Analysis of the Challenges of Integrated Coastal Management Approach in the Eastern Coast of Tanzania

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Abstract

Understanding the challenges that surround the adoption of Integrated Coastal Management (ICM) approach may potentially help actors and facilitators of coastal-based development initiatives to devise sustainable plans for managing coastal and marine resources. This paper analyses the challenges that prevail in contexts where ICM approach was adopted in the eastern coast of Tanzania. It draws experiences from the Kinondoni Integrated Coastal Area Management Programme (KICAMP) to yield lessons that may potentially shed light to facilitators of community-based management initiatives in the coastal regions. The paper raises three main issues: (i) What is the essence of ICM approach? (ii) What are the key challenges associated with the adoption of ICM approach in Tanzania? (iii) What is the recommended manner of addressing emerging challenges? The paper is enriched with in-depth interview inputs from 7 technical personnel and 3 marine scientists who have served in ICM projects and programmes. Their views are complemented with accounts from 3 coastal residents; selected strategically on grounds of their long-term experiences in ICM programmes. Moreover, reports from the KICAMP and Tanga Coastal Zone Conservation and Development Programme (TCZCDP) provided additional input on the emerging challenges and possible measures for addressing them. The paper adopts a critical realist framework of analysis, the RRREI(C) model, to yield insights that depict prevailing and emerging ICM challenges. Captured challenges include: over-reliance on fisheries resources, over-expectations, emergence of gender-selective activities, cultural challenges, complexity of adopted monitoring programmes, non-sustainability of some developed projects, land use issues, the condition of attaching municipal staff to ICM projects, and diversification of activities.

Key words: *Integrated Coastal Management, adoption, approach, challenges, coastal resources.*

1. Introduction

Several studies have attempted to uncover challenges that are linked with the adoption of Integrated Coastal Management (ICM) approach worldwide. Working in the Chinese coastal context, Kong et al. (2018) cited three challenges that need to be addressed to ensure effective management of coastal and marine resources under the ICM approach. These include: low priority in capacity

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building for coastal practitioners, unsustainable financing mechanisms, and the lack of political will. In an attempt to surface the specified issues, they proposed the use of the Xiamen model to serve as an illustrative tool and a framework for attracting optimal handling of ICM support funds, and strengthening governance to increase stakeholder participation, political will, and capacity building. The Xian model was developed by local coastal practitioners in 1993 in the Xiamen area (China), to address marine problems emanating from economic development (Thia-Eng et al., 1997). It has since then been adopted across Asia and in nearby regions as a useful ICM framework.

On the other hand, Warnken and Mosadeghi (2018) raise challenges that are associated with mainstreaming ICM input into local planning and local government policies in Australia. They identify diminishing political focus on coastal management as the main challenge that must be addressed to attain sustainable management of coastal and marine resources in the country.

In 1998, the government of Finland—in collaboration with UNEP—formed a team of coastal and marine specialists to explore challenges that emerge in contexts where ICM is implemented in Africa. Involved countries included Tanzania, Kenya, Mozambique, Ghana, Guinea, Morocco, Egypt, and Algeria. The team came up with several challenges including, inadequate awareness among coastal dwellers, incapacity to address emerging contextual challenges, lack of baseline data on the coastal and marine environment, non-existence of institutional structure that supports ICM implementation, inadequate infrastructure to allow ICM operations, contamination of coastal waters, decline in reef fishery, degraded marine habitats, loss of coastal biodiversity, coastal erosion, and resource use conflicts (PACSICOM, 1998).

Similar challenges are identified in Tanzania's national ICM strategy (2003), and in the ICM policy of 1999, but these challenges are not associated with the application of the adopted ICM approach. Thus, this paper advances further by exploring the challenges that emerge as a result of applying ICM in Tanzania; and suggests how the same may be addressed to ensure sustainable management of coastal and marine resources.

