

## Quality of Life (QoL) of Fishermen in the West Coast States of Peninsular Malaysia

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**Abstract:** This study aims to identify factors contributing to the Quality of Life (QoL) of the fishing community on the West Coast States of Peninsular Malaysia namely Selangor, Perak, Kedah and Johor. It also aims to determine challenges affecting the QoL of the community. This study employed a mixed methodology which combined two methods of research; quantitative and qualitative. Structured interviews and Focus Group Discussions (FGD) were used to obtain data. A total of 306 respondents answered the questionnaire and 24 respondents participated in four different groups of FGD. Correlation analysis showed indicators of income, savings, housing, family surroundings and fishing equipment contributed to the enhancement of QoL among fishermen on the West Coast of Peninsular Malaysia. Qualitative analysis indicated the challenges faced by the fishermen which affected their QoL were competition with foreign fishermen and lack of artificial reefs to increase the number of fish in the fishing spots where coastal fishermen are focusing. Qualitative analysis through FGD found that all of the respondents were satisfied with their QoL despite the challenges they have to face in their life.

**Key words:** Quality of Life (QoL), fishing community, Focus Group Discussion (FGD), coastal fishermen, West coast states of Peninsular Malaysia

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### INTRODUCTION

Many studies show that most coastal fishing communities are poor and found to be living with an unsatisfactory level of poverty (Aisyah and Saat, 2014). Their average income is RM435.00 per month, below the poverty level which clearly shows that it will be difficult for them to live their daily lives. In 2015, statistics released by the Malaysian Department of Fisheries listed a total of 77, 292 local fishermen researching on licensed fishing vessel throughout Malaysia. Sabah has the highest number of fishermen which is 29,440 fishermen followed by Perak with a total of 17, 564 and Sarawak with 16,210 fishermen. This study focuses only on four West coast States of Peninsular Malaysia namely Kedah, Perak, Selangor and Johor.

With regards to eradicating poverty of the poor, particularly among fishing community, many steps have been taken by the government to improve the QoL of fishermen. For instance, the government has put efforts to provide better opportunities provided including better social amenities. A number of social programmes exist, including low-costs housing, electricity and piped water, health services and education. Provision of amenities by

the public sector, according to Khalid (2011) do bring benefit to the fishermen. The Department of Fisheries Malaysia under the fisheries development authority of Malaysia (LKIM) has the responsibility to manage fishermen's affairs. The fishing industry contributes 1.47% of the Gross Domestic Product (GDP). Although, this is considered small, the fisheries sector is a major producer of protein for the population of this country. The government's role is seen as one effort to help the fishermen and farmers as well as livestock farmers to be competitive with the other sectors, thus helping them to increase their household income. The people's welfare development scheme (SPKR) and a few other programmes have been specially prepared to diversify their sources of income. Although, the fisheries sector has undergone major changes in terms of technology and number of landings, relatively, the economic status of most of the fishing community is still at a low level. In addition to the government's efforts to increase their income, the impact of development in surrounding residential areas also affects the level of the fishing community's welfare. Development such as tourism and industrial sectors also help the fishermen to enhance their QoL. Facilities implemented by the government have an impact on their standard of living.

**Literature review:** Though reported capture fisheries are dominated by marine production, inland fish and fisheries make substantial contributions to meeting the challenges faced by individuals, society and the environment in a changing global landscape. Inland capture fisheries and aquaculture contribute over 40% to the world's reported finfish production from <0.01% of the total volume of water on earth. These fisheries provide food for billions and livelihood for millions of people worldwide. Using supporting evidence from the literature, Abigail Lynch, concluded with 10 reasons why inland fish and fisheries are important to the individual (food security, economic security, empowerment) to society (cultural services, recreational services, human health and well-being, knowledge transfer and capacity building) and to the environment (ecosystem function and biodiversity as aquatic "canaries" the "green food" movement). However, the current limitations to valuing the services provided by inland fish and fisheries make comparison with other water resource users extremely difficult. This list can serve to demonstrate the importance of inland fish and fisheries, a necessary first step to better incorporating them into agriculture, land-use and water resource planning where they are currently often under appreciated or ignored (Lynch *et al.*, 2016).

