

Human Resources Development in Indonesia's Underwater Archaeology

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Abstract

The Indonesian archipelago position is located in a very strategic position at the crossroads of world maritime trade between the Pacific and Indian Oceans. According to archaeological and historical research, there is evidence that Indonesia has had a maritime nautical culture since prehistoric times. Some evidence of Indonesian maritime cultural civilization can still be found scattered on the ocean floor, including approximately 463 ancient ship location points according to data from the Ministry of Maritime Affairs and Fisheries.

The Ministry of Culture and Tourism, which is the Indonesian government agency that handles the field of culture, now has approximately 80 staff divers. Only a fraction of that number have competence in the field of underwater archaeology, so it is necessary to improve the knowledge and skills, not only in the field of diving but also the ability to conduct surveys, mapping, data recording excavation, and conservation. In the last five years, efforts to increase human resources in underwater archaeology in Indonesia continue to be done through various education and training, whether conducted in Indonesia or abroad facilitated by the United Nations Educational, Scientific, and Cultural Organization (UNESCO), such as in Thailand, Sri Lanka, and the Philippines. The effort is certainly not optimal and systematic, so it is necessary to develop appropriate strategies both in quantity and quality. Indonesia needs an underwater archaeological development centre that will prepare a teaching module, instructor, certification and partnerships (networking), as well as supporting facilities and infrastructure. Through this institution we can expect human resources of underwater archaeologists to have the following abilities: (1) diving, (2) various regulations relating to underwater cultural heritage, (3) development of management plans, and recording and documenting sites, (4) procedures, methods, principles and ethics of underwater archaeology, (5) artifact conservation and storage, (6) traditional knowledge, and (7) publications and exhibitions. In the last five years we have implemented several training programs to further underwater archaeology in Indonesia where participants have acquired skills in diving, survey and conservation. More skills would greatly empower Indonesians in managing their underwater cultural heritage, particularly at an advanced underwater archaeology theory and practice level.

Introduction

Indonesia as an archipelago has a vast territory that stretches from 95 ° to 141 ° East Longitude and between 60 ° N latitude and 110 ° LS. The total area of the Indonesian Exclusive Economic Zone's marine waters are approximately 7.9 million square kilometers (km²). When calculated, the length of the beach that surrounds the entire archipelago was recorded at approximately 81,000 km, and the number of people living in coastal areas are more than 40 million. Based on existing data on the United Nations Convention on the Law of the Sea 1982 (UNCLOS '82), Indonesia covers an area of waters of the ocean area covering 3.1 million km², which consists of the archipelagic waters and an area of 2.8 million km² of sea area covering 0.3 million km². The position of Indonesia is as a very strategic island nation, which is located at the crossroads between lanes of traffic and world trade, between the Pacific and Indian Ocean (Pramono 2005:2).

Based on Djoko Pramono's (2005: 3-6) study of archeology and history, there is evidence that the nation of Indonesia since prehistoric times has been

recorded in the nautical culture sailboat paintings found in prehistoric caves in the rock islands of Muna, Seram, and Arguni which are estimated to have been made in the year 10 000 BC. On the note of historical development of culture Nusantara civilization later found various kingdoms in the archipelago that has the basic maritime cultural values, such as the Kingdom of Sriwijaya and Majapahit Kingdom. Srivijaya kingdom was based on mastery of the political kingdom lanes and trade routes and control of strategic areas that are used as a base power of the sea. Majapahit kingdom established in the region Pull Raden Wijaya, the Brantas River near Port Canggus Sea (now in the eastern city of Mojokerto). Majapahit are renowned for their strength and fame as a maritime empire. Majapahit's political strategy was to unify the archipelago under his rule and prioritize the construction of a formidable navy. Maritime policy of the strong Majapahit had been confirmed in Amukti Palapa Oath of Gadjah Mada Mahapatih that essentially wanted to unite the whole archipelago under the Majapahit.

At present most evidence of Indonesia's maritime culture peak is still scattered on the ocean floor, including sunken ships and cargo. According to data from the Ministry of Maritime Affairs and Fisheries. There are around 463 points of known ancient ship locations based on information from: Chinese historians, in the tenth - twentieth centuries around thirty thousand Chinese ships sailed into the territory of Indonesia but did not return; and archives in the Netherlands, which hold records of 245 Verenigde Oost Compagnie (VOC) ships sunk in Indonesian waters (Directorate of Underwater Archaeology 2011). These data must be verifiable by conducting surveys and field mapping conducted by staff who are professionals in the field of underwater archeology.

