



Poverty and gender considerations in Marine Spatial Planning: Conceptual and analytical framework

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Abstract

Marine Spatial Planning (MSP) is a strategic and adaptive process for spatial planning of the marine environment, at national, subnational or regional scale. It is hailed as fostering the sustainable development of marine and maritime sectors, or “blue growth”. It has gained traction over the last two decades, including in developing countries in recent years. As a major planning process, it has the potential to help developing countries address their SDGs. However, because it is a national and centrally driven process that distributes power and influence among societal actors, there are also concerns that MSP may entrench existing power dynamics and marginalisation of certain groups, such as poorer households and women.

This report forms part of the Swedish Agency for Marine and Water Management (SwAM)’s efforts to support MSP implementation in the Western Indian Ocean (WIO). It provides a draft approach for ensuring that MSP does not exacerbate poverty and gender inequality in developing countries, and that potentially marginalised groups are appropriately considered and engaged in the MSP process. Although concerns have been vocalised, very little research has been carried out on mainstreaming poverty and gender perspectives in the MSP process and its impact on marginalised groups. Furthermore, the plethora of guidelines and tools to carry out MSP do not explicitly address these concerns.

In this report we suggest that a scorecard is used to guide and certify the social sustainability of the MSP process, and as part of the requirements of this scorecard, that indices for specific criteria pertaining to the wellbeing of potentially marginalised groups such as poor communities and women are used in the multicriteria analysis of planning options considered as well as in the monitoring of MSP outcomes. These criteria, based on Sida’s multi-dimensional poverty assessment framework, include power and voice, resources, opportunity and choice, community security, and domestic harmony. Guidelines are provided for the steps of a more inclusive MSP process.

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1 Introduction

Marine Spatial Planning (MSP) is a strategic process for spatial planning of the use of the sea designed to bring about sustainable development of the “blue economy” through ecosystem-based management¹ and sustainable ocean governance (Douvere, 2008; Ehler & Douvere, 2009; Agardy, 2010, Schaefer & Barale 2011). It is defined as a “*public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that are usually specified through a political process.*”² It is advocated by the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO) as a participatory, adaptive approach that involves the use of spatial zonation to reduce user conflict and cumulative negative impacts on marine ecosystems.

Through its stakeholder engagement approach, integration of sectoral interests, and approach to dealing with conflicts of interest, MSP provides the potential for a paradigm shift to democratise the management of the seas (Pomeroy & Douvere, 2008; Katsanevakis *et al.*, 2011; Frazão Santos *et al.*, 2014). It is viewed as an important step in the implementation of comprehensive ecosystem-based management³ while also promising to deliver on sustainable development goals (Ntona & Morgera, 2018). However, there has been considerable criticism of MSP in practice. This includes that MSP is being seen primarily as a means to unlock “blue growth”⁴, with environmental and social considerations often taking a back seat (Qiu & Jones, 2013; Silver *et al.*, 2015; Jones, Lieberknecht & Qiu, 2016; Frazão Santos *et al.*, 2018; Trouillet, 2020). Because MSP tends to be sectorally-focused, it does not take all of the complex social issues around space into account, such as the value of certain areas for marginalised groups (Flannery, Healy & Luna, 2018). Coastal communities associate oceans and seas with a sense of belonging, meaning, identity, and self-worth, and derive both material and immaterial well-being from activities, engagement with a place, and locational experiences (Fincher, 2016). Different groups affected by MSP have different values, attitudes, perceptions, beliefs and experiences about the marine environment, all of which must in some way be taken account. There have been important gaps in MSP relating to the assessment of social values, including the lack of spatial representation of ‘social connections’ to the marine environment and consideration of non-market values (Domínguez-Tejo *et al.*, 2016)

In particular, there are concerns that, as a national and centrally-driven process that distributes power and influence, MSP can fail to address the needs of society as a whole, instead favouring stakeholders that are resource strong and influential (International Monetary Fund, 2007; Jones *et al.*, 2016; Flannery *et al.*, 2018; Tafon, 2019; Saunders *et al.*, 2020). MSP has been criticised for being implemented “as a form of post-political planning⁵, dominated by the logic of neoliberalism⁶”, and without due attention to issues of power and inequality (Flannery *et al.*, 2018). Questions have been raised about stakeholder involvement, inclusivity and social equity of the MSP process, and hence its legitimacy (Flannery *et al.*, 2018). MSP could simply “repackage power dynamics in the rhetoric of participation to legitimise the agendas of dominant actors” (Flannery *et al.*, 2018). Indeed, as a

¹ This entails adherence to the Malawi Principles. <http://www.fao.org/3/y4773e/y4773e0e.htm>

² <http://mspglobal2030.org/about/>

³ This entails adherence to the Malawi Principles. <http://www.fao.org/3/y4773e/y4773e0e.htm>

⁴ The economic growth derived from development of the marine and maritime sectors, including renewable energies, offshore aquaculture, extraction of minerals, and fibre optic cable

⁵ A process that minimises engagement and meaningful debate, resists transformation of the status quo, and eliminates contestation, replacing it with elite and technocratic-managerial governance

⁶ A modified form of liberalism tending to favour free-market capitalism

planning tool, MSP offers an opportunity for misuse by powerful actors to reach sectoral rather than collective goals and sustain subjugation (Tafon, 2019). This undermines the normative purpose of MSP and its potential success. If a society feels that the planning processes and outcomes are unfair and inequitable, this can lead to lack of trust in the system. This, in turn, could discourage participation, diminish the legitimacy of decisions and decision-makers, or even spark contestations that lead to planning delays and increased legal costs for various actors (Saunders *et al.*, 2020).

MSP has gained momentum over the past 15 years (Ehler, 2017; Ehler, Zaucha & Gee, 2019). To date, about 70 countries have already embarked on the process, with some having already developed and implemented their plans. While progress has been dominated by developed countries, developing countries are increasingly taking an interest in MSP as they look for new economic opportunities. It is therefore important to consider MSP in a developing country context, where this sort of large-scale planning will come with many challenges, including major power and information asymmetries as well as different cultures, political and institutional contexts, and capacity and data shortages.

The Swedish Agency for Marine and Water Management (SwAM) is supporting the implementation of MSP in the Western Indian Ocean (WIO) region, in Somalia, Mozambique, South Africa, and soon also Madagascar, and aims to have a regional approach in its MSP work. SwAM has recognised the potential risk that MSP fails to address the needs of society as a whole. In particular, there is a major research and practice gap on how to apply a gender and poverty perspective in MSP. SwAM therefore seeks to better understand these risks and convey advice on how to mitigate them to the Western Indian Ocean (WIO) countries⁷. The key questions that have been posed are:

1. How can the MSP process take people living in poverty in traditional coastal societies into consideration, and what is needed from the existing legal framework for this to happen?
2. How can planners ensure that the MSP process integrates gender when working in a context where access to information and resources, the labour market and participation in public and political process are gender segregated?

This report is the first part of a two-part study. It outlines a rationale and proposed approach for ensuring that the needs of marginalised groups are fairly taken into consideration in the MSP process. As a starting point, the report focuses on women and people living in poverty, and the potential for MSP to contribute to gender equality and poverty alleviation in developing countries. To this end, the report explores how these groups are affected by MSP process and why this matters. It then proposes what a truly inclusive MSP process could look like. The second part of the study will test aspects of the proposed analytical framework in two short case studies in the WIO.

⁷ WIO countries include Comoros, Kenya, Madagascar, Mauritius, Mozambique, Réunion (France), Seychelles, Somalia, South Africa and Tanzania.

2 The IOC-UNESCO guidelines on MSP

The IOC-UNESCO guidelines for MSP⁸ suggest a 10-step process that includes the engagement of stakeholders and analysis of the existing situation and potential future scenarios in the production of a Marine Spatial Plan (Figure 1; see Ehler & Douvère, 2009). The ten steps are not a simple linear process; rather, some steps create feedback loops to others. A public participation process is included for the majority of steps in the MSP process (shown in orange in Figure 1). The process is typically centred on a marine zonation plan which delineates areas in terms of the different marine activities that are prioritised.

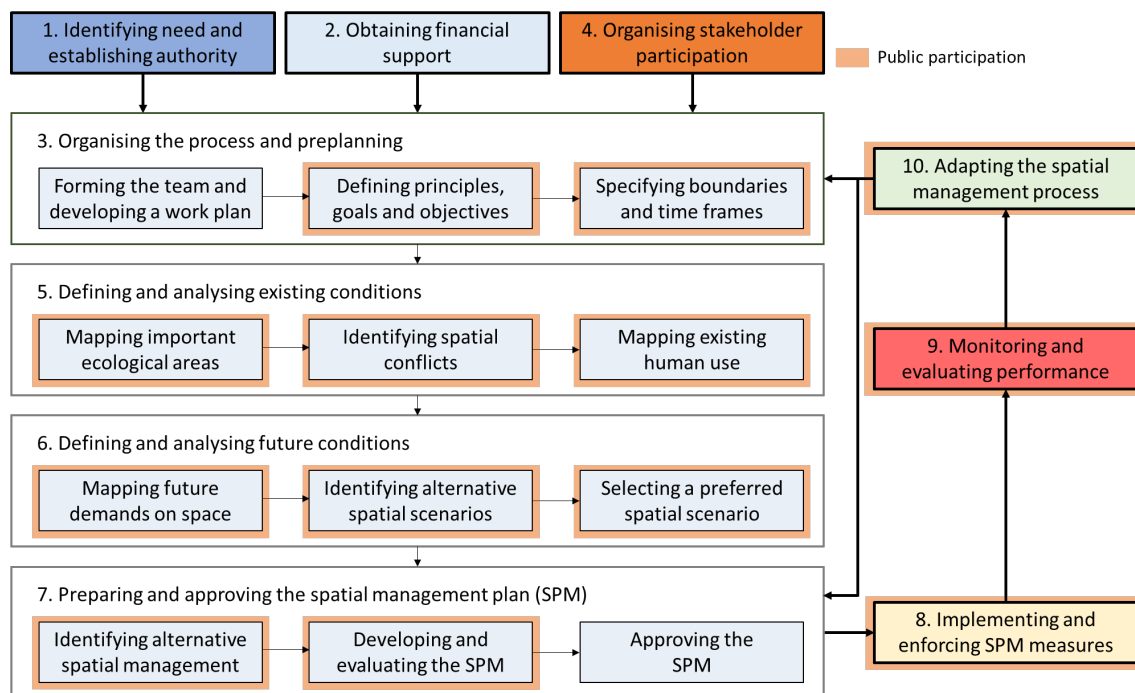


Figure 1 The ten step approach to Marine Spatial Planning (adapted from Ehler & Douvère, 2009).