To allow coastal practitioners to understand the challenges better, the paper sets the background for the essence of ICM approach, its adoption in Tanzania, and reasons for the adoption. It identifies and analyses contextual challenges that need to be known to coastal managers, researchers, practitioners, research institutions and coastal dwellers as a necessary pathway towards establishing successful coastal management initiatives, and recommends the manner of addressing them. Outlined challenges are discussed and analysed with the aid of the critical realism model, which contains six concepts, namely: Resolution (R1), Redescription (R2),

Retrodiction (R3), Elimination, Identification, and Correction. The model is commonly known in its abbreviated form as the RRREI(C), and it is further described as an analytical tool in the data analysis section.

The paper underlines the need for understanding better the coastal context and related management approaches, and the necessity of incorporating planning needs that cater for social, economic, cultural, and ecological needs. Recommendations on the manner of addressing the emerging challenges are given under each specific challenge in a form of inferences adopted from the RRREI(C) model, cited experienced lessons, and implied realities from the coastal context.

1.1 The Essence of ICM Approach
The concept of integrated coastal management (ICM) has its essence in the Earth's Summit, convened in Rio de Janeiro (Brazil) in 1992, to deliberate on issues of sustainable development (UNCED, 1992). The deliberations reached on the ICM approach served as an input for Chapter 17 of Agenda 21. The chapter raises the need for the protection of oceans, coastal areas, and all kinds of seas. It also places emphasis on the adoption of relevant monitoring techniques in the process of managing coastal and marine resources. Thus, the Summit was a global platform for coastal states to show their commitment by adopting the ICM approach as a useful tool for achieving sustainable development in coastal areas (UNCED,1992).

The set of obligations required coastal states to establish collaborative ICM support programmes, and even launch sub-regional plans to allow processes that would attract sustainable management of coastal and marine resources in their jurisdictions (Dromgoole, 2011). One of the ICM support programmes initiated for Africa was the Regional Programme for the Sustainable Management of the Coastal Zones of the Indian Ocean Countries (RECOMAP). This created funding opportunities under the support of the European Union (EU) to help the implementation of ICM initiatives in 7 countries: Tanzania, Kenya, Mauritius, Madagascar, Seychelles, Somali Republic, and the Union of Comoros (RECOMAP, 2009).

1.2 Reasons for adopting the ICM Approach
The need to adopt and introduce ICM as the suitable approach for guiding the management of coastal and marine resources in Tanzania was driven by reported incidences of unsustainable practices, such as the use of dynamite in artisanal fishing, construction of saltpans in mangrove sites, increased mangrove clearance, overfishing, charcoal burning, lime-making by burning corals, and mismanagement of coastal land (NICEMS, 2003). There was also a prevalence of conflicts emanating from overlaps of decisions and the duplication of responsibilities and costs involving different sectors, local government

authorities, NGOs, and private and public institutions. The overlaps were also visible in sectoral policies and structures. All these, triggered the need to adopt the ICM approach across the world (NEECS 2005-2009).

ICM was recommended and prioritized due to its wide range of benefits. The approach encourages participatory natural resources management; it avails a space for information collection through participatory processes; attracts creativity and learning through participatory monitoring of coastal and marine resources; encourages collective decision-making; provides a useful space for capacity building through training and knowledge exchange; and resolves conflicts by creating a space for harmonization of sectoral policy and structural aspects necessary for the management of coastal resources (TCMP, 1999).

1.3 Adoption of the ICM Approach in Tanzania
In Tanzania, the ICM approach was adopted in the 1990s under the coordination of the National Environmental Management Council (NEMC). The NEMC created a unit known as the Tanzania Coastal Management Partnership; and assigned to it the responsibility of spearheading the process that would allow development of the ICM policy and its strategy in the country. The policy was in place in 1999, and the strategy was developed in 2003.

