



Contextualizing methodology and measuring reflected material wellbeing of a fishing community in Sri Lanka

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Abstract

The present study develops an approach that consists of contextually specific, methodological stances to measure the material wellbeing and apply it to identify the wellbeing variations among four different fishing profiles of the *Rekawa* fishing community in Sri Lanka. One hundred and sixty fishers were randomly selected from “one-day fishing”, “multiday fishing”, “beach-seine”, and “lagoon fishing” profiles representing forty from each group. Material wellbeing is a profoundly important aspect of the overall welfare that consists of economic sustainability, healthy living, good and quality education, and access to nutritious food. Besides, acquiring and preserving material wellbeing can be considered an essential objective of the fishing community, but lay reflections on wellbeing experiences can be different because each fishing profile is attributed to different community characteristics. Development interventions are thus required to be adjusted in line with the unique socio-cultural characteristics of the community.

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**Original Article****INTRODUCTION**

During the past few decades, scholars and policymakers have discussed different modes of development interventions that correspond to different philosophical stances (Sen, 1999; Stieglitz et al., 2010). Alleviation of poverty whilst enhancing human wellbeing and social welfare has become a scholarly discourse and it even paved the way for innovative pragmatic approaches for economic growth and social development (Stieglitz et al., 2010). Initial endeavours toward development have primarily focussed on objectively verifiable indicators such as income, household expenditure, consumption and the kind (Diener et al., 1993). Recently, however, some have aptly criticised the conventional ideologies and beliefs about development while specifying the importance of subjective experiences among people (Sen, 1999). Concepts related to conventional development paradigm have become obsolete because of their inability to explore all dimensions of development in human life (Ryan & Deci, 2001; Sen, 1999; Stieglitz et al., 2009). Even though some have rationally asserted the importance of taking subjective experiences of wellbeing into account, policymaking still seems to go along with the conventional rationale that predominantly considers the importance of objective indicators, but that can debilitate the implementation of policies at local grounds (Diener et al., 1985; Gasper, 2009).

Although the concept of 'wellbeing' has been widely documented in the literature, providing a universal definition seems to be difficult due to different meanings given at contextually specific local grounds. The Wellbeing Development Group of Bath University has thus come up with a comprehensive definition: "Wellbeing is the state of being with others, which arises where human needs are met, where one can act meaningfully to pursue one's goals, and where one can enjoy a satisfactory quality of life" (McGregor et al., 2008). This captures the subjective dimension embodied in objective experiences.

This definition sets out a multi-dimensional approach to accessing human wellbeing outcomes in which three perspectives are taken into account: *material* dimension, which emphasizes the extent to which needs of people are met; *relational* dimension, which considers the extent to which social relationships among people enable them to act meaningfully in pursuit of what they take into account as wellbeing; and *cognitive* dimension, which considers their level of satisfaction with the quality of life. All these three dimensions must be considered to provide an adequate assessment of wellbeing (CMEPSP, 2009; McGregor, 2009).

An array of studies have been conducted to identify and define aspects of wellbeing during the past few years and most of them were



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limited to qualitative and descriptive level interpretations (Acheson et al., 1980; Amarasinghe, 2009; Brief et al., 1993; Britton et al., 2013; Cummins et al., 2004). The main objective of this research is to formulate an approach with grounded methodological stances to collect, analyse and compare wellbeing-related data among subgroups of anglers within a fishing community of Sri Lanka.

In this research, we have concerned only about the 'material' component of 'wellbeing', because among the three dimensions of wellbeing, the 'material' component is tangible and easily observable in deciding the level of wellbeing. Thus, the first part of this research strives to portray an appropriate methodology in line with previous studies and research on fishing communities that can be used to understand grounded or community-specific material wellbeing. In the second phase, we strive to identify a set of wellbeing parameters that can identify some aspects of material wellbeing. The third phase introduces an approach to analyse wellbeing data. In the fourth phase, we present material wellbeing information of *Rekawa* fishers to demonstrate the use of the developed grounded method and material wellbeing index. Finally, we compare the level of wellbeing among subgroups of anglers of the *Rekawa* village in Sri Lanka using the developed grounded-method.

LITERATURE REVIEW

Fundamentals of wellbeing studies

When development discourse evolves, 'wellbeing' has been used as a synonym for happiness (Michelos, 2007; McGregor, 2007). Layard (2005) and Frey et al. (2002) argued that the level of happiness can express the overview of human wellbeing. However, they inadvertently neglected the importance of complexity, contradiction and fluidity of human judgements about the quality of life (Gasper, 2004, 2009; McGregor et al., 2009). This makes it clear that the multidimensional nature of human wellbeing should be taken into consideration, particularly to formulate effective policies concerning the welfare of society.

Some conceptualize 'wellbeing' as the interplay between three dimensions of wellbeing outcomes:

- What a person possesses ("needs to be met" and "practical welfare and standards of living")
- What they can do with what they have (capacity to act meaningfully in pursuit of self-ratified goals), and
- How they think about what they have and can do (satisfaction with the quality of life)

(McGregor et al., 2007; McGregor, 2009).