A study on social sustainability of artisanal fishermen in five fishery collectives along the coast of Jalisco, Mexico revealed that the average daily income is slightly above the poverty level. The QoL scores were also related to annual catch and incomes within each collective. A QoL index is used in this study that combines importance and achievement ratings scores; the results are indicative of an acceptable QoL for fishermen. The concept of lived experiences incorporating aspects of life relating to mind, body, research and people was explored through interviews with 12 fishermen. The QoL data revealed that family and friends are important indicators related to positive QoL reported by the sample while economic indicators were not important. Although, four of the five collectives perceived that the future looks worse than the present and past there was limited correlation between catch or income and QoL. However, while the lived experiences exercise in part supported the QoL findings, in that people was the most important dimension for almost all of the fishermen interviewed, negative economic gaps related to poor catches and incomes were prevalent in the mind and research dimensions. The findings suggest that to understand the socioeconomic component of sustainable fisheries both of these approaches should be considered as they can illuminate different aspects of fishermen's lives that need to be considered during the development of fisheries' management policies (Bolivas *et al.*, 2015). Another, study done by Mohamad *et al.* (2014) on the quality of life and

experiences of fishermen along the coast of Jalisco, Mexico found that the locals QoL and experiences were slightly above the poverty level. This study aims to find out the relationship between income, size of catch and QoL as well as their fishing experiences. In 2012, a number of 83 respondents were selected and data were collected where QoL in this study included indicators like health, income, cost of living, family, friends, holidays, education and future perspective. The QoL index is a combination of importance and achievement rating scores where the results are indicative of an acceptable QoL for fishermen. The concept of life experiences was discussed in depth and interviews were conducted with 13 fishermen. Four dimensions of life experience's graphical representation comprising aspects of life related to mind, body, research and people of each fisherman is derived where each person were asked on the significance and gaps between aspiration and actual situation about each dimension. In this study, it was found that the most important dimension in a fisherman's life is people. The gaps identified suggested that those that should be closed were associated to the mind dimension, followed by research, body and finally people. Responsibility for closing the gaps were identified by frequency as: self, government, self with the help of family members and God or faith. An inverse moderately strong relationship between catch, marginalisation and QoL score was found while income and QoL score were directly related. In general, future and past are not better than the present. All these and life experiences are discussed in the sustainability context (Bolivas *et al.*, 2015).

## MATERIALS AND METHODS

This study employed a mixed methodology which combined two methods of research; quantitative and qualitative. Structured interviews and Focus Group Discussion (FGD) were used to obtain data. 306 respondents were involved in structured interview while 24 respondents joined Focus Group Discussions (FGD) for qualitative data.

**Objectives:** The objectives of this study are twofold; to identify indicators that contribute to the Quality of Life (QoL) of fishermen and to determine factors that affect the QoL of the fishing community on the West coast states of Peninsular Malaysia namely Selangor, Perak, Kedah and Johor.

## RESULTS AND DISCUSSION

**Respondent socio demographic status:** Table 1 shows the total number of respondents consisted of 306 fishermen (N = 306). This included a total of 276 Malays (90.2%)

Table 1: Profile of respondents by race, state and category

Items	Frequency (%)
<b>Race</b>	
Malay	276 (90.2)
Chinese	18 (5.9)
Indian	12 (3.9)
Total	306
<b>States</b>	
Kedah	58 (18.96)
Perak	48 (15.68)
Selangor	100 (32.68)
Johor	100 (32.68)
Total	306
<b>Category</b>	
Coastal fishermen	239 (78.1)
Deep sea fishermen	67 (21.9)
Total	306

followed by 18 Chinese (5.9%) and 12 Indians (3.9%). Four states from three zones were involved in this study which included Northern, central and Southern zones. The number of respondents from the Northern zone, Kedah were (N = 58, 18.96%) while Perak had (N = 48, 15.68%). For the central zone, Selangor the number of respondents were (N = 100, 32.68%) while for the southern zone which is Johore the number of fishermen were (N = 100, 32.68%). The number of respondents in this study, therefore is 306 altogether where 239 fishermen or 78.1% of the total were coastal fishermen and the other 67 (21.9%) were deep sea fishermen.

#### Indicators contributing to the quality of life

**Correlation analysis:** The results of the correlation analysis showed several indicators affecting the QoL of the respondents. Each state had a significant difference and this factor contributed to unique and significant discovery.