MSP is not intended to replace existing management paradigms such as integrated coastal zone management (ICZM), ecosystem-based management (EBM), ecosystem approach to fisheries (EAF) or MPAs, but rather integrates these established tools (UNEP-Nairobi Convention Secretariat, WIOMSA & CSIR, 2017) (UNECA, 2016).

Overall, the IOC-UNESCO guidelines (Ehler & Douvère, 2009) define an effective MSP process as one that is:

1. Ecosystem-based, balancing ecological, economic, and social goals and objectives toward sustainable development;
2. Integrated across sectors and agencies, and among levels of government;
3. Place-based or area-based;
4. Adaptive, and capable of learning from experience;
5. Strategic and anticipatory, focused on the long-term; and,

⁸ <http://www.mspglobal2030.org/resources/key-msp-references/step-by-step-approach/>

6. Participatory, with stakeholders actively involved in the process.

Table 1 Summary of the outputs of the ten steps of MSP. Source: Ehler & Douvère (2009).

Step		Outputs
1	The identification of need and establishing authority.	(a) a preliminary list of specific problems to be solved through marine spatial planning (b) a decision about what kind of authority is required for developing marine spatial planning
2	Obtaining financial support.	A financial plan that: (a) estimates the costs of the MSP activities (b) identifies alternative means to obtain financing for those MSP activities
3	Organising the process through pre-planning	(a) organisation of a marine spatial planning team with the desired skills (b) a work plan that identifies key work products and resources required to complete the outputs of planning on time (c) defined boundaries & time frame for analysis and management (d) a set of principles to guide development of the marine spatial management plan (e) a set of goals and objectives for the management area
4	Organising stakeholder participation	(a) a plan indicating who, when and how to involve stakeholders throughout the marine spatial planning process
5	Defining and analysing existing conditions	(a) an inventory and maps of important biological and ecological areas in the marine management area (b) an inventory and maps of current human activities (and pressures) in the marine management area (c) an assessment of possible conflicts and compatibilities among and between existing human uses
6	Defining and analysing future conditions	(a) a trend scenario illustrating how the MSP area will look if the present conditions continue without new management interventions (b) alternative spatial sea use scenarios illustrating how the management area might look when human activities are redistributed based on new goals and objectives (c) a preferred scenario that the basis for identifying and selecting management measures in the spatial management plan
7	Preparing and approving the spatial management plan	(a) an identification and evaluation of alternative management measures for the spatial management plan (b) identification of criteria for selecting alternative management measures (c) a comprehensive management plan, including if needed, a zoning plan
8	Implementing and enforcing the spatial management plan	(a) clear identification of actions required to implement, ensure compliance with, and enforce the spatial management plan.
9	Monitoring and evaluating performance	(a) a monitoring system designed to measure indicators of the performance of marine spatial management measures (b) information on the performance of marine spatial management measures that will be used for evaluation (c) periodic reports to decision makers, stakeholders, and the public about the performance of the marine spatial management plan.
10	Adapting the marine spatial management process	(a) proposals for adapting management goals, objectives, outcomes and strategies for the next round of planning (b) the identification of applied research needs

Indeed, the MSP framework can accommodate the 12 Malawi Principles for an ecosystem approach agreed upon in Malawi in 1998 (Box 1), which include the involvement of all relevant sectors of society.

Box 1. The Malawi Principles on the ecosystem approach to biodiversity management

1. Management objectives are a matter of societal choice.
2. Management should be decentralized to the lowest appropriate level.
3. Ecosystem managers should consider the effects of their activities on adjacent and other ecosystems.
4. Recognizing potential gains from management there is a need to understand the ecosystem in an economic context, considering e.g. mitigating market distortions, aligning incentives to promote sustainable use, and internalizing costs and benefits.
5. A key feature of the ecosystem approach includes conservation of ecosystem structure and functioning.
6. Ecosystems must be managed within the limits to their functioning.
7. The ecosystem approach should be undertaken at the appropriate scale.
8. Recognizing the varying temporal scales and lag effects which characterize ecosystem processes, objectives for ecosystem management should be set for the long term.
9. Management must recognize that change is inevitable.
10. The ecosystem approach should seek the appropriate balance between conservation and use of biodiversity.
11. The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.
12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines

As per the guidelines, the final output of MSP is a comprehensive, strategic document that provides the framework and direction for decisions related to specific management actions. This identifies when, where, and how management actions will deliver desired outcomes for a chosen marine spatial vision. This is typically centred on a marine zonation plan which delineates areas in terms of the activities (e.g. protection, shipping, mining, industrial fishing etc.) that are prioritised.

Because MSP is such a complex undertaking, a large amount of effort has gone into developing tools that can be used to streamline the process (Lagabrielle *et al.*, 2018a; Metcalfe *et al.*, 2018; Weig & Schultz-Zehden, 2019; Stelzenmüller *et al.*, 2013). These include tools that are used to understand the spatial use of the marine environment and interactions between activities, spatial conservation and development planning tools (see Stanford *et al.*, 2013), tools to assess cumulative risks of human pressures (e.g. the GIS-based *Symphony* tool - Hammar *et al.*, 2020), and decision support (DSS) tools to evaluate scenarios.

3 Poverty and gender dimensions of MSP

3.1 Poverty

3.1.1 *The poverty reduction imperative*

The UN's 2030 Agenda for Sustainable Development acknowledges that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development. The first Sustainable Development Goal (SDG 1) aims to “*End poverty in all its forms everywhere*”. The seven associated targets aim to eradicate extreme poverty for all people everywhere, reduce at least by half the proportion of men, women and children of all ages living in poverty, and implement nationally appropriate social protection systems and measures for all.

Developing countries typically try to address poverty through economic growth. Increasingly, coastal countries are looking at the potential for Blue Growth, and MSP is seen as a means to facilitate this. However, there are concerns that this approach may not necessarily serve the interests of the poor, since many poor coastal communities rely on resources that may be impacted by the higher-value sectoral activities that are favoured. Thus, the way in which MSP affects the poor requires further attention.

3.1.2 *Understanding poverty*

Agenda 21, the non-binding action plan for sustainable development produced at the UN Conference on Environment and Development in 1992, emphasized that poverty is a complex multidimensional problem with origins in both the national and international domains. The measurement of poverty comprises of *identification* of the poor, and *aggregation* of data on poverty into an overall index (Tsui, 2002). Understanding and applying poverty dimensions is critical in incorporating poverty perspectives in MSP processes. Two approaches have been used in the identification people affected by poverty.

- The first is the income or poverty-line method of aggregation, which has attracted considerable attention and involves determination of a poverty-line income sufficient to attain minimum basic needs. Any individual that falls below this line is considered poor or deprived. In the MSP example, this would involve using an already predetermined poverty-line, or construction of a local poverty line, against which incomes or expenditures of individuals in the communities under consideration would be gauged.
- The second method, which is the multidimensional poverty approach, views income, not as intermediary of basic needs, but in terms of shortfalls from the minimum level of the basic needs themselves. The income approach presupposes that markets for all basic needs always exist, but this is not the case. This and other considerations have made the multidimensional approach to poverty measurement gain popularity especially among development economists and development agencies.

The differences and preferences notwithstanding, both methods are objective as they involve collection of household surveys and use individual characteristics such as education and investment opportunities, as well as the surrounding social and economic, environmental and other contexts affecting how the household can use those opportunities to determine a household's long-term economic wellbeing. The poverty-line or income method, especially, introduces a number of

practical problems such as measurement errors, but also introduces difficulties especially when constructing poverty lines to compare households in a community, region or a country (Browning, Crossley & Weber, 2003; Deaton, 2010). Therefore, measuring only current objective poverty status may be misleading (Alem, Köhlin & Stage, 2014). It is therefore imperative to supplement the objective measure of choice with measures which are subjective to perception of deprivation and are defined by examining who is in general considered poor, or by collecting their beliefs about their own position in a system of inequalities (Nandori, 2011). The subjective measure of poverty simply asks people whether they perceive themselves poor or not (Alem, Köhlin and Stage, 2014). Depending on how the questions are framed and the responses from the subjects, information from subjective measures of poverty can be used to effectively measure poverty over time and to make poverty comparisons (Ravallion & Lokshin, 2002), and provide more information about deprivation.

Given the advantages of the multidimensional approach, this paper proposes the Sida multidimensional poverty approach as the method of identification of poverty when incorporating poverty perspectives in MSP. This is because, despite of the advantages of multidimensional approaches over income approaches in general, this tool presents a tractable concentric view of poverty and its determinants that are easy to follow and apply. Therefore, a combination of this tool with a well-structured subjective measure of poverty would help bring out poverty issues amongst coastal communities for discussion and inclusion in MSP. This being the case, it is imperative to expound on the components of the approach and how it links to MSP.

