

Chapter 2 Background

2.1 Overview

This chapter is broadly divided into two sections; a literature review of the different methodological concepts used in my study and some background to coastal resource management in Sri Lanka.

The literature review discusses the evolution of the concept of poverty over the years to one that is multidimensional and dynamic. It describes the sustainable livelihoods (SL) approach as one method of analyzing the different aspects of poverty and discusses the historical and theoretical background of this approach and its use. A discussion of how to assess the sustainability of livelihoods is also included, focusing mainly on two elements of livelihood security – food security and personal well-being - and how these concepts illuminate different aspects of livelihood sustainability.

The second part of the chapter includes a review of Sri Lanka's Coastal Zone Management Policy with a focus on the Special Area Management (SAM) approach. SAM involves communities co-managing coastal resources within specially designated SAM sites, in partnership with the government, to address poverty and unsustainable resource use practices.

2.2 Concepts of poverty and its measurement

Concepts of poverty have evolved over the years, with a static idea of poverty becoming more dynamic and multidimensional. Traditional approaches to measuring poverty have focused on income and consumption expenditure (World Bank, 2001). In Sri Lanka for example, poverty measurements have followed the international trend and are now based on consumption expenditure. Households are considered poor if average adult equivalent food expenditure is less than Rs.1338.48 per adult per month and if more than 50% of household expenditure is on food (Department of Census & Statistics, 2002b). However, consumption expenditure is only a one-dimensional measure of poverty and only records data from a single point in time (Senaratna Sellamuttu and Clemett, 2003b).

In recent years it has been recognised that poverty is a complex, multidimensional concept that extends far beyond the more conventional definitions of low levels of income and consumption, and includes a range of other social dimensions (Brock, 1999; DFID, 2001b; JBICI, 2002; Bene, 2003; Fisher *et al.*, 2005). This much broader conceptual view of poverty can be largely attributed to the great deal of qualitative research undertaken in low-income countries since the 1980s (Narayan *et al.*, 2000; Fisher *et al.*, 2005). There are therefore many and varied explanations of poverty that have been put forward by international agencies, government institutions and also by poor people themselves. According to the World Bank (2001), “Poverty is a multidimensional phenomenon, encompassing inability to satisfy basic needs, lack of control over resources, lack of education and skills, poor health, malnutrition, lack of shelter, poor access to water and sanitation, vulnerability to shocks, violence and crime, lack of political freedom and voice”.

Poverty is also clearly not a static phenomenon and while some people remain in a state of chronic poverty, others experience a state of transient poverty. According to Holzmann (2001), there is an increasing volume of empirical evidence in the form of panel data sets from different countries that shows that the poor consist of those who are always poor and those who move in and out of poverty. The latter group has been shown to be strikingly large (and such movements in and out of poverty were observed when looking at poverty in absolute or relative terms). Moreover, as stated by Chaudhuri (2003), “today’s poor may or may not be tomorrow’s poor”. For example, households that are considered currently non-poor may face a large adverse shock that causes the household to become poor tomorrow. To investigate the more dynamic nature of poverty, the underlying factors and processes that drive people into poverty, keep them in poverty, or help them to move out of poverty must be better understood. Although these underlying factors may not necessarily be amenable to measurement in quantitative, statistical terms, they can often be observed in real life situations at the community and household level, using qualitative research methods (Fuenfgeld *et al.*, 2004).

2.2.1 Vulnerability and Risk

The concept of ‘vulnerability’ is also closely associated with poverty although vulnerability is distinct from poverty (Davies, 1996). Vulnerability attempts to conceptualise the processes of poverty, rather than seeing poverty as a static phenomenon. Moreover, underlying poverty contributes to increased vulnerability (Bohle, 2001; Young *et al.*, 2001). There are many definitions of vulnerability depending on the specific field of application i.e., economics, sustainable livelihoods, environment, etc (Holzmann, 2001). According to Chambers (1989) vulnerability is defined as “not lack or want, but defenselessness, insecurity, and exposure to risks, shocks and stress, and difficulty in coping with them”. Holzmann and Jorgensen (1999), describe vulnerability as the relationship between risk and efforts to manage risk. Vulnerable households are considered to be more likely to be adversely affected by risk because they do not have assets needed to counteract the effect of the risk. Risks comprise events that occur beyond the control of households and the individuals in those households. Rural households face multiple sources of risk and these could be small-scale and individual (for example the income earner in the household falling ill) or affect communities more broadly (for example environmental disasters such droughts or the Asian tsunami).

Measuring vulnerability is difficult as it is a dynamic phenomenon. By observing households once it is not possible to determine their state of vulnerability – panel data would be required. In addition, people’s movements in and out of poverty are informative about vulnerability only after the event (World Development Report, 2000/2001). Vulnerability and risk cannot be measured directly and it is not possible to simply ask a household whether or not it is vulnerable to risk, as the range of unforeseen occurrences or shocks is very broad, any individual household could be vulnerable to some events and not to others (Steel, 2005). According to Seigal and Alwang (1999), vulnerability can be measured through proxies that can be defined as those assets that will allow a household to manage risks which, in turn, can be defined as the household’s ability to withstand shocks using the assets available. Assets can be tangible, such as financial capital, savings, land and labour, or intangible, such as social capital (social relations and networks) and empowerment. There is a growing consensus that both tangible and intangible assets and their interplay are important in being able to measure vulnerability of households and individuals. In terms of the ability of a household to cope with risks,

the more assets a household has access to and the more diversified those assets, the better the household's ability to cope with the risks they face (Chambers, 1995; Steel, 2005).

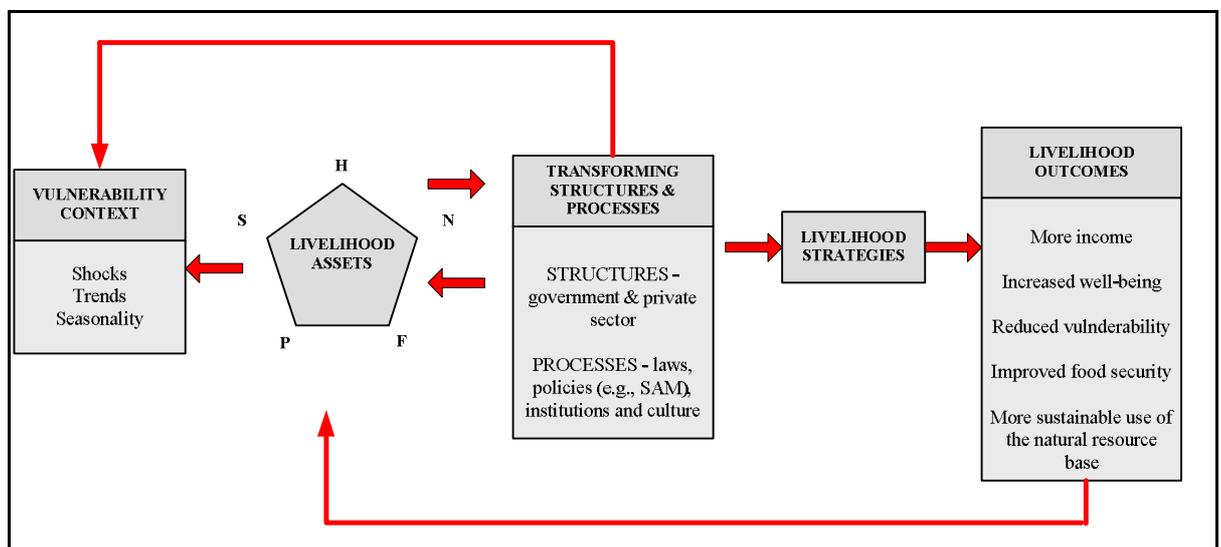
Chaudhuri (2003) summarizes the links between poverty, vulnerability and risk by describing poverty as an *ex-post* measure of a household's well-being, that reflects its current state of deprivation and lack of the resources or capabilities to satisfy current needs; while vulnerability is broadly considered to be an *ex-ante* measure of well-being, reflecting not so much on how well-off a household is currently, but what its future prospects are. What distinguishes the two concepts is the presence of risk and that the level of future well-being is uncertain.

