



An analysis of property rights in the Special Management Area (SMA) in Tonga

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ABSTRACT

The people of Tonga has been enjoying the abundance of its marine resources for centuries under an open access regime with the absence of any traditional marine tenure system. But time has changed and the population has increased, the fishing gears have been improved and more and more people are now moving from subsistence fishing to commercial fishing. These changes are posing threats to the health of the marine resources in the coastal areas causing a widespread concern among the coastal communities. This has led to the introduction and implementation of one of the management tools considered to be effective in combating the increased threats faced by the communities and the marine resources; the Special Management Area (SMA). To better understand the effectiveness of the SMAs, there is a need to understand the elements that makes it effective by analyzing the different characteristics of property rights within the SMA. These property right characteristics were proposed by Schlager and Ostrom and are employed for the analysis of the SMAs. The analysis provides an insight into the different elements and factors that contribute to the effective implementation of SMAs. Understanding the characteristics of property rights will contribute to strengthening of SMAs and improving of the benefits to the communities. It will certainly provide a basis for any review required for the SMAs.

1. Introduction

The marine and coastal environments are integral to the livelihood and daily sustenance of all South Pacific Islanders, of which the Kingdom of Tonga is no exception. In the meantime, there is a growing concern that the biodiversity components of the marine and coastal ecosystems will be lost if the appropriate measures are not taken to conserve and ensure the sustainable use of these resource components. The open access regime that governed the marine resources in the Tongan waters has been proven to be toxic as it leaves many coastal marine resources in an unhealthy state that requires immediate attention. In an attempt to mitigate the impacts of the open access regime on the coastal marine resources, the Ministry of Fisheries initiated a co-management system with the communities in a program known as the Special Management Area (SMA). It has been a decade since the inception of the SMA, communities with SMA have indicated that the program has been successful in reviving their coastal marine resources and has proven to be a successful management tool. Many of the communities with SMAs indicated that their initial goal for establishing a SMA has been achieved which includes the improvement of the stocks

and reduction of the number of fishers. In many of the Pacific Island countries, there is a growing concern about the health and the sustainability of the coastal marine resources. The successes of the SMAs bring new light to the management of the coastal marine resources. This paper is therefore aimed at bringing some understanding to the nature of SMAs through its property right characteristics.

In order to have a good understanding of how effective the new management tool of SMA has been, this paper will analyze the SMA and its characteristics of property rights proposed by Schlager and Ostrom. Firstly, this paper will outline how the fishing rights in Tonga have evolved from an open access regime to a common property regime with the establishment of SMAs. The second part will briefly describe the SMA. The final part of this paper will analyze the characteristics of property rights within the SMA and the implications of having those rights in the management of the marine resources in Tonga. Three communities with SMAs were chosen for the analysis from the major island groups of Vava'u, Ha'apai and Tongatapu where each island group have different levels of harvest, with particular influence from their proximity to the main market.

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2. Evolution of fishing rights in Tonga

The Kingdom of Tonga was unified by King George Tupou I in the mid-1800s and it was followed by a constitution that became effective in 1875 where freedom of all Tongan people was declared. A Royal Proclamation was issued in 1887 claiming national jurisdiction over “all islands, rocks, reefs, foreshore and waters lying between the fifteenth and twenty-third and a half degrees of south latitude and between the one hundred and seventy-third and the one hundred and seventy-seventh degrees of west longitude from the Meridian of Greenwich” [22]. This Proclamation is Tonga's first legal claim of historic title to maritime domain which resulted in Tonga's exercise of jurisdiction and authority over the land territory and the maritime spaces defined for over one hundred years.

The Territorial Sea and Exclusive Economic Zone Act 1978 defines and regulates the territorial seas of Tonga and pursuant to *Section 7*, it reinforces the Crown's rights over all territorial sea and internal waters [19]. It should be noted that the Legislative Assembly of Tonga has passed a Maritime Zones Act, 2009 which has also been assented to by the King but is still not effective as a date has not been proclaimed as per *section 1(2)* of that Act. The Act is a comprehensive legislation which encompass Tonga's full rights to maritime space under its national jurisdiction.

