ocean from the coastal metropolitan cities like Karachi is causing severe degradation of the marine ecosystem, along with the destruction of the metallic and wooden structures of the shipwrecks (EHAR, 2014). The current and proposed coastal and offshore development projects such as the commercial ports of Sindh and Balochistan, power generation facilities, coal jetty in Gadani, and the habitation of islands pose serious risks to the integrity of the UCH found in the vicinity.

Interest of various stakeholders in exploring and preserving the UCH is deemed lacking. Since Pakistan has not ratified the UNESCO Convention on the Protection of the Underwater Cultural Heritage; there is little knowledge on the subject, and the efforts for preservation and protection can not be lawfully backed. The absense of a sutiable framework practically allows the activities that have detrimental effects on the UCH (Staniforth, 2017). For instance, the accident of two ships due to the hindrance caused by the sunken shipwrecks resulted in their cutting and removal in the year 2008 (Ayub, 2008). The shipwrecks, of over 30 years age, were disintegrated by the salvaging companies. Since the sunken vessels, along with being culturally and scientifically important, become home to the marine biodiversity as they act like artificial reefs. The invasive actions are expected to have damaged these marine life hotspots. In an ideal case, these shipwrecks, which were a hurdle in the seamless movement of vessels from nearby ports, would have been either relocated in the ocean, buried deep in the sea bed as a part of the preferred *in-situ* conservation, or transferred on land to be maintained under the ex-situ conservation techniques (Aznar, 2018; Björdal et al., 2012). Since the coast of Pakistan is on the fast-track to host one of the most important commercial ports in the greater south Asian region i.e., Gwadar Port, the threat to the UCH is expected to increase manifolds and the occurrence of several such unreported events is likely; and is expected to happen if suitable legislations are not adapted.

Pakistan has a rich cultural history, and the remnants of those periods are available to us in the form of the cultural heritage. There is a dire need to preserve and protect these resources to secure these relics for their cultural and scientific value for the current and future usages. To achieve this, Pakistan has to adapt relevant international legislations. The UCH, regardless of its geographic location, are resource of global significance, and every country needs to unite to protect these resources from commercial uses and degradation. In this regard, Pakistan could benefit from an international coalition with an exchange of knowledge, skills, and resources.

#### CONCLUSION

Human interferences and alterations due to self-satisfying wish to attain more and more have caused the destruction of the natural environments. Similarly, in the case of the underwater heritage resources, the desire of extracting monetary benefits from these precious resources of cultural and scientific significance has ensued destruction. Immense loss of historically and culturally important artefacts and materials has been happening as they get plundered unethically by singular and organized treasure hunters. Despite the technical gaps, the adaptation of the current relevant global regulation regarding the preservation and protection of UCH is imperative for every country. Presently, only 61 nations have ratified UNESCO's Convention, which gives an insight on the priorities of the rest of the countries, along-with their technical and financial capacities to protect the UCH in their jurisdiction. The UCH, regardless of its geographic location, is a resource of global significance, and each country, including Pakistan needs to protect the UCH falling in their geographical authority from illicit commercial uses and degradation in order to sustainably protect and preserve them for their cultural and scientific value. This could be possible by adapting the relevant treaties and regulations such as the aforementioned convention through international coalition with an exchange of knowledge, skills, and resources. Pakistan has missing links of policy safeguards in this regard and needs to make necessary arrangements by taking into account the national and provincial context of marine archaeology.

## REFERENCES

- Argyropoulos, V., & Stratigea, A. (2019). Sustainable Management of Underwater Cultural Heritage: The Route from Discovery to Engagement—Open Issues in the Mediterranean. *Heritage*, 2(2), 1588–1613. https://doi.org/10.3390/heritage2020098
- Ayub, I. (2008). KARACHI: Shipwrecks hindering seaport traffic.
- Aznar, M. J. (2018). In Situ Preservation of Underwater Cultural Heritage as an International Legal Principle. *Journal of Maritime Archaeology*, *13*(1), 67–81. https://doi.org/10.1007/s11457-018-9192-4
- Björdal, C. G., Gregory, D., Manders, M., Al-Hamdani, Z., Appelqvist, C., Haverhand, J., & Dencker, J. (2012). Strategies for protection of wooden underwater cultural heritage in the baltic sea against marine borers. The EU project wreckprotect. *Conservation and Management* of Archaeological Sites, 14(1-4), 201-214. https://doi.org/10.1179/1350503312Z.00000000017
- Blue, L., & Breen, C. (2019). Maritime Archaeology and Capacity Development in the Global South. *Journal of Maritime Archaeology*, *14*(3), 321–332. https://doi.org/10.1007/s11457-019-09244-x
- Borgatti, S. P., Mehra, A., Brass, D. J., & Labianca, G. (2009). Network Analysis in the Social Sciences. *Science*, *323*(April), 892–896.
- Cámara, B., de Buergo, M. Á., Bethencourt, M., Fernández-Montblanc, T., La Russa, M. F., Ricca, M., & Fort, R. (2017). Biodeterioration of marble

