

The Efficacy of the Legal and Institutional Frameworks for Fisheries Enforcement and Licensing on the Stock of Commercial Fish Species in Lake Victoria, Uganda

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Abstract

Illegal, unreported and unregulated (IUU) fishing has been identified as one of the important drivers of unsustainable management of fish stocks worldwide. Although, the government of Uganda has initiated regulations and institutions to address these concerns, over the years little progress has been achieved in controlling drivers of illegal fishing. The study employed sequential exploratory mixed methods design. A sample of 107 respondents was selected using clustered, purposive and convenient sampling and the data was collected using questionnaires and interviews and analyzed using logit models. Results demonstrate that monitoring control and surveillance is poor. The study found evidence of serious decline in mesh size in several net fisheries. Exploring the opinions of fishery experts through the analytical hierarchy process also showed that economic, social, fishing, and conservation contributed greatly to the occurrence of IUU fishing. Overall, close associations were observed between the range of determinants, with the probability of the occurrence of IUU fishing indicating that illegal fishing is a complex event that should be studied in different dimensions because of the involvement of a combination of factors. The knowledge obtained here can assist the relevant agencies in preventing this widespread problem, and with the practical rebuilding and more efficient conservation planning of fish stocks.

Key words: IUU, Fry, Illegal fishing

Introduction

The study examined the relationship between the legal and institutional frameworks for Fisheries Enforcement and Licensing in Uganda on the stock of Commercial Fish Species in Lake Victoria, Uganda. The United Nations Food and Agricultural Organization (FAO) developed a Code of Conduct for Responsible Fisheries, as a tool for conservation of fisheries. Implementation of the code was meant to mitigate the progressively declining fish stocks world-wide through responsible fishing practices (Hanchard, 2022). Although the United Nations Convention on the Law of the Sea remains the overarching legal document governing optimum utilisation of global fish resources, subsequent fisheries laws like the UN Fish Stocks Agreement (FAO 1995a), UN Fisheries Compliance Agreement (FAO 1993), International Plan of Action (IPOA) to prevent, deter and eliminate IUU Fishing (FAO 2001) and the UN Agreement on Port State Measures (FAO 2009) have all tried to plug the gaps in management of coastal, straddling and high seas fish stocks. Several of these instruments have important

provisions to address illegal fishing through coastal states within countries and through Regional Fishery Management Organizations (RFMOs) in the high seas and in land lakes.

In Africa and other parts of the world, countries adopting progressive laws like the United Nations Fish Stocks Agreement, FAO Compliance Agreement and FAO International Plan of Action on IUU fishing have not backed them up with adequate monitoring and surveillance assets, leading to low compliance (Kibuuka, 2020). Most countries within the new legal framework lack adequate institutional and enforcement infrastructure to improve fisheries compliance. Problems in tackling Illegal, Unreported and Unregulated (IUU) fish landings are particularly acute in developing countries that possess meager patrolling and surveillance assets (Mwikya 2020)

In Uganda, a quarter of fish stocks are overexploited, depleted, or recovering from depletion (FAO, 2020) yet fisheries is one of the key foreign exchange earners to Uganda. Currently Uganda earns about \$150m (Shs542b) in exports annually but in 1998 when all factories were operational, the country was earning \$400m (Shs1.4 trillion) from the sector. The country used to have 23 fish processing plants countrywide but today it has only 13 factories (MAAIF Report, 2021). Although the country has put in place a Fisheries Protection Unit (FPU) to fill the law enforcement gap that has hit the fisheries sector since November 2015, illegal fishing continues to increase every passing day (MAAIF, 2020). The police that used to enforce the law was disbanded because of engaging in criminality (Kaheru, 2020). The decline is supposedly attributed to issues to gaps in fisheries licensing and enforcement of commercial fish stock. The institutions concerned in Uganda have been reluctant to implement the national policies and laws to ensure sustainable fisheries resources production given the growing levels of fish depletion on Lakes.