Some significant findings contributed to identifying these aspects of wellbeing. Moreover, criteria of measuring wellbeing have been

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developed through a binary approach: one is in through 'top-down' approach in which particular ingredients of wellbeing are identified through reviewing the literature about the philosophical position, conceptual frameworks or ideology; the other is through a 'bottom-up' approach in which the 'list' of what is required for wellbeing is identified from observation or participatory approaches (PRA) (Brief et al., 1993). Thus, we try to combine the top-down and bottom-up methods to identify wellbeing measures. Participatory appraisal sessions (PRA) and in-depth interviews provided the opportunity for community members to present their wellbeing requirements to shape up the parameters of the study. A comprehensive literature review was then incorporated with community-identified wellbeing parameters.

Gasper (2010) noted that the subjective measures of wellbeing include perceptions of people, while objective measures of wellbeing come from observed and actual conditions and do not depend on the respondent's perceptions. Therefore, some poverty analysis tools have been constructed based on studies on objective wellbeing (Layard, 2005; Ryan et al., 2001). Objective measures often do not go along with self-reported or subjective measures (UN, 2005). However, the way in which people perceive their wellbeing is important in determining the extent to which they are satisfied (Cummins et al.,

2004). In this sense, some may reflect satisfaction on the basis of their living conditions while objective parameters can demonstrate a dissatisfaction. For example, Courtland (2010) found that some people with low income (below average) are likely to rank their wellbeing at a satisfactory level while high-income earners demonstrated dissatisfaction. Therefore, there can be a mismatch between objective measures and subjective identifications about the wellbeing. Poverty indexes have been developed predominantly based on the objective measures. However, human wellbeing indexes have incorporated subjective measures such as perceptions, reflections and lay identifications. For example, Officer for National Statistics of the UK introduced online filling wellbeing index, Happy Planet Wellbeing Index, and OECD better life index (Office for National Statistics of UK, 2015; OECD, 2009; UN, 2012). Some, however, argue that applying the subjective parameters might reduce the reliability of the research (Distaso, 2007). On the other hand, some specify that comparing what people think in line with objective measures about life conditions would provide valuable insight into the relationship between happiness and income (Easterlin et al., 2003). Since it is essential to measure human wellbeing for development policy formulation, the use of both subjective and objective measures have been widely accepted.

**Original Article****Wellbeing and fishery development policies**

Unlike many other industries, fishery is a unique industry because thousands of anglers/fishers extract common resources from inland water bodies and oceans. A surface-level observation may conclude that 'fishing is an income-generating activity', even though in-depth studies clearly show that fishing is not just an income-generating activity but an art of living. Alongside obtaining monetary benefits, different fishing groups are likely to go forward with different and unique objectives. For example, some may work for prestige or continue to work because fishing is considered to be a heritage of their lineage. As perspectives of people can change, the way in which the wellbeing of a community is perceived can be differently reflected, and hence a multidimensional approach is required in order to capture the cumulative experiences of wellbeing (Weerathunge et al., 2013).

Several anthropological studies have been carried out on fisheries to understand subjective wellbeing, and often these studies were succinct in objective measures as their major objective was to identify lay reflections and subjective interpretations. For example, some anthropologists have argued that job satisfaction is often more important than income (Acheson et al., 1980; Gatewood et al., 1990). Sometimes, fishermen continue to engage in fishing despite a high level

of the cost incurred. This is because of the passion for work in deep seas (Anderson, 1980; McCay et al., 1993).

Although some studies contend fisher-communities to be homogenous, this research argues that even a small fisher-community can be hierarchically arranged with several differences, thus heterogeneity is an inherent characteristic. Each group within a community uses different techniques to catch fish, and each group can even consist of different capabilities in accessing different fishing grounds. Not just the level of income but also the level of occupational risk may vary among fisher-groups in accordance with the fishing ground and adopted fishing gears (McGregor et al., 2009).

Moreover, there are a number of variations among fisher-groups with regard to their harvest in terms of fish quantities, qualities and species. As a result, income and material wellbeing can be differently identified among different fisher-groups. Furthermore, cultural practices, norms and beliefs are different among fisher-groups. Universal policies or a blanket approach to the development of fishery is thus not applicable because a universal policy is not likely to address unique needs. Therefore, taking different cultural practices prevailing in each community pocket within society into ardent consideration is important (Coulthard et al., 2011).

Recently, 'social wellbeing framework' has been widely used to understand



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fisher-community reflections (Amarasinghe, 2009; Bavinck, 2009; Britton et al., 2013; Coulthard, 2009; McGregor, 2009; Coulthard et al., 2012a). Most of these studies are exploratory. As Coulthard et al., (2011) argue 'social wellbeing' is one significant determinant among fishery development policies that concerns natural resource sustainability and socio-economic development. Thus, this study has endeavoured to construct a community-particular wellbeing index to compare wellbeing levels among different fisher-groups within the same community.