However, by virtue of the “tragedy of the commons” theory, the Royal Proclamation gives the citizens of Tonga a right to fish anywhere in the defined areas under Kingdom of Tonga [4]. It also abolishes any traditional authority or claim over the fishing areas of the Kingdom [2].

The management and development of aquatic resources in the Kingdom is a mandate of the Fisheries Division that was established in the 1940's. The Fisheries Act 1989, which is now repealed, did provide for the conservation and management of fisheries in Tonga but it did not restrict the access to fishing on Tongan waters by the people of Tonga. It also did not restrict fishing access to the coastal fisheries resources by any specific individual or community nor were there any provisions for enclosed areas to be set aside for subsistence fishing. However, restrictions were applied to several species by way of using seasonal closures, as well as restrictions on the fishing equipment, such as the ban on using self-contained underwater breathing apparatus for the purpose of fishing and the mesh size [20].

Since the coastal resources belonged to the state/Crown, the responsibility for the management of the marine resources in Tonga rests with the then Fisheries Division. The Fisheries Division has several stations in the outer islands to carry out the task of managing and developing the marine resources of the country. However, this is a task that has been proven to be challenging for the Fisheries Division. The lack of formal and informal rules to govern the access or the use of the marine resources has led to the rapid deterioration of the marine resources. The growing population coupled with climate change impacts such as sea level rise and ocean acidification, have impacted the coastal fisheries resources. Some familiar fish species have started to disappear and the fish sizes and abundance are now shrinking. Although regulations have been enacted to protect the coastal fisheries resources, the top-down approach to its management have been proven ineffective by the continuous depletion of the coastal resources. Tonga is therefore left as a country with heavily exploited coastal resources compared to other Pacific Island countries [15].

The deterioration of the marine resources has raised concerns particularly from the coastal communities whose livelihoods depend on the coastal marine resources. The traditional management measures such as input restrictions have failed to halt or decelerate the exploitation rate of the coastal marine resources. Some coastal communities need more control on their local marine resources particularly when fishing activities are moving from predominantly subsistence fishing towards commercialization. The involvement of commercial fishing have enhanced the ‘tragedy of the commons’ where the commercial fishers have the right to fish anywhere on Tongan waters. Further, this fuels

the need for a better management strategy of the coastal resources.

The idea of directly involving or engaging of the community in the management of the marine resources, is seen as a solution to the exploitation of the marine resources in Tonga. Several works and projects such as Petelo and others in 1995, have pointed out the need for co-management of the coastal marine resources [2], while Gillett and others in 1996 [15] underscored the need to review the Tonga fisheries sector [14]. This led to a sector review that was conducted in 1997 where one of its recommendations was for a policy change where a new fishery system for coastal communities is required in order to give exclusive access to defined inshore fishing areas. The results of this sector review reports prompted the then Ministry of Fisheries to review the Fisheries Act 1989 and the promulgation of The Fisheries Management Act 2002 (hereby referred to as the Act 2002).

The Fisheries Management Act 2002 provides under *section 13* that:

“The Minister may by Order published in the Gazette, declare any area of the fisheries waters and corresponding subjacent area to be a Special Management Area for purposes of coastal community management, application of certain conservation and management measures, subsistence fishing operations or other specified purpose” [21].

Section 14 provides for the designation of

“any local community in Tonga to be a coastal community for the purpose of community based fisheries management and may (a) allocate any Special Management Areas or parts thereof for which such coastal community shall be responsible under this Act; (b) prescribe the rights and responsibilities of such coastal community in respect of the Special Management Areas or part thereof” [21].

These provisions address the open-access fishing rights in Tonga and thus introduce a new management mechanism that changed the management of the coastal marine resources. To further strengthen these provisions, the Fisheries (Coastal Communities) Regulations 2009 [1], hereby referred to as the Regulation, was promulgated and it outlines the procedures to be followed in the establishment of an SMA.