Problem Statement

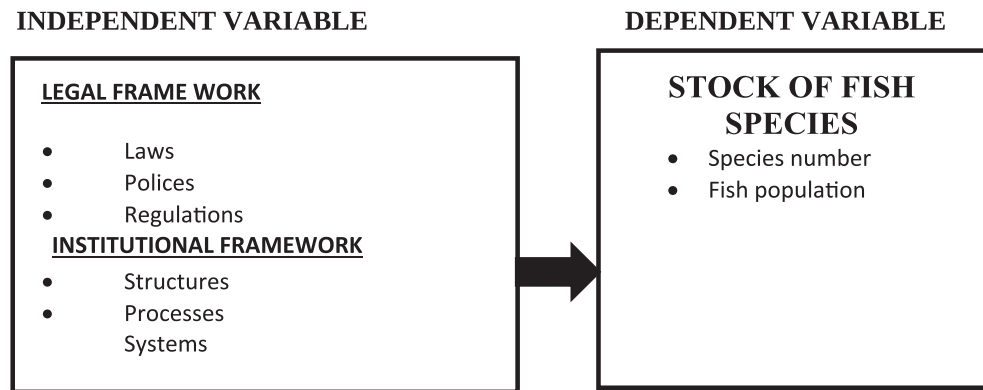
Uganda has many laws regulating fishing that Ministry of Agriculture Animal Industry and Fisheries (MAAIF) is putting emphasis on for enforcement but the question remains on the effectiveness of law enforcement. Despite the attempts made, it is estimated that a quarter of fish stocks are overexploited, depleted, or recovering from depletion in Uganda (Okello, 2020). Part of the reason for the persistent decline in fish stocks is non-compliance to regulations. Indeed, the decline in stocks has partly been attributed to enforcement failures and overcapacity in terms of excessive fishers and fishing fleet, and rampant use of illegal fishing gears (Kariuki, 2022). Thus enhancing wild stock of fish and other species, requires managers to focus attention on regulations and policies against overcapacity and illegalities but how effective the regulations and laws have been enforced raises questions in Uganda. In 2004, the Government of Uganda adopted the fisheries policy after the enactment of the Fish Act (2000) CAP 197 and its subsidiary legislation but given the continuing fish stock depletion in millions on Lake Victoria, the debate as to the effectiveness of the existing legal and institutional frameworks is the key subject of investigation (Lubulwa, 2018). It remains unclear whether the gaps are due to legal and institutional related factors hence prompting the study. The above scenarios indicate failure of existing systems. Yet, no much linkage has

been done empirically to demystify the proposition surrounding the legal and institutional framework for Fisheries Enforcement and Licensing on the stock of Commercial Fish Species and this has created a knowledge gap. It is against this background that the study sought to examine the effect of the legal and institutional frameworks for Fisheries Enforcement and Licensing in Uganda on the stock of Commercial Fish Species in Lake Victoria

Conceptual Framework of this Study

This sub section presents the conceptual framework of the study showing the relationship between the study variables.

Figure 1.1: A conceptual framework illustrating the relationship between the study variables



Adapted from: Garrity, (2016) and modified by the researcher

Literature Review

The literature is reviewed on the basis of the study objectives. In 2007, the impacts of excess fishing capacity and its implications through illegal fishing were highlighted in the United Nations General Assembly Resolution 62/1774 (FAO, 2016).

Legal Framework and the Stock of Commercial Fish Species

Sailis (2020) asserts that not many times do governments take enforcement budget as a fundamental instrument, the budgetary principles and rules must be codified in a form appropriate to the legal and administrative principles of the institution to give room for good fund flow (Olupot, 2022). Depending on their importance, the budget principles and rules can be enshrined in descending order of legal hierarchy, in the constitution, a framework law, other laws and regulations, administrative instructions and circulars, and of course the annual budget law (Seabright, 2021). These are the general criteria: It is not easy to modify the basic rules, because they must be underpinned by a very broad consensus, and easy to modify the detailed rules, because they are likely to require frequent modifications as circumstances

change (Weaver and Kent, 2021).

However, effective legal changes require consultation with the key stakeholders, because unenforced law is no law at all and the effectiveness of enforcement depends largely on the voluntary cooperation of those affected. Therefore, only the most fundamental principles should find their way into the country's constitution. Despite the clarity, the law has proved unreliable in fostering good fisheries management/inspection in many African countries.

Weaver and Kent (2021)'s study is based on public management experience where the laws have been amended to help manage public resources. In this study, it was found out that proper enforcement of laws is a good tool for management in a country. This could be a strong case for the laws as it has showed an actual natural experiment outcome (Kaheru, 2020). However, to the contrary, the current study found out that the legal framework cannot stand alone, the institutions concerned must be properly functional because most times they regulate and enforce the existing laws. However, there have been series of allegations that the law is sufficient to end cases of mismanagement but this is not true, systems, institutions, processes and structures must be properly functional alongside having good laws. Therefore this study sought to concur with such a claim.