According to the multidimensional poverty analysis (MDPA), poverty does not simply mean the lack of resources, but also lack of opportunity and choice, power and voice and/or human security. A person living in poverty is resource-poor *and* poor in one or several of the other dimensions as discussed hereunder and depicted in the inner circle of the MDPA illustration in Figure 2;

- Poor in terms of resources means not having access to or power over resources that can be used to sustain a decent living standard, meet basic needs and improve one's life.
- Poor in terms of opportunities and choice concerns one's possibilities to develop and/or use the resources to move out of poverty. These opportunities include; access to productive employment, education, health clinics, infrastructure, energy, markets and information affect the choices available and opportunities to escape from poverty.
- Poor in terms of lacking power and voice relates to people's ability to articulate their concerns, needs and rights in an informed way, and to take part in decision-making affecting these concerns.
- Poor in terms of human security means that violence and insecurity are constraints to different groups' and individuals' possibilities to exercise their human rights and to find paths out of poverty.



Figure 2. The Swedish International Development Cooperation Agency's multi-dimensional poverty assessment (MDPA) framework

These four dimensions of poverty are interlinked in complex ways, where changes in one or several dimensions could lead to positive and negative consequences in others. The Sida model (Figure 2) asks who is poor and in which dimensions? This starts with an understanding of the situation, needs, preconditions and priorities of individuals. The *who* can be characterised by gender, age group, ethnicity, etc. The four dimensions under the Sida poverty framework are therefore objective by construction. The context of the household is important and warrants discussion as it influences how resources, opportunity and choice, power and voice and/or human security interact.

The outer circle of the framework is contextual circle which interacts with the poverty dimensions to produce the final poverty status of the individual or household. They highlight the underlying causes and help identify pathways out of poverty. The contexts are; economic and social, political and institutional, environmental, and, peace and conflict. The *economic and social context* covers the size and growth rate of the economy, the key macroeconomic variables, fiscal policy, structure of the economy and exports, use and dependence on natural resources, education system, health system and demographic developments. The *political and institutional context* refers to the formal and informal political institutions, norms, rule of law and human rights. The *peace and conflict* context refers to factors such as social cohesion, trust, conflict resolution mechanisms, justice, and arms control on the one hand and violence, tensions, grievances and conflicting interests on the other. The *environmental context* includes the need to understand the environmental situation, trends and consequences in the country of region – e.g. climate change, loss of biodiversity and ecosystems services, pollution, water quality – and the causes and drivers of degradation.

3.1.3 The influence of MSP on poverty

MSP processes are multi-faceted with multiple objectives, but the overall objective is to ensure long-term planning of marine and maritime sectors and marine resources i.e blue growth. Blue growth has benefits which if equitably shared between the stakeholders will bring benefits such as improved incomes and reduced poverty especially for the local communities. To reduce poverty, the MSP process has to ensure access to resources, opportunity and choice, power and voice, and absence of

violence and insecurity for the poor and marginalized groups such as women. The effect of the MSP on these poverty dimensions as spelled out by Sida (2017) will determine its success.

MSP will, for example, affect the primary dimension of poverty, which is **access to resources** in a number of ways. In the WIO region for instance, small-scale fisheries and mariculture play an important role in food security, livelihoods, and wealth generation for coastal communities (Matsue, Daw & Garrett, 2014). Marine and coastal centred tourism is also an important source of livelihood in the region, and is focused on sandy beaches, mangroves and corals, the latter of which have significant economic value in terms of dive tourism (Barton, 1994; Crabble & McClanahan, 2007). There are also extractive industries taking place in the region, both formal and informal, include coral and limestone quarrying, sand mining, salt production and mineral extraction from sand dunes (UNEP-Nairobi Convention and WIOMSA, 2015). In spite of the rich array of livelihood sources, the coastal communities of the WIO include some of the poorest and most vulnerable communities in Africa. Decisions about the use of marine areas could impact directly on people's access to subsistence and small-scale fisheries (i.e. artisanal fishing), the abundance of resource stocks, and the quality of the environment. This could in turn affect livelihoods and social networks, for example by changing distances and times involved to maintain benefits from coastal activities. They could also impact on opportunities for income from employment in tourism and industrial sectors, as well as in other sectors linked to these. There is little evidence from the literature on any of these types of impacts, however. Poor households engaged in small scale activities tend to carry out those activities in coastal and inshore environments. Thus, it is important that plans for and impacts on the users of these environments are taken into account in MSP.

MSP could also have a significant impact on the levels of **opportunity and choice** facing households. For example, commercial and industrial activities such as oil and gas extraction offer significant blue growth opportunities for the developing countries in Africa (UMECA, 2016; Adewumi, 2020). As set out by the African Union's Agenda 2063, the blue economy is perceived as the continent's future because its benefits extend beyond the shores of coastal states and create opportunities for adjacent landlocked communities and countries (AU, 2015). Recognizing the significance of the blue economy as the "next frontier" for Africa's development in its Agenda 2063 of the "Africa we want," the African Union (AU) declared that the blue economy is "Africa's Future" (UNEAC, 2016). In addition to the employment opportunities created by blue growth, it can have an important indirect impact through generation of tax revenues. These allow improvements in services such as education, health care, infrastructure, electricity and water supply, and the internet. Thus, benefits to poor households should not only be seen in terms of direct access to small-scale sectors, and the relative contributions of these pathways should be carefully considered. Very few, if any, applications of MSP have considered these effects.⁹ These potential benefits of blue economy growth need to be weighed up against the potential impacts on inshore environments and their users.

Although MSP cannot be expected to address all the dimensions of poverty, it can play a role in addressing the **power and voice** of poorer communities through engagement, and it has potential influence on the dimension of human security through its impact on women and hence male-female relations. **Violence and insecurity** can hinder the potential benefits accruing from any intervention including MSP. A potential challenge could be conflicts over resources arising from disgruntled groups

⁹ <https://www.cffacape.org/publications-blog/why-the-current-african-unions-blue-economy-strategy-threatens-small-scale-fisheries>

or communities whose needs have not been taken care of in the process due to, for example, poor stakeholder engagement. If MSP process is properly conducted however, such internal conflicts can be avoided.

MSP will also influence the '*context*' circle (Figure 2), as the processes in the '*how and why*' circle are expected to interact and influence those in context circle such as socio-economic interactions, politics and institutions, the environment, and prevailing peace/conflict. The reverse is also true as the context circle determines to a large extent the outcomes in the *how and why* circle. Socio-economic interrelations, for instance, are likely to give rise to an environment that impedes or promotes the MSP. The process is also heavily political as it is led by government ministries and agencies whose aim is both managing marine resources and ecosystems as well as to ensure exploitation of the marine economy for growth of the national economy. These objectives might not always be equally prioritized and economic incentives might override others depending on the importance of the marine sector for the economy of a particular country. The MSP process will also depend on the peace or conflict during the planning and implementation phases of the process. Finally the impact of MSP on the environment is critical as most of the coastal societies depend on marine ecosystems for their livelihoods, and any interventions disturbing already fragile ecosystems is likely to drive the communities further into poverty. A successful MSP that incorporates poverty perspectives should be cognisant of the delicate balance of communities welfare, environment, politics, and potential for conflicts.

3.2 Gender

3.2.1 *The importance of empowering women*

The SDG 5 aims to achieve gender equality and empower all women and girls. On a global level, women still experience legal, social and economic barriers to their empowerment and are under-represented at all levels of political leadership (UN, 2020). Girls tend to be less educated, which means they have limited opportunities in the labour market, and when they enter the labour market, they tend to do so at lower wage rates than men (Agesa, Agesa & Dabalén, 2013; Nix, Gamberoni & Heath, 2016). This not only puts them in a vulnerable position with respect to treatment by men (see discussion on poverty above), but also limits economic growth (UN, 2020). Vulnerable women also tend to have higher numbers of children for cultural or economic reasons, which exacerbate maternal mortality rate and childhood malnutrition (Dasgupta, 1997). Indeed, there is a strong connection between women's empowerment and poverty alleviation. The empowerment of women and its importance for accelerating the fertility transition¹⁰ is seen as a key strategy in accelerating poverty reduction in Africa (Beegle & Christiaensen, 2019).

3.2.2 *Understanding gender issues*

Gender analysis is used to assess gender relations in a society, and the inequalities therein, by asking: Who does what? Who has what? Who decides? How? Who gains? Who loses? While there is no universal way to undertake a gender analysis, numerous frameworks exist to highlight gendered differences in terms of opportunities, status and standards in society, such as the Harvard Analytical

¹⁰ This is the demographic transition from a situation of high fertility and mortality to one of low fertility and mortality.

Framework¹¹ and the Moser Framework¹² (March *et al.*, 1999; de la Torre-Castro *et al.*, 2017). These typically comprise simple tools (e.g. checklists, tables) to guide qualitative information gathering. These tools have allowed better recognition of the way in which policy decisions affect women, by considering the gendered differences in reproductive, productive and community roles, the practical and strategic needs of women, and who controls resources, for example.

While gender issues exist throughout society, they tend to be of greatest concern in poor societies. Indeed, gender issues are recognised as a significant factor in Sida's multidimensional poverty framework (Figure 2). Thus, women can be seen as impoverished when they lack access to resources, lack voice and power, lack opportunity and choices or when they are insecure in their homes as a result of their roles and position in society. Thus, it can be recognised that women, or any other marginalised group, fit the same profile as described in this framework.

3.2.3 The influence of MSP on women

As for any other marginalised group, the primary potential influence of the MSP process on women is that of their access to marine resources or employment in marine sectors. Women are particularly vulnerable to changes in policy because their range of options is much narrower than those of men. This has implications for their domestic security. Thus, the impacts of women can be considered in the **same dimensions as for poverty** (Figure 2).