Comparing the level of wellbeing or quality of life among different segments of society has not been a new endeavour. Watts et al., (1974) measured and compared the wellbeing level among mill workers and fishermen with citizens in America. He predominantly asserted the importance of subjective experiences embedded in everyday activities among them. Gatewood (1990), in addition, differentiated fishers of an American seaside in accordance with the type of harvesting fish species and compared the differences of wellbeing experiences among those segments using a community-specific wellbeing index. Binkley (1995) studied wellbeing levels among deck hands and captains of fishing ships in America. Pollnac (2006) strived to elaborate wellbeing differences among different stakeholders of the fishing industry and he discussed regional

differences of wellbeing among anglers. Johnson (2007) compared fishers' satisfaction and income levels with those of students, watershed coordinators, and lawyers.

“Quality of Life” Framework

Among different dimensions of wellbeing, material wellbeing has been mainly considered in this study. Material or objective aspects of life have been historically judged by income or consumption per capita (Ravalin, 2010). Now, however, the multidimensionality of wellbeing, poverty and development has been taken into careful consideration (UNDP, 2014). Research on 'quality of life' provides a solid foundation to studies on 'material wellbeing'. 'Quality of life' has been identified and interpreted differently, and thus some have developed different frameworks to measure wellbeing. For example, The world health organization (1974) introduced a quality of life framework (WHOQOL), paying considerable attention to physical and mental health whilst social and economic domains was given less attention.

Cummins (1998) proposed seven (7) aspects of 'quality of life' (material wellbeing, health, productivity, intimacy, safety, community, and emotional wellbeing – spiritual wellbeing was added later). This delineation includes both subjective and objective dimensions of wellbeing. The Stieglitz Commission (2010) proposed a 'multidimensional'



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framework that includes eight dimensions of wellbeing (material living standards, health, education, personal activities, political voice, personal relationship, environment, and physical and economic security).

Constructing a grounded material wellbeing index

Because “wellbeing” has been identified differently, defining it would also be difficult (White, 2008). Different studies have thus introduced numerous components/parameters of material wellbeing. Table 1 demonstrates such parameters of material wellbeing as identified and thoroughly given attention to by some empirical studies.

Table 1: The parameters which were found through the literature review

Parameter	Source
Household expenditure	Camfield et al., (2009)
Comparative income	Coulthard et al., (2012b)
Adequacy of income	Diener et al., (1993, 1985)
Periodical income (based on time dimension)	Stieglitz (2009)
Income level	Summers (2014)
Alternative income sources	Weeratunge et al., (2013)
Income fluctuation	Cruces (2006)
Ability to borrow money	Brrettion et al., (2012)
Confidence in the ability to borrow money	Coulthard et al., (2012a)
Access to savings	Diener et al., (1985)

Insurance	Ziliak et al., (2009)
Housing status	New Zealand E S R (2010).
Household electricity supply	Camfield et al., (2009)
Access to clean drinking water	MEA (2005)
Access to quality food	MEA (2005)
House ownership	New Zealand Economic Social Report (2010)
Land ownership	Land (2000)
Number of animals and plants	Coulthard et al., (2012b)
Fishing gear	Coulthard et al., (2010)
BMI/Obesity	Linna et al., (2013)
Education	Michalos A.C. (2007), Gasper et al., (2004)
Food security	Doyal et al., (1991)
Access to water (other types that of drinking water)	Camfield (2006)
Satisfaction in medicine received	Mitchell et al., (2005)
Treatment types	Ring et al., (2005)
Physical health	Stieglitz et al., (2009)
Mental health	Gallup (2009)
Household sanitation	WHO (2004)
Addiction to drugs	Gallup (2009)
Number of sleeping hours	WHO (2004)
Sexual health	WHO (2012)
Oral health	McGrath et al., (2004)

Figure 1 shows a summary of these parameters employed in different



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studies. The *three-dimensional model of wellbeing* (including material, subjective and relational domains) can be used here as a prototype to construct a community-specific index while incorporating community reflections about material wellbeing. This research exclusively focuses on material wellbeing (capability to continue life with required provisions for needs). It consists of four sub-domains: economic wellbeing, availability of food and water, access to education, and health. Economic

wellbeing can be attributed to income, expenditure, financial security, household assets etc. Health and hygiene can be subdivided into physical health, mental health, access to health services, environmental quality, health-related behaviour and hygiene. This research collected a set of parameters to cover all those subdomains of material wellbeing. Food and water, and education are the other two sub-domains of material wellbeing as identified by community members.