in an underwater environment. *Science of the Total Environment*, 609, 109–122. https://doi.org/10.1016/j.scitotenv.2017.07.103

- Chiricioiu, V. (2018). Brief Observations on the Protection of Underwater Cultural Heritage in International Law. *Revista Română de Drept Internațional*, 20, 127–140.
- Clément, E. (2017). Proceedings of the ICLAFI-ICUCH Symposium The UNESCO Convention on the Protection of Underwater Cultural Heritage: how do we make it work? The elaboration of the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage.
- Cogliati-Bantz, V. P., & Forrest, C. J. S. (2013). Consistent: The convention on the protection of the underwater cultural heritage and the united nations convention on the law of the sea. *Cambridge International Law Journal*, 2(3), 536–561. https://doi.org/10.7574/cjicl.02.03.120
- Dionisia, K., & Stratigea, A. (2020). Leveraging Underwater Cultural Heritage (UCH) Potential for Smart and Sustainable Development in Mediterranean Islands. Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 12255 LNCS, 237–252. https://doi.org/10.1007/978-3-030-58820-5\_19
- Dromgoole, S. (2013). Underwater Cultural Heritage and International Law.
- Edney, J. L. (2018). Lust for rust Wreck divers and the management of underwater cultural heritage.
- EHAR, M. (2014). Diving into the wreck: Singing the blues for the Karachi sea.
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107–115. https://doi.org/https://doi.org/10.1111/j.1365-2648.2007.04569.x
- Ferreira, J. C., Vasconcelos, L., Monteiro, R., Silva, F. Z., Duarte, C. M., & Ferreira, F. (2021). Ocean Literacy to Promote Sustainable Development Goals and Agenda 2030 in Coastal Communities. *Education Sciences*, 11(2), 62. https://doi.org/10.3390/educsci11020062
- Finlay, R. (2018). THE 2001 UNESCO CONVENTION ON THE PROTECTION OF THE UNDERWATER CULTURAL HERITAGE: IMPLEMENTATION AND EFFECTIVENESS.
- Fjordr, A. F. (2018). Managing Shipwrecks.
- Forrest, C. (2019). The UK and the UCH Convention. In *Maritime Legacies* and the Law (pp. 272–304). Edward Elgar Publishing. https://doi.org/10.4337/9781784717254.00016
- Guo, R. (2017). China's Maritime Silk Road Initiative and the Protection of Underwater Cultural Heritage. In *International Journal of Marine and Coastal Law* (Vol. 32, Issue 3, pp. 510–543). Brill Nijhoff. https://doi.org/10.1163/15718085-12323033
- Hovland, I. (2005). Successful Communication A Toolkit for Researchers and Civil Society Organisations.pdf (Issue October). Overseas Development Institute 2005. https://haiweb.org/wpcontent/uploads/2015/07/Successful-Communication.pdf
- Jeffery, B., Parthesius, R., Ngivingivi, C., Mahudi, H., Maburi, J., Mshenga, A., Ali, S., Mchome, M., Mjema, E., Kasu, O., Ally, M., Robert, A.,

Mndowla, S., Ichumbaki, E., Lema, W., Kuguru, B., Selemani, F., Kanyangemu Jeffery, M. B., Jeffery, B., ... Parthesius, R. (2013). Maritime and Underwater Cultural Heritage Initiatives in Tanzania and Mozambique. *J Mari Arch*, *8*, 153–178. https://doi.org/10.1007/s11457-013-9112-6