3. Description of Special Management Area (SMA)

The Fisheries Management Act 2002 provides the provision for the establishment of a Special Management Area and also the designation of a local community to be a coastal community where an SMA area can be allocated to. This new form of management was not employed until 2004 where the island of ‘O‘ua applied for the establishment of an SMA for their community. It became the first form of co-management for the coastal resources in Tonga where a coastal community was given a fishing right to a designated area for the purpose of community-based fisheries management. Although the application was submitted in 2004, the formal declaration of the first SMA did not take place until 2006. The establishment of this work was made possible by the support from the Aus-AID funded Tonga Fisheries Project which assisted the Ministry of Fisheries by promoting sustainable management and development of marine living resources through the enhancement of sustainable community-based management of inshore resources [7]. Between 2006 and 2016, only 11 SMAs were formally established with 32 requests from local communities [8].

Three of the eleven communities with established SMAs will be used for the analysis of the characteristics of property rights. These communities are Ovaka (from the Vava‘u Group), Felemea (from the Ha‘apai Group,) and ‘Atata (from the Tongatapu Group). These communities were established in 2008 and 2010 respectively. Each of these communities represents a different island group in Tonga where they are exposed to different levels of harvest. These communities have been successful in managing their SMAs and their success will be analyzed against the different characteristics of property rights.

4. Process for establishing an SMA

The belief behind the establishment of the SMA lies along the principles of co-management of the coastal marine resources between the state and the coastal communities. With evidence of overharvesting and the threat from pollution and climate change on the coastal marine resources, it indicates to some extent the failure of the top-down approach that has been employed for the management of the marine resources. In an attempt to change that and give the communities more involvement in the process, the first step towards the establishment of a SMA, is for a local community to submit a formal request to the Ministry of Fisheries. A selection criteria or an eligibility criteria is yet to be put in place for prioritization, however, the Ministry of Fisheries is currently working on a first-come-first-serve basis, but of course, subject to availability of funds [8].

The second step for the SMA establishment is the community consultation. This consultation is carried out by the Ministry of Fisheries to ensure that SMA establishment is in the interest of the majority of the community. During the consultation, a Coastal Community Management Committee (CCMC), herein referred to as the Committee, will be established in accordance with the Fisheries (Coastal Community) Regulation 2009 (hereby referred to as the Regulation 2009). The membership for the Committee is also outlined in the Fisheries (Coastal Community) Regulation 2009. The Committee has a vital role in assisting the coastal community to conduct its operations and to ensure that those operations are conducted in an effective conservation and management manner. It also has the authority, under *Section 7* of the Regulation 2009, to determine its own rules and procedures which must be in line with the Fisheries Management Act 2002 and the Regulation 2009. It is also the decision-making body for the operation, management and development of the SMA and their decisions have to be made by consensus.

One of the Committee's major role in the initial steps is the preparation of the Coastal Community Management Plan (CCMP), hereby referred to as the Plan, for the conservation, management, sustainable utilization and development of fisheries resources for its SMA. This is the third step in the establishment of the SMA. The Committee must ensure that the members of the community are included in the development of the Plan. The Plan should also comply with *section 7(2)* of the Act 2002 where certain requirements are outlined such as the objectives to be achieved, and the licensing system to be applied. Additional to these requirements are outlined in *section 15* of the Regulation 2009 where it states that the trend analysis containing the details of stock assessments and the socio-economic situation of the community are to be included in the Plan. Another important task for the Committee is the establishment of a Fishers Register and a Fishing Vessels Register. These registers record the people, vessel owners and details of vessels authorized to fish in the SMA by the Committee. Further, the Committee has the authority to withdraw names of persons and vessels from the registers if they fail to comply with the conservation and managements measures of the SMA.