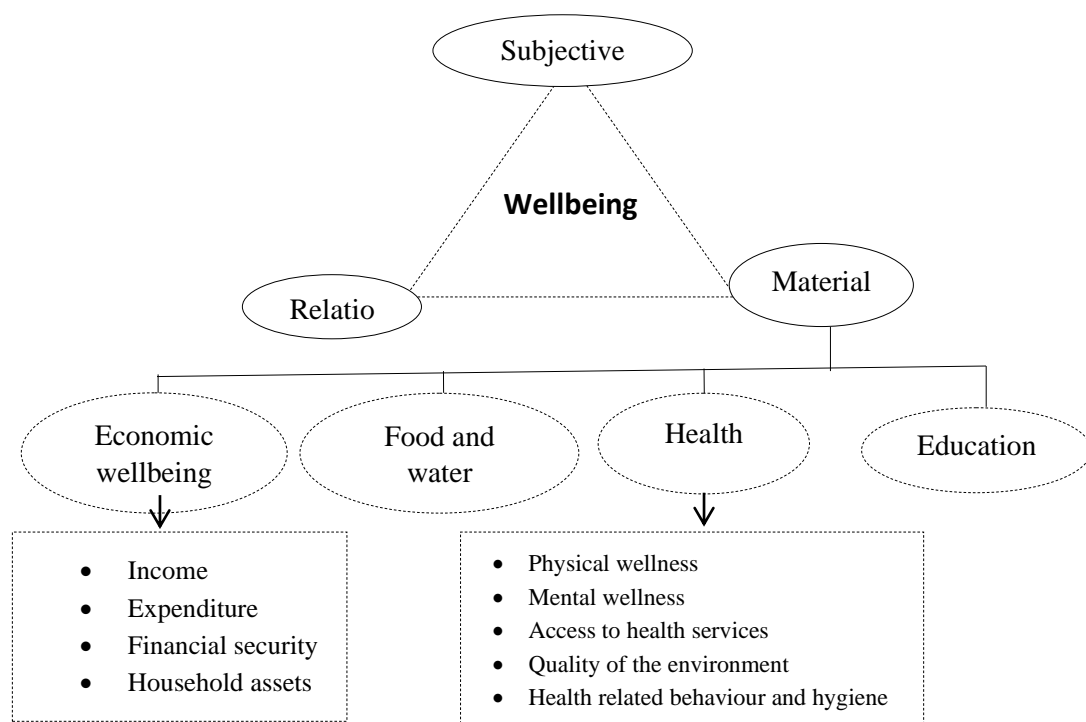


Figure 1: Material wellbeing in the three-dimensional model of wellbeing (Incorporated with community reflections)

METHODOLOGY

Mixed method approach and contextualizing

We employed a mixed-method approach in view of capturing

grounded realities through both subjectivist and positivistic perspectives. Even though material wellbeing can be measured, identifying measure-parameters is challenging because community reflections on wellbeing can be

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culturally grounded and interpreted. Measuring material wellbeing thus requires an understanding of subjective perspectives. Subjective interpretations are difficult to convert into objective parameters, but incorporating existing knowledge on measuring material wellbeing, we have strived to contextualize the method in understanding the state of the material wellbeing of a fishing community in Sri Lanka. First, we identified empirically tested material wellbeing parameters from previous studies. Thereafter, we conducted two participatory rural appraisals to understand how material wellbeing is reflected on and perceived by community members. For that, a fishing community in the southern province was selected. Community-identified parameters were then amalgamated with contextualized broad parameters identified through the literature review. Then, a questionnaire was developed to grasp the state of material wellbeing among anglers.

The Unit of Study

We used a single case multiple unit design in this research. The *Rekawa* community was selected as the case in which seven sub-units were integrated. *Rekawa* is a rural community in the southernmost tip of Sri Lanka, situated about 200 km from Colombo in the *Tangalle* divisional secretariat of the *Hambantota* district. The majority of people in *Rekawa* are engaged in fishing and agriculture.

This research focused on seven Grama Niladhari Divisions located around *Rekawa* Lagoon: *Medilla*, *Marakolliya*, *Medagama*, *Netolpitiya*, *Rekawa West*, *Rekawa East*, and *Wellodaya*. The majority of fishers live in *Rekawa* West and *Rekawa* East, and therefore 75% of the sample was selected from those two areas. The selected area consists of 2,342 families with a total population of 6,813. *Rekawa* was selected for this research because four different fisher-groups are found within the same village.

Identifying Fishing Profiles of Rekawa and Sample Selection

The literature review of this paper reveals that the wellbeing of fishers can change according to their access to different fishing grounds and fishing techniques. There are four fisher-groups in this village: multiday fishers, one-day fishers, beach seiners, and lagoon fishers. Each member of the community occupies a particular fishing profile, so that their social identity may vary according to sub-culture-related norms. Because the main objective of this study is to construct a community-relevant wellbeing index, and distinguish wellbeing levels among different fisher-groups within the same village community, first community reflections about material wellbeing were studied and then compared with differences in the level of wellbeing among community members of those four fishing profiles.

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Forty fishers were selected from each fishing profile. In total a hundred and sixty respondents were recruited for this research. Lagoon fishers were selected randomly using the registration book of the Lagoon Corporation in *Rekawa*. One-day fishers were selected from the fishing registration book of the Fisheries Inspector in *Rekawa* similarly, and crew members of the selected boats were interviewed. Since there was no available formal database, multi-day fishing crew members and crew members of beach seines were selected using the snowball sampling technique.