Poorer women in developing country contexts are particularly vulnerable in terms of their access to **resources** because of they tend to have more limited options than men. In coastal and marine environments of developing countries, their activities tend to be onshore, and close to home, while men work throughout the seascape, and can travel further to trade (Feka, Manzano & Dahdouh-Guebas, 2011; Fröcklin *et al.*, 2013, 2014; de la Torre-Castro *et al.*, 2017). This tendency is linked to reproductive roles¹³, with women less able to take advantage of new resources or move to new areas if needed (Fröcklin *et al.*, 2014), and limits their earning power. For example, in Zanzibar, deep sea fishing is carried out entirely by men, while women tend to only utilise shallow areas and coastal forests for the collection of invertebrates and firewood, as well as seaweed farming (de la Torre-Castro *et al.*, 2017a; Figure 3). Similarly, in the rest of Tanzania, men are linked to higher value offshore capture fisheries, while women are linked to lower valued shore-based gleaning (Fröcklin *et al.*, 2013). They are also involved in different forms of aquaculture to men, such as seaweed farming (UNEP-Nairobi Convention and WIOMSA, 2015; Steyn Kotze *et al.*, 2018). Men have also been found to have greater access to post-catch marketing compared to women, including being able to sell the catch further away from the landing site, direct trade with the tourism industry, and access to more profitable market space i.e. women have lower access to capital and opportunities (Fröcklin *et al.*, 2013). Because women tend to be more restricted to inshore areas than men, they are particularly vulnerable to how the coast is taken into account in MSP.

¹¹ The Harvard Analytical Framework comprises 3 tools to describe differences in activities, access to and control over resources, and the factors that influence this.

¹² The Moser framework has modules on (1) gender roles in reproduction, productive work and community work (triple role), (2) gender needs– practical and strategic, (3) control of resources and decision making in the household, (4) planning for balancing the triple role, (4) distinguishing between different aims: welfare, equity, anti-poverty, efficiency, empowerment and (5) involving women and gender aware organisations/planners in planning.

¹³ **Reproductive tasks** encompass the care and maintenance of the household and its members, such as cooking, washing, cleaning, nursing, bearing children and looking after them, building and maintaining shelter. This is in contrast to **productive tasks**, which include the production of goods and services for income or subsistence.

The tourism sector tends to be dominated by men (Mshenga & Richardson, 2013, Mangwangi, 2015), but there are examples of women-led initiatives (UNEP-Nairobi Convention and WIOMSA, 2015). Inshore artisanal mining also offers opportunities for women in East Africa, mainly in the form of informal salt production, but to some extent also informal sand mining, coal and limestone quarrying. These activities are time consuming, and earn little cash income (Turpie, 2001; Ngabiire, 2014). However, women have particularly low involvement in the more lucrative industrial and extractive sectors (Steyn Kotze *et al.*, 2018; Ngabiire, 2014; Monfort, 2015; de la Torre-Castro *et al.*, 2017), not only because of their reproductive and social roles, but also due to their lower educational status, lack of access to capital and cultural barriers, or due to the physical requirements of the work. In general, women tend to be confined to the small-scale, inshore components of the aquaculture and extractive sectors, or relatively menial onshore employment in the more commercial or industrial sectors. Nevertheless, in Mozambique, women make up half of the workforce in the oil and gas sector (UNEP, 2018).

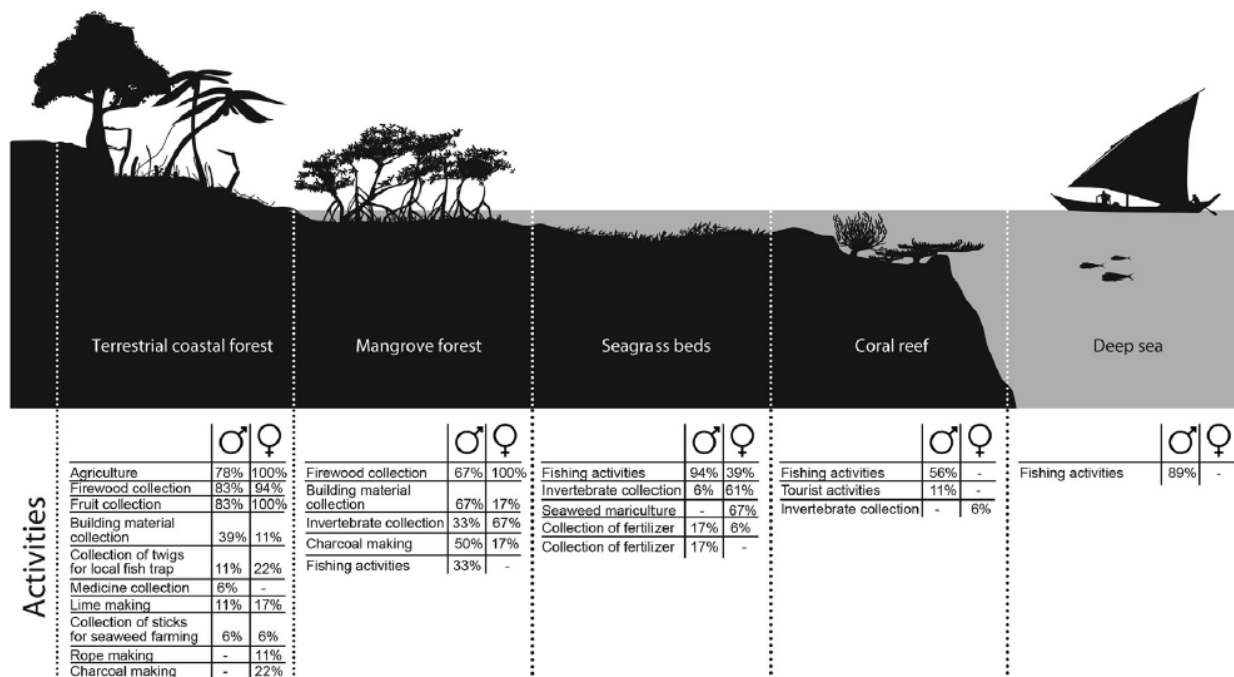


Figure 3 Gendered use of the Zanzibar seascape (image from de la Torre-Castro *et al.*, 2017).

These strong gender differences in roles mean that different planning alternatives may impact very differently on men and women, and the narrower range of options means that the impact is likely to be more serious for women. In Tanzania for example, shifting markets resulted in an increased value of the lobster resource, and a corresponding shift of men into active harvesting of lobsters, which was traditionally seen as a “women’s” fishery. This shift resulted in the exclusion of women from their traditional artisanal fishing grounds, forcing them to instead move to new sectors, such as farming of seaweed or sea cucumbers (Mwaipopo, 2008; Samoilys & Kanyange, 2008). It is important to stress that one cannot legislate against this sort of shift, or even hope to influence it via MSP. What the planning process can do is ensure that additional costs are not imposed on women simply because they are not present to represent themselves in policy discussions.

As for poor households, the other way in which women's status and wellbeing can be affected by MSP is indirectly, through the redistribution of tax income from blue economy development. This can lead to the improvement of **opportunities and choice**, e.g. through access to better health services and education. This could be of greater significance to women in the longer term than direct access to resources. It is well established that better education contributes to women's economic empowerment and more inclusive economic growth (OECD 2012).¹⁴

As a planning process MSP can also contribute to giving **power and voice** to women, as for any other marginalised group, by taking them into account and including them in the process. However, it should be emphasised that MSP alone will not be able to change attitudes and cultural norms. MSP will not be able to change gender roles or gender gaps in the industrial workplace, but it can help to ensure that women are not negatively affected by the process. This is explored further below.

Finally, in societies where there are pronounced gender roles, impacts on women's access to marine resources or employment could have knock on effect for their roles in the home, and impact on their own **security** as well as the future wellbeing of their children.

3.2.4 Lack of representation and influence of women in the MSP process

Having a say is instrumental to women's maintaining or improving their access to resources and benefits from marine activities. However, in patriarchal societies, women can be forgotten or sidelined at the planning table (de la Torre-Castro *et al.*, 2017). The importance of understanding both the gendered use and management of resources lies in the fact that such differences may have different implications for the sustainability of the system in question under MSP. This understanding is hampered by the lack of representation of women who work within the system in decision-making positions across sectors — because these women's voices are not heard, the potential gendered differences in resource and spatial use are not accounted for, and the impacts of this use, as well as existing or potential conflicts with other users, are ignored. A critical component in sustainable use is thus missing, and the efficiency of management interventions is reduced. Existing biases are thus reinforced, negating the "inclusive and democratic stakeholder participation" promise of MSP.

The exclusion (or lack of real influence) of women in planning processes in developing countries such as those of the WIO is linked to the gendered division of labour, with women tending to participate in lower-income activities, a low level of participation of women in more commercial sectors and professional associations (particularly at managerial level) and attitudes towards the inclusion of women in decision-making. These differences stem from social and gender norms that shape gender differences in access to support and information, participation in community governance and social organisation, and learning and experimentation (Cohen *et al.*, 2016), as well as in their access to land and resource rights.

Reviews of management frameworks in the WIO reveal a "deep gender inequality" and androcentrism¹⁵. Planning and legislation are entirely focused on male-dominated sectors, with little or no planning, management or monitoring of women's activities (Fröcklin *et al.*, 2013; de la Torre-Castro *et al.*, 2017). As an example, in Tanzania, women's shore-based and near shore catches of both fish and invertebrates are both undervalued and absent from fisheries statistics and management plans (Fröcklin *et al.*, 2013). This under-representation and undervaluing of so-called

¹⁴ OECD, *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*.

¹⁵ Androcentrism is the practice, conscious or otherwise, of placing a masculine point of view at the centre of one's world view, culture, and history, thereby culturally marginalizing femininity.