Once the Committee, the Plan and the registers are established, further consultations will have to be made with the community, their adjacent community (ies) and at nation-wide. This fourth step can take up to a month to ensure that the Plan is well understood and accepted. Upon the completion of the consultations, the Plan will then be submitted to the Fisheries Management Advisory Committee (FMAC) for their approval before it is submitted to Cabinet for their endorsement. Once the FMAC endorse the Plan, it will then be submitted Minister of Fisheries (hereby referred to as the Minister) for his/her approval before it is submitted to Cabinet for their endorsement. The approval from the Cabinet will give authority to the Ministry of Fisheries and Crown Law office to declare the SMA by an Order that must be gazetted. Once the Order is published in the gazette, the Ministry of Fisheries will then assist the coastal community in implementing their Plan which usually starts with demarcation of their SMA boundary and registration of

fishers and fishing vessels.

5. Analysis of the characteristics of 'rights' in the SMA

Although 10 years have passed since the establishment of the first SMA in Tonga, there still seems to be a lot of confusions around and misunderstandings of the 'right' that a coastal community has within its SMA. This was echoed in the first national conference for SMAs – lessons learned where it was evident that a lot of people, even in communities with established SMAs, have yet to understand SMAs, which stems from their open-access view of the ocean [17]. Similar message was emerged from the result of a household survey conducted at 26 communities surrounding the Fanga'uta Lagoon where 77% of the respondents to the SMA questions indicated that they are aware of the SMA program but they do not know what the program is [16]. To shed some lights into this confusion, this section analyzes the property rights characteristics of access that existed in the SMA.

5.1. Bundles of rights

One of the main theories of property is the 'bundle-of-rights' theory which explains the ownership interests over time, among people and common interest communities [3]. Property is seen to be composed of different rights, referred to as 'sticks', which can be put together as a 'bundle' yet can be untangled [3]. This property theory is seen as appropriate for the analysis of the rights in an SMA.

To analyze the rights ('sticks') in the SMA ('bundle'), this paper will apply the five characteristics of property rights proposed by Schlager and Ostrom which are 'access', 'withdrawal', 'management', 'exclusion', and 'alienation' [6]. These property rights are split into two levels; operational level ('access' and 'withdrawal') and management level ('management', 'exclusion', and 'alienation'). The analysis will also employ the three fishery access regimes suggested by Sloan and Chand, namely the open access, private property and common property [10] to provide a brief explanation of the management framework for the fishery resources.

Prior to the promulgation of the Fisheries Management Act 2002, an open access system was in place where all Tongans had equal fishing access to all Tongan waters. This type of management regime led to what is known as the 'tragedy of the commons' where Hardin suggested that "freedom in a commons brings ruin to all" [9]. With every Tongan having equal access ('freedom') to all Tonga waters ('commons'), the result is often devastating with resources being overexploited ('ruin'). The Act 2002, however, introduced a different type of management regime where a local community can have exclusive right to harvest and manage the marine resources in a designated Special Management Area (SMA). This management regime is known as the common property regime. The last fishery access regime is the private property regime where fishing rights is exclusively allocated to an individual or entity. An example of this type of management regime is the state ownership of right to all Tongan waters where the management of all marine resources were done by the Ministry of Fisheries.

5.2. Analysis of SMA using relevant sticks in the bundle

The need for an understanding of the property rights characteristics of access in the SMA is of vital importance. The overexploitation of coastal marine resources under the open access regime is an unfortunate yet very critical lesson learned. We learned that in the open access regime, people had little to no incentive to conserve the marine resources, instead it was a 'rush to cash' situation which was exacerbated by the growing numbers of commercial fishers. As many economists often argued, the absence of a well-defined property right often resulted in a market that fail to function effectively [5], [18, 1776].