The policy statements indicated the challenges and critical issues prevailing in the coastal area such as coastal resource use conflicts, institutional overlaps, and mismanagement of resources including fisheries, sea-grass, mangroves, coral reefs, and coastal land (TCMP, 1999a). It also came up with a strategy indicating the process and manner of addressing identified challenges and issues.

The ICM approach has proved to be a useful space for institutions and organisations operating in the coastal area to help users of coastal and marine resources to understand better the benefits of the resources that surround them; which in turn has helped them to assume active roles in the management process, and increase the spirit of responsibility and ownership (KICAMP, 2004). Under the ICM approach, various local actors are actively involved in conducting field assessment, monitoring, and natural resource inventories. It has also attracted collective planning, and full participation of coastal communities. According to Sabai (2014), ICM approach has the potential for creating a learning environment in the coastal area; and capacity building in terms of training, experiential learning, and engaging in participatory monitoring of coastal resources (KIMP, 2005). The aim was to encourage collective actions through processes that would encourage knowledge-sharing and better ways of attracting sustainable use of coastal and marine resources such as mangroves, fisheries, coastal land, seaweed/grass and coral reefs (TCMP, 1999b).

Good examples of the ICM initiatives that were initiated in the 1990s in Tanzania include the Tanga Coastal Zone Conservation and Development

Programme (TCZCDP); Rufiji Environment Management Project (REMP); National Mangrove Management Project (NMMP); Rural Integrated Project Support (RIPS); Mafia Island Marine Park (the first marine park in Tanzania) established under the Marine Parks and Reserve Act 29 of 1994; Saadani Mkwaja Game Reserve; and the Kinondoni Integrated Coastal Area Management Programme (KICAMP). These employed ICM approach as a logical framework for guiding a wide range of coastal and marine conservation and management initiatives (TCMP, 1999a; TCMP, 1999b and TCZCDP, 2005).

2. Theoretical Framework

This paper draws from Rhoy Baskar's critical realist model, commonly known as the RRREI(C). The model serves as a critical realist tool that helps researchers explain, describe, or analyse complex phenomena in the field (Bhaskar et al., 2010). It helps them to clearly distinguish causal mechanisms that generate particular forms of events or experiences from the general causal mechanisms, and may also be useful in explaining how various processes occur (Hartwig, 2007), or what generates particular challenges as is the case with this paper. As alluded in the introduction, the RRREI(C) model contains six components, namely; Resolution (R1), Redescription (R2), Retrodiction (R3), Elimination (E), Identification (I), and Correction (C). The role of a researcher is to mirror the presented accounts, narratives or testimonials and determine the extent to which the elements of the model are reflected in the given data (see Table1).

Table 1: Description of the RRREI(C) Model

Component of the Model	Application level/stage	Role
Resolution (R1)	1	Assists the user to choose, make breakdown, and describe key components of the presented data/accounts.
Redescription (R2)	**2**	Assists in discussing or analysing the attributes by either contrasting them or relating them at a deeper level to discover emergence outcome.
Retrodiction (R3)	3	Involves explaining or interpreting ideas or information by making assertions about the past and in making inferences from events to causes.
Elimination (E)	4	Eliminating competing alternatives or confounding explanations in order to keep those that explain the situation better and in a more pure manner.
Identification (I)	5	Involves choosing generative mechanisms that are believed to be correct from those considered.
Correction (C)	6	Allows removal of possible errors that appear in the analysis of phenomena to keep the outcomes of the analysis as pure as possible.

Note: The table was created by the author to allow clear visibility of the components that forms the Model, their level of application and roles as per description given by Bhaskar et al., 2010.

3. Context and Methods

3.1 Study Area

The paper draws data from a recent case study that was carried out in Mbweni and Kunduchi localities in Kinondoni Municipality, Dar es Salaam (6°48' S, 39°17' E); where the KICAMP was first adopted and implemented for a period of six years (2001-2007), before it was mainstreamed into the municipal's development plans (Figure 1).