Data collection and analysis

A Human Needs Assessment questionnaire was administered during the data collection, therein each selected household head was inquired about different experiences regarding fishing and everyday life. Questions

were structured so as to capture information on actual experiences and their reflection on future possibilities.

Before data were collected, appropriate parameters were identified through the literature review, as noted above. We found out that a set of the parameters employed in other countries were not applicable to the Sri Lankan context. Thus, at the beginning of the fieldwork two participatory appraisal sessions (PRAs) were carried out to identify community-specific parameters. Besides, McGregor et al., (2015) emphasize the necessity of fine-tuning wellbeing questionnaires to detect specific characteristics of the community being studied. Then, data were collected using a Pre-tested, structured questionnaire. Twelve qualitative interviews were carried out, in addition. Quantitative data were analyzed using SPSS version 22.

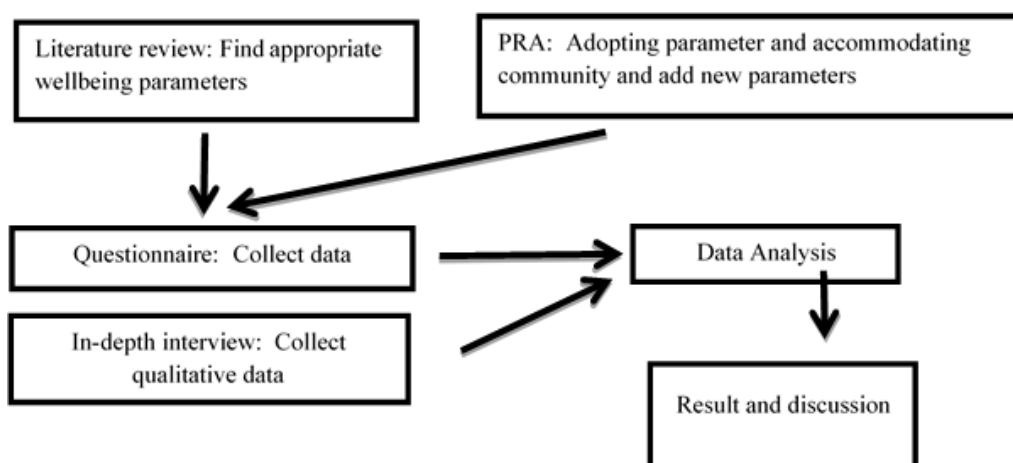


Figure 2: Data analysis process



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ANALYSIS

Economic Wellbeing

Income and expenditure of fishing households

Household expenditure related data were collected under fourteen subcategories. The lowest average of monthly household expenditure was recorded by lagoon fishers at about LKR 18,336.00 while the highest average was recorded by multiday fishers (LKR 27,189.00). Respectively, the expenditure of beach seiners and one-day fishers were LKR 18,717.00 and LKR 22,706.00. According to the Department of Census and Statistics (2013) of Sri Lanka, the country's average monthly household expenditure is LKR 46,207.00 in 2012. All the studied fishing profiles spent significantly less than the country value. Even though there is a significant difference in the total expenditure, individual expenditure criteria seem to be somewhat similar among the crewmembers of the four fishing profiles. About 42% of the total expenditure was allocated for food. The second highest expenditure was on children's education. The household Income and Expenditure Survey in Sri Lanka (Department of Census and Statistics, 2013) asserts that an average household can allocate 38% of the monthly food expenditure, and hence the sample spent somewhat higher percentage for food. 11% of the household expenditure was dedicated to settling loan premiums whereas only 3% was allocated for savings. Due

to the uncertainty of income and mismanagement of finance in the household, fishers are likely to go by with loans.

Besides, 56% of the lagoon fishers perceived that they belong to the poorest category of the community and only 11% of marine fishers said that they fit into the poorest category of the society. 68% of beach seiners are suffered due to the income inadequacy whilst 20% of multiday fishers felt on extreme income inadequacy. The current income among lagoon fishers (76%) was lower than the past because prawn and fish stock of *Rekawa* lagoon can be rapidly declined due to the changes in water salinity.

Multiday fishers worked 16 hours on average per active fishing day and lagoon fishers worked for about 7 hours. Average working hours among one-day fishers and beach seiners were 9 hours and 8 hours respectively. For a generic fishing day, "multiday boat crew members" can earn an average income of LKR 1846.00. Respectively beach seiners, lagoon fishers and one-day fishers can earn LKR 604.00, LKR 468.00 and LKR 1056.00 per day. As a strategy to mitigate income uncertainty, 75% of beach seiners and 90% of lagoon fishers are engaged in one or more alternative income-earning activities. The level of concern on alternative income-generating activities among one-day fishers and multiday fishers was comparatively less. Due to the continuously declining income among lagoon fishers, 78% of



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them are not satisfied. Multiday fishers ought to spend an average of twenty-five days in the sea so that 72% of them are dissatisfied about their job as they feel estrangement from the family. Income earning period among beach seiners are limited to six months, and hence 63% of them show dissatisfaction about their job. Low income, price uncertainty and increasing of the fuel price cause 52% of one-day fishers to become dissatisfied.