The right of *access* provides the authority to enter a resource or

defined physical property [6]. Under the Fisheries Management Act 2002, a local community can be designated as a coastal community upon approval by the Minister for Fisheries and be allocated with an SMA where they can prescribe the rights and responsibilities of such coastal community in respect of the SMA. This provides the coastal community with the right to access the resources within their designated SMA. The boundary of the SMA is prescribed under the *Section 4* of the Fisheries (Coastal Community) Regulation 2009. The Committee of the coastal community will then outline in their management plan specific conditions for access. For example, the Ovaka CCMP outlines that only the residents of Ovaka are allowed to fish in the Ovaka SMA and should be listed in the Ovaka Register of Fishers and Register of Fishing Vessels. The Ovaka CCMP also granted authority for ‘outsiders’ or what is described as those who are not listed in the Ovaka Register of Fishers and Register of Fishing Vessels, to fish in their SMA with a permit issued by the Committee [13]. The Committee can also grant an access right to those not residing in their community but with conditions on what they can harvest and gear to use.

The right of *withdrawal* is the right to harvest the resource, i.e. catch fish. Within the SMA, the community or those considered to be the residents of the coastal community with the SMA, have withdrawal rights for subsistence purposes. This withdrawal right is limited only to those regarded as ‘residents’ and are registered in the Registers mentioned above. These withdrawal rights are also outlined in the management plan and in accordance with the Regulation 2009. The Committee is given the authority by the Regulation 2009 to grant withdrawal rights to non-residents or ‘outsiders’. This limited withdrawal right is called the fishing permit for consumption purpose only. No ‘outsiders’ are allowed to fish in the SMA unless they are issued a fishing permit and this permit provides them with a limited withdrawal right where it can be used to catch fish for consumption only and not for commercial sale or barter. The Committee can further define this withdrawal right by allocating certain number of permits to be issued within a period of time, usually in a year, and also outline the catch limits within each permit. The fishing permit for ‘Atata SMA allows only 5 permits to be issued in a year and each permit is valid for only one fishing trip [11]. The permit also indicated what marine resources can be harvested, what amount for each marine resource can be harvested, what marine resources not to be harvested and the type of fishing gears that are allowed to use as well as the fishing gears that are prohibited. The Plan for the community of ‘Atata however, did not state clearly whether the 5 permits to be issued annually is the maximum permit per person or whether the Committee can only issue a total of 5 permits per year.

The case for Ovaka is somehow different. Although the withdrawal right remains the same for the residents of Ovaka, the condition of the withdrawal right in a form of a subsistence fishing permit that is applied to ‘outsiders’ differ. In the Ovaka CCMP, it clearly stated that a total of 50 permits can be issued by the Committee. It does not specify by name the marine resources that can be harvested, however, it indicated a maximum of 7 kg of inshore fish only that can be harvested with each permit [13]. The Committee for Felemea indicated that their subsistence fishing permit can allow ‘outsiders’ to fish up to 5 kg per item specified on the permit. The Committee can issue a maximum number of 20 permits per year [12].

It is clear from these Plans that the residents of communities with SMA have exclusive withdrawal rights to the resources within their SMA. However, from the three communities, their management plans does not indicate specifically whether those withdrawal rights are limited to subsistence fishing only. It also does not indicate any limitation on commercial fishing should the residents of their communities involve in commercial fishing. This therefore creates a loophole for overharvesting of the resources by those considered as residents when the limits on their harvests are not clearly outlined in their management Plan. What is clear though, is the withdrawal right and the conditions of those rights that are allocated to ‘outsiders’. It is a clear indication of

how these communities want to protect their marine resources for themselves and limit the access from the outside, which is seen as a threat to the coastal marine resources.

At an operational level, the Committee of the coastal communities has the authority to grant access and withdrawal rights however, these rights must adhere to what is prescribed in the Act 2002 and the Regulation 2009.

The *management* rights of the SMA rests with the Committee of each coastal community where they have the authority to determine how, when and where harvesting of resources within their SMA may occur which is outlined in the management plan. The management right of the Committee is authorized by the Fisheries Management Act 2002 and supported by the Fisheries (Coastal Community) Regulation 2009. It's this management right that gives the Committee the authority to determine the level of harvests, the type fishing gears allowed and prohibited to use within their SMA. The minimum requirements for these decisions must be in line with what is prescribed by the Fisheries Management Act 2002 and the Regulation 2009.