2.2.2 The Sustainable Livelihoods Approach

In the early 1990s the sustainable livelihoods approach emerged and was also linked closely to the conceptual understanding of poverty at that time, which itself was evolving rapidly. The concept of livelihoods has a long history of its own and evolved through a wide range of micro-economic studies carried out over the last 30 years. Livelihood approaches have achieved wide acceptance as a valuable tool that helps gain a better insight into factors that influence people's lives and well-being; as it provides a better understanding of the complex driving forces and processes behind the poverty concept and is a more dynamic measure of poverty than conventional measures (Carney, 1998; Davies, 1996; Scoones, 1998; DFID, 2001b). There are many definitions of 'sustainable livelihoods' but the definition presented by Carney (1998) based on the work of Chambers and Conway (1992), is most often cited. According to Carney (1998): "A livelihood is considered to be sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base". The sustainable livelihood approach is therefore centred on people and their livelihoods. Livelihoods describes how people access resources, what gets in the way of access, how resources are used to build assets and crucially how assets reduce people's vulnerability to disasters (Care, 2005). Parallels can be drawn between the livelihoods approach and the vulnerability concept as the former places an emphasis on five broad categories of tangible and intangible assets or 'capital' that a household has access to, and also incorporates the idea of withstanding shocks (referred to as the 'vulnerability context').

The SL approach is most usually used to support the data collection process when carrying out a situation analysis on poverty in a selected location. Several leading Development Agencies such as the UK Department of International Development (DFID), the United National Development Programme (UNDP), Oxfam and CARE International have all been using livelihoods approaches in their work. A brief overview that compares the different livelihoods approaches adopted by these four agencies is found in Carney *et al.*, 1999. A general livelihoods framework has been advocated by DFID to assist in understanding the different aspects of a community's livelihoods patterns and the factors that influence this, the relative importance of these factors and the way in which they interact (DFID, 2001a; Fisher *et al.*, 2005). DFID's work is particularly focused on understanding poverty and achieving poverty elimination. The Sustainable Livelihoods framework (see Figure 2.1) presents the main factors that affect people's livelihoods, and typical relationships between these (DFID, 2001b).

Figure 2.1 Diagram of the Sustainable Livelihoods Framework (Adapted from DFID 2001b and Carney *et al.*, 1999)



Natural capital = N; Human capital = H; Social capital = S; Physical capital = P; Financial capital = F

In the Sustainable Livelihoods Framework, the 'vulnerability context' encompasses the wide range of dynamic external forces that influence people's livelihoods – and over which they have limited or no control (DFID 2001a; Sakhivel and Ziegler 2002). In my study site for example, sources of vulnerability include environmental and political factors. In terms of the former, natural events such as drought (for example, a severe

drought affected the study site in the Hambantota District in 2000-2002 and was the worst drought to hit the area for over forty years), occasional flooding (low-lying area of paddy cultivation are especially vulnerable to unexpected flooding) and the catastrophic damage caused by the Asian tsunami can be cited.

As mentioned previously, five broad categories of livelihoods assets or 'capital' are recognized by the Sustainable Livelihoods Framework. Different groups of people will have access to different livelihood assets based on factors such as institutional arrangements, power structures and political affiliations. People require a range of assets to achieve positive livelihoods outcome; no single category of assets on its own is sufficient to yield all the many and varied livelihood outcomes that people seek. This is particularly true of poor communities whose access to any given category of assets tends to be very limited. There is also a likelihood of inequitable access to a particular resource depending on different levels of poverty (Scoones, 1998; DFID, 2001a; DFID, 2001b; World Development Report 2000/2001). The five different livelihood assets are categorized as: human capital, natural capital, social capital, physical capital and financial capital.

Human capital includes the skills, knowledge, ability to labour and good health that together make it possible for people to pursue different livelihood strategies and achieve their livelihood objectives. Human capital is necessary to make use of any of the other four types of assets and is therefore critical for the achievement of positive livelihood outcomes. In the context of the sustainable livelihoods framework, **social capital** represents the social resources upon which people draw in search of their livelihood objectives. This includes family, friends, informal and formal social networks and political affiliations. Social capital can be particularly important in contributing to people's sense of well-being (by creating a sense of identity and belonging). **Natural capital** comprises the natural resource stocks from which resource flows and services (such as nutrient cycling and erosion protection) useful for livelihoods are derived. There is a wide range of resources that fall into the natural capital category; such as intangible public goods (example, the atmosphere) to tangible assets used directly for production (forests, lagoons, fish, etc.). Natural capital is clearly of utmost importance to those who are engaged in livelihoods dependent on natural resources (such as fishing or farming). Access by especially the poor to natural resources, including land, forest, water, fisheries

and wildlife is essential for sustainable poverty reduction. Within the sustainable livelihoods framework, the link between natural capital and the vulnerability context is especially close. A majority of the shocks that devastate the livelihoods of the poor are themselves natural processes that destroy natural capital (such as drought or floods that destroy agricultural land). **Physical capital** refers to the basic infrastructure and producer goods needed to support livelihoods. Infrastructure comprises of the changes to the physical environment that help people meet their needs and be more productive (such as transport, adequate water supply and sanitation, affordable energy). Producer goods are the tools and equipment that people use to function more productively. **Financial capital** in the context of the livelihoods framework describes the financial resources that people use to achieve their livelihoods objectives. This includes available stocks (such as liquid assets like jewellery, cash or bank deposits) and regular inflows of money [such as income, pensions, remittances and other transfers from the state (e.g., welfare monies)]. Financial capital is the asset that is likely to be least available to the poor. As a result the other types of assets prove to be very important to them (DFID, 2001a; Ellis and Allison, 2004).