In Selangor, residential area is significant with the highest ( $r = 0.845$ ) while the value for fishing equipment is the lowest ( $r = 0.158$ ). Other indicators such as family surroundings scored ( $r = 0.539$ ) Income ( $r = 0.636$ ), Savings ( $r = 0.673$ ), Health ( $r = 0.397$ ) and Housing ( $r = 0.363$ ) as shown in Table 2. Fishing equipment had no significant relationship to the QoL and health showed a significant negative correlation.

In Perak, the correlation test showed the indicator of residential areas scored the highest ( $r = 0.758$ ) while the lowest was health ( $r = 0.191$ ). The  $r$  value of other indicators such as income was ( $r = 0.499$ ), savings ( $r = 0.455$ ), fishing equipment ( $r = 0.249$ ) and housing ( $r = 0.458$ ). Only four indicators affect the QoL of respondents in Selangor, namely family surroundings, savings, housing and residential area.

Residential area scored ( $r = 0.765$ ) indicating a significant factor that helped the fishermen to improve their QoL in the state of Kedah. Another significant

indicator was family surroundings ( $r = 0.412$ ), income ( $r = 0.287$ ), saving ( $r = 0.706$ ), fishing equipments ( $r = 0.473$ ) and housing ( $r = 0.258$ ). There are two indicators that have no significant relationship with the fishermen's QoL namely; health and housing.

In Johore, the highest  $r$  value was the residential area ( $r = 0.799$ ) while the lowest value of  $r$  was health ( $r = -0.177$ ). Another indicator, family surroundings scored ( $r = 0.573$ ), income ( $r = 0.464$ ), savings ( $r = 0.567$ ), fishing equipment ( $r = 0.027$ ) and housing ( $r = 0.164$ ) which is also significant. Only three indicators have no significant relationship with the factors that affect the QoL of the respondents in Johore; fishing equipment, health and housing.

#### Mean analysis of main indicator

**Residential areas:** The  $r$  values in Table 2 indicate the residential area has the highest  $r$  value on the respondent's QoL in all four states, Selangor ( $r = 0.845$ ); Perak ( $r = 0.758$ ); Kedah ( $r = 0.765$ ) and Johore ( $r = 0.799$ ). It shows this indicator affects the respondent's QoL. Fishing communities residential area or settlement is usually passed down through one generation to another. They are more comfortable living in settlements near to coastal areas or beaches because it is easier for them to land their boats near the base or jetty.

#### Qualitative analysis on indicators affecting the quality of life

Significant indicators that are affecting fishermen's QoL using correlation test are also substantiated by qualitative analysis through FGD interview involving 24 respondents from three groups as shown in Table 3. More than half of the respondents are fishermen association committee members or Persatuan Nelayan Kawasan (PNK).

Qualitative data showed that the main indicators affecting QoL of respondents on the West Coast of Peninsular Malaysia are income, government subsidy, education and religious beliefs as well as enforcement. These indicators were repeated several times by the respondents during FGD sessions.

**Income:** Income is the main factor influencing the enhancement of the fishermen's QoL because it is crucial to their survival. Analysis of interviews revealed word of earnings, revenue and efforts often uttered by the respondents indicating that it is a matter of great importance to them. What follows are the interview verbatim transcripts of the respondents.

'...If these fishermen are committed to going to sea, they can get a lot of money, in fact hundreds per day...a few who are researching on their orchards, some have

Table 2: Correlation analysis of indicators affecting the quality of life

Quality of life indicators	States			
	Selangor (N = 100)	Perak (N = 48)	Kedah (N = 58)	Johor (N = 100)
Family surroundings	r = 0.539, p = 0.000	r = 0.407, p = 0.004	r = 0.412, p = 0.001	r = 0.573, p = 0.000
Income	r = 0.636, p = 0.000	r = 0.499, p = 0.000	r = 0.287, p = 0.029	r = 0.573, p = 0.000
Saving	r = 0.673, p = 0.000	r = 0.455, p = 0.001	r = -0.706, p = 0.000	r = 0.567, p = 0.000
Fishing equipments	r = 0.158, p = 0.000	r = 0.249, p = 0.088	r = 0.473, p = 0.000	r = 0.027, p = 0.793
Health	r = -0.397, p = 0.000	r = 0.191, p = 0.194	r = -0.071, p = 0.594	r = -0.177, p = 0.079
Housing	r = 0.363, p = 0.000	r = 0.458, p = 0.001	r = 0.258, p = 0.051	r = 0.164, p = 0.104
Residential areas	r = 0.845, p = 0.000	r = 0.758, p = 0.000	r = 0.765, p = 0.000	r = 0.799, p = 0.000