The right of *exclusion* is the right to determine who will have the access right. Once an SMA is established, the exclusion right rests with the coastal community Committee. It is the Committee who will then decide, in consultation with the Ministry of Fisheries, who will have access right to their SMA. Most of the exclusion right is given to the residents of the coastal community with the SMA, however, there is no specification whether such exclusion right is solely for subsistence fishing or it encompass both subsistence and commercial fishing. The Committee also has the right to grant access to ‘outsiders’ but with conditions such as the number of permits that can be issued in a year. The number of permits will be determined by the Committee and who should get those permits will also be determined by the Committee.

The right of *alienation* according to Schlager and Ostrom is the right to transfer its management and exclusion rights or both by an individual or group to another. This right does not exist in the SMA where its management and exclusion right were granted to the Committee in accordance with the Fisheries Management Act 2002 and Fisheries (Coastal Community) Regulation 2009. The rights granted to the Committee at both operational level and management level is exclusive to the Committee alone, and the Committee cannot transfer those rights to any other group or individuals.

The analysis above illustrates the strong authority granted to the Committee of a coastal community where it seemed to hold most of the ‘sticks’ in the ‘bundle’ of rights in an SMA. *Section 5* to *12* of the Fisheries (Coastal Community) Regulation 2009 is dedicated to ensuring that the Committee is well represented by the members of the community and the Ministry of Fisheries. It also ensures that a participatory approach is employed for the management of the marine resources in the SMA.

6. Implications of rights in the SMAs on coastal fisheries management

6.1. Improvement to fisheries trend - perception of communities

The co-management nature of the SMA between the coastal community and the Ministry of Fisheries has been seen as a success over the years. The coastal community seems to hold all the ‘sticks’ in the ‘bundle’ of rights within the SMA. This is proof that the communities are being empowered to take over the management of their marine resources. With the community, through its Committee, holding majority of the ‘sticks’ in the ‘bundle’ of rights in the SMA, feels that the Government trusted them by granting them all those rights which then strengthens their sense of ownership of their marine resources. This empowerment has led to the success of the SMAs so far.

The establishment of any SMA will require the Ministry of Fisheries to conduct an assessment of the ecological, social and economic status of the coastal community. To monitor the progress of the co-

management, data collection is done by the community which will then be passed on to the Ministry of Fisheries. These data will assist the Committee (where both the community and the Ministry of Fisheries are represented) in reviewing their management plan on an annual basis as mandated by the Regulation 2009. The Ministry of Fisheries relies on the data collected by each community to assess the progress of the SMAs. This data however, has its own limitation and the analysis of this paper will therefore focus on the perceptions of the community members.

In the communities of Ovaka, Felemea and 'Atata, all their SMAs have been established for almost 10 years now and to date, there has not been any survey done to assess the progress and current status of the resources in their SMA as well as the socio-economic status of the coastal community. To have a good understanding of the impact of the SMA, the Committee members in the communities observed in this paper were interviewed. Their responses indicated that their coastal marine resources have improved greatly. The improvements in the fishing trend is evident in the time spent on fishing. Prior to the SMA establishment, fishers would spend the entire night fishing for the amount that they would consider sufficient for subsistence consumption. Five years after the establishment of the SMAs, fisher could spend two to three hours to fish the amount of fish that usually takes them a whole night to catch. Improvements in the fishing trend are also evident in the varieties of reef fishes caught. Prior to SMA, some species were starting to disappear, however, with the SMA, these species are coming back and in abundance.

The general perception of the communities with SMA is that their community's vision of putting a halt to the decline of marine resources in their inshore waters has been fulfilled. One of the main causes of the decline in the marine resources was the increase in the fishers that were considered to be 'outsiders' or non-residents of the communities with SMAs. This issue was addressed with the SMA where the community has the right to determine the number of fishers within their coastal waters, the fishing gears to be used and the level of harvest. Being given the majority of the 'sticks' in the 'bundle', the coastal communities are able to recover their depleted marine resources.