Transforming structures and processes (sometimes referred to as Policies Institutions and Processes or PIP) within the livelihoods framework are the institutions, organizations, policies and legislation that help shape livelihoods. They can operate from the household level to the international level and in both private and public spheres. The influence of transforming structures and processes extends throughout the livelihoods framework (DFID, 2001a). An example of a transforming process operating in my study site is the Special Area Management policy process that enables local natural resource user groups to get involved in the management of coastal resources in the area. Local institutions governing the utilization and access to natural resources such as the fisheries corporative societies are another example of a transforming structure found within my site.

Livelihood Strategies is the term used to denote the range and combination of activities and choices that people make in order to achieve their livelihood goals. There is generally an enormous diversity of livelihood strategies at every level – within geographic areas, across sectors, within households and over time. This is a dynamic process in which people combine activities to meet their various needs at different times. People's access to different levels and combinations of assets is probably the major influence in their choice

of livelihood strategies. Based on choices made in terms of a livelihood strategy, households will engage in livelihood activities which usually generate an income. Rural livelihood strategies usually depend heavily on a natural resource base (Scoones, 1998; DFID, 2001a; DFID *et al.*, 2002).

Empirical evidence from a number of different locations suggests that in rural communities often households engage in more than one livelihood activity (Ellis, 1999; Bryceson, 2000). For example in South Asian farming communities it was found that approximately 60% of the rural household income may actually come from non-farm sources (Ellis, 1999). Rural livelihood diversification according to Ellis (1998) has been defined as ‘the process by which households construct a diverse portfolio of activities and social support capabilities for survival and in order to improve their standard of living’. Diversification is considered to help secure better living standards (Ellis and Freeman 2004) and contribute positively to livelihood sustainability because it improves long-term resilience in the event of adverse trends or sudden shocks (Ellis, 1999). With respect to the latter for example, some fishermen interviewed post-tsunami were of the opinion that they would have found it much easier to cope soon after the tsunami if they had not been so heavily dependent solely on the fisheries industry. According to Ellis (2000), one of the negative aspects of diversification is that it could widen the disparities between the rural poor and better-off as a result of the better-off being capable of diversifying in more advantageous labour markets than the poor, because in terms of human capital they are generally in a better position. Overall however, the positive impacts of livelihood diversification generally outweigh the negative impacts.

Livelihood Outcomes are the achievements or results of livelihood strategies. They are important as they help us understand what motivates people to behave as they do and what their priorities are. Livelihood outcomes could include: more income, increased well-being, reduced vulnerability, improved food security and more sustainable uses of natural resources (DFID, 2001a).

2.2.3 Further developments of the Sustainable Livelihoods Approach

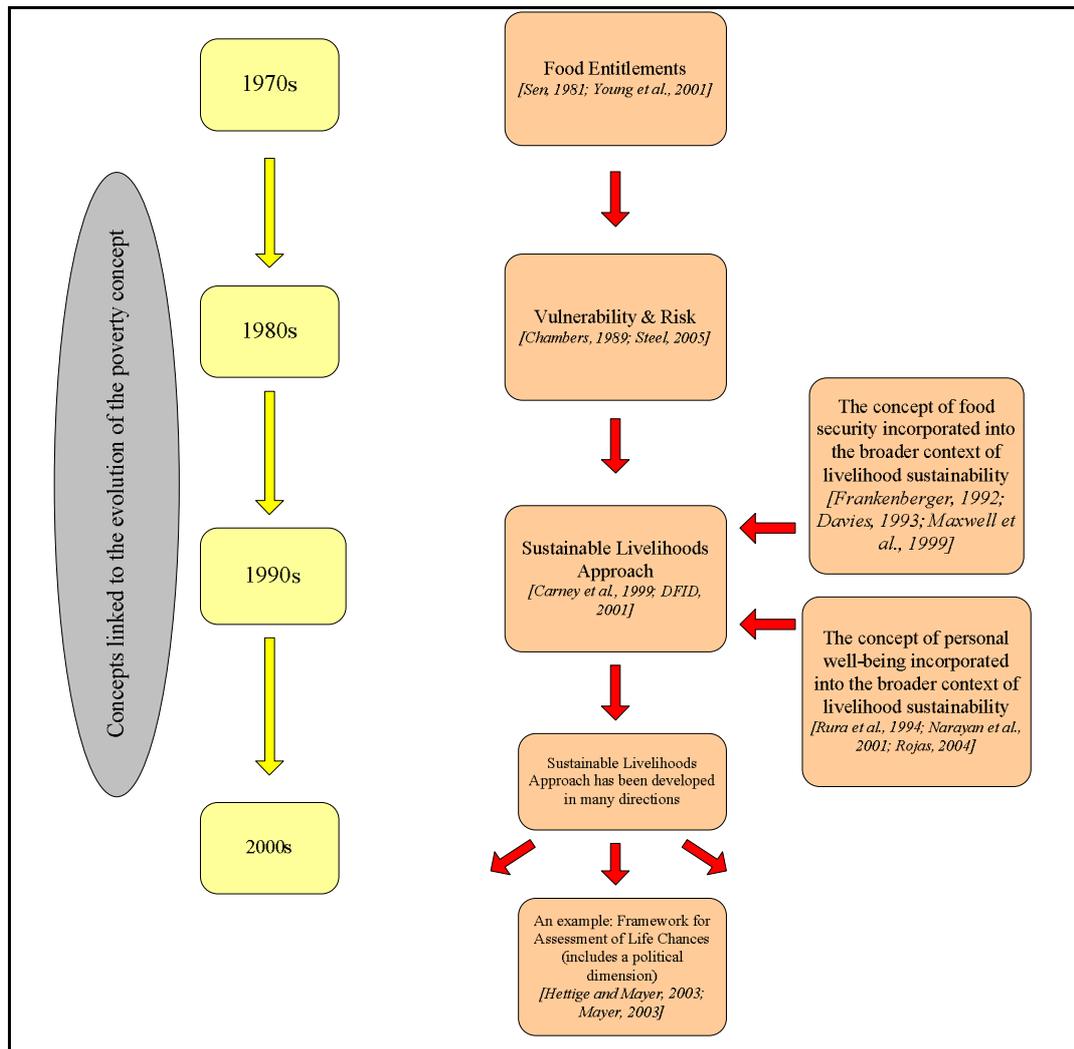
So whilst the sustainable livelihoods methodology emerged as an alternative poverty reduction approach (DFID, 2001b), over the last few years, the sustainable livelihoods

approach has been further developed in several different directions by researchers and practitioners that place more emphasis on certain factors within the general framework. In this context, the conceptual framework for the Assessment of Life Chances (Mayer, 2003) is one such development and incorporates the analysis of political factors and how they influence livelihoods. A key assumption with the Assessment of Life Chances Framework is that causes of poverty are likely to be rooted as much, if not more, in the diverse relations that the poor have with the wider environment, as in their individual and household attributes. In other words, poverty is considered to be a relational phenomenon. The framework assumes that many of the attributes of poor people may be the products of their wider politico-economic and socio-cultural relations (Hettige and Mayer, 2003). Six analytical dimensions are used in this conceptual framework – ecological, economical and political dimensions (which are used to investigate external factors that influence life chances) and ‘identity formation’, ‘social integration’ and ‘recognition of human rights’ (which are used to investigate ‘internal’ factors influencing an individual’s life chances) (Mayer, 2003). Therefore an analysis of economic, political, social and cultural relations that poor people are engaged in is critical for a proper understanding of the changing life chances and thereby poverty status of the poor (Fuenfgeld *et al.*, 2004).