Figure 1: Map Indicating the Location of ICM Sites
Source: Dar-Profile - 2004.

Similarly, the Tanga Coastal Zone Conservation and Development Programme (TCZCDP), which contributes additional input for this paper, was initiated in Tanga region (at the extreme north-east corner of Tanzania, between 4° and 6° degrees below the equator).

The specified ICM cites are inhabited by largely artisanal fishers, mangrove restorers, and residents who are carrying out a wide range of activities that affect the status of coastal and marine resources such as mangroves, coral reefs, coastal land, seagrass, water, and fisheries.

3.2 Methods
3.2.1 Sample Size and Selection of Research Participants
A sample of 7 technical personnel who happened to serve in some of the ICM projects and programmes (4 from the KICAMP and 3 from the TCZCDP), 3 marine scientists from local scientific institutions, and 3 representatives of local coastal communities, i.e., Mbweni, Kunduchi, and Kijiru) was selected strategically (purposefully) on the grounds of their long-term involvement in ICM programmes. As advised by De-Vaus (2001), the selection of the research participants for a studied case in social research is contextually determined.

3.2.2 Data Collection
Data for this paper were collected in three distinct phases, in a single case study, to yield in-depth knowledge on the practice of ICM in the selected coastal localities. At least 8 in-depth interview sessions were carried out to capture data on experienced ICM challenges. Verschuren and Doorewaard argue that case studies yield profound knowledge on a studied phenomenon (2010). In a case study research like this, emphasis is placed on depth rather than the breadth of knowledge (ibid.).

The first phase of data collection involved the capturing of testimonies, accounts, and experiences through in-depth interviews with 3 representatives of coastal communities who happened to participate in the implementation of the KICAMP and TCZCDP. The second phase focused on conducting in-depth interviews with 4 technical municipal personnel from the Kinondoni Municipality (Dar es Salaam), 1 technical personnel from Pangani District Council (Tanga), 1 technical personnel from Tanga City Council, and 1 technical personnel from Mkinga District Council (Tanga).

The third and last phase of in-depth interviews involved 3 scientists who were responsible for facilitating the monitoring of coastal and marine resources in the coast of Tanzania. These were involved separately in three guided telephone interviews. The obtained input was complemented with data from observation and reviewed ICM reports to yield inputs that cemented this paper. Observation method offers opportunities for researchers to capture additional inputs in qualitative designs (Flick, 2011). In this context, observation served as means of verifying the presence of gender-selective activities such as mangroves transplanting and fisheries. Under the ICM approach, ecological restorative initiatives are expected to be collectively implemented by all individuals and social groups, rather than leaving such an important role to women as it is explained in the results section.

The paper also drew insights from reports that were prepared during the implementation of the TCZCDP (1994-2005) and KICAMP in the Eastern Coast of Tanzania to complement primary data.

3.2.4 Data Analysis

Individual accounts, statements, testimonies and experiences were coded thematically to yield sub-themes, themes, and variables as advised by Flick (2009). These were further analysed qualitatively with the aid of the RRREI(C) model (see Table 1) to produce insights that depicted emerging and prevailing ICM challenges.

This paper adopted the RRREI(C) model as a tool for analysing, explaining and describing data that are presented in the form of narratives, accounts, or testimonials to the level that suggests the occurrence or existence of ICM challenges in the coastal and marine contexts. The model offered a guidance for uncovering important situations, decisions, outcomes, reasons, and factors that shed more light on the given responses to the extent that they shape potential ICM challenges. Maxwell (2012) comments that critical realist analytical tools help in understanding meanings, processes, and local contextual influences that are involved in a studied phenomenon.