Hanson (2020) using pooled data, found that the legal framework was the most effective tool for fisheries regulation. The study recommended that countries should be selective in the way they enforce the law. Robindo (2021) also argue that under the law, management and supervision improves. They are also of the view that it is necessary to build the absorbing capacity of the local institutions at the same time. It is under these conditions that the law will have a significant impact on management. Ramkumar and Shapiro (2020) unlike the other studies in the 1990s, in his study found that the legal framework has a significant effect on management. Their finding also shows that by invoking the existing laws, sanity may be restored and corruption will be minimized which is in line with the other studies carried out in early 2000s that identified the legal framework as the main tool for efficient management. After the review the hypothesis below emerges;

Hypothesis: *There is as significant positive relationship between legal framework and the stock of Commercial Fish Species in Lake Victoria*

Institutional Framework and the stock of Commercial Fish Species

Literatures indicate that the fight against poor law enforcement has been based on the law (Muzaale, 2019). The acceptance of this view is apparent from the increase in illegal fishing in Uganda and across the world. There are substantial theoretical arguments in favor of public support to fight the vice using the law. In bridging the gap between the past and current study, it is imperative to note that as a result of this change of dynamics, proper management has become the main competition tools for fisheries management.

Kariuki(2022) in his concluding remarks note that a lack of predictability of resources undermines strategic prioritization and makes it hard for institutions to plan for the provision of services (and gives them an excellent alibi for non- performance, to boot). However, in

addition to their concluding remarks, it is worth noting that predictability of expenditure in the aggregate and in the various institutions is also needed as a signpost to guide the private institutions in making its decisions. The definition of the major substantive elements like expenditure and financial resources misses from Drekel(2021)'s work, while the issue of the tasks undertaken to solve cases of mismanagement may not handled hence leading to poor law enforcement in the fisheries sector, the study looks at how the laws have been invoked which gap this study bridged.

Hypothesis: *There is as significant positive relationship between institutional framework and the stock of Commercial Fish Species in Lake Victoria*

Methodology

The study employed sequential exploratory mixed methods design. A sample of 196 respondents was selected using clustered and convenient sampling and the data was collected using questionnaires, interviews and analyzed using logit models. The sample was from fisheries officers/experts, Ministry of Agriculture (Fisheries Department) staffs, and fishing community members (fishers). Convenient sampling method was used to sample the respondents from the seven selected landing sites that agreed to participate in the study. The MAAIF staff and fisheries experts were purposively selected. The key Landing sites on Lake Victoria selected for the study were Kasenyi, Jinja Pier, Masese, Namayingo, Katosi, Bugula, Bubazi. Permission was sought from the selected Ministry of Agriculture (Fisheries Department) Staffs and Fisheries Officials on Lakes through the Human Resource Department. Each staff was provided with relevant information about the research such as copy of the research instrument and research objectives. After permission was granted, the researchers proceeded to administer the questionnaire with the help of personnel in the various HR units and fishers control offices of the participating respondents. The analysis of data collected was in two parts. The first part dealt with preliminary analysis such as means, and standard deviation, reliability and Bivariate correlation between variables and normality test. The result of preliminary analysis such as means, standard deviation, reliability and normality using skewness and kurtosis is presented under the section of empirical findings.

Empirical Results

Apart from the above discussions, there are also unique characteristics specific to the fisheries department that is prone to some of the operational challenges. To note is the nature of funding for fisheries enforcement which is mainly made up of many groups including the army (Fisheries Protection Unit). Given the growing cases of illegal fishing activities on Lake Victoria, this scenario has culminated in the existence of many agencies to stop the illegal fishing.

Table 1: Summary Statistics on legal framework on the stock of Commercial Fish Species

Items	Min	Max	Mean
Uganda has laws in place for regulation of fisheries sector	1	5	3.24
The public is aware of the existing laws on the fisheries sector	1	5	3.63
The fisheries sector institutions are effectively implementing the laws in place	1	5	4.15
Uganda has policies in place for regulations of fisheries sector	1	5	3.80
The public is aware of the existing policies on regulation of fisheries sector	1	5	3.79
The institutions have tried to effectively implement the existing policies on regulation of fisheries sector	1	5	3.85
There is good policy implementation in relation in place for regulation of fisheries sector	1	5	3.80
There is effective regulation of fisheries sector	1	5	4.03
The regulatory framework for the fisheries sector has loopholes	1	5	4.20
The general public is not aware of the existing regulatory framework in the country	1	5	3.88
Regulations that are currently used in Uganda are not duly followed by the fishing communities	1	5	3.51

Source Primary Data

As to whether Uganda has laws in place for regulation of fisheries sector, findings indicated a mean = 3.2 revealing that the majority were in agreement. A Senior Fisheries Officer noted Uganda has laws, but some are obsolete, some are weak and some none existent hence new ones have to be put place. The strong ones have not had full blessings for full scale implementation.