2.3 Relationship between Livelihood Sustainability and the Food security and Personal well-being approaches

While the above section has established how the sustainable livelihoods approach came about to be widely accepted as a means of measuring poverty, it is clear that livelihood sustainability has various dimensions. Two of these are food security and personal well-being. While both these concepts have been incorporated into the broader sustainable livelihoods approach, they have both evolved independently and have a long history of their own as discussed in the following sections. Figure 2.2 illustrates how these different concepts link up to the evolving concept of poverty.

Figure 2.2 Different concepts used in my PhD study that are linked to the poverty concept



2.3.1 The Concept of Food Security

One aspect of a household’s livelihood system is food security, which has been defined as “The state of affairs where all people at all times have physical and economic access to adequate, safe and nutritious food for all household members, without undue risk of losing such access” (FAO, 1996). The concept of food security has evolved over the last thirty years. Until the late 1970s, concerns regarding food security were directed more at the national and international levels and were linked to the ability of countries to secure adequate food supplies. Only later did the level of analysis shift to the local level, right down to the household and even individual level. There are two important elements in the definition for food security and these are: availability (the quality and quantity of food supply) and access (entitlement to food through purchases, exchange and claims). It

became clear in the early 1980s that availability of food at the macro-level did not necessarily mean that food security is guaranteed at the micro-level. Amartya Sen's entitlement theory of famine (Sen, 1981) formed the conceptual basis to assessing food security at the micro-level. Sen explained that famines occur not because there is not enough food, but because people do not have *access* to enough food (Young *et al.*, 2001). Food entitlements represent all the ways in which a household has access to food, such as natural resources, subsistence production, income, savings, assets, community support and migration. A number of socio-economic variables therefore have an influence on a household's access to food (Maxwell and Frankenberger, 1992). The other prerequisite for food security is of course the availability of food near to the household. Sen's work was considered to be revolutionary, as prior to this it was the availability of food that was considered to be the overriding determinant of famine (Young *et al.*, 2001).

In the mid 1980s the food security concept underwent another paradigm shift from a food first perspective to a livelihood perspective. Research into people's responses to famine had shown that their priorities in times of food stress are to preserve productive assets to protect livelihoods, rather than to meet immediate food needs. For example, de Waal (1991) observed that in the case of the Darfur famine in Sudan in 1984/85, people were quite willing to put up with a fair degree of hunger, in order to preserve seeds for planting or avoid having to sell a farm animal (Maxwell and Frankenberger, 1992). Therefore it was misleading to consider food security as a fundamental need, independent of wider livelihood considerations. In addition, food insecurity was viewed as an evolving process where the victims were not passive to its effects. Social anthropologists observed that vulnerable populations exhibited a sequence of responses to economic stress, giving recognition to the importance of behavioural responses and coping mechanisms in food crises (Frankenberger, 1992). This was another major step in the evolution of the food security concept as it shifted from giving a materialistic perspective on food production to a social perspective of behavioural responses. As a result, by the late 1980s, the development community and governments had begun to incorporate socio-economic information in their diagnoses of food insecurity (Frankenberger and McCaston, 1998). By the early 1990s therefore food security was integrated into the broader context of livelihood security. Food security was considered to be just one objective people seek to realize in the wider context of securing their livelihood, which was considered to be a household's ultimate goal (Davies, 1993; Abila, 2000). According to Maxwell and Smith

(1992), food security was regarded as only one of an entire range of factors that determined how poor households made decisions and spread risk and they finally balanced competing interests in order to survive in both the short and longer term. The concept of food security and the sustainable livelihoods approach had therefore reached common ground by the 1990s.