4. Results

Input from research participants and secondary sources reveal that the ICM approach may yield social, cultural, ecological and economic benefits to coastal communities. However, its adoption is likely to face a wide range of challenges that need to be known to coastal actors, and be addressed accordingly to attract sustainability and effective management of coastal resources such as mangroves, coral reefs, sea-grasses, fisheries and coastal land. As mentioned in the abstract, the identified challenges include: over-reliance on fisheries resources, over-expectations, emergence of gender-selective activities, cultural challenges, complexity of adopted monitoring programmes, non-sustainability of some developed projects, land use issues, the condition of attaching municipal staff to ICM projects, and the diversification of activities.

5. Discussion

5.1 Contextual Challenges of ICM Approach in Tanzania

In spite of the ICM benefits alluded under sections 1.2 and 1.3 above, there are marked challenges that should be understood and addressed effectively by relevant agencies to achieve sustainable management of coastal and marine resources in Tanzania. These are presented and discussed further to the level that raise useful lessons to coastal practitioners, actors, and facilitators of ICM initiatives in general.

5.1.1 Over-reliance on Fisheries Resources

ICM was introduced in contexts where fishing is the main source of food and income (NICEMS, 2003). One of the recommended approach for increasing the number of fish in the coastal and marine areas under the ICM approach is to

limit or prohibit fishing activities in fish nursery sites, including areas that contain coral reefs and mangroves, for a specified period of time to allow them multiply (Cinner et al., 2005). This may have caused coastal communities to disqualify the specified approach and fail to show cooperation to ICM facilitators. An account given by one of the long-term artisanal fishers commends the initiative but raises a gap that emerges as a concern: *"Reef closing is a good practice, but we experience shortage of income when the closure is effected"* (Participant 1 - Mbweni locality).

There is an explicit indication from the specified account that the practice of reef-closing—which is normally implemented in the coastal area to allow fish reproduction and increase—becomes a threat to target individuals and social groups by reducing fishers' income. This suggests that actions that are taken by coastal actors in the course of implementing ICM practices should consider potential risks and livelihood implications to target communities. Lensing the account given by Participant 1 through the RRREI(C) model, (i.e., Resolution (R1), Redescription (R2), Retrodiction (R3), Elimination (E), Identification (I) and Correction (C); it is possible to observe that the presented account capitalises on *elimination* and *identification* of causal factors and the associated risks. The participant *identifies* the closure of reefs as a risk, and links it with potential loss of income. Moreover, the participant *eliminates* other causal factors that may potentially affect the income of local communities in the coastal area. The account also *eliminates* potential ecological risks in the reef area. Similarly, it ignores the possibility of experiencing reduced fish counts in the future; a condition that may also affect incomes and potential absence of fish protein, if the reefs will remain unclosed. This signals the challenge of inadequate awareness on ecological restorative measures that are associated with the ICM approach.

In addressing the challenge of over-reliance on fishery resources in the eastern coast of Tanzania, ICM practitioners need to consider a wide range of activities such as introduction of ecological education programmes and adoption of alternative sources of income such as mariculture; including crab fattening min-projects that have proved to be viable in coastal areas, especially in the Tanga coastal strip (IUCN, 2008; Sabai, 2014).

5.1.2 Over-expectations

In contexts where donors are involved in supporting ICM initiatives, there have been cases of over-expectations. Experience from the KICAMP programme, which was under Sida support, reveals that the involvement of local communities in capacity-building programmes caused some individuals and social groups to neglect their day-to-day activities, and direct their expectations to donor funds as the main source income (KICAP, 2002). Moreover, the mid-

term evaluation, which was carried out in 2005, revealed that fishers and mangrove restorers in Mbweni and Kunduchi localities (Dar es Salaam), commended the KICAMP programme for exposing them to four years of capacity-building, but insisted that the capacity they had built through study tours, workshops, seminars and periodic monitoring could have been complemented with the construction of fish markets and learning infrastructure. This compelled KICAMP to revise its original goals and direct the remaining funds to the construction of infrastructure (KICAMP, 2005).

