

Maritime Culture Indicators for the Development of Fishermen's Settlement

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Abstract—Today's development of urban area including fishermen's settlement requires specific and sustainable approach. Future quality improvement of fisher's dwelling have to consider its inhabitant's unique culture as the important part of the development. In this regard, maritime culture is highly related to fishermen's livelihood, sustainable, and potential to be developed in many sectors. Therefore, this paper aims to generate a maritime culture exploration guideline on a particular fishermen's settlement which is dismantled into five layers of culture, ranging from the most to the least visible. The results consist of aspects, factors, and respective indicators of maritime culture that can be assessed on fishermen settlement in any contexts and places. Further, the upcoming result of maritime culture exploration can be set as the underlying consideration for the fisher's housing renewal in a sustainable way.

Keywords—fishermen's settlement; housing development; maritime culture; sustainable housing

I. INTRODUCTION

Nowadays, sustainable approach is needed to develop urban areas, including fishermen's coastal housing. It can reduce some challenges of the settlement such as climate change, environmental pollution, or rapid urbanization [1,2]. In this regard, culture is important for housing development since its ability to make the effort sustain in many aspects [3-5]. To develop fishermen's settlement, fisher's maritime culture is applied as the main view because its supportive nature of maritime livelihood, sustainable, and has potential to be improved in tourism sector. Also, the use of maritime culture as development base help controlling fishermen's settlements' negative phenomena over time, especially in Indonesia as mentioned on preceeding studies [6-8].

Some studies have been conducted on the importance of culture for housing developments [4,8-13], on fishermen's settlement development [6-8,14-17], and on fishermen's maritime culture [18-25]. However, no research has merged all related components of fisher's maritime culture as the main base in developing fishermen's settlement. Therefore, this paper aims to generate a maritime culture exploration guideline on fishermen's dwelling. Furthermore, the result of this study can be set as underlying consideration for particular fisher's housing renewal in a sustainable way.

II. LITERATURE REVIEW

A. Relations between Culture and Human Settlement

People do regular activities as ways of life to survive, and they are accommodated in housing environment as inhabitants

'container' [20]. The culture of specific society grows naturally and able to be observed through many things, such as activities, behaviors, and also physical products including architecture/ building [4,26]. Reference [27] also described that cultural things happen informally amongst society (in form of events, performance, gathering / temporary activity, oral history /expressions across generations, music, or group of artist) on many places such as schools, worship facilities, parks, community or recreational centers, service organizations, libraries, public plazas, restaurants, shops, homes, or other communal spaces. To simplify the culture assessment on architecture (housing environment), there are several layers from most invisible to the most visible form [28-30]. In this case, classification of culture by Spencer-Oatey (2000) is applied, consisted of: Basic Assumptions and Values, Beliefs and Attitude, System and Institution, Rituals and Behaviors, and Architecture/ Building as Cultural Products [4,30].

Several studies show the importances and potentials of cultural aspects for urban housing development [4,8-13]. Reference [9] explained local socio-cultural aspects for urban renewal in Nigeria. Reference [11] examined the relation between cultural products / activities and urban regeneration process in order to increase human and social capital. Reference [4,10] highlighted cultural product in form of traditional architecture that the principles can be applied for house and buildings development nowadays. Reference [13] considered culture as a platform for urban conservation and revitalization in Indonesia, observing connection between built environment and cultural process. Reference [12] reviewed the role of local cultures and creativity products in Scandinavian urban redevelopment process, in which the culture should be promoted as supporting factors for economic development, district regeneration, and also urban re-imagery. Reference [8] developed human settlement based on societies' way of life as design consideration.

B. Fishermen Settlement Aspects and Development

Fishermen's settlements are mostly inhabited by people with closeness to sea-water or fishery activity, equipped with supporting facilities and infrastructures [31]. As a form of coastal dwelling, followings are fisher's settlement characteristics: physical environment, biodiversity, people's economic-social-cultural aspects, housing and settlement, housing infrastructure, regional development, and legality. These represent visible things to be observed from a fishermen's housing environment [32]. Other than that, coastal dwelling also faces various natural phenomena, such as high-low tides, hard rain and winds, and the other natural disasters,

which indirectly influence the building characteristics [33,34]. Thus, fisher’s settlement has to survive over time.

Many researches showed that sustainable base for fishermen settlement development is needed in order to face the development phenomena of fishers dwellings nowadays [6-8,14-17]. Reference [6] observed that fishing settlement in Indonesia grew naturally without specific spatial control. Meanwhile Reference [7, 8] highlighted examples of fisher’s dwelling in Indonesian dense urban area that slowly turned into slums. Therefore, diverse approaches for fishermen’s housing quality improvement are utilized, one of which is based on: activity systems, physical, and non-physical aspects of fishing built environment [6]; ecotourism development [14]; or community participation [35]. Other than that, some studies also have been done about the relation between fishermen’s built environment and the inhabitant’s cultural background [15-17]. Reference [15] explained the fishing settlements in Peruvian North Coast from maritime archaeological and anthropological view. Reference [16] emphasized fishing culture as added value in coastal areas management. Reference [17] discussed spatial arrangement of Bajau Tribe’s houses.