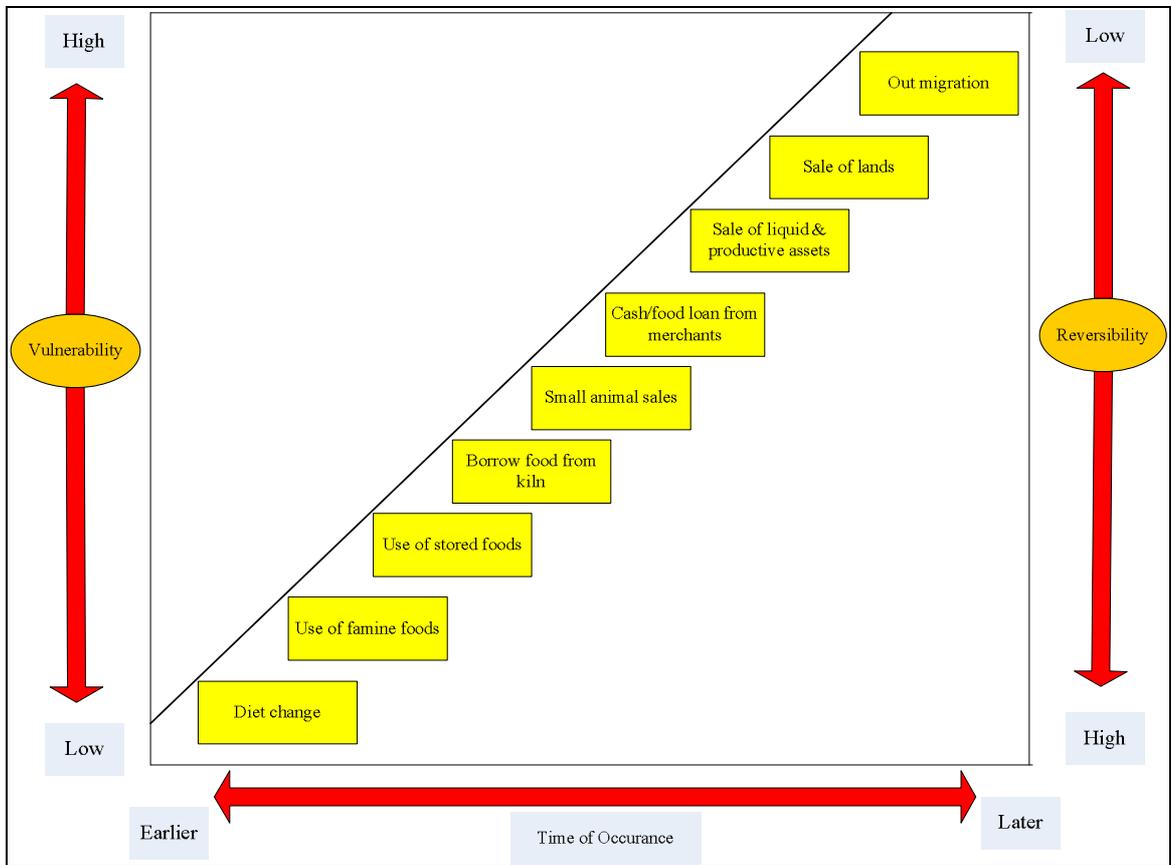
2.3.1.1 Coping strategies

When a household is facing a crisis or an external shock, in order to remain food secure and to maintain a sustainable livelihood system, it will use a combination of coping strategies (Swift, 1989; De Waal, 1991; Davies, 1993). Food coping strategies have been defined by Davies (1993) as ‘short term temporary responses to declining food entitlements’ and they are widely used socio-economic indicators. Households when facing a crisis do not respond arbitrarily to variability in food supply, but use a succession of coping strategies to remain food secure and to maintain their livelihood systems (Maxwell and Frankenberger, 1992; Malleret-King, 2000). These strategies encompass a wide range of economic, social, cultural, political and behavioural responses to declining food security. Although coping strategies may be viewed as synonymous with economic activity, in reality, the social and cultural dimensions of coping strategies are often more important (Young *et al.*, 2001). Coping strategies can be distinguished in terms of strategies whose effects are easily reversible versus those that incur unacceptable costs. Coping strategies may vary from site to site and from crisis to crisis, but generally include the following aspects: changes in diet, sale of productive assets (those that play a role in generating income such as equipment – for example fishing gear and boats) and liquid assets (such as jewellery, radios and television sets) as well as migration. Coping strategies used world-wide have shown to include all or some of the elements mentioned above (Nyborg and Haug, 1995; Davies, 1996; Malleret-King, 2000).

The literature indicates that coping strategies can be broadly categorized as belonging to an early, middle and late stage of food insecurity. For example at an early stage of a crisis, risk minimizing strategies may be given priority (such as change in consumption patterns – reduced number of meals and change in diet); if the crisis persists – more drastic strategies are required to meet subsistence needs (such as sale of productive and liquid assets). In the late stages of a crisis, the most drastic coping strategies would be

utilized (such as sale of land and permanent migration). A shift of a household from one stage to the next would indicate an increasing vulnerability of that household to food insecurity. Vulnerability in this context is defined as the sensitivity of the household to shocks and its resilience or ability to bounce back to its original status. In other words, moving from one set of coping strategies to the more drastic set of strategies makes it more and more difficult for the household to return to its pre-crisis stage. Figure 2.3 illustrates the stages of coping strategies and gives an example of a sequence of coping strategies adopted by a farming community (Corbett 1988; Maxwell and Frankenberger, 1992; Nyborg and Haug, 1995). Several empirical studies have identified sequencing patterns of response to crises (Watts, 1983; Corbett, 1988; Devereux, 1993), including that of Malleret-King (2000). It must be noted however that these sequencing patterns are not universal and are case-specific; they can differ significantly between different livelihood systems and even those in the same livelihood system could differ depending on their socio-economic profile (rich vs. poor), and even those within a household can differ by age and gender (Chambers, 1989; Nyborg and Haug, 1995). But at the same time, coping strategies do broadly show some commonalities across the different regions and scenarios.

Figure 2.3 A Model of Responses to Food Shortages (adapted from Watts 1988; Maxwell and Frankenberger, 1992; Davies 1993; Nyborg and Haug, 1995; and Malleret-King 2000).



2.3.1.2 Methods of measuring food security at the household level

Several methods have been developed to measure food security at the household-level. The most common indicators of food security revolve around measures of food consumption (Bouis, 1993). For example household food consumption measurements using the household budget and 24 hour recall (de Merode *et al.*, 2004) methods are often used in empirical studies. These methods however are fairly costly, time consuming and do not always reflect household food security. For instance, the household budget method only relies on bought products to estimate household consumption and does not take into consideration subsistence production such as fish catch or paddy harvests. The 24 hour food recall method obtains information on what types of food have been consumed in the past 24 hours by household members, and these food items are then analysed to estimate food calorie intake. In this method it is often impossible to

aggregate 24 hour recall data at the household level as the food frequency intake varies with household members and also depends on no memory lapse to ensure precision (Maxwell and Frankenberger, 1992; Maxwell, 1996; Maxwell *et al.*, 1999; Malleret-King, 2000).

Another method that is being used more frequently by development agencies these days is qualitative assessments that depend on participatory approaches to evaluate food security and vulnerability at the household level. For example, in 2002, under the UN World Food Programme (WFP), a community food security profiling was carried out in Sri Lanka. The overall objective of this process was to provide a participatory and qualitative assessment of the nature of food security and vulnerability in selected areas of the country, which were affected by different external factors related to conflict, markets and the environment. The findings of this study highlighted that the main reasons for food insecurity according to the community were: insufficient income, scarcity of work, insufficient farm yields, high cost of living, sickness and disability and conflict⁴. The study also revealed that households depend on a number of coping mechanisms to face food shortages during specific periods. These mechanisms are similar to those mentioned in other empirical studies and belong to the early, middle as well as late stages of food insecurity (Silva *et al.*, 2002). The WFP concluded that vulnerability maps could be a useful tool in project planning for their global programme. A Vulnerability index was developed by combining 24 quantitative variables – where a Principal Component Analysis was used to obtain the weighted average of 10 factors extracted from the 24 variables. It was found that these 10 factors reflected almost 75 percent of the total variation. Data on the quantitative variables were collected through various surveys including national level surveys and censuses. Spatial variations in food security were represented on an island-wide map, with DS divisions categorized into ‘most vulnerable’, ‘less vulnerable’ and ‘least/not vulnerable’ (UNWFP, 2003).

⁴ Civil disturbances have undermined development efforts, especially in the north and east of the country over the last 25 years or so. A certain faction of the Tamil ethnic minority has been engaged in battle for a separate state.

2.3.1.3 Using food coping strategies to measure food security at the household level

Although there is a fair amount of literature on the significance of food coping strategies (Watts, 1983; Corbett, 1988; de Waal, 1989; Frankenberger, 1992; Davies, 1993; Davies, 1996); little has been written on their use in measuring food security. While comparing households on the basis of short term coping strategies may be all that is required under certain circumstances (an example given above from the UN World Food Programme in Sri Lanka), it may be too simplistic in other cases.