The Indonesian government institution in-charge of culture, namely the Ministry of Culture and Tourism, currently has approximately eighty divers. Only a fraction of that number have competences in the field of underwater archeology, so it needs to improve knowledge and skills, not just in the diving but also the ability to conduct surveys, mapping, excavation data recording, and conservation.

The government of Indonesia has made efforts to increase human resources in the field of underwater archeology through various education and training programs. Facilitated by UNESCO these programs have occurred within Indonesia and abroad, such as in Thailand, Sri Lanka, and the Philippines. The effort is certainly not optimal and systematic, so it needs proper human resources (HR) development strategies both in quality and quantity. For that Indonesia needs to development a center in underwater archeology. This institute will prepare teaching modules, instructors, certification and hierarchy, partnerships (networking), as well as supporting facilities and infrastructure. Through this institution it is expected that successful HR will entail the following:

- have knowledge and skills of diving,
- understand the various regulations related to Underwater Cultural Heritage (locally, nationally, and internationally),
- understand and be able to create a management plan and site plan,

- understand and be able to implement procedures, methods, basic principles and ethics of underwater archeology,
- understand and are able to conserve, document. manage and store publications and public outreach, such as: exhibitions and mass media (print and electronic).

In the last five years, the Government of Indonesia has conducted training programs gradually and continuously to improve HR in the field of underwater archeology, but this is still limited due to the need to improve skill and abilities in the field of diving, survey, and conservation.

A rich maritime Archaeological resource

Indonesian waters have become a graveyard of ships from ancient times. Based on data from the Directorate of Underwater Heritage (2010) estimated there were 1234 ships sunk, and until now only 463 known location. Referring to these data, the government of Indonesia has conducted surveys in several locations. Tables 1 and 2 provide the details of when and where the survey has occurred, as well as what was found and at what depth.

Table 1. Survey Data (Directorate of Underwater Archaeology 2010)

NU*	YEAR	LOCATION	DEEP	FINDING
1	2006	Selayar, South Sulawesi	21 m	Chinese ship
2	2006	Barang Lompo, South Sulawesi	32 m	Japanese ship
3	2007	Pesisir Selatan, West Sumatera	22 – 28 m	Iron ship
4	2008	Sagori, Buton, Southeast Sulawesi	7 m	VOC ship
5	2009	Nangka Islands, Bangka Belitung	28 m	Iron ship
6	2009	Wayame, Ambon Bay	17 – 35 m	Aquila ship
7	2009	Lembe straits, Bitung, North Sulawesi	20 – 28 m	War ship (Mawali)
8	2009	North Halmahera, North Molucas	3 - 7 m	Tosimaru ship
9	2009	Tidore, North Molucas	50 m	Iron ship
10	2010	Genting Islands, Karimunjawa, Central Java	2 m	ceramics
11	2010	Seruni Islands, Karimunjawa, Central Java	10 m	Iron ship
12	2010	Kemojan Islands, Karimunjawa, Central Java	15 m	Indonor ship
13	2010	Parang Islands, Karimunjawa, Central Java	34-38 m	Timber ship
14	2010	Kumbang Islands, Karimunjawa, Central Java	2-13 m	Iron ship

15	2010	Taka Manyawakan Islands, Karimunjawa, Central Java	3-9 m	Iron ship
16	2010	Geleang Islands, Karimunjawa, Central Java	48 m	Timber ship
17	2010	Menjangan Kecil Islands, Karimunjawa, Central Java	28-30 m	Timber ship

Table 2. The survey by the National Committee (Directorate of Underwater Archaeology 2010)

NU	YEAR	LOCATION
1	2004	Tegal Waters, Central Java
2	2004	Cirebon Waters, West Java
3	2005	Sumpat Bay, North Bintan
4	2005	Natuna Waters, Thousand Islands
5	2005	Maspari Waters, South Sumatera
6	2006	Selayar Waters, South Sulawesi
7	2007	Karang Baginda, South Bangka
8	2007	Karimata Waters, West Kalimantan
9	2008	Karang Baginda, South Bangka
10	2008	Tanjung Menjangan, South Sumatera
11	2008	Cermin coast, North Sumatera
12	2008	Belitung Waters, East Belitung
13*	2008	Mandalika Waters, Jepara Central Java
14*	2008	Kerawang Waters, West Java
15	2009	Gelasa strait, Bangka Belitung
16	2009	Subang Waters, West Java
17	2010	Bangka Belitung Waters