In contexts where the ICM approach is adopted, facilitating actors are urged to complement capacity-building activities with other tangible needs such as improvement of local assets. Where the latter has not been given weight, facilitating institutions are advised to revise original plans to make them more theoretically and practically significant. When coastal facilitators *re-describe* their actions and plans (i.e., Redescription (R2)), they are likely to attract promising outcomes in coastal areas, and discourage over-expectations.

5.1.3 Emergence of Gender-selective Activities

A study that was recently carried out by Sabai (2019b) suggested that the practice of mangrove transplanting in Mkinga district is mainly carried out by women groups. Men are often seen fishing in mangrove sites but do not devote time for mangrove restorative activities. There are claims among men that mangrove restorative activities do not yield income to cater for family needs. One of the experienced female mangrove restorer made the following statement:

> *We used to have several men in the mangrove restoration group. By last year, the group had only one man. Currently we work alone. Men say that they need tangible income to feed their families, but they allow us to go on with the transplanting activities* (Participant 2 - Kijiru locality).

Participant 2 presents a scenario that reflects the *Retrodiction* stage (R3) of the RRREI(C) model. Under R3, research participants may explain or interpret ideas or give information by making assertions about the past, and making inferences from effects to causes. In this case, the effect is that women are left alone, and the cause of being left alone is the decision of men to leave mangrove restoration practice on grounds that such a practice do not yield tangible benefits. Participant 2 also presents the past and present scenario, and thus affirms the inference of *Retrodiction* (R3) in the presented account.

To attract active participation in the management of coastal resources, facilitators of ICM initiatives should make coastal communities understand that ecological restoration is a societal role and not a gender- or sex-specific as alluded by Participant 2. Facilitators of ICM programmes should also be able to facilitate a process that will lead to the adoption of eco-friendly activities such as

beekeeping, seaweed farming, mariculture, and ecotourism. When the facilitators are unable to prepare enabling conditions for adopting and implementing a variety of ecological friendly activities, ICM goals and objectives are likely to be unsuccessful. Experiences from the TCZCDP shows that local communities in the coastal area-initiated crab-fattening activities, bee keeping activities, and seaweed farming to complement their incomes as they continued to participate in the management of coastal and marine resources (IUCN, 2008). Similar initiatives were carried out in Kunduchi and Mbweni localities (KICAMP, 2007).

5.1.4 Cultural Challenges

Some cultural factors may potentially affect active participation of men and women in the ICM initiatives, if such will be ignored by enabling institutions and actors. One of the experienced coastal practice is the separation of men and women in social meetings or gatherings and an emphasis on men to assume leadership in a wide range of local practices (KICAMP, 2001). As it is the case with other African cultures, it is clear that there are gender-specific roles that are assumed to be embedded in the coastal culture (Ibid). This may emerge as a challenge since ICM approach requires equal and active participation of all social groups in the coastal rea. Experience from KICAMP programme suggests that when sensitization meetings were being convened, in the early stages of implementing the ICM programme in Mbweni and Kunduchi localities, men and women would isolate themselves, making it hard for organisers to find a common ground for deliberations (KICAMP, 2001). This was resolved by having a series of awareness programmes. As a result, women started engaging fully in roles that were previously assumed by men such as leading community-based activities, chairing meetings and raising input for the management of mangroves and collection of cucumbers from the ocean shore (KICAMP, 2004). One of the participant shares her views on the specified challenge:

> *When I was asked to lead the CBO group, I was not ready. You know! It needs courage to assume roles that were initially not assigned to women* (Participant 3, Kunduchi locality).

The account given by Participant 3 suggests that there are times when we change our ways of thinking and arrive at decisions that are useful. This is in line with the *Correction* (C) stage of the RRREI(C) model, which allows practitioners to remove any possible theoretical and practical errors; including discarding actions that were embarked on previously that appear to encourage gender supremacy or attract disunity. Likewise, coastal practitioners are encouraged to help users of coastal and marine resources to adopt new ways of practice and discard cultural practices that tend to discourage active participation of local communities in the management of coastal and marine resources.