- Jing, Y. (2019). Protection of underwater cultural heritage in China: new developments. *International Journal of Cultural Policy*, 25(6), 756– 764. https://doi.org/10.1080/10286632.2017.1372753
- Jing, Y., & Li, J. (2019). Who Owns Underwater Cultural Heritage in the South China Sea. *Coastal Management*, 47(1), 107–126. https://doi.org/10.1080/08920753.2019.1540908
- Khakzad, S., & Van Balen, K. (2012). Complications and effectiveness of in situ preservation methods for underwater cultural heritage sites. *Conservation and Management of Archaeological Sites*, 14(1–4), 469– 478. https://doi.org/10.1179/1350503312Z.0000000040
- Khalaf, R. W. (2020). Cultural Heritage Reconstruction after Armed Conflict: Continuity, Change, and Sustainability. *Historic Environment: Policy* and Practice, 11(1), 4–20. https://doi.org/10.1080/17567505.2019.1605709
- Lee, Y.-H. (2019). Ocean Cultural Heritage and Ocean Literacy Programs in the UN Decade of Ocean Science for Sustainable Development(2021-2030). *Journal of Ocean & Culture*, 2, 136–146. https://doi.org/10.33522/joc.2019.2.136
- Leshikar-Denton, M. E. (2010). Cooperation is the Key: We Can Protect the Underwater Cultural Heritage. *Journal of Maritime Archaeology*, 5(2), 85–95. https://doi.org/10.1007/s11457-010-9068-8
- Li, X., & Chang, Y. C. (2019). Legal mechanism for the Sino-Foreign cooperative exploitation of the underwater cultural heritage in the South China Sea. Ocean and Coastal Management, 175, 144–151. https://doi.org/10.1016/j.ocecoaman.2019.04.004
- Lindgren, B. M., Lundman, B., & Graneheim, U. H. (2020). Abstraction and interpretation during the qualitative content analysis process. In *International Journal of Nursing Studies* (Vol. 108, p. 103632). Elsevier Ltd. https://doi.org/10.1016/j.ijnurstu.2020.103632
- Lu, B., & Zhou, S. (2016). China's state-led working model on protection of underwater cultural heritage: Practice, challenges, and possible solutions. *Marine Policy*, 65, 39–47. https://doi.org/10.1016/j.marpol.2015.12.003
- MacLeod, I. D., Selman, A., & Selman, C. (2017). Assessing the Impact of Typhoons on Historic Iron Shipwrecks in Chuuk Lagoon Through Changes in the Corrosion Microenvironment. *Conservation and Management of Archaeological Sites*, 19(4), 269–287. https://doi.org/10.1080/13505033.2017.1378536
- Manders, M. (2010). Dutch Involvement in Asian Underwater Cultural Heritage Management: Building Upon Old Connections. *Journal of Maritime Archaeology*, 5(2), 117–127. https://doi.org/10.1007/s11457-010-9071-0
- Manglis, A., Fourkiotou, A., & Papadopoulou, D. (2021). The accessible underwater cultural heritage sites (AUCHS) as a sustainable tourism development opportunity in the Mediterranean region. *Tourism*, 68(4),