6.2. Strengthening the existing decision-making processes

The Committee of the coastal community with the SMA has been empowered by Government to conserve and manage their coastal resources. So far in the communities where SMA has been established, the Committee has been fulfilling its obligations with regards to conserving and managing the marine resources within their SMA. From the interviews done within the three communities, it is clear that the success of the Committee is embedded in how the Committee is structured (dictated by [Section 6](#) of the Regulation 2009). The Committee is chaired by the Town Officer of the community where the SMA belongs. The Town Officer is elected by the people of the community and he is therefore well respected by the community. In his role as a Town Officer, he has leadership experience, something that is required in order to achieve the goals of SMA. Because he is a member of the community, he or she has a better understanding of how to lead his or her communities and how to incentivize them to work towards fulfilling their common goals. The result of the interviews showed that these three communities have great respect for the structure of the Committee and that it is chaired by their Town Officer.

One particular trait in the Town Officers of these three communities that was seen as a contributing factor to the success of their SMA is that, these Town Officers are fishermen themselves and therefore have great interests in the health of their marine resources. On top of that, these Town Officers are great community leaders where they lead their communities in the conservation and management of their SMA despite the limited financial support provided or made available to them, and despite the lack of capacity within their communities. They were not reluctant to use their own personal resources to get things done for the

betterment of their communities as a whole. They lead by example. It's this type of leadership that has the power to pull a community together and collectively put their efforts toward a long-term common goal that will benefit the whole community. This is particularly important because SMA is not a one-man work. Without the collective support of the community, meeting the goals of the SMAs will be a difficult feat.

One of the challenges that are often met by the implementation of long-term sustainable goals is the lack of awareness of the potential benefits of meeting such goals. At times, it is a costly and time-consuming activity to carry out public awareness programs. But it is little known that this challenge can be overcome by a Town Officer who leads by example. Some people may yet to fully comprehend the long-term benefits of establishing an SMA within their community, but the leadership by the Town Officer often convinces people there are real benefits from taking part in such an activity.

Although it may not always be the case, it is important to acknowledge the role of the community members in shaping and leading their community towards sustainably managing their coastal resources. In the case of Atata, an exception was given to their community because the current chair of their SMA Committee is not the current Town Officer. However, a consensus was reached within the community where their Town Officer forfeited his role as the chair because he feels that it is an additional responsibility that he does not have the capability to carry out. The Atata Committee then accepted his decision and chose a chair from within the community. This decision was then submitted to the Ministry of Fisheries and it was accepted. It is very important that the community unites and good leadership is essential in ensuring that SMA goals are reached. As a member of the Committee, the Ministry should be kept abreast of any progress, developments, disagreements or challenges the Committee and the community may face. As a co-manager of the SMA, the Ministry should be able to settle any dispute that may arise within the community, but most importantly, in developing policies that are relevant and can contribute to better management of the marine resources.

6.3. Means to strengthen the existing rights

Although the SMA tool is a co-management tool, our analysis has shown that community itself, through its Committee, holds majority of the 'sticks' in the 'bundle'. Despite this, there are few things that they cannot use those 'sticks' to influence the management of their marine resources due to the co-management nature of the SMA. Some of their rights may be dependable on other factors by which they cannot fully exercise their right unless those other factors are met. An example would be the operational-level property rights of *access* and *withdrawal*. The Committee may have the right to grant access to particular individuals to fish for a particular amount which are stated in the Plan. To make changes, there is an unknown process as to how the Committee can pursue such changes and this is the case particularly for the communities of Ovaka and Felemea whose Plan seem outdated. Most of the objectives outlined in the initial Plan have been met and revisions are required, however, the Committee does not have the full authority to do so. For such change to take place, a survey of the marine resources within the SMA has to be conducted and a socio-economic survey of the perception of the community members has to be done also. These surveys are beyond the capability of the Committee nor the financial means to do so. The community and its Committee rely on its partner, which is the government, to provide such services. However, due to the limited resources within the Ministry, such surveys are not envisioned to take place in the near future. A lack of flexibility despite holding majority of the rights has a major drawback with regards to ensuring that the community benefits from the management of their marine resources, but in a sustainable manner. From the existing Plan, the *withdrawal* right does not allow for commercialization purposes, however, moving towards commercialization could generate financial benefits for both the community members and the Committee. Such

move can be devised in a sustainable manner so as to optimize the benefits while ensuring that the *withdrawal* is done in a manner that is sustainable.