Maxwell (1996) pioneered the development of a household-level food security index based on the frequency of use and the perceived severity of short term food coping strategies. A discrete score for each strategy was obtained, which, added up together, made up a cumulative score or index of food security for a household. The ultimate objective of the indicator was to “compare the food sufficiency between two urban groups: those that have access to land for semi-subsistence farming and those who did not” (Maxwell, 1996). Results of Maxwell’s paper (1996) suggested that important information can be obtained by comparing the frequency and severity of short term coping strategies. For example in this case, results showed that the group most vulnerable to food shortage consists of very low income households who have no access to land for farming. The index used by Maxwell (1996) to compare food security situation of two groups of households thus showed a way to use food coping strategies to measure food security. The index was a direct measure of intentional responses based on decisions about the sufficiency of food. An important point about this measure was that it was not simply to measure gross consumption, but to shed some light on what people actually *do* when faced with food insufficiency. It begins to capture the issue of vulnerability (an important element of food security and poverty which has proven to be difficult to capture as described in Section 2.2.1) and the trade-offs made with other basic needs to acquire sufficient food (Maxwell, 1996; Maxwell *et al.*, 1999).

One of the disadvantages of this indicator however was the fact that it measured only short-term coping strategies and hence reflected only the current food security status, and this in turn would only capture one element of vulnerability of that household. To address this short-coming, Maxwell (1996) suggested that parallel indicators should be developed taking into consideration non-food related practices and longer-term adaptive strategies,

in order to obtain more information on the vulnerability and potential resilience of the household. Malleret-King (2000) built upon this idea and developed four indices: These included a short term coping strategies index similar to Maxwell's (1996) index, and an indicator based on the responses to longer term crises. Moreover, to increase the sensitivity of the analysis to non-crisis situations, accumulation indices (short term and long term) were also designed. According to Malleret-King (2000), by investigating the accumulation strategies of the households in the short and long term, more detailed comparison of the households' situations could be carried out. There appears to be no precedent in the literature either before or after Malleret-King's work on the use of accumulation strategies.

Malleret-King (2000) used these four indices in an investigation carried out to evaluate the impacts of a Marine Protected Area, the Kisite Marine National Park (KMNP) in Kenya, on fishing communities. Her results showed that although fishers were overall the least food secure group, those who had access to boats that had been provided by the Park authorities were much more food secure than other fishers. There was also a relationship between fishers' food security and their distance from the park boundaries. The most food secure households were those with a member engaged in Park-related tourism. All four food security indicators provided information on the situation of the households in the study communities and showed the differences across and within these communities. They also helped identify some of the causes of these differences, particularly the differences linked to the presence of the KMNP. In her research, the accumulation indices, both long and short term, appeared to be the most useful (she ranked the indices according to their overall strength and these were ranked as having the highest strength). This indicated that when households are not facing a crisis, accumulation indices provided a larger amount of information. They allowed for discrimination among households. The rough measurement of the indices' strength also illustrated that the indicators provided different amounts of information and also different types of information. It was therefore considered useful to use a range of indicators. Overall her study showed that food security indicators are good tools to compare households' situations and to investigate causes of differences.

One of the limitations of the indices developed by Malleret-King (2000) is that she only used female respondents when collecting data for all four indices, whereas clearly some

of the strategies may have been adopted by the males and not the females (especially long-term strategies). Hence the results may have been gender biased. Also the fact that she did not take into account the actual frequency of use of a strategy, but weighted the frequency of use instead (as in the Maxwell, 1996 case), but in opposite directions for crisis and non-crisis indices (for coping strategies, every day = weight 1; and never = weight 5; for accumulation strategies, everyday = weight 5, never = weight 1), rather than giving a frequency scoring to represent the average *actual* number of estimated times a strategy was used in a certain time period [as in the case of Maxwell *et al.*, (1999), where for coping strategies for example, every day per week = 7, never = 0]. This may have ensured that the results she obtained complemented each other (a household that had a high coping strategy index had a low accumulation strategy index and vice versa), which may not in reality have been the case if the indices are measuring *different* elements of vulnerability (not necessarily *opposite* elements of vulnerability).

The further development of the food coping strategy indicator outlined in 1996, is discussed in Maxwell *et al.* (1999). A comparative analysis is then undertaken of this measure with more traditional measures of food insecurity, using some empirical evidence from the 1997 Accra Urban Food and Nutrition study. The coping strategy index is shown not to be measuring the same phenomenon as the more conventional measures of food security. The results clearly illustrate that combining frequency and severity results in a simple quantitative score which could be useful to compare over time to capture changes (for example over different seasons or the impact of development interventions), or compared within and between different communities to identify households that are at risk. Moreover according to Maxwell *et al.* (1999) the index reveals some shortcomings of the more conventional food security indicators as well. For instance, their findings showed that the benchmark indicators tended to falsely classify relatively food secure households also as food insecure. This according to Maxwell *et al.* (1999) indicates that perhaps the coping strategy indicator is both an alternative and complementary to some of these traditional benchmark indicators.

2.3.2 Personal well-being

Personal well-being is an important although less tangible aspect of a household's livelihood system as it includes psychological dimensions in addition to material

dimensions. Many definitions of personal well-being are used in the human development literature.

To measure people's long term well-being, a composite indicator termed the human development index (HDI) was developed by the United Nations Development Programme (UNDP). The index covers three dimensions of human welfare – income, education and health. Income is measured by GDP per capita, education measured by a combination of adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio and health by life expectancy at birth. Progress in human development needs a balance across the three dimensions that make up the index. Moreover gains in any one dimension are difficult to sustain in the absence of overall progress (UNDP, 2005). The human well-being index (HWI) developed by Prescott-Allen (2001) incorporates 36 indicators that are categorized into five dimensions: health and population, wealth, knowledge and culture, freedom and peace at the community level and equity (household equity and gender equity). According to Prescott-Allen, this index covers more aspects of human well-being than the HDI advocated by the UNDP. Both the HDI and HWI can be used to measure changes in human well-being and for comparing progress in different regions of the world as aggregated data at the country-level are used in calculating these indices.

Narayan *et al.* (2000) established that the well-being of the poor had a great deal in common across the world, in the qualitative study undertaken for the World Development Report (2000/2001). The poor viewed well-being as a multi-dimensional concept and there were six dimensions of well-being that emerged as important. This included: material wellbeing (such as having enough food, assets and work); bodily wellbeing (such as being healthy); social wellbeing (such as caring for, marrying and settling children, having good relations in the family and community); having security (including civil peace, a safe and secure environment and personal physical security); having freedom of choice and action (including being able to help other people in the community); and psychological wellbeing (which included peace of mind, happiness and a spiritual life and religious observance). Descriptions of ill-being were also multidimensional but not the exact opposite of well-being. Experiences of ill-being include material lack and want (of food, housing and shelter, livelihood, assets and money); hunger, pain and discomfort; bad relations within the family and in the community; insecurity, vulnerability, worry,

fear, powerlessness, frustration and anger. People's perceptions of well-being and wealth were also different.