499–503. https://doi.org/10.37741/T.68.4.9

- Martin, J. B. (2021). Harnessing Local and Transnational Communities in the Global Protection of Underwater Cultural Heritage. *Transnational Environmental Law*, 10(1), 85–108. https://doi.org/10.1017/S2047102520000369
- Martin, J. B., & Gane, T. (2020). Weaknesses in the Law Protecting the United Kingdom's Remarkable Underwater Cultural Heritage: The Need for Modernisation and Reform. *Journal of Maritime Archaeology*, 15(1), 69–94. https://doi.org/10.1007/s11457-019-09240-1
- Meyer, K., Brooke, S., Sweetman, A., Wolf, M., & Young, C. (2017). Invertebrate communities on historical shipwrecks in the western Atlantic: relation to islands. *Marine Ecology Progress Series*, 566, 17– 29. https://doi.org/10.3354/meps12058
- Michel L'Hour. (2015). Countering Illicit Traffic in Cultural Goods.
- Mondal, T., & Raghunathan, C. (2017). Shipwrecks in Andaman and Nicobar Islands: An Artificial Habitat for Corals. J. Mar. Biol. Ass. India, 59(2), 92–101. https://doi.org/10.6024/jmbai.2017.59.2.1910-12
- Mugge, R. L., Brock, M. L., Salerno, J. L., Damour, M., Church, R. A., Lee, J. S., & Hamdan, L. J. (2019). Deep-Sea Biofilms, Historic Shipwreck Preservation and the Deepwater Horizon Spill. *Frontiers in Marine Science*, 6(FEB), 48. https://doi.org/10.3389/fmars.2019.00048
- Mughal, M. R. (2017). Heritage Management and Conservation in Pakistan: The British Legacy and Current Perspective.
- Naelul, N., & Ridwan, H. (2018). The Importance of Empowering Local Community in Preserving Underwater Cultural Heritage in Indonesia: Case Study in Tulamben, Bali and in Taka Kappala, Selayar-South Sulawesi 1.
- Papageorgiou, M. (2018). Underwater cultural heritage facing maritime spatial planning: Legislative and technical issues. Ocean and Coastal Management, 165, 195–202. https://doi.org/10.1016/j.ocecoaman.2018.08.032
- Parthesius, R. (2011). Shared Heritage? Shared Responsibility? Reflections of the role of "sahred" colonial heritage within capacity building programs in the postcolonial world. *The 2011 Asia-Pacific Regional Conference on Underwater Cultural Heritage Proceedings*.
- Pater, C. (2020). Seabed infrastructure projects, underwater cultural heritage and the environmental assessment process: The UK example. In *Coastal Research Library* (Vol. 35, pp. 509–520). Springer. https://doi.org/10.1007/978-3-030-37367-2\_26
- Pearson, N. (2019). Protecting and Preserving Underwater Cultural Heritage in Southeast Asia. In *The Palgrave Handbook on Art Crime* (pp. 685– 730). Palgrave Macmillan UK. https://doi.org/10.1057/978-1-137-54405-6\_31
- Perez-alvaro, E. (2013). Unconsidered Threats to Underwater Cultural Heritage : Laying Submarine Cables. 54–70.
- Petriaggi, B. D., Stefanile, M., D'agostino, M., Ricci, S., & Perasso, C. S. (2019). MUSAS: an innovative project for the enhancement of the Underwater Cultural Heritage NIAS Director-Istituto Superiore per la Conservazione ed il Restauro 2 Underwater Archaeologist-MUSAS

*Project collaborator.* 

- Petrig, A., & Stemmler, M. (2020). Article 16 UNESCO convention and the protection of underwater cultural heritage. In *International and Comparative Law Quarterly* (Vol. 69, Issue 2, pp. 397–429). Cambridge University Press. https://doi.org/10.1017/S0020589320000081
- Pozdnakova, A. (2018). *Historic Shipwrecks Contemporary Challenges: Protection of the Underwater Cultural Heritage.*
- Razavirad, M., & Blake, J. (2019). Reflection on Commercial Exploitation of Underwater Cultural Heritage with a Focus on UNESCO'S 2001 Convention. *Public Law Researsh*, 21(64), 87–109. https://doi.org/10.22054/QJPL.2019.34545.1913
- Reap, J. K. (2017). United States law on underwater cultural heritage: Can it support the goals and objectives of the UNESCO Convention?
- Rengifo Lozano, A. J., & Castellanos Gómez, E. F. (2019). The legal protection of underwater cultural heritage: comparative study of legislation with reference to the galleon San Jose. *Pensamiento Jurídico; Núm. 50 (2019): Construcción de Paz y Pedagogía.*
- Renzi, M., Romeo, T., Guerranti, C., Perra, G., Canese, S., Consoli, P., Focardi, S. E., Berti, C., Sprovieri, M., Gherardi, S., Salvagio, D., Giaramita, L., Esposito, V., Battaglia, P., Giacobbe, S., & Andaloro, F. (2017). Are shipwrecks a real hazard for the ecosystem in the Mediterranean Sea? *Marine Pollution Bulletin*, 124(1), 21–32. https://doi.org/10.1016/j.marpolbul.2017.06.084
- Rey da Silva, A., & Herrera Tovar, J. M. (2017). Constructing America from the Sea: Maritime Archaeology Research, International Cooperation and Best Practices in the Underwater Cultural Heritage of Latin America. In *Journal of Maritime Archaeology* (Vol. 12, Issue 3, pp. 149–162). Springer New York LLC. https://doi.org/10.1007/s11457-017-9189-4
- Ricca, M., Alexandrakis, G., Bonazza, A., Bruno, F., Petriaggi, B. D., Elkin, D., Lagudi, A., Nicolas, S., Novák, M., Papatheodorou, G., Prieto, J., Ricci, M., Vasilijevic, A., & La Russa, M. F. (2020). A sustainable approach for the management and valorization of underwater cultural heritage: New perspectives from the TECTONIC project. *Sustainability* (*Switzerland*), 12(12), 5000. https://doi.org/10.3390/su12125000
- Ricca, M., & La Russa, M. F. (2020). Challenges for the Protection of Underwater Cultural Heritage (UCH), from Waterlogged and Weathered Stone Materials to Conservation Strategies: An Overview. *Heritage*, 3(2), 402–411. https://doi.org/10.3390/heritage3020024
- Risvas, M. (2013). The duty to cooperate and the protection of underwater cultural heritage. *Cambridge International Law Journal*, 2(3), 562–590. https://doi.org/10.7574/cjicl.02.03.133
- Roberts, H. (2018). THE BRITISH RATIFICATION OF THE UNDERWATER HERITAGE CONVENTION: PROBLEMS AND PROSPECTS. https://doi.org/10.1017/S0020589318000210
- Secci, M. (2017). Survey and Recording Technologies in Italian Underwater Cultural Heritage: Research and Public Access Within the Framework of the 2001 UNESCO Convention. *Journal of Maritime Archaeology*,