Table 3: Respondents Interviewed in 3 FGD groups

Respondents (R)	State	Status	Race
R1	Johore	PNK committee	Malay
R2	Johore	PNK committee	Malay
R3	Johore	Member	Malay
R4	Johore	Member	Malay
R5	Johore	Member	Malay
R6	Selangor	PNK committee	Malay
R7	Selangor	PNK committee	Malay
R8	Selangor	PNK committee	Malay
R9	Selangor	PNK committee	Malay
R10	Selangor	PNK committee	Malay
R11	Selangor	PNK committee	Malay
R12	Selangor	Member	Malay
R13	Selangor	Member	Chinese
R14	Selangor	Member	Malay
R15	Kedah	PNK committee	Malay
R16	Kedah	PNK committee	Malay
R17	Kedah	PNK committee	Malay
R18	Kedah	PNK committee	Malay
R19	Kedah	Member	Malay
R20	Kedah	Member	Malay
R21	Kedah	Member	Malay
R22	Kedah	Member	Malay
R23	Kedah	Member	Malay
R24	Kedah	Member	Malay

paddy fields... they have an extra work besides fishing...’ (R6) ‘...For me, the most important is earnings... it’s okay to go fishing but if there’s no catch that day... what am I supposed to do? When you come back with empty hands you’ll be frustrated... when you go fishing and you bring your catch home then you will be happy to go fishing again...’ (R14)

For R15, money is a necessity. “... for me personally, it’s the effort you put to your research and income... today, when we look at the current needs, everything is money... you have to research hard to earn more...”. R18 added: ‘... In order to improve this, one needs to work on it on their own, if one goes fishing at 10 in the morning... if you’re shy or lazy to research, stop dreaming of being successful...’ R23 supported “... in order to improve one’s quality of life... for me, economy comes first... then religious beliefs...”

R21 added, “many fishermen, we are talking about today’s traditional fishermen... coastal fishermen... mostly they are in the poor category... which means their source of income are only enough to live their life... most of their income is spent and they do not save the income...”

“...three times a week fishing... looking at the tides... it’s the effort that plays a major role in increasing a fishermen’s QoL. There are some fishermen here who grow oil palm, breed cattle, ducks and many others... for me, all of this depends on themselves... I’m not saying that all fishermen are like this... but some of them are... fishing is their main source of income... the others are only their extra income... because they love fishing...” (R22).

Fishermen always try to adapt to the level of their ability, that they have to be satisfied with the level of prosperity enjoyed by virtue of their employment and income. They also need to have at least one other ancillary research to ensure the financial soundness of themselves and their families since being a fisherman has great risk (Dahalan *et al.*, 2012).

**Government subsidy:** The government has helped fishermen both physically and mentally in facing life’s challenges today. Various subsidies have been provided to the fishing communities including subsistence allowance, home repair subsidies, subsidised petrol, 1 Malaysia Aid and fishing equipment such as boats, engines and fishing nets. These subsidies are offered by the government to help fishermen to continue their fishing activities in the sea. Although, some people see this aid as negative the fishermen agree that the government’s aid and subsidies helps them a lot.

As R16 said, “I don’t know what to say... but for me, most small scale fisherman rely on the government’s subsidies.” This is supported by R1 “that is why before the government introduced the retail price for petrol and gasoline (subsidies) most fishermen were thrilled to go fishing because the price of petrol was cheap and affordable... but when they introduced the retail price... it was a bit difficult for fishermen to go out to sea because it somehow affects their cost of living”.

Another, respondent added “the most important thing for the fishermen is petrol (government’s subsidies)... if possible, let’s not make the price of petrol for fishermen the same as others... make it special for fishermen alone... if they can lessen it to 20 cents each it’s better because fishing is taking risk, you’ll either

bring back your catch or not when you go fishing...but somehow fishermen have to go fishing...let's say they have to go fishing for 20 days in a month, each time they go out to sea, they spent RM50.00 for petrol and gasoline alone, if 20 day? They had to spend not less than RM1000.00 on petrol. Can you imagine? RM1000.00 on petrol alone...most of their income goes to petrol...if the price of petrol can be decreased, I believe their income will start increasing from now on..." (R2).