5.1.5 Complexity of the Monitoring Methodology

ICM approach allows coastal communities to participate in the monitoring of resources such as mangroves, sea-grasses, fisheries, coral reefs and coastal land. There is evidence that the suggested methodology contained mathematical methods that are difficult for individuals and social groups to apply. The language of description used in the specified methods limited the acquisition of knowledge and experience. This affected the practice of 'learning by doing' through participatory monitoring of mangroves, fisheries, coral reefs, coastal land, and other coastal and marine resources (KICAMP, 2004; 2007). Below, is a statement from one of the technical personnel who served for a period of 6 years in the KICAMP project:

> *The methods for monitoring mangroves and other coastal resources were indeed technical. It was a challenge for us to simplify them and make our target communities apply them. But I am aware that one of the programme facilitators worked closely with fishers and mangrove restorers to develop locally based methods which were later adopted by local communities* (Technical Personnel 1-KICAMP).

In line with statement by the Technical Personnel 1, Sabai (2014) found that the monitoring methods and techniques that were adopted by ICM facilitators in the eastern coast of Tanzania were not clear to the local coastal communities. Moreover, the adoption process did not consider factors such as the level of education and the local context. When such a situation is experienced, the *Resolution* stage (i.e., R1) of the RRREI(C) model becomes useful. In this stage, facilitators of ICM initiatives are supposed to choose, break down, and describe key components of the ICM framework of methodology to reduce complexities, and pave the way towards knowledge transfer. This simply means engaging people in a process that will allow them to decide the type of methods that should be adopted, applied, or developed locally by individuals and social groups (Sabai & Sisitka, 2013).

The narrative also identifies the cause for the failure of coastal communities to apply the prescribed scientific methodologies as 'being technical'. This suggests the 5th level of the RRREI(C), i.e., *Identification* (I). In this level, the generative mechanisms (i.e., causes) for the experienced situation are identified. When facilitators of ICM are certain about the correct causal mechanism of a particular outcome, they can devise plans that rightly addresses the challenge of 'technicality'. The best approach for addressing it is to inquire from the affected individuals about the parts of the methodologies that appear to be difficult to them, and involve them in suggesting alternative traditional ecological knowledge techniques which they think may help in obtaining useful data or information regarding a particular resource. When this had been done, the next level is to incorporate the suggested input in the monitoring framework.

Accepting traditional ecological input in the monitoring framework has the potential for raising the lack of harmonization, but this should not be an issue since the main objective for monitoring is learning rather than generating scientific data.

Involving target communities in the development of frameworks that are relevant to their areas need to be a priority. There is evidence that when coastal communities engage in practices that they have planned themselves, and in the contexts that they are familiar with, they develop a sense of ownership, creativity, and belonging (Sabai, 2019a).

5.1.6 Non-sustainability of Developed Initiatives
Evidence shows that most of the ICM projects and programmes were initiated in collaboration with local government authorities. For example, the TCZCDP was initiated to build the capacity of Tanga Municipality; and the KICAMP for Kinondoni Municipality. With the exception of KICAMP, the rest of the ICM initiatives were not mainstreamed into local government plans. One reported experience is recited below:

> *Most of the coastal projects failed to facilitate revolving funds schemes. We need to learn from KICAMP which appears to be successful in supervising the revolving funds in Kinondoni Municipality* (Technical Personnel 2- TCZCDP).

The account given by the Technical Personnel 2 suggests the need for unsuccessful ICM initiatives to learn from successful ones. Learning through knowledge sharing creates a community of practice, and attracts expansive learning (Pesanayi, 2008). The account *retrodicts* the failure and success of ICM projects in Tanzania by making assertions about what happened to many ICM projects. It reflects a scenario of making inferences from failure to causes. This depicts the *Retrodiction* (R3) stage of the RRREI(C) model. Lessons learnt from one contexts may pave the way for the success of similar projects or programmes (KICAMP, 2001).