The rigidity of the existing rights of *access* and *withdrawal* held by the community through its Committee is translated further to its right to *management* and *exclusion*. Although the Committee seemed to hold majority of the rights, they are not well equipped to exercise those rights to its full extent and to use those rights to reap the full benefit from owning those rights. The community's counterpart, the Ministry, is also not better equipped, in terms of manpower and finances, to fulfill its part of the deal.

A first step towards improving the existing rights of the community is for the Ministry to put in place a process for which the Committee can use should they need to improve their benefits from owning their rights. This may include the need for reviewing of the management plan periodically by ensuring that a monitoring and evaluation mechanism are in installed. The Committee should also be reminded of their authority to make changes to how they utilize those rights. The Committee seemed to be very reliant on its government counterpart to prompt changes that needs to be made on their Plan, although it is outlined clearly in the Plan that it has to be assessed and where necessary, revised every year. This has not happened since the inception of the SMA in the past decade. It is solely a responsibility of the Committee with their collaboration with the Ministry and therefore should be held accountable for failing to carry out such responsibility. A Plan needs some refresher so that the Committee and the Ministry are reminded of their rights.

In the long-run, the Committee needs to be self-reliant so it can exercise its existing rights to its full extent. Despite being established for about a decade now, none of the three communities with SMA for this research seemed to be financially independent. They rely heavily on the Government and NGOs to provide financial assistance. The popularity of the SMAs and how effective it is in managing marine resources has attracted several donors both nationally and internationally. These are seen as a positive externality to establishing SMAs. However, it should not deter the Committee from striving to be financially independent. There are various options that would require further research into and consideration that could generate funding. One of those options is a catch-share scheme, however, the viability of applying such scheme should be considered first to ensure that the resources are protected from depletion.

7. Conclusion

The establishment of SMAs in Tonga was a first step towards intervening with the existing way of managing the marine resources where open-access regime prevailed for the past century. The intervention was an attempt towards allocating certain rights to communities that have followed due process and have been designated as coastal communities. The intervention has created incentives for the community to manage their coastal resources in a sustainable manner by allocating benefit to the participants. This was made possible by the legal framework that was developed to provide guidance and the support needed by the community for improvement in the management of their coastal resources. The legal framework allows the community to hold the majority of the 'sticks' in the 'bundle' of rights whereby they feel empowered and therefore have successfully implemented their SMA program. The co-management between the communities and the Ministry of Fisheries through SMA has been considered to be an effective management system and tool for the management of the coastal marine resources. Understanding the characteristics of property rights in the SMA is vital in improving the benefits the communities derived from their marine resources.

It is recommended that SMA communities and its government counterpart develop a system where they can revise their Plan on a periodic manner. Updating their plan is important so they stay abreast

of the recent changes at different level of governance at local, national and international levels. The analysis showed that there are no restrictions to the levels of harvest by the residents of communities with SMA, a loophole that could be taken advantage by the commercial fishers and could potentially lead to overfishing and failure of SMA. Revision of management plans is therefore very impotent to ensure that such loopholes are patched.

The communities must also be able to be self-sufficient where they could be able to drive the management of their resources and reduce their reliance on the government to constantly provide support especially in the monitoring and surveillance aspects. However, to do so, a careful planning should be done to develop a catch-share scheme to ensure that the transition to commercial fishing will not pose any threat to the abundance of the resources. Self reliance will allow the communities to attract external resources to assist in reviewing their management plan such as conducting ecological, social and economic surveys.

The understanding of the property rights of SMAs brings light to how effective it has been and also provides an insight into where those rights can be strengthened to improve the benefit derived from the coastal marine resources as well as improve its management.

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