Although, this assistance could help the fishermen in terms of physical support there are some respondents who see help provided by the government as an obstacle for them to remain competitive in the fishing industry. For example R7 and R12 from Selangor said.

"...I can see that the subsidies, aid and assistance provided to them made them lazier to go to sea..." (R2). To R5, some of the fishermen are ignorant. He stated, "One thing that I've noticed about the fishermen is that they really don't understand what they need to do with the government's aid...For example the RM300.00 allowance...it should be used for petrol...not other things..."

Interviews indicate that the government aid does have a positive affect and helps increase fishermen's QoL. This is further supported by the findings of a study from Aisyah and Saat (2014), stating that there is a significant increase in the fishermen's revenue after they received help and funds from the government. There is also a significant difference between the income of fishermen then and now. However, the government must also re-evaluate and monitor the suitability of the assistance provided to the local fishing community to avoid irregularities in the funded aid and subsidies among them.

**Education and religious beliefs:** Education and religion is an important factor in helping fishermen to improve their QoL. The level of education among fishermen is very low (Ghani, 2003) and becomes a barrier for them to work in other government or private sectors rather than fishing. Awareness is needed in encouraging their children to get a higher education to a better QoL. Findings of interviews showed that most of the fishermen nowadays are well aware of the importance of knowledge. Although, the conditions of their families are poor they see religion and education as an appropriate platform to improve their QoL. The following statements describe the respondent's awareness of the importance of education.

"...In order to improve our QoL, I have to send my children to schools...they need religious education as well...religious upbringing and other factors need to

balance..." (R17). "...for me, religious upbringing is important...then income and education...for me, education is life long learning..." (R10).

R12 added, "...Life will be important if we follow the rules...we have to get back to practicing our religious beliefs and rules...if we disobey the rules, it's like you are ignoring the world rules...we should be on the right track, then there will be barakah (blessings) in our income...life will be a blessing then...if the way we research is wrong how can our life be a blessing?"

Fishing communities expect the existence of educational institutions can guarantee a better life for their children. The establishment of universities or colleges based on marine and fisheries programmes should be established to teach fishermen about skills related to humanity, spiritual matters, science and technology, providing them more secure job opportunities.

**Enforcement:** Enforcement factors related to the maritime and fisheries enforcement is the last factor that affects the quality of life of respondents. Enforcement by the marine police, the Department of Fisheries Malaysia, the Malaysian Marine Department, immigration Department and the customs Department of Malaysia is very important to ensure the safety and survival of the respondents in the course of their research. However, each state has a slightly different administration and jurisdiction. A majority of the respondents agreed that law enforcement and the existing acts need to be implemented.

As R21 said, "A law enforcement from the fisheries act itself...prohibited fishing equipment that should be banned because it will destroy the artificial and coral reefs...so the number of fish will increase...secondly, illegal foreign fishermen who trespassed into Malaysia from other zones..."

"The enforcement is less than it should be...they should do it frequently...because so much trespassing happens...illegal fishermen come fishing beyond our sea border...they should monitor it 24 h a day...." (R11)

"The second thing about our local enforcement authorities is that...most of our artificial reefs have gone missing...so how is it possible for fish to breed? There was no enforcement done by the authorities that is the reason why illegal fishermen are brave enough to come and fish in our country...when they are trespassing across the border...the number of fish decreases and the small scale fishermen's income also decreases" (R14)

"...For me, they should review things and all the related agencies should cooperate...don't separate it into too many agencies...for example, JPJ can also put people

in jail...like the police...as well as the traffic officers...they have different laws...the same goes to the sea laws...the licensing should be managed by the fisheries agency...the maritime law should be managed by the maritime authorities...it is easier that way...sometimes, they do not even know their own rules..." (R1).

"...Smuggling in these areas is active...such as drugs...prostitutes...we have a lot of them here...most locals here know about it...when we relate it with bribery, everything is difficult...back in the years 1986 the number of bribery was not as much as today...here..." (R5).

"...Because there was less enforcement done by the authorities...most are biased...like for example, last time there were two Vietnamese boats came and pulled their wide nets into the 150 metre river, so wide believe me there was nothing left for us...we made a report but we were told that those two boats are boats from the upper hill fishermen (Myanmar refugees)...you know who they are..." (R3).