Survey activities conducted by the Directorate of Underwater Heritage, the Ministry of Culture and Tourism, (see Table 1) helped to establish a framework of cultural resource preservation potential under water. If the survey has significant value to science, history and culture, then the existence of such sites must be preserved and protected by the *Law of the Republic of Indonesia Number 11 Year 2010 on Heritage Act*, which was published to replace the *Law of the Republic of Indonesia No. 5 of 1992 on Cultural Heritage Objects*. Meanwhile, the survey by the National Committee Appointment and Use of Valuable Cargo Ships Sink origin (see Table 2) was performed in order to determine the potential of underwater cultural resources for the sake of exploration. If the survey results have indicated high economic value, then they were followed up with the activities of the appointment. National Committee Appointment and Use of Valuable Cargo Ships Sink origin was established by *Presidential Decree. 43 of*

1998. Under this rule, the appointment must first be selected for the collection of State and deposited at the museum. The rest can be traded and resulting income partly added to the state treasury. Since the opening of the first appointment until the last, there have been no sales activity in which the results benefit the Government of Indonesia. The appointment of activities that have been done are as follows.

Table 3. Removal of Ceramic Data
(Directorate of Underwater Archaeology 2010)

NU	LOCATION	THE NUMBER OF TILES
1	Crocodile Islands, Riau	16.031
2	Batu Hitam, Belitung and Tuban	10.757
3	Thousands Islands (Eks Intan Cargo)	664
4	Blanakan Islands, Subang, West Java	13.590
5	Karimata Bay (Karang Cina)	31.029
6	Java Sea, North Cirebon	271.834
7	Karang Heliputan Waters,. Riau	21.521
8	Sumpat Bay, Riau	15.461
9	Java Sea, North Karawang	14.814
10	Java Sea, North Karawang	6.442
11	East Belitung Waters	34.680
12	Ujung Waters , Pamanukan	18.469
13	Gelasa Strait, Bangka Belitung	32.150
14	Jepara, Central Java	328
	Total	487.770

The magnitude of the potential of underwater cultural resources in Indonesia attract many foreign and local businessmen. They assume the archeological remains under water are a treasure trove of unknown owners.

Underwater Cultural Heritage

Management of underwater cultural heritage in Indonesia has not been done optimally. This condition is caused by several things, as follows:

- Harmony between some regulations related to the handling of UCH. *Law of the Republic of Indonesia No. 5 of 1992 on Cultural Heritage Objects* was formed to mandate the use of education, science, culture, religion, and tourism; while the Presidential Decree No 43 of 1998 on the National Committee for Salving and Exploiting Valuable Objects Retrieved from Shipwreck gives permission for exploitation activities of UCH for monetary

reward. Institutionally, there are several government organizations that are not synergistic in the management of UCH. For example: the government agency in charge of culture and environmental conservation prioritize aspects of sustainability, while the government agency in charge of fisheries and maritime affairs, as well as local governments, prioritize commercial use.

Efforts have been made to rectify these inconsistencies by the Government of Indonesia in the recently issued *Law of the Republic of Indonesia Number 11 Year 2010 on Heritage*, in lieu of the *Republic of Indonesia Law No. 5 of 1992 on Cultural Heritage Objects*. In which law? (Article 1, point 1), "the cultural heritage that is protected by law is not only the land but also in the water (including under water)". In addition it is also mentioned in (Article 1, point 33) that, "its use should still maintain its sustainability". Mandate of this law in accordance with the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage, in particular related to the Annex of the general principles (rule 1) which states, "in situ conservation is a priority", and (rule 2) that, "the UCH can not be bought and sold as commercial goods, nor be of other uses that could undermine its sustainability".

- Community understanding of the responsibilities and mandate of the Underwater Heritage Directorate is still limited. The high level of violations on UCH indicates that the level of understanding about the importance and variety of regulations have not been socialized with optimal management, so various efforts need to be done to improve it. The Government of Indonesia has been working with stakeholders (government agencies, universities, museums, and community). It has conducted various activities both in the form of exhibitions and publication.
- More synergy in the management programs on UCH among government agencies, academia, and society. The Government of Indonesia is working to improve coordination and cooperation with various parties. Our more successful improvement of HR competencies in the field of underwater archeology have been through collaboration with universities and professional divers. 1) Mapping and survey have been done in cooperation with the Coordinating Agency for Surveys and Mapping, Ministry of Maritime Affairs and Fisheries, Indonesian University, Hasanuddin University, Gadjah Mada University, Diponegoro University, and fishing communities. 2) Protection of UCH has been coordinated through cooperation with the Ministry of Forestry, the Navy (Indonesian Military), Local Governments, and the fishing communities. 3) Public awareness involves cooperation amongst museums, mass media, local government, and society.
- Our HR competence in the field of underwater archeology is still limited. Until recently the Ministry of Culture and Tourism, particularly in institutions that deal with UCH, has a total diver count at 87 people: consisting of level 1 (42 people), level 2 (37 people), and level 3 (8 people) . 30 persons of the divers

are trained in underwater archeology. Likewise, the equipment for underwater archeology is still limited to the diving equipment and some survey tools, documentation, and conservation.