Mainstreaming of ICM initiatives into municipal development plans and policy, ensures sustainability, continuity, ownership, accountability and attracts the use of scientific methods in data creation and storage (KICAMP, 2007). Experience from the KICAMP suggests that for mainstreaming of ICM activities into municipal plans to be successful, some municipal staff must be attached fully to ICM projects or programmes (KICAMP, 2001). Moreover, planned coastal activities must be incorporated in municipal budgets; and be expected to increase slightly each year throughout a project period.

Let us take an example of a scenario where an ICM programme is initiated by a specific donor in collaboration with a particular municipality, and the two agree on a 5-years project/ programme. Initially, the donor will contribute a specified amount of funds in the first year, and keep on reducing the amount in subsequent years until the project or programme phases out. The municipality, on the other hand, will reverse the practice by increasing its budget to fill the gap being created due to reduced donor funds. In the end, the funding responsibility will be fully covered by the municipality when donor funds cease. This appears to be the approach that was adopted by KICAMP programme, leading to successful mainstreaming of its activities into the Kinondoni Municipal plans.

5.1.7 Land Use Conflicts

Coastal land is among the resources that are considered to be potential investment sites. It is also a good space where monitoring of land as a resource is carried out under the ICM approach by involving local communities (KICAMP, 2004). The creation of business sites along the coastal strip in the absence of a proper land use plan(s) puts mangrove forests and other forms of biodiversity at risk. For example, the creation of saltpans to allow salt harvesting is done after mangrove forests have been cleared from the site (ibid).

Relating an ongoing experience in Mbweni locality, one of the technical personnel says:

> *We are tired of this leader….[who] is always busy looking for investors to buy the area that contains mangroves. If we are not careful, most of the protected coastal lands will disappear* (Technical Personnel 3 - KICAMP).

It is clear from the above account that some individuals may misuse positions they are entrusted with for self-gain. In the specified case, ecological benefits receive less or no priority, while economic benefits are mostly valued. This account identifies the generative mechanisms for the destruction of ecological sites in coastal areas as interests for self-gain. Someone who is supposed to lead well takes the opposite dimension. This reflects the *Identification* (I) stage of the RRREI(C).

The construction of business apartments in the coastal strip that lies in the jurisdiction of the Kinondoni Municipality has always affected participatory monitoring practices in the coastal area, and raised conflicts between ecological restoration groups and owners of the business apartments (KICAMP, 2002; KICAMP, 2004).

The possible effective action for addressing land conflicts in the coastal area is to build enabling conditions for actors to incorporate participatory land use plans in their ICM initiatives to avoid potential conflicts that may affect participatory

monitoring of coastal land, as an important parameter in monitoring. For instance, in 2007 the KICAMP—in collaboration with Mbweni and Kunduchi local communities—initiated the practice of mapping and description of ecological sites that was later followed by developing a proposal for a land use plan. The proposed plan that contained specific ecological protection zones was approved by the Ministry of Lands and Human Settlements in the same year (KICAMP, 2007). Other ICM initiatives in the country could adopt the same approach to reduce land use conflicts in their localities.

6. Conclusion

The ICM approach offers a wide range of social, cultural, ecological, and economic advantages that may potentially attract sustainable management of coastal and marine resources in the eastern coast of Tanzania. ICM is also known for its potentiality in harmonizing emerging and prevailing sectoral conflicts, and overlaps of institutional mandates. For ICM to yield maximum benefits, facilitators of ICM projects and programmes need to lay down proper strategies for addressing potential and actual challenges in a proactive and participatory manner. Understanding better the type of challenges that limit the adoption and application of ICM and addressing them properly may greatly enhance coastal management practices, and attract their effectiveness and sustainability. Moreover, learning from successful ICM initiatives will greatly attract positive results in the eastern coast of Tanzania.

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