Enforcement plays an important role in maintaining the safety and welfare of fishermen and their local communities, particularly in the coastal areas. This statement is supported by a study done by Yusof *et al.* stating that the development amenities and administration by the authorities has an impact on their QoL.

### **Challenges faced by fishermen in enhancing quality of life**

**Foreign fishermen/outsideers:** Interference of foreign fishing boats from Indonesia, Thailand, Myanmar and Vietnam caused local fishermen to be unhappy about fishing and finding their source of income. This situation is disturbing to them because the foreign fishermen or outsideers often trespass across the Malaysian border and fish where the local fishermen make their living.

"We often go fishing at the territorial waters of Langkawi...near Thailand...so often times they (the thais) came into our fishing areas...But, we can only report it to the authorities. There's nothing that we can do to stop them..." (R21).

"There are a lot of Indonesians and Burmese (Myanmar)...we reported to the fisheries as well as the maritime...we told them all..." (R14). R3 added, "If here there are Burmese... They are very hardworking but the thing is they always trespass into our waters...trespass our islands...though of course they are not allowed to do so...they're brave enough to trespass into our fishing areas..."

External intrusion is also associated with the presence of foreign fishermen into the fishing areas of Malaysia. However, there are also intruders coming from local Malaysians-the local fishermen. The Fisheries

Department has divided the fishermen into three fishing Zone categories based on their fishing licenses. For example, Zone A are for fishermen who have small boats or sampan. Zone B and C are for those who have larger boats and they are categorised as commercial fishermen and deep sea fishermen. The areas that have a lot of fish resources are usually located in Zone A as Zone A is surrounded by a number of islands and coral reefs which attract fish.

Often, Zone B and C fishermen trespass into Zone A areas to find these marine resources and these actions are against Malaysia's fisheries law. Foreign researchers who are hired by the entrepreneurs are also found to be trespassing into these areas-the coastal fishing areas. Most of these foreign workers also have problems communicating in Malay and thus do not understand the Malaysian laws.

R11 complained, "...it's the same thing...it's just that these entrepreneurs ...they do not go out fishing, instead they choose to stay home be a couch potato the one who researches who goes out fishing are the foreign fishermen they hire...it should be, one boat one licence...but here, one license, four to five boats...how is that even possible?"

According, to R10, local fishermen also did the same thing. He said, "...The problem is there are trespassers from our local fishermen as well...these fishermen, they own much money and they buy large boats along with crews...they bought five boats altogether with the crews who happens to be foreign researchers..."

This problem also shared by by some respondents. R13 mentioned, "...we, the Chinese are also angry...it's not that easy to fish 3 days...three sampan (small fishing boat) with one registered number (one licence) are too many here..." R6 added, "...5-8 nautical of fishing areas up to the C zone they know...but the problem is they often trespass areas...for example, trawlers are only allowed in Zone B but they use them in Zone A which is illegal according to the law. They trespass into Zone A probably because there are no more fish in their fishing areas..." R17 added, "...For example, the re-Zone made from 5-8 nautical miles is good for fishermen...the number of tugboats have lessened...but there are fishermen from Perlis, Kuala Perlis who come fishing all the way here..."

From this study, it can be concluded that the trespassing of foreign and local fishermen affects the local coastal fishermen in finding their source of income and the increased numbers of foreign or outsider's boats becomes a threat to them. In addition to that the increase in number of foreign fishermen hired on large boats decreases the number of employment opportunities for the local fishermen's children. Thus, it is crucial that the

Malaysian government take necessary action to overcome the increase in the number of outsider boats and foreign fishermen working in Malaysian waters.

**Resources:** Marine resources such as fish, sea cucumbers, seaweed and many others are a source of protein. However, these marine resources are threatened due to the invasion of coral reefs, overfishing and extinction of fish species. This is also a threat to the ecosystem and fishermen's income. No more fish means the end of the fishermen's source of livelihood and they have to do other things in other sectors to ensure their survival.

Conservation of resources should be carried out by all parties to ensure the sustainability of the marine resources continue to grow and maintain. Concerned respondents such as R21 and R22 stated, as follows.

R21: "...For me, the resources should be conserved. If the government takes legal action for the conservation of our marine resources... it is not possible that our marine resources are well maintained... law enforcement should be done through fishing acts for example the use of appropriate fishing equipment, those that are illegal stay illegal... so that it does not destroy the marine resources, the artificial and coral reefs... so that the fish can increase in numbers..."