12(2), 109–123. https://doi.org/10.1007/s11457-017-9174-y

- Sharfman, J., Boshoff, J., & Gribble, J. (2017). Benefits, Burdens, and Opportunities in South Africa: The Implications of Ratifying the 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage (pp. 101–110). Springer, Cham. https://doi.org/10.1007/978-3-319-46985-0\_9
- Sharfman, J., Boshoff, J., Parthesius, R., Sharfman, J., Boshoff, J., & Parthesius, R. (2012). Maritime and Underwater Cultural Heritage in South Africa: The Development of Relevant Management Strategies in the Historical Maritime Context of the Southern Tip of Africa. 7, 87– 109. https://doi.org/10.1007/s11457-012-9101-1
- Spezzano, P. (2021). Mapping the susceptibility of UNESCO World Cultural Heritage sites in Europe to ambient (outdoor) air pollution. *Science of the Total Environment*, 754, 142345. https://doi.org/10.1016/j.scitotenv.2020.142345
- Staniforth, M. (2017). Factors affecting the ratification of the UNESCO Convention 2001 in the Asia and the Pacific region.
- Trakadas, A. (2020). UN Decade of Ocean Science for Sustainable Development.
- Trakadas, A., Firth, A., Gregory, D., Elkin, D., Guerin, U., Henderson, J., Kimura, J., Scott-Ireton, D., Shashoua, Y., Underwood, C., & Viduka, A. (2019). The Ocean Decade Heritage Network: Integrating Cultural Heritage Within the UN Decade of Ocean Science 2021–2030. *Journal of Maritime Archaeology*, 14(2), 153–165. https://doi.org/10.1007/s11457-019-09241-0
- UNESCO. (2020). Convention on the Protection of the Underwater Cultural Heritage.
- Victoria Browne, K. (2017). Legal Order in the World's Oceans: Exploration of the 2001 Underwater Cultural Heritage Convention in the Context of the Broader Ocean Policy of International Law.
- Viduka, A. (2020). Going for the win-win: including the public in underwater cultural heritage management through citizen science in Australia and New Zealand. *International Journal of Nautical Archaeology*, 49(1), 87–106. https://doi.org/10.1111/1095-9270.12412
- Wellman, B. (1983). Network Analysis: Some Basic Principles. In Sociological Theory (Vol. 1, pp. 155–200). Wiley. https://doi.org/https://doi.org/10.2307/202050
- Zamora, T. V. (2008). The impact of commercial exploitation on the preservation of underwater cultural heritage. In *Museum International* (Vol. 60, Issue 4, pp. 18–30). Blackwell Publishing Ltd. https://doi.org/10.1111/j.1468-0033.2008.00662.x
- Zhong, H. (2020a). The Protection of Underwater Cultural Heritage in Disputed Maritime Areas: A Case Study of the South China Sea. Asian Perspective, 44(4), 651–675. https://doi.org/10.1353/apr.2020.0028
- Zhong, H. (2020b). Underwater cultural heritage and the disputed South China Sea. *China Information*, 34(3), 361–382. https://doi.org/10.1177/0920203X20905302