To enhance human resource capacity in the field of underwater archeology Government of Indonesia since 2006 has conducted various training initiatives (see table 4). It also collaborates with several universities in Indonesia and sent several people to follow the Underwater Cultural Heritage Training, UNESCO.

Table 4. Training Activities Data (Directorate of Underwater Archaeology 2010)

NU	YEAR	TRAINING	PARTICIPANTS
1	2006	Diving	26
2	2007	Underwater Archaeology Excavation	27
3	2008	Underwater Archaeology Photography	20
4	2008	Conservation	25
5	2009	Underwater Archaeology Photography	15
6	2009	Ship Identification	15
7	2010	Diving	16
8	2010	Conservation	25

In 2012 the Directorate of Underwater Heritage is working on realizing the concept of establishing a formal training center for underwater archeology in Indonesia.

Underwater Archaeology Training Center

In 2011 the Government of Indonesia is preparing the establishment of the Underwater Archaeology Training Center (Training Center) aimed at improving the ability of archaeologist and conservationist personnel in the handling of UCH. The Training Center is expected to generate HR who not only have the capabilities in the protection of UCH, such as data recording, conservation, and case study management but who are also capable of conducting activities towards the development and information sharing for the benefit of society. Specifically, people who can work on development activities through research programs, publications and exhibitions. Public awareness could be more engaging through cooperation with educational institutions and tourism. This is due to the fact that UCH has a value of history, science, and culture. It can be studied by research and education institutions, as well as having recreational value and the draw of adventure. All these activities still have to prioritize conservation so that sustainability is maintained

The framework plan for the establishment of the Training Center include:

a. Subject Matter and Trainers

Course subject matter being prepared is not only related to diving and underwater archeology, but includes material about the various regulations concerning the protection of UCH. The course subjects under consideration include: management and site plans, nautical-architecture, history, anthropology, museology, and publications.

b. Participants' Criteria

The minimum criteria for people to participate are that they must be able-bodied, have interest in the development of knowledge and skills in UCH and its preservation, and are actively working in the field of the protection of UCH. The criteria should be determined carefully so that the output of the training is in accordance with the principle of 'the right man on the right place', so it can improve performance in the field of the preservation of UCH.

c. Equipment and Accommodation

The equipment must be prepared not only to support practical activities (such as diving, survey, excavation, removal, documentation, and conservation) but also include data processing equipment, transportation, and communications.

Accommodation for the various needs of the Training Center need to be prepared including: classrooms, laboratories, equipment rooms, data processing space, artifacts storage space, teaching rooms, and dormitories.

d. Education Level and Time

Level and time for training is being arranged. Given the output of this training is focused on the development of skills, the time will be focused largely on practical field training than on classroom learning.

e. Location

Location must be strategic for accessibility and security. The criteria for location includes access to convenient transportation, close to the various supporting agencies (such as museums, research institutes, hospitals, navy, and rescue teams), not far from underwater archaeological sites. Thus the participants can practice on site.

Conclusions

Territory waters of Indonesia have UCH rich and valuable for science, history, and culture, so its existence must be protected and utilized for various purposes that are not in conflict with sustainability.

For that we need regulatory harmonization efforts coordinated under the Underwater Heritage Directorate management, so there are no rules that overlap or contradict each other. *Law of the Republic of Indonesia Number 11 Year 2010 on Heritage* expressly states that cultural heritage protected by law includes UCH. When working with this valuable material we must always consider the

best method to ensure its sustainability. This is in accordance with the 2001 Convention, in particular, to the Annex which gives priority to conservation in situ and bans commercial sale of objects.

We aim to improve networking among stakeholders, both domestically and abroad, in the form of cooperation programs in the field of human resource capacity building, provision of equipment underwater archeology, dissemination and publication, as well as monitoring and securing the Underwater Cultural Heritage.

Regulation and networking will not run properly without the support of competent HR. For that we have increased efforts towards HR in the field of UCH management according to the needs and potential of UCH in Indonesia. The establishment of a training center is our method to increase capacity building in HR specialized in the field of underwater archeology who have the ability to protect, develop and utilize the UCH based on principles of conservation and for the overall benefit of society.

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