“women’s work” is a global trend, especially in fisheries, despite the essential role played by women: in the Pacific, for example, women account for 56% of annual catches in small-scale fisheries, and such a scenario is likely to be similar in the WIO (Harper *et al.*, 2013). Given that 47% of the 120 million people who work in the capture and post-harvest fisheries sectors are women (Monfort, 2015), gender should be an important consideration (Alarcón & Cole, 2019).

It must be noted that gender biases exist within all stakeholder groups, including policymakers, planners, vessel owners and operators, researchers and environmental and social campaigners (Saunders *et al.*, 2020). Around the world, women only occupy a small proportion of jobs in research and development, the oil and gas industry, and industrial fisheries, and an even smaller proportion of executive positions (Monfort, 2015; Urama *et al.*, 2015; Sardelis, Oester & Liboiron, 2017; Gerrard & Kleiber, 2019; Global Energy Talent Index, 2020). Thus, unsurprisingly, women also tend to make up a relatively small percentage of representatives in public forums. De Pryck (2013) suggests that there are also cases where women are excluded from membership of professional organisations, resulting in disproportionately low representation of women in the planning process. However, formal exclusion from a profession is now extremely rare outside of religious bodies.

Decisions that are made with little or no regard to women’s activities, views and interests undermine the sustainability goals of MSP (Monfort, 2015). Regardless of the status and perspectives held by women and men in a society, spatial planning must take gender into account to ensure a well-informed and equitable outcome (Dymen, 2014).

4 Designing and evaluating a socially-sustainable MSP process

The long-term success of MSP hinges on the three pillars of environmental, economic and social sustainability. However, the social dimensions have received much less attention than the other two (Saunders *et al.*, 2020). It is argued that MSP must include improved representation of a wider variety of (less organised) interests in the decision-making processes; it must rethink the distributions of the costs and benefits associated with MSP; it must increase recognition of distinctive socio-cultural identities specific to certain places; and must include the means to empower “weaker” stakeholders (Saunders *et al.*, 2020). Thus, a properly inclusive process is also more likely to lead to a sustainable outcome.

4.1 The Social Sustainability Framework

Using a social justice lens, social sustainability can be conceptualised as being based on three key dimensions of recognition, representation, and distribution (Saunders *et al.* 2020; Figure 1):

- **Recognition** deals with respect in relation to socio-cultural diversity of the group e.g. rights, needs, livelihoods, lifestyles, and knowledge (i.e. cultural influences). This can be seen as what information is taken into account in devising and evaluating options.
- **Representation** deals with who is included or excluded in decision making, as well as the how and time inclusion in decision making (i.e. political influences). This is reflected in the way in which stakeholders are engaged in the process.
- **Distribution** is concerned with how risks, benefits, pollutants, capacities, and resource/experiences are distributed particularly in relation to already disadvantaged group (i.e. economic influences). This is reflected in the outcome of the process – how the various benefits and costs of the marine spatial plan are distributed among different actors.

The inclusivity of stakeholder engagement in the MSP process depends on good communication, transparency and perceptions of unbiased decision-making (Flannery, Clarke & McAteer, 2019). Information has been key to allowing meaningful participation of fishers in France (Trouillet *et al.*, 2019). In the US, stakeholder participation in the Northeast Ocean Planning initiative was limited by a failure to understand that the process was meant to be inclusive; issues relating to governance and scale; and lack of information on what was at stake (Flannery *et al.*, 2018).

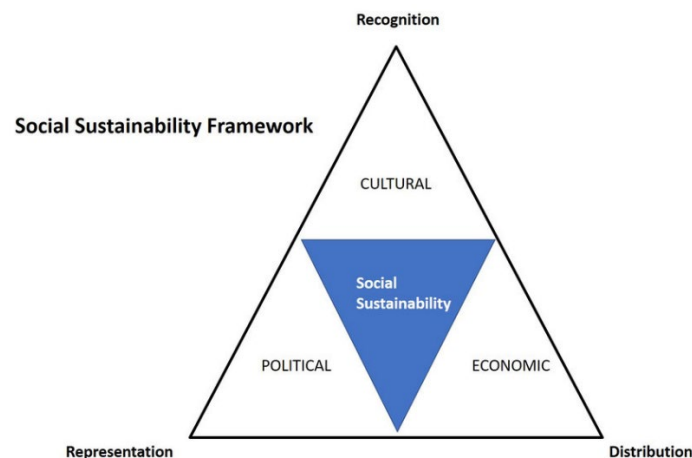


Figure 4 Social Sustainability Framework in MSP. Source: Saunders *et al.*, (2020)

Quite often responsible entities do not engage stakeholders in a timely manner, but only in the final stages when their input is much less likely to be effective (Gilliland & Laffoley, 2008). Also, engagement is often limited to simple communication through public comment, rather than approaches such as facilitation, negotiation and consensus-building, where the decision-making process is shared among stakeholders and governments (Pomeroy & Douvere, 2008; Gopnik *et al.*, 2012).

The MSP guidelines encourage the involvement of stakeholders in the evaluation of options for managing the marine environment. In developing countries, this would require communicating these options and their consequences to people not only from multiple sectors but also from vastly different socio-economic backgrounds. Understanding the implications of different planning options can also be complicated when the scale of management is different to the scale(s) of the ecological processes being managed (Cumming, Cumming & Redman, 2006; Lagabriele *et al.*, 2018b). Here, it is easy to see that marginalised groups could be left behind in the complexity of the analysis unless proactive steps are also taken to empower them in the process.

4.2 Steps in a socially-sustainable MSP process

In order to achieve a socially-sustainable outcome, the process requires an approach for identifying potentially-marginalised communities or groups (PMCs/PMGs), for describing their current position and the impacts of alternative options, and for evaluating the outcomes. This requires conscious efforts in almost all steps of the MSP process (Figure 5). This figure also shows which MSP steps can be better aligned to meet the requirements of recognition, representation and distribution:

- **Recognition:** The preparatory steps are where efforts are made to recognise the potentially marginalised stakeholders, their values and needs, by bringing them into the process and making an effort to understand their situation. This includes a commitment to do so in the establishment of the legal and policy framework for MSP.
- **Representation:** The need for representation of all groups is most pertinently addressed in the Scenario Analysis step of MSP, through explicit inclusion in the decision analysis framework.
- **Distribution:** The outcome, in the form of the spatial management plan and associated policies, can be evaluated in terms of its distributional implications after any mitigation to determine that no threshold conditions (e.g. relating to human rights) have been violated.

The proposed sub-steps for a socially-sustainable process out are described in more detail below.

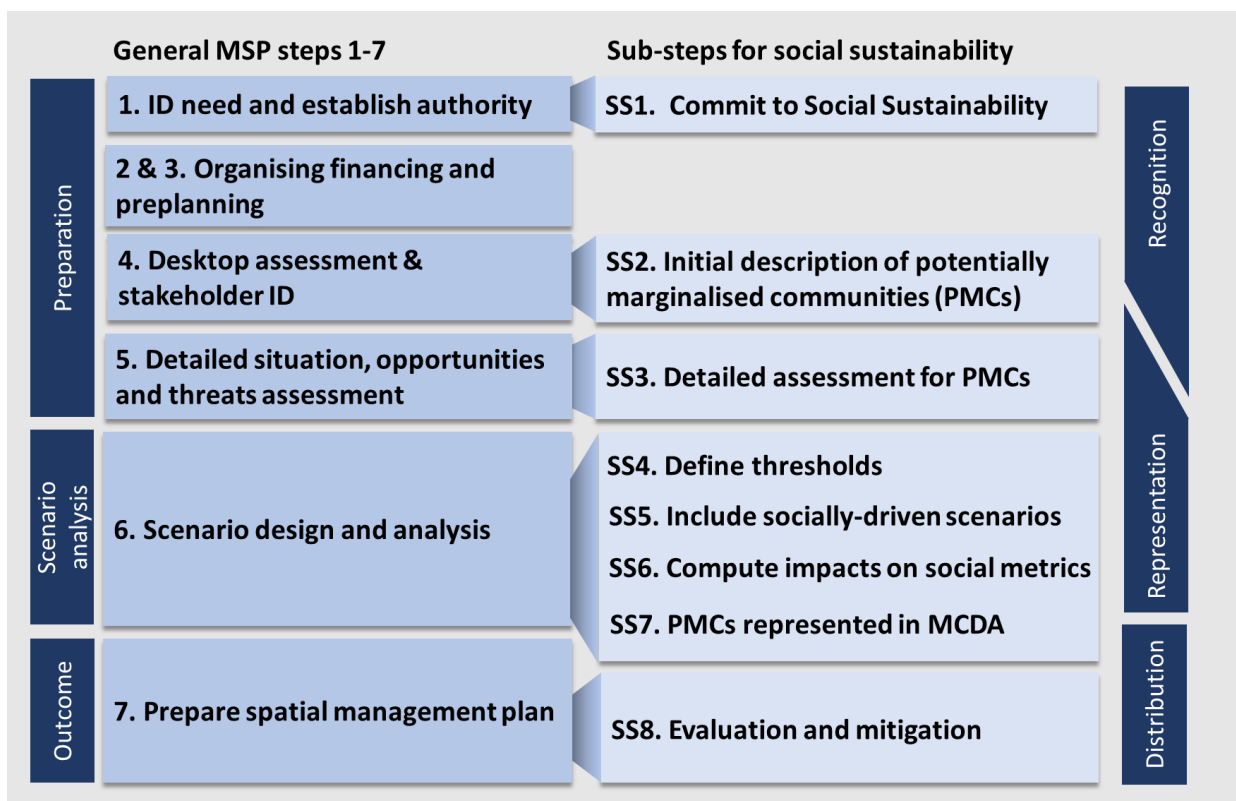


Figure 5. Outline of the sub-steps for incorporating potentially marginalised communities (PMCs) in MSP

4.2.1 Step SS1: Commit to social sustainability.

In the first step of the process, government should commit to meeting requirements for social sustainability as well as environmental sustainability, based on a Social Sustainability Checklist (see section 4.3 below), and this should be reflected in any policy or legislation developed for the process.