According to Jackson and Marks (1999), human well-being (or welfare) is related to the satisfaction of human needs. The welfare of an individual may be said to be high when that individual's needs are largely satisfied. This could include a range of factors including those related to achieving livelihood security and food security, amongst others. Maslow characterized human needs in the form of a simple hierarchical pyramid (Maslow, 1954). The basic human needs such as air, water, food and shelter, are at the base of the pyramid, social needs such as safety, security and self-esteem - in the centre, and moral and spiritual needs at the top. According to Max-Neef (1991), human needs can be organized into two categories: existential and axiological which are combined and displayed in a matrix. This allows the demonstration of needs of being, having, doing, and interacting (existential) with the needs of subsistence, protection, affection, understanding, participation, leisure, creation, identity and freedom (axiological). The matrix developed by Max-Neef therefore comprised of 10 human needs and consideration of these needs using a participatory approach enabled communities to interpret their own situation in a more holistic manner. According to him, needs could be satisfied at the level of the individual or community. Needs that were not adequately satisfied revealed an aspect of human poverty. Max-Neef's set of needs are intended to be universal, even though all of them may not be observable in a given community (Alkire, 2002).

The measurement of well-being has been investigated most extensively in the "quality of life" research, where a numerical value is generally assigned to people's subjective perceptions, thereby enabling comparisons across different contexts (White and Pettit, 2004).

Cummins (1996) undertook an extensive survey of the "quality of life" literature, and identified seven domains of subjective well-being which were: material well-being, emotional well-being, health, productivity, friendship, safety and community. Thereafter he developed a Comprehensive Quality of Life Survey instrument that collected subjective and objective measures of quality of life in these seven domains (Alkire, 2002).

Rojas (2004) investigated the relationship between human well-being and poverty using a subjective well-being approach. Rojas devised six domains of life; job, consumption, health, family, friendship and pursuing one's goals. Each domain was measured using a scale of 1 to 7. The following question was also asked: "taking everything in your life into consideration, how happy are you?" and a Likert ordinal scale giving seven options from very unhappy (=1) to extremely happy (=7) used to report people's responses. Her findings show that not all six domains of life were of equal importance to subjective well-being. While greater satisfaction in any of the domains results in a higher level of well-being, as correlation coefficients were relatively low, it meant that all six domains were important but none of them individually good determinants of subjective well-being. The domain related to family appeared to be the most important followed by that on health and consumption. A weak positive correlation also existed between subjective well-being and more traditional indicators of well-being such as income. According to Rojas, as this relationship was weak, subjective well-being captured additional information that was not covered by the conventional indicators and therefore enriched the overall understanding of the poverty concept. Although traditional indicators had an effect on an individual's subjective well-being, on their own, variables such as income showed a low correlation and were not good proxies of well-being. The study found that subjective well-being was influenced by an individual's own socioeconomic position and satisfaction of material needs. But there was also heterogeneity in what people thought their purpose of life was. Perceptions on life and what is important would therefore be different amongst individuals. For example, there were very poor people who felt happy with life and well-off people who were dissatisfied and unhappy. Therefore in a population while socio-economic and income were good proxies of well-being for some people, they were irrelevant in explaining the well-being of others.

While quality of life research involves participatory approaches, the level of participation could vary considerably. In the case of the person generated index (PGI) discussed by Ruta *et al.* (1994), individuals themselves specify domains of life that are important to them and then evaluate their performance in respect to these. Participation of individuals is therefore high and from a well-being research point of view, the advantage of this more individualized approach lies in the fact that it is designed to both identify the value system of individual respondents and to use this system in working with them to gauge their quality of life. While this method has much to offer in terms of sensitivity to local

culture and social conditions of the participants, it also makes it possible to undertake comparative analyses within and between communities. This could include the frequency with which different domains are identified, and the range of scores that they attract (White and Pettit, 2004).

Human well-being has been studied extensively in the fields of psychology and sociology, in addition to the field of medicine and health services, and more recently in economics (Rojas 2004; White and Pettit, 2004). From the literature review however it can be noted that within the context of natural resource management and sustainable livelihoods systems personal well-being is one aspect of sustainability which has not received much attention to date and is rarely analysed [see Rivera and Edwards (1998) for an uncommon example], even though non-financial benefits such as personal well-being may play an important role in influencing a household or communities decisions and subsequent actions.

In Rivera and Edwards (1998), a case study on community-based management of two species of lizards in Nicaragua, carried out by Gutierrez-Montes (1996), found that communities linked to the management programme had a higher sense of personal well-being than those that were not. Although no significant difference was noted in the income of the two groups, there was a substantial difference recorded in the perceptions and attitudes of the households involved in the management programme, where a higher importance was placed on personal endeavours. Families had migrated to the area seeking freedom, protection and survival from civil conflict. However those involved in the community management programme later placed higher priority on recreation, affection and leisure time, which underscored their personal well-being and collective security (Rivera and Edwards, 1998).

2.4 Sustainability of livelihoods in the coastal zone

Sustainable livelihood development plays a key role in ensuring the economic security, food security and personal well-being of coastal communities. This generally involves a comprehensive strategy to address the multi-faceted issues affecting coastal environments and communities and takes into consideration the economic, environmental, social, cultural and political dimensions that influence people's lives.

In developing regions of the world, the livelihoods of most coastal communities tend to be subsistence-based. In South Asia for example levels of poverty appear to be pronounced in coastal zones (ADB RETA, 2003).

2.5 The main threats facing the coastal zone

A high degree of stress has been placed on the coastal environment due to numerous development activities. If present trends continue, it is estimated that by 2025, three-quarters of the world's people may live within 100 kilometres of the sea, putting immense pressure on coastal ecosystems (Shalizi, 2003). In South Asia for example, at present nearly 300 million people (i.e., a quarter of the combined population of India, Pakistan, Maldives and Sri Lanka) live within 100 km of the coast (ADB RETA, 2003). Globally, two-thirds of all fisheries are exploited at or beyond their sustainable limits, and half or more of the world's coral reefs may perish in this century (Shalizi, 2003).

2.6 Overview of approaches to coastal resource management

As many coastal communities are dependent on coastal resources for their livelihoods in terms of food security and income generation, the mounting pressure on coastal systems around the world, has prompted most countries to recognize that coastal zones are distinct regions with resources that require special attention. In this context, many have taken specific actions to conserve coastal resources and to manage coastal development. There is a current trend among the coastal countries to move towards more comprehensive and integrated coastal programmes (Sorenson and McCreary, 1990).

Over the last twenty years there have been many initiatives that engage integrated and multidisciplinary approaches to management of coastal systems. Since the United Nations Conference on Environment and Development (UNCED) or the 'Earth Summit' in 1992, investments in integrated coastal management (ICM) have increased dramatically (Tobey and Volk, 2002). In a world-scale survey of coastal management initiatives, Olsen et al (1997) identified 140 initiatives in 56 countries. More recently, Sorenson (2000) quoted a figure of 380 integrated coastal initiatives in 92 countries – many of these to be found in the developing world. Integrated coastal management is widely accepted as a comprehensive, multi-sectoral integrated approach to the planning and management of coastal areas (Aston, 1999). According to Cicin-Sain and Knecht (1998), "Integrated coastal (zone) management can be defined as a continuous and dynamic process by which decisions are made for the sustainable use, development and protection of coastal and marine areas and resources. ICM acknowledges the interrelationships that exist among coastal and ocean users and the environments they potentially affect, and is designed to overcome the fragmentation inherent in the sectoral management approach".