Financial security among fishing households

Due to seasonal differences, the beach seine fishing is limited to six months, so that beach seine fishers are likely to jobless during the rest of the year, though they strive to do minor income-generating activities; thus 88% of income fluctuation has been recorded. One-day fishers can be affected by daily weather conditions, and hence they have to limit their fishing activities during the offseason more often, but recent technological advancements help them fishing even during the offseason despite several difficulties. Therefore, 64% of income fluctuation level has been reported by one-day fishers. Whereas 45% of income fluctuation can be seen among multiday fishers, as they are less vulnerable to environmental differences relatively.

Fishers are highly likely to borrow loans from different informal sources,

and it has become a common practice. Although their income can be uncertain and confined into a short period of months, household expenditure remains constant. When they encounter a less income situation and thus they are compelled to obtain loans. Due to a lack of collaterals and uncertainty of income, fishers are given limited access to *formal* credit sources. Therefore, 79% of fishers tend to borrow money from relatives, community organization and some moneylenders. Even though fishers are engaged in an industry with a comparatively high risk, 71% of them have not obtained insurance facilities because of the inability to pay monthly instalments, continuously. Consequently, less financial security among fishers were encountered.

Different assets among fishing households

In order to explore differences of wealth among fishing profiles, four household items were considered as benchmarks (fridge, motor bicycle, three wheels, and van). These household items were identified during the participatory appraisal sessions (PRA) conducted at the beginning of the research. In addition, the size of the land belongs to a household, ownership of a farmstead, amount of harvest were accounted to measure the household assets. Table 2 and Table 3 show information about household assets.



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Table 2: Household assets

Item	Fisher-Profile			
	Beach seine	Multiday	Lagoon	One day
Fridge	34%	70%	48%	62%
Motor bicycle	38%	68%	32%	58%
Three wheels	8%	64%	18%	54%
Van	0%	8%	0%	3%
Timber crops (10 or less than 10)	72%	66%	56%	52%
Timber crops more than 10	28%	34%	44%	48%
Cattle (0)	66%	78%	52%	70%
Cattle (5 or less than 5)	24%	22%	32%	24%
Cattle (more than 5)	10%	0%	16%	6%
Chicken (0)	58%	70%	44%	62%
Chicken (10 or less than 10)	26%	24%	34%	26%
Chicken (more than 10)	16%	6%	22%	12%
Average size of the land (Acre)	0.18	0.3	0.2	0.28

Table 3: Household conditions

Category		Options			
Toilet facilities	No toilet	Shared	Outside but within house grounds	Inside house	
	0.6%	12.5%	70.6%	16.3%	
Kitchen condition	Temporary kitchen	Permanent kitchen			
	64.4%	35.6%			
Plastered wall	No	Yes			
	67.5%	32.5%			
Permanent ceiling	No	Yes			
	80.6%	19.4%			
Number of furniture	<10	11-15	16-20	>21	
	35.60%	36.30%	18.80%	9.40%	
Roof type	Thatch/reed/palm/plastic	Corrugated iron	Tile, asbestos, or concrete		
	4.4%	26.9%	68.8%		
Overall condition of the household	Hut	Dilapidated house	Still constructing and incomplete house	Completed house	
	12.5%	4.4%	40.6%	42.5%	



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Infrastructure facilities of the fishing community

68% of the households consist of mobile communication facilities and only 24% of the households constitute landline telephone connections. 95% of households have access to electricity facilities. According to Camfield et al., (2009), 98.78% of Thai households and 59% of Bangladesh households have access to electricity service.

Multiday fishers occupied significantly a higher amount of assets than of other three profiles in the community. Majority of households (87.5%) have access to pipeline drinking water supplied by the Municipal Council. However, only 23% of the households are satisfied with their transportation system whereas only 34% are satisfied with the public transport facilities available in the village.

Access to food and water

Almost every household has access to safe drinking water because the municipal council provides filtered water through an established pipeline. As reported, 73% of fishers employ primary health care practices with regards to drinking water. While 93% of respondents reported having easy access to food, only 48% have reported having a balanced diet. In addition, 21.5% of people are not satisfied with the freshness of their food. During the last twelve months, 10% of the sample has experienced scarcity of staple food. Vegetable consumption among

community members is less at about 20.5%. Food shortage is a severe problem for one fourth (1/4) of the sample.