In support another respondent noted

The Ugandan fisheries laws do exist. However, they are not effective enough since most of them are obsolete and need amendments to match the current developments pertaining fisheries. The existing legal framework also is not elaborate enough to cover all aspects of fisheries including aquaculture and a host of emerging issues. (KI 1)

Implementing the law/ regulations is still faced with certain challenges. Despite the Ugandan government banning the harvesting of fry, non-compliance with rules by a large number of fishers takes place and IUU fishing has been reported as one of the main causes of fry decline (Lagutu, 2020)

In corroboration, a fisher noted that

It is true the laws are in place. However, they are outdated and need amendment. The Fish Act being the principle law was enacted in 1964. It cannot adequately address current issues in the sector

Further, respondents were asked whether the public is aware of the existing laws on the fisheries sector, a mean = 3.63 indicated that the public is aware of the existing laws on the fisheries sector.

In contradiction to the survey findings, a respondent said

There has never been a recognizable programme to disseminate the entire fisheries laws. Some laws are known others are not known for example 90% know the law on mesh size and fish size, but 20% know of the mandatory statistics, 30% know about the auctioning of equipment impounded facilitating immature fish trade for example vehicles. About 50% know of the provisions against fishing along the shoreline. Hence some laws are known others not known to the stakeholders. (KI 2)

Given the growing ignorance about the law, the fishing communities continue to engage in illegal fishing and once arrested by the army (Fisheries Protection Unit), they allege torture and brutality from the army. This matter came to the floor of the Ugandan Parliament in 2018 but it was dismissed.

Although MAAIF has attempted to improve fry restoration and conservation, there is little sign of fry stock improvement and the artificial breeding of fry for restocking is currently faced with challenges. As a rejoinder, a Fisheries expert said that

The public is well aware of the existence of laws in fisheries sector but to a very limited extent. For instance the public just knows that harvesting and trading in immature fish is illegal and also use of illegal fishing gears is prohibited. However, they don't know any details (KI 3)

Indeed all the respondents had mixed reactions about the level of awareness but most of them felt that the level of law awareness is poor hence need to cause more awareness about the existing law.

With regard to whether the fisheries sector institutions are effectively implementing the laws in place, the responses indicated that the majority of the fisheries sector institutions are not effectively implementing the laws in place.

One fisherman noted that the laws in place are not effectively implemented. He said, "For example auctioning of immature fish and it still ends up in the market is not deterrent. In 2013, a fish trader was fined Ushs. 300,000 yet his profits before arrest were Ushs. 1,000,000 per trip."

Ddumba(2020) noted that the existing laws are not effectively utilized mainly because of limited facilitation to the implementers to enforce them. Kakuma(2016) noted that the institutions have the capacity, but only face challenges of poor coordination, lack of equipment (in most districts the ratio of staff to field Motor cycle is 4 staff: 1 motor cycle which affects emergency response for enforcement), new staff mainly District Fisheries Officers have never been oriented by MAAIF, lack of annual fisheries stakeholders joint reviews is another

challenges to effective law enforcement. The laws are implemented perhaps up to 10%. First there has been no enabling political and financial support to implement the laws. This is compounded by the President suspending enforcement activities of Beach Management Unit Committees and fisheries staff. Therefore effective law enforcement cannot be achieved. Dheyongera(2020) attributes the weakness in the legal framework on failure to draft new laws and fisheries policies that are current with the existing economic, socio-political environment in Uganda. The current fisheries policy was enacted in 2004 but is being implemented using a law enacted in 1964 and re-arranged to CAO 197 in 2000. The aspirations in the policy are not legally backed by the law which was enacted in 1964 and thus, enforcement has been poor.

Although the MAAIF Report (2020) notes that institutions have tried to implement the existing policies through regulation of fishing effort by licensing and annual registration of fisher folk and controlling illegal fishing practices, quality assurance and promotion of aquaculture remains wanting. The provisions in the existing policies/laws do not pertain to the existing fisheries problems in the country at hand which is absurd.