4.2.2 Step SS2. Identification and initial description of potentially marginalised communities (PMCs).

In this step, potentially marginalised communities (PMCs) are identified. PMCs would be identified as those in which the community as a whole, or a subset of the community, can be characterised as:

- a) having a likely absence of sufficient power and voice in influencing government policy at local or larger scales **and**
- b) being potentially affected by MSP on a measurable scale.

PMCs could include any communities (defined in terms of geographic location) in which a significant proportion of people are defined as poor in terms of the Sida framework. They could include:

- communities that are generally poor in terms of resources,
- communities in which women with limited alternatives depend on direct consumptive use of marine resources or on employment in a marine industry to maintain their own gendered roles and/or gender relations; and/or
- ethnic or religious groups that tend to be marginalised.

For each of these communities it will be necessary to identify the relevant stakeholder groups (potentially marginalised groups – PMGs) and who will represent them in the MSP process.

Communities could thus be considered both as a whole (e.g. poor, marine-dependent communities), and in terms of specific groups within them (e.g. women).

The PMCs/PMGs need to be identified at an appropriate spatial scale. They would be mapped based on spatial data from the census and on marine habitats and activities, as well as spatial data relating to property rights and access, and any other available information or expert input. The initial description of these communities can be in terms of average household income (e.g. from Census data), main livelihoods and primarily links to the marine environment. During this process, data gaps and uncertainties will be noted. These will inform the efforts in the next step.

4.2.3 Step SS3. Detailed situation assessment for PMCs, including opportunities and threats.

This step is a very critical step in properly fulfilling the recognition aspect of the social sustainability of the MSP process. The step would involve the collation of existing data, field studies and modelling to describe communities in terms of a range of relevant characteristics relating to household and women's wellbeing that might be affected by decisions made in MSP. This forms the baseline for the analysis. The main attributes and indicators to be used are discussed in more detail in Section 5.

This step should seek to provide more data and more depth to the preliminary analysis undertaken in Step SS2, as well as to validate or adjust these estimates. In addition, it should seek to collect the information that will be required to estimate how these measures will change under a business-as-usual scenario and in response to different alternatives. This would involve analysis of existing variation or exploring hypothetical scenarios with experts or stakeholders in order to develop response curves with which to predict scenario outcomes.

This research step will also investigate how these communities perceive opportunities in the marine realm. For example, what are their desires for access or management of resources, or for marine-related economic developments in their area. This can draw on some of the information being collected for the MSP process on the expected economic impacts of different activities, and on the benefits of marine protected areas for sustaining fisheries and tourism. It would also seek to how changes in the nature of marine areas or activities may pose threats to their wellbeing. This can

draw on existing MSP activities that describe potential environmental impacts of marine activities and the impacts of climate change. It will be important to take indigenous knowledge into account.

4.2.4 Step SS4. Define thresholds

In this step, we define acceptable thresholds for the social criteria attributes/indicators that were used to describe aspects of the wellbeing of the PMCs in the baseline description that will be applied in the scenario analysis. These thresholds, or non-negotiables, will be based on SDGs, national policies, human rights considerations and stakeholder inputs. It is assumed (an essential) that the broader process will also include environmental thresholds.

The 17 SDGs are: (1) No Poverty, (2) Zero Hunger, (3) Good Health and Well-being, (4) Quality Education, (5) Gender Equality, (6) Clean Water and Sanitation, (7) Affordable and Clean Energy, (8) Decent Work and Economic Growth, (9) Industry, Innovation and Infrastructure, (10) Reducing Inequality, (11) Sustainable Cities and Communities, (12) Responsible Consumption and Production, (13) Climate Action, (14) Life Below Water, (15) Life On Land, (16) Peace, Justice, and Strong Institutions, (17) Partnerships for the Goals. MSP has the potential to contribute to most of these, either directly through the promotion of specific activities, or indirectly through facilitating economic growth that increases government revenues. While it might be argued that an MSP, at the very least, should not be regressive in terms of any of these goals, even this may be counterproductive as many projects trade off small losses in some these against substantial gains in others.

For environmental criteria, for example, we may define a minimum area of 30% of all habitats under protection, with some minimum level of connectedness to ensure some minimum level of ecological functioning and species viability, etc.

For the social criteria (see next section), the non-negotiable thresholds should at least be no negative change relative to the business-as-usual scenario (BAU). In this way any negative changes would be flagged for mitigation in the analysis of options (scenario analysis).

4.2.5 Step SS5. Include socially-driven scenarios

The information collected in SS3 needs to be consolidated and integrated into the consideration of possible alternatives for the scenario analysis in the MSP process. These hypothetical (or what if) scenarios should incorporate potential changes in the social, economic, political, and environmental contexts in an *ex-ante* framework, and should ask how the fortunes of the PMGs could change if the scenarios change. These scenarios should be constructed with involvement of the local communities i.e. they should be participatory. For example, an option might be included that accommodates the protection of certain inshore areas for small scale activities, including protection from activities outside the area that pose a threat to its resources.

4.2.6 Step SS6. Compute impacts on social metrics

The research undertaken in SS3 will inform the estimation of changes in the social metrics for each scenario. This information needs to be summarised in such a way that the implications for each PMG is made clear to all stakeholders and is presented in context. Indigenous knowledge should be taken into account in this step.

4.2.7 Step SS7. PMGs represented in MCA

This step is a very important one to incorporate the preferences of PMGs in a fully representative **multicriteria analysis (MCA)**. This is the process in which social, economic and environmental criteria are brought to the table and trade-offs are analysed to determine the best option. All these criteria will be compared against a do-nothing or business-as-usual scenario. Thus, the MCA will also include consideration of impacts on the wellbeing of marginalised groups. The following section covers the proposed analytical approach in more detail.

4.3 MSP social sustainability scorecard

In order to address the first main area in ensuring the whole MSP process can be considered socially sustainable, we suggest the use of a check list and scorecard. We have developed a prototype for this scored based on the principles of the Social Sustainability Framework and the steps outlined above (Figure 6). The three groups of steps are based on Figure 5, which aligns the MSP steps to the three main pillars of the Social Sustainability Framework. A scoring system for this would need to be devised. It is also proposed that the social aspects of MSP are considered for all potentially marginalised groups, not just poor households and women, and that these are considered in a single framework. Thus, the analysis should also be able to identify any other affected groups that need to be considered (e.g. minority cultural or religious groups).

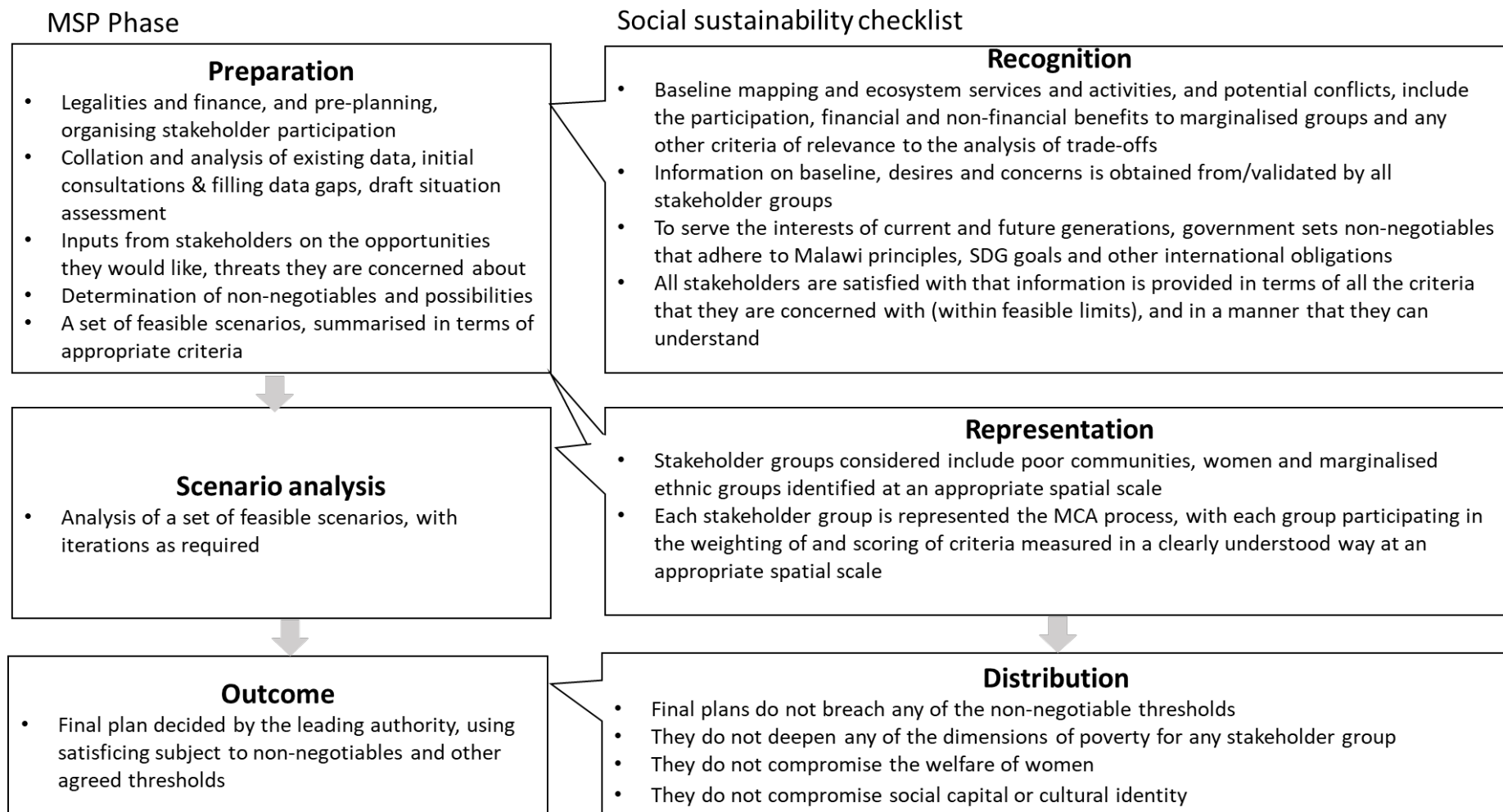


Figure 6. Social sustainability checklist for evaluation of the validity of the MSP process in this regard.