Health wellbeing

Physical quality of life: some parameters

In line with the structured fisher-groups (fishing profiles) in the community, distinctive diseases can be identified among anglers, and this might be further studied by medical anthropologists. 47.5% of lagoon fishers are suffered from leg and knee pain caused by the uniqueness of their activities in the lagoon. High cholesterol level is significant (37%) among multiday fishers. 30% of lagoon fishers are suffered from wheeze and this is comparatively higher than that of other fishing profiles. Wound and bruise on the back are (45%) conspicuous among one-day fishers. Skin rashes are common for both one-day fishers and multiday fishers (47.5% and 45% respectively). Average Body Mass Index (BMI) of multiday fishers is significantly higher than the average BMI of other fishing profiles. Overall BMI value (25.8) of the total sample is slightly inclined toward the overweight region. Oral health among almost every angler seems to be very poor because of the addiction to betel chewing, smoking and neglect of regular healthy oral practices.

Health care services

Consulting a doctor privately for treating a general illness is less though

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41% of multiday fishers likely to consult a private doctor even for treating a general illness. 55% of lagoon fishers depend on government hospitals because of the inability to spend money on channelling a private doctor. 85% of the sample have been vaccinated properly. As reported, 87% of households are received maternity and post-maternity caring services. Health care services are well established due to the advancement of public health provisions in the country, but some disparities can be seen in fishing communities.

Health-related behaviour

As far as health-related behaviour is concerned, addiction to betel chewing, smoking and liquor can be considered malign behaviours that hamper the health among anglers. A large number of people are addicted to every day beetle chewing (72%) while 69% are likely to smoke at least a cigarette or a "beedi" (locally made cigarette) per day. Daily alcohol consumption is at about 43% while 56% are reported having liquor at least three days per week. One day fishers are less likely to pay attention to health and safety practices, on the other hand. For example, only 28% of them have carried life jackets. Ironically, 35% of one-day fishers use run-down boats. In addition, 40% of one-day fishers have no access to GPS facilities in their boats. Multiday fishers are highly likely to pay considerable attention to their safety while fishing. Moreover, 39% of fishermen are aware of family

planning methods. Only 23% are reported using proper contraceptives mechanisms. Importantly, 80% of multiday fishers sleep for less than six hours, whereas 35% of one-day fishers are unable to sleep at least six hours.

Health friendly living environment

Mosquito bite (and prevalence of dengue) is the main determinant of health hazards in this community. Therefore, 72% use bed-nets or coil to prevent mosquito bite and 43% regularly clean their garden and houses to destroy mosquito breeding places. 75% of the sample believe that they live in a clean and unpolluted environment. 100% are agreed that their living environment is not disturbed by annoying noises. Only 20% are asserted preparing compost using household organic waste while 80% have not adopted a proper waste management system. In addition, 90% of fishers perceive that their environment is clean enough for a healthy life.

Mental health

Mental health continuum that ranges from negative mental health to positive mental health was used to measure the mental health among anglers. The negative side of the mental health continuum can contain anger, sadness and depression whereas the positive side of the mental health can include happiness, satisfaction on life and encouragement, as reflected by the community members. Mental health status was



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measured using a scale that ranges from 0 to 3 (0 for the worst 3 for the best). Noticeably, community members recorded a negative mental health state within the last three months as follows: unbearable angriness - 22.5%, intolerable sadness - 15%, fed up with the life- 22.5%. On the other hand, positive mental health state was recorded as frequently happy: 62%, encourage to work: 73%, satisfaction about overall life: 57%. The difference between positive mental health state and negative mental health state provides a sense of overall mental health state in the community. A *Kruskal-Wallis H test* indicated that there is a significant difference between positive and negative mental health states at $\chi^2 = 8.523$ with $p = 0.014$. Therefore, it shows a moderately higher level of positive mental health state.

Education

Education is another significant determinant that contributes to the overall wellbeing. As indicated, 20% of Table 4: Index scores in each parameter by the type of fishing profile

anglers were educated up to grade five. Although 47.3% of the fishermen entered into the secondary level of education, they were dropped out before the completion. In addition, 19.2% have completed secondary education, but further education was dismissed. Only 13.5% have continued their education up to the tertiary level. 38% of the population thus believe that their education level is *inadequate*. 42% perceive that their level of education is *just adequate*. So that only 20% of the sample claim that their education level is *adequate*. Only 52% satisfied with the quality of education.

Index values

Results were congregated as interval data and applied into the *PI equation*, then converted into decimal values. Values were sorted under subtopics and subtopics were categorized by four major themes: economic wellbeing, Physical wellbeing, access to food, and education. Relevant scores of each fishing profile are demonstrated in Table 4.