The fisheries experts expressed worry about the current penalties provided for in the law referring to the penalties as not deterrent enough. Relatedly a fisher at Jinja Pier noted, it is *very true they are not deterrent. In 2013 a Fish trader was fined 300,000= yet his profits before arrest were 1,000,000= per trip and could make 1 trip weekly to Democratic Republic of Congo*. Another incidence was a trader with capital worth 15millions was fined 10,000sh (Ten thousand shillings). The cost of compliance is far lower than non-compliance. Imprisonment is either six months but has the option of a fine. The law carries fines ranging from 1,000 to 3,000. Even when the amendment Act of 2011 revised the fines to 50 currency points at maximum with a currency point being 20,000/= . This was not deterrent enough. This means the maximum fine payable is 1,000,000/= yet the profits from illegal fish trade are in millions of money.

Table 2: Summary Statistics on the institutional framework and the stock of Commercial Fish Species in Lake Victoria

Items	Min	Max	Mean
The structures and facilities used in fisheries enforcement are adequate	1	5	4.26
The fisheries sector has well developed institutional structures	1	5	3.18
There are loopholes within the structures for regulation of the fisheries sector	1	5	3.89
The fisheries management institutions' level of functioning is satisfactory	1	5	3.89
The MAAIF observes all its functions as laid down in the statute	1	5	3.17
The general public is aware of the existence, roles and functions of the Fisheries sector	1	5	3.44
The public budgetary process is done according to principle	1	5	3.36
The general audits standards being followed in the fisheries institution are satisfactory	1	5	3.63

Items	Min	Max	Mean
The collection and allocation of funds is done as per the fisheries guidelines	1	5	3.29
The systems are well functioning in relation to fisheries department	1	5	3.50

Source Primary Data

With respect to whether the structures and facilities used in fisheries enforcement are adequate, the mean = 4.26 indicated agreement. The responses from surveys are in line with the interview response from the Commissioner of Fisheries who said “*the structures are inadequate and even the facilities*”. Findings revealed that most of the equipment used in illegal fishing on Lake Victoria is not duly licensed. It is a requirement that before entry into the fisheries, one must be licensed. However, data in fisheries indicates that only about 5% of fishing boats are licensed every year. Frame survey on Lake Victoria show that illegal fishing gears have been increasing over the last decade. This was attributed to inadequate sensitisation/training and inadequate facilitation to monitor and crack on those with unlicensed equipment. Muzaale (2019) noted that the enforcement structures are existent but fall short of standard due to capacity related challenges like trainings. Each district has fisheries staff and BMU committees at legal landing sites to regulate and enforce. These are coordinated by the Regulations unit in the Directorate of Fisheries. However, there is lack of support in terms of facilitation, staff being ill equipped and the human resource being ill trained. There are no boats for movement on the Lake. Even on land vehicles and motorcycles are lacking, Muzaale (2019) notes.

Table 3: Frequencies, Percentages and Means on stock of Commercial Fish Species

Items	Min	Max	Mean
The fish species is on decrease on Lake Victoria	1	5	3.57
The method of fishing has affected the lives of fish species	1	5	3.76
The fish stock on Lake Victoria depletion is attributed to illegal fishing	1	5	3.71
Immature fish is the most depleted in Lake Victoria	1	5	3.83
No measures are taken to have new fish species	1	5	3.75

Source Primary Data

With respect to whether the fish species is on decrease on Lake Victoria a key informant noted that “*Some traders have reported a 45% decline in Tilapia and the some traders have reported a 25% decline in Nile Perch*” Hydro Acoustic Survey Reports (2021) indicate declines in biomass of Nile perch. Similarly Dedan (2022) noted that the stocks of Nile perch have drastically declined

It was established from findings that the method of fishing has affected fish species, a respondent further noted that “*the use of destructive fishing gears and methods have greatly contributed to a decline in fish species in water bodies in Uganda*” Mwiganga (2020) pointed out that the methods of fishing used by the fishermen have grossly affected the fish stocks especially beach seines, undersized gill nets, basket traps etc.

As to whether high profits drive them into illegal fishing, a fisheries expert noted “*given the high profits people are always ready to risk*”. This was corroborated by a fisher at Kasenyi landing site who noted in a rejoinder “*I am ready to be killed by the army but I cannot give up such a lucrative activity.*” In contrast, a man who lost his brother in 2018 when fishing at night noted “*ever since the army men killed my brother, I no longer engage in illegal fishing despite the profits*” (KI,2)

Despite the profit accruing from illegal fishing, there are always fishers that obey the law and support endangered species conservation.

Statistical summary and goodness of fit of the Logit model, and the marginal effect of variables involved in the licensing and enforcement of the stock of commercial fish species.