5 An inclusive analytical framework for MSP

The development of a more socially-sustainable MSP process as outlined above includes incorporation of an appropriate decision-making process that takes impacts on potentially¹⁶ marginalised communities (PMCs) or groups (PMGs) into account, using appropriate analytical tools, data and metrics.

5.1 The need for a pragmatic multi-criteria decision analysis approach

MSP involves decisions about who has access to which resources, in which locations, for which productive activities, with the broad objective of maximising societal wellbeing. Planning is important since although such an outcome might be attained in a hypothetical, perfectly functioning market economy, this does not happen in the real world, especially in a system dominated by public goods, poorly defined property rights, and imperfect and asymmetric information. Furthermore, even if market conditions yield an efficient outcome, this is unlikely to be equitable; the market votes of the rich outweigh those of the poor. Thus, planning interventions are essential if egalitarian objectives are to be met, and in particular if marginalised groups are to be considered (Bator, 1957).

Imperfect and asymmetric information are particularly pertinent for MSP. Imperfect information is one of the main constraints to the management of living marine resources, as well as to the optimal siting of marine protected areas for achieving biodiversity targets. Layered on this is the shortage of information available to stakeholders on the relative economic value, social significance and environmental consequences of different activities in the marine zone. Such information, particularly information of a suitable standard, is particularly scarce in developing countries, and often not freely shared where it does exist. Moreover, access to information tends to be asymmetric, with more educated and more powerful stakeholders tending to have far more information and technical understanding than more marginalised groups. Given the mantra that “knowledge is power”, this would likely have a strong bearing on the outcome of an MSP process.

In theory, social planning is not controversial as long as a net gain is achieved without anyone becoming worse off (referred to as “Pareto optimality” in welfare theory or “win-win options” as projects are being promoted). However, in all situations involving choices, such as in MSP, there will be both winners and losers. Since the Pareto criterion cannot be met, acceptability is defined in terms of the Hicks-Kaldor criterion that winners should be able to adequately compensate losers, i.e. that there should be a net increase in utility (Graaf, 1968). Although the Hicks-Kaldor compensation criterion provides a simple way to address the problems of winners and losers, including impacts on marginalised groups; it assumes that all parties value a unit of income equally. If this is unacceptable, then distributional issues have to be considered by introducing income weights, normally in a sensitivity analysis (Pearce, 1983, p59-66). While the Hicks-Kaldor compensation principle seems to enable also complicated societal planning exercises, such as MSP, three clear concerns remain. Does compensation actually need to be paid? Should money be used as a unit of social welfare in a world where the marginal utility of money is likely to fall as income rises? And lastly, following Scitovsky (1941), should one allow for preference reversal as economic development occurs and communities and interested parties in consequence change their preference orderings?

¹⁶ Note that we use the term “potentially” marginalised in recognition of the fact that the process *could* change the status of these groups for the better or worse.

The challenges of how to ensure that social and economic groups who lack political and economic power are not left worse-off in a planning process are thus two-fold: First of all, they need to be recognized and included in the analysis. But even then, the challenge remains of how to “weigh” the impacts on each group, particularly non-monetary impacts?

These issues are at the heart of multi-criteria analysis (MCA; also referred to as multi-criteria decision analysis – MCDA). Unlike cost-benefit analysis (the main tool of conventional economics), MCA allows decision-makers to take non-monetary criteria into account. The process requires the dedicated participation of a representative group of stakeholders who can define their objectives, devise a hierarchy of goals, criteria and their relative weightings, and score the alternatives in terms of those criteria to derive aggregate scores for each alternative (Belton & Stewart, 2002, p1-7).

The criteria used in an MCA need to be mutually preferentially independent, sufficient but not excessive in number and operationally meaningful. The weights are assigned in such a way as to transform all the criteria to a more or less commensurate scale. This allows the comparison of scenarios in a way that is compatible with the notion of marginal utility that underlies cost-benefit analysis, but without requiring the expression of criteria in monetary terms.

Nevertheless, a welfare maximizing solution is still unlikely, since it is impossible to verify all possible alternatives. People’s decisions are limited not only by the availability of information (Vargas-Hernández et al.), but also by neuropsychology and language limits. This situation, known as **bounded rationality** (Simon, 1957), is an inherent limitation of the MSP process. While the problem of bounded rationality can be addressed to some extent with a better approach to data collection, presentation and communication, the situation requires that decision makers should aim for a satisfactory or adequate result, rather than the optimal solution or ideal outcome. Such “**satisficing**” (the word is an amalgamation of satisfy and suffice) can ensure that each interested party achieves an acceptable outcome. i.e. once the process is complete, and all allowances and compensations made, no participants should feel themselves worse off, even though the outcome need not be a welfare maximum (Belton & Stewart, 2002 p104/5).

Therefore, rather than pursuing optimality, the MSP process should aim for satisficing in terms of a set of key thresholds. These thresholds should be embedded into a more holistic, scenario design and analysis process that integrates economic, social, biodiversity, and sustainability objectives. Examples of such thresholds would include the minimum areas to sustain viable populations of species, or that no one should be absolutely impoverished (left destitute).

The analytical problem is similar to land and water allocation decisions. Here, the typical approach is to quantify trade-offs and apply optimisation techniques or scenario analysis to determine the best possible plan (e.g. Kennedy *et al.*, 2008; Polasky *et al.*, 2008). In the latter case, scenarios would be evaluated using cost-benefit analysis if all relevant values can be monetised, or MCA if they cannot. In a socially-sustainable process, the inclusion of non-monetised criteria is important, which makes MCA a better approach than standard economic analysis for supporting decision-making in MSP.

MCA involves a comparison of alternative scenarios based on multiple factors. These outcomes are clearly presented and visualised for stakeholders (e.g. Figure 7; also see Malczewski, 1999). It includes methods for weighting different management objectives using stakeholder opinions. The process of developing the criteria layers for the MCA provides useful insights into the conflicting activities. These methods have been used for the spatial location of marine protected areas, as well as for broad scale marine management (e.g. Day *et al.*, 2008).

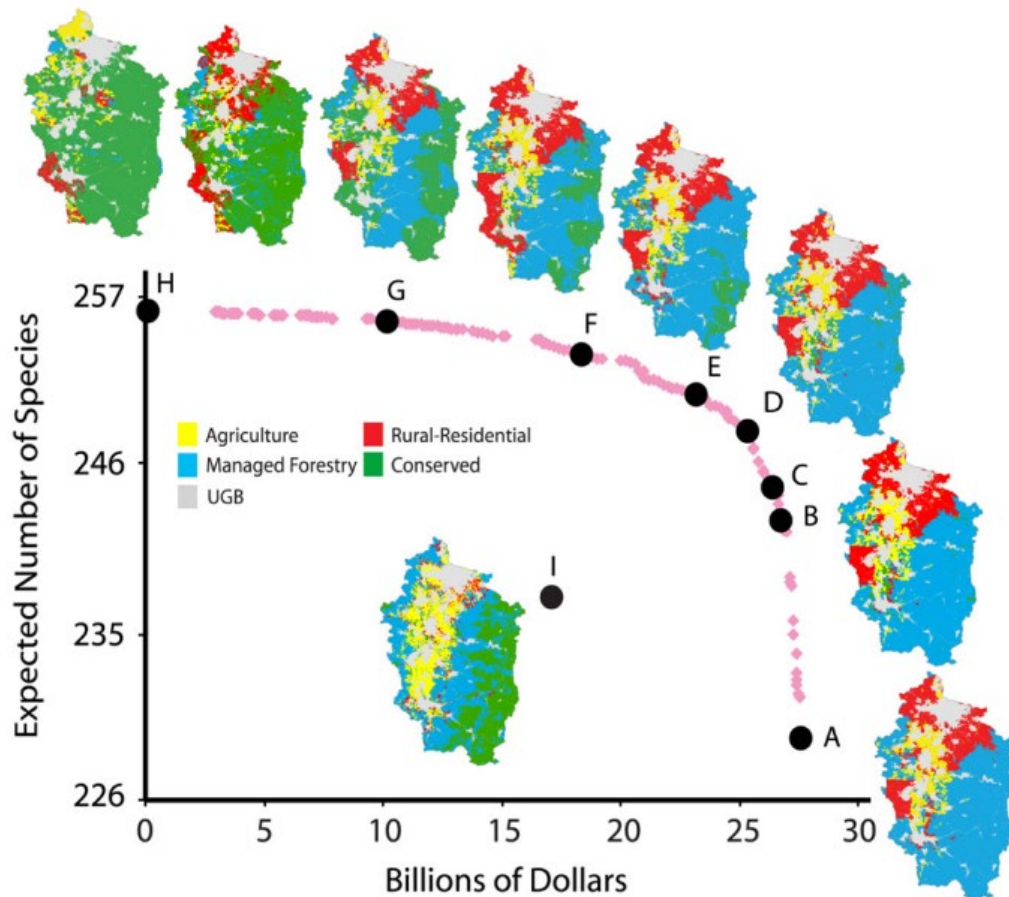


Figure 7 Example of the visualisation and valuation of land use options. Source: Polasky et al. 2008.