		<i>Beach seine</i>	<i>Multiday</i>	<i>Lagoon</i>	<i>One day</i>	<i>Domain overall</i>
Economic wellbeing	Income and expenditure	0.33	0.46	0.24	0.37	0.35
	Financial security	0.31	0.38	0.28	0.38	0.34
	Household assets	0.37	0.45	0.33	0.3	0.36
	Infrastructure facilities	0.29	0.28	0.25	0.28	0.27
	Overall economic wellbeing	0.31	0.39	0.29	0.33	0.33
Health /Physical wellbeing	Physical fitness	0.67	0.71	0.71	0.75	0.71
	Mental wellness	0.66	0.57	0.73	0.65	0.65
	Health habits and	0.84	0.6	0.82	0.64	0.73



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sanitation					
Healthy environment	0.81	0.79	0.87	0.83	0.83
Access to health services	0.59	0.73	0.6	0.72	0.66
Overall health / physical wellbeing	0.71	0.68	0.75	0.72	0.72
Access to food and water	0.72	0.8	0.69	0.75	0.74
Education	0.46	0.49	0.45	0.48	0.47
Overall material wellbeing score	0.55	0.57	0.54	0.56	0.55

DISCUSSION

Multiday fishers and one-day fishers receive a moderately high income and hence they are likely to spend more. According to the indicated values, lagoon fishers and beach seiners make a comparatively low income; consequently, they are less likely to spend more on everyday needs. Camfield et al., (2009) observed a significant positive relationship between expenditure on basic need fulfilment and material wellbeing among different social segments in their research. This research too revealed a positive and significant relationship between expenditure and the individual material wellbeing (Pearson correlation 0.703 in $p = 0.021$).

Every fishing profile was scored lower than the mid-point (0.5) for economic wellbeing. The highest economic wellbeing was experienced by multiday fishers, while second and third places were occupied by beach seiners and one-day fishers, respectively. Lagoon fishers experienced the lowest economic wellbeing. So that it clearly shows the severity of the environmental issues

that perils the economic wellbeing among lagoon fishers. Therefore, it is recommended to implement programmes that increase the quality of the *Rekawa* lagoon.

Poor economic wellbeing among community members has not been exclusively caused by low income, but it has been significantly influenced by income fluctuation and income uncertainty. During the fishing season, anglers can obtain a considerable amount of income and would suffice to cover household expenditure during the off-season. This implies that if fishers are encouraged to saving, they can get away with the vicious cycle of poverty, particularly caused by heavy dependence on loans. Fishers thus are required to encourage saving their income, though this might be a difficult task due to unique subcultural practices. Make anglers aware of household money management would be another effective policy initiative to break the protracted poverty trap in fishing communities.

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Scores on mental wellness and healthy living environment were high in lagoon fishers because they work under comparatively low risk working conditions. One day fishing crew members ranked the highest in physical fitness. The best sanitation and health habits were reported by the beach seiners. Due to the high level of income, access to health services and availability of healthy food and water were highest among multiday fishers. Mental wellness is comparatively low compared to other sub-domains related to overall health wellbeing. All fishing profiles recorded 0.7 in health wellbeing index. There are no significant differences in health state among fishing profiles.

Access to food and water is scored the highest. Health/Physical wellbeing, education and economic wellbeing occupied the second, the third and the fourth places respectively. As results indicate, there is no significant relationship between economic wellbeing and health wellbeing (because the highest economic wellbeing is recorded by multiday fishers while ranking the least in health indicators). On the other hand, for lagoon fishers, economic wellbeing is the least whilst health wellbeing value is recorded the highest. Financial capabilities are important to access health services but health is not merely the absence of diseases, in that sense, though the lagoon fishers cannot afford to expensive medical services, they maintain a healthy living

environment, positive mental wellbeing and a comparatively lower rate of addiction to drugs and alcohol that contributes to their high rate of physical wellbeing.

Overall, multiday fishers experience a comparatively high level of material wellbeing (0.57) followed by one day fishers (0.56). Third place was secured by beach seine crew members (0.55) while lagoon fishers ranked the fourth as at 0.54. Overall material wellbeing in this community is moderate as at 0.55.

CONCLUSION

The material wellbeing can be measured unlike the subjective wellbeing, but as asserted in this study, material wellbeing is also a personal experiential state that can be varied from one culture to another, and hence methodological specification is essential in order to understand unique features of the material wellbeing. Although several frameworks have been employed to measure the material wellbeing, we have strived to adopt a community-specific method in order to measure as experienced by community members. Moreover, because a community can also be structured in line with significant strata of society, wellbeing experiences might be different among them as this study demonstrated. Majority of parameters employed in this research were adjusted in line with the unique characteristics of the



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fishing community. Material wellbeing does not portray a complete picture of community wellness so that different dimensions of wellbeing should be taken into account. In this research, however, we have focused on material wellbeing among fishers for the convenience in this study. Moreover, the material wellbeing index is more often taken into account even in policy formulation with regard to development interventions in fishing communities.

The material wellbeing analysis demonstrates possible areas of focus in development policies and also it provides a deeper understanding of experiential wellbeing state whilst implying effective policy implementation toward welfare. For example, the overall material wellbeing of this community scored at 0.55 with significant differences among sub-domains of the material wellbeing. Food availability and physical wellbeing scored more than 0.7, but infrastructure facilities and financial security scored lower than 0.4.

This research thus informs the inefficiency of providing general development package to a whole community. Each member of the community does not experience equal wellness experiences because structural differences influence how people perceive wellness experiences. Policymakers thus are required to be conscious about structural determinants that significantly affect

wellness experiences among community members.

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