R22: "...we have to care for our marine resources... if there are no fish left... how is it possible for us to live and look for food... probably it will be hard to even eat fish after this..."

It is crucial to conserve the marine resources and it should be made a priority by the fishing community to make sure that the survival of the marine resources and marine ecosystem continues. This sense of awareness shown by the fishermen should be applied to all Malaysians in conserving the marine life. The use of artificial reefs to encourage the breeding of fish and other aquatic life, for example has proven a success.

R16: "...they should put in more of these artificial reefs... so that the number of fish increases... in that area... and not go to other places... areas where we fishermen are not able to go... let these reefs be there... fish will surround it to eat and play... it's like a home for these fish..."

R16: "...the government should also diversify the number of marine resources... such as fish breeding in cages... sea cucumbers... conservation of seaweed... other alternatives like these can help improve our economic status..." R17: "...the government should reconsider their laws, rules and fishing acts so that it can help us maintain the marine resources..." Our marine resources need to be maintained for the sake of continuing the next

generation of fish in the future. These marine resources are among the main sources of protein that we need in our daily lives. Necessary measures need to be taken such as the placement of artificial marine reefs; law enforcement should also be implemented and applied among all fishermen and Malaysians in general. Awareness campaigns on the conservation of natural resources and the marine ecosystem is crucial in preserving the environment as a whole.

**Law enforcement and regulations:** Enforcement of laws and regulations at sea has helped the fishermen to continue their legacy to find revenue in the sea without hindrance. Each fishing Zone that has been set by the Department of Fisheries gives more space to coastal fishermen to seek more revenue and resources by expanding the range from five nautical miles to eight nautical miles offshore. If the rules change the government should take steps to enforce the laws and regulations made. One respondent explained.

"The government came up with all these laws and acts and they're good. But the implementation is almost zero because there are still so many illegal boats trespassing our zones." R1. R3 added, "Relevant agencies related to maritime should be reviewed and merged... too many laws make it confusing... maybe they should lessen them... the laws... even the authorities themselves know nothing about the laws".

Another, respondent said, "this act has been enforced since the year 1971... when it was first enforced it was suitable to be applied at that particular time... but now it is no longer relevant... things change as time goes by... many fishermen these days are smart... the existing legal policy should be improved" (R7). For R12, "existing acts and rules should not be too strict... especially for the elders... it is hard for them to digest the information... if new fishermen like us can hardly understand it how can the veterans understand it? In depth explanations should be given to us fishermen so that we will understand better." R12 also added "too many Departments is the main reason why there are so many rules... too many cooks spoil the broth... meaning when there are too many people to listen to, everything will go out of control... we don't know who or which to follow..."

Respondent R17 said that the agencies should know fishermen's needs: "...for me, the previous enforcements were okay because the fisheries was in charge of it... now, it is under the responsibility of the maritime, marine police, they themselves do not know what we fishermen want... they have to know and understand what we want..." As a conclusion, fishermen look at the fisheries agency as the backbone of their lives and if they are no

longer in charge of the fishermen's lives these fishermen will be ignored, marginalised and abandoned. Improvements to legislation and policies should be in line with the fishermen's needs.

**Fishing technologies:** The fisheries sector in Malaysia plays an important role in social and economic development of Malaysia. The deep sea fishing industry and the coast is one of the major contributors of fish landings in the country. However, when compared to the progress of the fisheries sector in other developed countries, Malaysia is still lagging behind compared to other countries. Constraints in using the latest technology in offshore fishing causes our local fishermen will be left behind. Below are some comments from respondents.

"Basic facilities that we have are very much behind compared to others...even our existing jetties are far behind those in other developing countries" (R22). "For example, I am a fishermen in Johore Bharu... we cannot go far due to the lack of fishing equipment...going all over to Kota Tinggi for the sake of fishing... is not worth it...the place now is developing so it's hard" (R1). He added, "during fish landings the Chinese when fish are overwhelming in numbers...they will put them in freezers...when there are less fish they will take those frozen fish out of their freezers and sell at a higher price...look at those Chinese...they begin fishing using sampans then upgrade their sampan to boat B and finally boat C...that is what we need from our local Bumiputera...we may keep on improving with the help from the government..." R21 responded, "Mackerels cannot be frozen...they cannot be exported to other countries...if there are too many fish like what happened before...RM1 per kilo what can we do? If we have appropriate technology that we can use to freeze these fish and make them as fertilizer...ice blasting is when you freeze those fish individually...but in Kedah we don't have that yet...it's too expensive."