C. Maritime Culture and its Components

Maritime culture is a hereditary system of ideas and way of life amongst a society group closely related to maritime world at sea or coastal area [22,36]. Fishermen’s maritime culture in a specific coastal region is an outcome of several ethnics and cultures acculturation resulted from marine activities, shipping, and trading [37,36]. Those are the reason why maritime culture characteristics are different in many regions, adapting knowledge and local wisdoms of respective societies [20].

Maritime culture is composed of several complementary elements supporting one to another and related to marine activities. [22,38,39]. Reference [22] described that maritime culture is portrayed on fisher population, coastal dwelling, maritime communities’ rights, institution, and identity. It also described that there are two main components of maritime culture, namely the big tradition (related to broad maritime values and ideas) and the small tradition (related to the dynamics of coastal fishermen’s life). Reference [39] explained that maritime culture is related to origins, language, belief, spiritual faith, tradition, work ethic, settlements structure, population growth, and marine activities. Moreover, [24] gave detailed explanation that maritime culture is composed of three main elements related to fisher’s maritime way of life, namely ideas and cognitive systems, institutional systems, and maritime technologies; while [38] classified maritime culture components as cognitive systems, beliefs, roles of women, social position and classification, and fisheries technology development.

Also, many researches have been conducted on fishermen’s culture characteristics and its potentials [18-25]. In these studies, various aspects are emphasized, such as: social, economic, and cultural aspects of fisher community [21]; coastal-based language and rituals [18]; coastal communities’ socio-cultural system [19]; rites as way of life [20]; redefinitions of maritime culture [22]; coastal communities empowerment [23]; and maritime culture as a

system of ideas, institution, and product of marine technology [24]. Meanwhile, [25] explained broader aspects of fishermen’s livelihood in Brazil from maritime anthropological view, such as type of fisheries, natural ecosystems, traditions, tenure, fisheries management, fishermen’s basic knowledges and the others.

III. METHODS

In order to thoroughly assess maritime culture of fishermen’s habitation and their environment, comprehensive indicators are needed. We qualitatively compared and formulated certain aspects and related elements from literature reviews in architecture discipline (housing and human settlements), involving theories about ‘culture and built environment’ and supporting theories about ‘housing developments’, ‘housing renewal’, and ‘sustainable housing’, particularly about fishermen’s settlements. Other than that, we also referred to several anthropological knowledges (maritime anthropology) related to fishermen’s livelihood.

IV. RESULT

Maritime culture is complex in nature and consists of many complementary elements. Therefore, to explore it comprehensively, some indicators need to be classified by five cultural layers from Spencer and Oatey (2000) [4]. Followings are the most abstract to the most concrete form of culture: (1) Basic Assumptions and Values; (2) Beliefs and Attitude; (3) System and Institution; (4)Rituals and Behaviors; and (5) Cultural Products. Further descriptions are listed on Table 1.

TABLE I. FACTORS AND INDICATORS OF MARITIME CULTURE

<i>Cultural Aspect</i>	<i>Maritime Culture Factors^a</i>	<i>Maritime Culture Indicators^a</i>
Basic Assumptions and Values of Maritime Culture	Fisher’s Cognitive Skills (basic knowledge about surrounding sea, fisheries, and fishing activities)	<ul style="list-style-type: none"> • Marine high-valued species • Fishing ground / tenure /productive zones at sea • Fish sanctuaries • Fishing time pattern • Signs on sky, moon, clouds, rain (torrents or drizzles), and winds • Ebb and flows, depth, and wave of sea-water
	Cultural Values or Principles (ideas related to sea conditions and its natural resources)	<ul style="list-style-type: none"> • Principles in fishermen’s livelihood • Rules amongst fishers about fisheries, techniques, or fishing location • Local customary law
	Communication Symbol (historical background and its influence on the way fishermen communicate)	<ul style="list-style-type: none"> • Native / local language • Linguistic symbol • Tribal origins • Related ritual /traditions
Beliefs and Attitude of Maritime Culture	Cosmological Beliefs (beliefs in supernatural things and its impacts on life)	<ul style="list-style-type: none"> • Hereditary beliefs / myths about sea spirits or fishing activities • Rituals / traditions related to particular myths / beliefs