Ideally, the analytical tools used in MSP need to be sufficiently sophisticated to guide decision making to the best possible outcomes, while balancing the needs of different segments of society. Thus, the way in which the views of marginalised groups are incorporated into the process requires some careful consideration.

5.2 Social criteria for description, decision-making and monitoring

An inclusive decision-making approach will need to describe the impacts of the alternative scenarios considered in the MSP process on PMCs/PMGs. The purpose of doing this is to be able to evaluate the extent to which PMCs/PMGs are made better or worse off. It is proposed that this is done by describing PMCs in terms of a set of five straightforward community-level attributes, and then predicting changes in these attributes under different scenarios. The attributes can also be used to track impacts on the PMCs/PMGs over time.

To be fully inclusive, the description of the status quo and how that is likely to change under different scenarios needs to be both comprehensive and accessible. Because of this, there is often a temptation to list too many criteria. While many factors contribute to societal wellbeing, they are often strongly correlated. Thus, the impacts of a scenario can be communicated in terms of relatively few, primary criteria. These can broadly be grouped into social, economic and environmental criteria, encompassing the three pillars of sustainability. It is also important to note that a certain

level of correlation between variables might be allowed to allow for these three primary groupings. For example, ecosystem health determines the level of benefits for people and economic output.

The proposed attributes are based on the four dimensions of Sida’s multi-dimensional poverty analysis (MDPA) framework and the discussion in chapter 3 (Table 2). Details of their proposed measurement and scoring are summarised in Table 3 and will need to be refined after testing. Communities found to be wanting in terms of any of these attributes could be considered as PMCs. This means that they do not meet some threshold acceptable level.

The last of the four Sida dimensions (security) has been split into two different attributes to distinguish between community-level security (or cohesion) and domestic security, which we rather characterise as domestic harmony (Table 2). The latter is based on the notion that gender relationships, and so household harmony, are dependent on all members of the household being able to balance their productive activity with their reproductive and other roles. While this idea is based on the well-established notion of the triple role of women (Moser 1983), it recognises that in modern societies, gender identities and roles may have become more nuanced. Nevertheless, this framework will of course accommodate the impacts of effects on women’s ability to perform their roles and the impact that this has on their own security.

If, say for practical reasons, the unit of analysis is limited to communities (rather than stakeholder groups), then the analysis should be carried out separately for men and women within each potentially marginalised community.

Table 2. Criteria for the evaluation of the wellbeing of affected communities or groups

Resources	The extent to which the benefits from employment or resource use are sufficient to sustain a decent living standard
Opportunities and choice	The extent to which people have access to education, health care, infrastructure, energy, markets and information sufficient to allow them to move out of poverty
Power and voice	The extent to which individuals are able to articulate their concerns, needs and rights in an informed way and influence decision-making affecting these concerns without discrimination
Community security	The extent to which people’s rights and livelihood potential are limited by unrest in the community
Domestic harmony	The extent to which households are able to fulfil their family roles and ensure healthy gender relationships

Table 3. Criteria for evaluating impacts on potentially marginalised groups (e.g. a poor community, or women in a poor community), the guiding questions and metrics required for scoring the baseline, and related metrics that will also be quantified for use in the estimation of impacts.

Criteria	Guiding questions for scoring	Metrics required for scoring community wellbeing	Metrics required for scoring women's wellbeing	Related metrics needed to model impacts of MSP
Power and voice	To what extent are individuals able to articulate their concerns, needs and rights in an informed way and influence decision-making affecting these concerns without discrimination	% representation in local community organisations and local government at decision-making level; % representation in national organisations and government at decision-making level	% representation of women in local community organisations and local government at decision-making level; % representation in national organisations and government at decision-making level	N/A - this metric used to confirm the potentially marginalised status of the stakeholder groups (rather than increased voice as a result of inclusion in the MSP process)
Resources	To what extent are income and/or other benefits sufficient to sustain a decent living standard, and in this regard, how do we define the decent living standard/poverty threshold in terms of \$/hh/year	Average annual income, including the market value of subsistence production, welfare payments and remittances and non-monetary benefits	Average annual income, including the market value of subsistence production, welfare payments and remittances and non-monetary benefits	The contribution of marine and coastal resources or activities to this income, by resource/activity
Opportunities and choice	To what extent is access to education, health care, infrastructure, energy, markets and information sufficient to allow households to move out of poverty	Municipal expenditure per capita on services x quality of financial audit	Municipal expenditure per capita on services x quality of financial audit	The contribution of MSP activities to tax revenue, and the extent to which tax revenues reach this community
Security	To what extent are people's rights and livelihood potential being limited by unrest in the community To what extent are households able to fulfil their family roles and ensure healthy gender relationships	Qualitative scoring based on data/expert opinion Score from 1 = unrest severely disrupts livelihoods to 5 = community is peaceful	Qualitative scoring based on data/expert opinion' Score from 1 = household members frequently struggle to achieve this, to 5 = secure in this regard	The sensitivity of community scores to a change in marine-related access/income The sensitivity of domestic security scores to a change in marine-related access/income

The way in which these social criteria might be aggregated alongside economic and environmental criteria is illustrated in Figure 8. Because the metrics for each criterion are different, they are first converted to normalised scale before weighted aggregation. The weightings are determined using well-established techniques. An MCA decision framework can allow for aggregation across different communities and spatial areas. Scores might be arrived at separately for people (e.g. different districts) and the environment (e.g. different parts of the ecosystems). These spatial relationships are somewhat more complex than depicted in Figure 8, and need to be mapped out and taken into account.

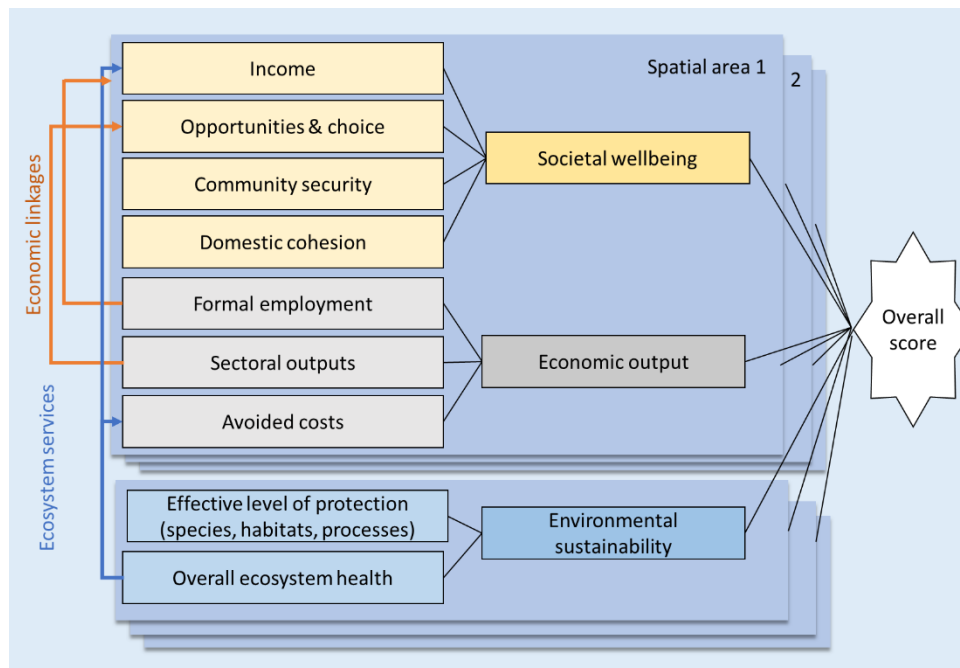


Figure 8. Schematic of an inclusive multicriteria analysis framework for MSP

5.3 Data needs

In spite of the array of tools and methods, socioeconomic data is usually a gap in the MSP process. To inform a socially-sustainable process and monitor its outcomes in a way that also meaningfully serves the intention for MSP to be adaptive, the quality of data inputs need to be as high as possible. Up to now, MSP has relied either on existing national datasets or in more data poor situations, on techniques such as participatory mapping (Klain & Chan, 2012; Tolvanen, Erkkilä-Välimäki & Nylén, 2019). The lack of data collection has been attributed to its high costs, and the difficulty in the remote detection and monitoring of dispersed activities such as subsistence harvesting.

While existing national data sets could be useful to some extent, this may be limited by the fact that they do not specifically focus on communities of interest for MSP and their relationships to the marine environment. This issue is a significant drawback as national MSP requires nationally consistent comprehensive data. Indeed, the MSP process should begin with a baseline survey which involves both remote sensing and large-scale social surveys. A more permanent solution is thus to ask countries to organize for comprehensive MSP baseline surveys and spatial data collection prior to MSP processes. Baseline and subsequent MSP data sets, especially at the household level can

then be designed to capture important information on marginalised groups that can assist in developing more targeted interventions. This approach can then be extended to monitoring and evaluation. The required extent of the surveys does need further consideration and field trials, since the costs need to be commensurate with the value added to the decision making process. The data needs need to be checked with partner groups.

6 Conclusion and next steps

Fulfilling all the goals of the MSP process is an ambitious undertaking involving the complex interweaving of sectoral, environmental and social considerations in an equally complex geographic, political, legal and socio-economic setting. This raises the risk of developing over-simplified or over-complicated planning processes that if anything, can entrench the marginalisation of certain groups. Indeed, MSP has already come under much criticism, but with little practical guidance on how these problems could be fixed.

The framework developed here could ultimately accompany the other manuals and guidelines used in MSP. It is important to have a pluralistic planning process, and this approach should be seen as one of many tools to support such a process. It would mesh well with more elaborate economic and environmental tools, and can also be integrated into some of the spatial tools that are in use or under development.

However, a framework such as this first requires testing and refinement alongside the existing tools. The next steps for this study will be to test and further develop aspects of the framework and practical aspects of the approach through research and simulation in appropriate developing country settings.

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