Although, the government is providing assistance in terms of fishing equipment, only some fishermen participate and help take care of the equipment. Selfishness and irresponsibility among programme participants have caused the programme to fail. According to R6 "for example, we're in LKIM...we have this fishermen fund where we give them RM25,000 to buy fishing equipment...but it was 90% a failure...<60% of them actually paid back the rest did not pay a single cent...those who paid only paid half or less..." R9 disagreed with the attitude of his counterparts: "...they have this mindset saying that whatever is given by the government should not be paid back...it is their

responsibility to pay...however they feel too comfortable with the funds provided to them...the state's fund they do not repay but LKIM, they have to pay."

R7 commented about the decision made by local fishermen to cooperate with their neighbour country. "There is this deep sea fishermen force or Angkatan Nelayan Laut Dalam (ANLD)...they went to have an attachment with the thais...what is it for? They believed that Thailand's technology are better than Malaysia's...they should be developing the Malaysian's first...help improve our local fishermen's technology first..."

Capital is one of the problems faced by respondents. R21 said, "most fishermen who are using GPS sonar have no problem understanding it the technology...although there was no course or workshop held to help make them understand better...the only thing is in term of capital...not all fishermen can afford it...we are well aware that the government encourages us to use such technology...but it is up to our capabilities."

The use of technology and modern facilities among fishermen is much lower than the fishermen of other countries and this is supported by Wasak (2012) in which the agency must encourage the use of technology, especially in fishing operations. Technologies such as sonar, GPS, large boats and appropriate fishing equipment are used in order to help fishermen increase their catch while improving their quality of life.

## CONCLUSION

There are seven indicators that affect the quality of life of the fishermen namely the residential areas, income, savings, fishing equipment, housing, health and family surroundings. The analysis showed no difference exists between the factors that affect the quality of life of respondents in each state due to the different state environments. However, the most dominant indicator which affects the respondents' QoL is residential area. The fishing communities' settlement is usually inherited from one generation to another. Fishermen are more comfortable living in coastal areas for the safety of their fishing equipment and for the ease to leave their boats at the jetty.

Qualitative findings show some of the main factors affecting the quality of life of the fishermen to be income, government assistance, education, religion as well as local enforcement. This was conformed with research findings from Muda *et al.* (2006) where income, government assistance, expenses, savings, home ownership, land, vehicles, facilities, fishing equipments, health and education had a significant relationship with well-being



of fishermen. Kuala Kedah, Kuala Muda and Langkawi in the state of Kedah have become a tourist attraction and people take the opportunity to engage in the tourism industry while improving their QoL. In Selangor, most fishermen have extra sources of income from their own orchards and farms. Most of the fishermen from Selangor grow oil palm and paddy around their residential areas, particularly those in Kuala Selangor. All respondents who were interviewed in the focus group discussions have a piece of land each where they cultivate on a small scale and indirectly help improve their QoL.

The fishing situation in Perak is slightly different where many fishermen, especially the Malays are found to be facing a shortage of capital to survive. They are left behind as compared to the Chinese who are using large boats. This means, the Malay fishermen in Perak have to compete with the operators of commercial fishermen for their catch. According to statistics obtained from the Department of Fisheries in 2015, in Perak, the number of Chinese fishermen is 2,689 this is more than the Malays which number only 1,480.

The same situation also occurs in Johore where there is a competition between coastal fishermen and commercial fishermen who own large boats. In addition, the position of the straits of Malacca which is too close to the Indonesian border make it difficult for the Johore fishermen to catch fish because there are illegal foreign fishermen from Indonesia who cross the Malaysian border and fish in Malaysia. Such incidents do not only occur in Johore but in most fishing areas in Malaysia as well.

In conclusion, the challenges faced by fishermen on the West Coast of Peninsular Malaysia does affect their QoL. Careful planning by the government can help in improving the QoL of the fishermen. Fishermen, however, cannot rely on others to move forward. They should make full use of the existing resources and environment creatively and innovatively to diversify existing resources to improve their QoL.

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