<i>Cultural Aspect</i>	<i>Maritime Culture Factors ^a</i>	<i>Maritime Culture Indicators ^a</i>
	<p>Spiritual Beliefs (beliefs in religious matters and its impacts on life)</p>	<ul style="list-style-type: none"> Religious views in life Use of religion as problem solving solution in life Rituals/ traditions related to particular religious view
	<p>Attitude towards Nature and Environment (attempts to keep balancing human-nature relationship)</p>	<ul style="list-style-type: none"> Environmental friendly / traditional fishing techniques Effort to preserve sea environment Effort to preserve built environment
Systems and Institutions	<p>Social Position and Classification (fishermen society groupings based on fishery practices)</p>	<ul style="list-style-type: none"> Fisher strata based on fishing gears (upper / middle / lower) Fisher classification based on fishery technology (tackles/ transportation/ fleet/ market orientation/ production relationship) Fisher classification based on the catch/ haul
	<p>Organization / Institution of Community (fishermen society groupings based on communal activities in housing environment)</p>	<ul style="list-style-type: none"> Fisher institution based on kinship / economic / spiritual /political relation Marine communities Fisher's rights of natural resource and fishing area
	<p>Fishermen's Economic System (the way fisherman manages his finance in household or housing scope)</p>	<ul style="list-style-type: none"> Types of fishermen's enterprises Fish marketing Cooperation or competition between fishers and traders Revenue distribution / profit sharing systems
	<p>Fishermen's Lifecycle (fishermen's activities system in certain times and places)</p>	<ul style="list-style-type: none"> Preparation for fishing Fishing practices (from beginning to the end) Fishing cycle (daily/ weekly/monthly)
Rituals and Behaviours	<p>Roles by Gender (tasks and responsibilities of man and woman on many occasions)</p>	<ul style="list-style-type: none"> Tasks division at home Tasks division at housing environment Tasks division at sea
	<p>Fishermen's Domestic Activities (fishermen's household activities at home)</p>	<ul style="list-style-type: none"> Household domestic activities (sleep, cook, eat, do dishes / laundry, bath, store, etc.) Fish processing activities (storing, cleaning, drying, and selling the catch)
	<p>Fishermen's Communal Activities (fishermen's activities in housing environment, done in weekly, monthly, or annual occasions)</p>	<ul style="list-style-type: none"> Regular activities (i.e. community services, worship, social gathering, pre- and postnatal health care, family welfare

<i>Cultural Aspect</i>	<i>Maritime Culture Factors ^a</i>	<i>Maritime Culture Indicators ^a</i>
		<p>movement, cleaning environment, or events)</p>
	<p>Fishermen's Cultural Traditions (regular ceremony at home / housing environment to celebrate particular day)</p>	<ul style="list-style-type: none"> Cultural or tribal rituals/ ceremony Fishermen's rituals / ceremony Religious ceremony
	<p>Solidarity on Fishers' Community (people's participations and involvement on communal activities)</p>	<ul style="list-style-type: none"> Participation in housing environment (on communal occasions) Participations at sea (on fishing practices) Each other closeness and togetherness
Cultural Products (Architecture / Building)	<p>Fishing Technology (methods and equipments for fishing practices)</p>	<ul style="list-style-type: none"> Types and capacities of fishing tackles (hooks, lines, sinkers, floats, rods, reels, baits, lures, spears, nets, gaffs, traps, waders, tackle boxes, etc.) Fishing methods (traditional / modern)
	<p>Maritime Motorization Technology (transportation for fishing)</p>	<ul style="list-style-type: none"> Boat type, capacity, and quality Boat-making Boat maintenance
	<p>Fish Processing or Farming Technology (the way fishermen prepare or upkeep the catch)</p>	<ul style="list-style-type: none"> Fish processing methods (traditional / modern; domestic / commercial) Fish cultivation equipment, techniques, and capacity
	<p>Typology of Fishermen's Houses (physical aspects of fisher's individual house)</p>	<ul style="list-style-type: none"> Structures and materials Shape and facade Space use / organization
	<p>Typology of Fishermen's Housing Environment (physical aspects of fishermen's settlement)</p>	<ul style="list-style-type: none"> Houses location and placement (based on kinship or particular ethnic relationship) Roads systems, structures, and materials Housing infrastructures (electricity, water, sanitation, drainage, waste management) Housing amenities / public facilities (jobs, shops, worship, education, childcare, healthcare, etc.) Facilities for fisheries / fishermen activities (moorings, docks, dockyards, ladders, etc.)
	<p>Fishermen's Traditional Art, Culture, and Creativity (coastal particular art and creativity products)</p>	<ul style="list-style-type: none"> Local arts and creativity products (dances, music, songs, games, poems, ceremonies, etc.) Local Products (food, merchandises, etc.) Artist community and Art venues (locations

Cultural Aspect	Maritime Culture Factors ^a	Maritime Culture Indicators ^a
		and spaces)

^a As exploration guideline, all these factors / indicators are defined generally and have possibility to be added or reduced

V. CONCLUSIONS

The utilization of cultural aspect as a basic consideration for urban housing renewal is pivotal. Layers of culture ranging from the invisible to visible form helps defining interrelation between inhabited locality (as architectural product) and people's way of life that forming it (as underlying culture). Specifically, effort to develop fisher's dwelling is necessary to take local inhabitant's maritime culture into account.

All mentioned aspects, factors, and indicators can be used as a comprehensive exploration guideline of maritime culture on fishermen settlement located on any contexts and places. Academics or governments can apply the guideline for future researches or development projects related to fisher's housing. The characteristics found on fishermen's built environment based on this guideline become a wide yet strong background for upcoming improvements. It reveals the most to the least important thing to be maintained and improved during the housing renewal process, based on certain local cultural story. In this case, the culture core or even local wisdom of particular fishermen's livelihood and habitation is highly possible to be discovered. Furthermore, from architectural point of view, the existence of local maritime culture may deliver fishing settlement's quality improvement to sustainability.

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