Variables	Coefficient	SE	Z Statistics	P	Marginal effect
Fisheries knowledge on laws	-0.21	0.11	-1.90	<0.050	-0.020
Knowledge on fish prices	0.19	0.14	1.62	<0.050	0.020
Effective utilisation of laws and policies	2.29	0.29	7.86	<0.001	0.262
Use of illegal fishing nets	0.49	0.22	1.66	<0.050	0.41
Fishing fry at night	1.84	0.41	3.77	<0.001	0.139
Disrespecting enforcers	-0.55	0.11	4.23	<0.001	0.050
Penalty awareness	0.20	0.14	1.76	<0.050	0.018
Log likelihood	-144.3	Mcfadden R2			0.449
Average log likelihood	0.31	Akaike information criterion			0.666
Deviance	314.3	Schwarz criterion			0.723

Results showed that illegal fishers mostly lacked knowledge on the existing laws (Fisheries Act), and this was a significant predictor of the occurrence of illegal fishing. The majority of fishers believed that the cost of fishing operations has increased in recent years, which was also accompanied with increases in fish price and fishing profit. Therefore, a positive association was found between the occurrence of illegal fishing and fish price. Failure to utilise the existing laws and policies was also significant driver to predict the occurrence of illegal fishing. In this respect, legal fishers use standard gillnet and fishing vessels, but illegal fishers tend to use bony-fish gillnet and other non-standard fishing nets, as well as a variety of modern and traditional fishing equipment. Fishing time was also a significant variable: compared with the legal fishers, many illegal fishers were engaged in fishing activities during the night. Although many fishers believed that the conservation of fry is important to them, this attitude was significantly weaker in the illegal fishers communities. Therefore, the importance of small/young fish conservation was a significant driver of the occurrence of illegal fishing.

Table 5: Mean, Standard Deviation, Normality and Reliability Results of Study Variables

Variable	Mean	SD	Skewness	Kurtosis	Alpha
Legal and Institutional Framework	56.776	6.589	0.279	0.912	.821
Stock of fish species	30.015	6.510	0.066	0.012	.806
N=196					

As shown in Table 5, the skewness and kurtosis values for legal and institutional framework and stock of commercial fish species are within the acceptable range of ± 2 for normal distribution of scores (Tabachnick & Fidell, 1996). This means that, parametric statistical analysis such as regression can be performed using these scores.

Conclusion

Uganda has laws, but some are weak. The existing legal framework also is not elaborate enough to cover all aspects of fisheries including aquaculture and a host of emerging issues. The Fish Act being the principle law was enacted in 1964. It cannot adequately address current issues in the sector. There has never been a recognizable programme to disseminate the entire fisheries laws. The existing policies have are not effectively been implemented. For the policy to be well implemented there must be an enabling law.

Recommendations

There is need to amend the existing law to introduce stringent penalties and increase the imprisonment period because as the findings indicate, the penalties are not deterrent enough. Secondly, the regulations are obsolete and the situation is different from when they were made. So the existing law does not adequately address the current challenges in the fisheries sub sector.

There is need for a water-body based coordination to supervise fisheries management and provide the necessary patrol resources to cover the loopholes within the structures for regulation of the fisheries sector.

Governmental institutions should promote education on the legislation relating to IUU Fishing and promote awareness in fishing communities using audio and visual tools on a regular basis. This will help to obtain knowledge that can serve not only to conserve and manage fishery resources, but also to promote development of the communities.

To make improvements, managers must avail the fishing community members with fair rules and guidelines that are tailored to promote good fishing. Therefore, it is recommended that institutions should strengthen their strategies to stop illegal fishing and mechanisms to enhance the stock of commercial fish species. Given the limited funding, government should come out and support fisheries law enforcement activities. Performance feedback should be timely and continuous. Fisheries employees should be given instruction on how performance can be

improved and must have short-and long-term goals set to show incremental improvements. Managers should be encouraged to engage in careful, systematic and professional execution of their roles and implementation of the activities.

Implications to Policy and Practice

From the results obtained, the author believes that this study can help to some degree in the formulation of policies and/or strategies with a view to preventing and combating IUU fishing. The institutions of state and government should, likewise, prioritize training packages for fishing communities in order to improve their levels of behaviour and attitudes in relation to rational use of resources. To the same degree, the fishing communities must support and adhere to government programs relating to education, such as the case of adult education and co-management of fisheries, in order to obtain knowledge that can serve not only to conserve and manage fishery resources, but also to promote development of the communities.

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