Historically, coastal resources were generally either part of an open-access regime (where resources did not belong to any one particular group and could be accessed and harvested by everyone) or managed under common property regimes (where ownership and management of resources lie with a particular community group). In addition to the above two mentioned property rights regimes, certain coastal resources were privately owned, such as immobile resources like shell fish (FAO, 1998).

Until recently, almost all the deep sea fisheries around the world operated under the conditions of free and open access. Many coastal fisheries are still under de facto open access regimes. Fundamental problems that exist in open access regimes are that there is no means of excluding newcomers from exploiting resources and no incentive for individuals to harvest resources in a sustainable manner. In fact, resource users have the incentive to harvest as much of the resource as possible, before other people do (FAO, 1998).

Common property regimes associated with coastal resources are found throughout the world, but are particularly well developed in the Asia-Pacific region (Ruddle, 1996). They are generally found where territorial boundaries of the resource can be identified

easily – such as a lagoon or coral reef, or where fishing takes place in specific segment of the coastline (for example, beach seine fisheries). A majority of these regimes have evolved over a period of many centuries. Traditional societies that depended on coastal resources often had elaborate community managed regimes that sustained the community and resources for generations, although they were not always consciously planned or intended as management strategies and had survived simply because they helped meet basic human needs (Berkes 1989; White *et al.*, 1994). However, not all common property regimes have been in existence for centuries, in fact some have developed relatively recently. Examples of communal regimes in relation to coastal resources can be found in Berkes (1994), Pomeroy (1994), White *et al.*, (1994) and Senaratna (1999).

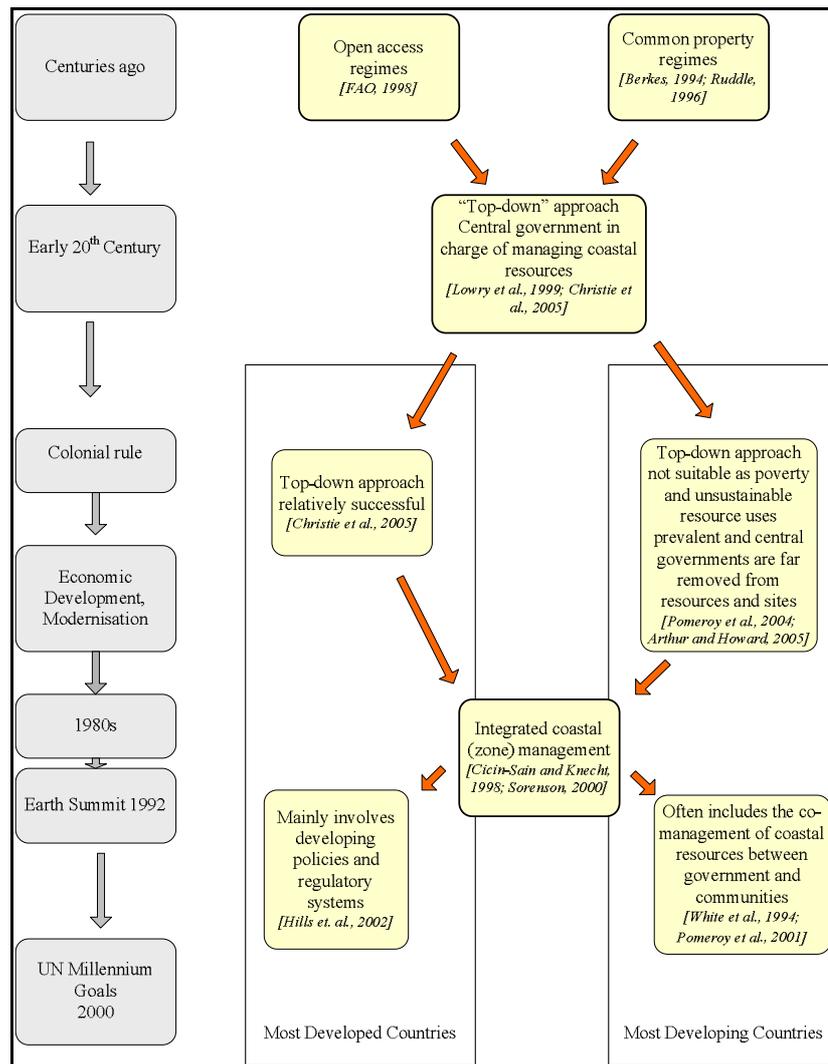
In common property regimes, the community develop a set of rules concerning who may use resources, how resources should be shared among users and who should be excluded from using the resources (Hanna *et al.*, 1989). However, the system of property rights and rules governing these communal regimes need to be recognized as being legally binding by those who are not part of the resource user group, as otherwise these systems can be easily overruled. Likewise, if these regimes operate in isolation without formal recognition or support from the state authorities they are likely to be vulnerable to threats posed by macro-economic processes (Senaratna, 1999).

Starting in the early 20th century, a distinct transition took place in relation to management of coastal systems, with the replacement of traditional local authority by a central government-driven system. The management of coastal resources therefore moved away from resource users and into the hands of government institutions. This ‘top-down’ approach to coastal management prevailed for many decades, reflecting the past colonial rule in certain regions of the world, in addition to the modernization and economic development taking place in the world during this time period (Senaratna, 1999). This ‘top-down’ approach has been most successful where there is a consensus about the overall management requirements, clarity about who the coastal users or stakeholders are, a comprehensive institutional and regulatory framework, strong government commitment and presence of national policies and legislation in relation to coastal resource management, economic stability which ensures the necessary financial commitment and political stability in the country. Therefore while a top-down approach to coastal

management was adopted world-wide, it proved to be more successful in the developed world (Lowry *et al.*, 1999; Hills *et al.*, 2002; Christie *et al.*, 2005)

During the early 1980s it became clear that in many regions of the developing world, poverty and the unsustainable use of coastal resources meant that centralized coastal management was not the appropriate solution and that resource users and other stakeholders needed to play a bigger role in the process to make coastal resource management sustainable in the long-term. In most developing countries, while the state legally owns coastal resources and is accountable for their wise use and management, often central government authorities are far removed from the site of the resources and have insufficient capacity to manage the resources on their own. It therefore makes economic and administrative sense to involve user groups in management. Co-management of coastal resources is one such approach that has gained wide acceptance in several parts of the world (Lowry *et al.*, 1999; Mulekom, 1999; Pomeroy *et al.*, 2004; Arthur and Howard, 2005). Figure 2.4 highlights the key international trends in terms of approaches to coastal management.

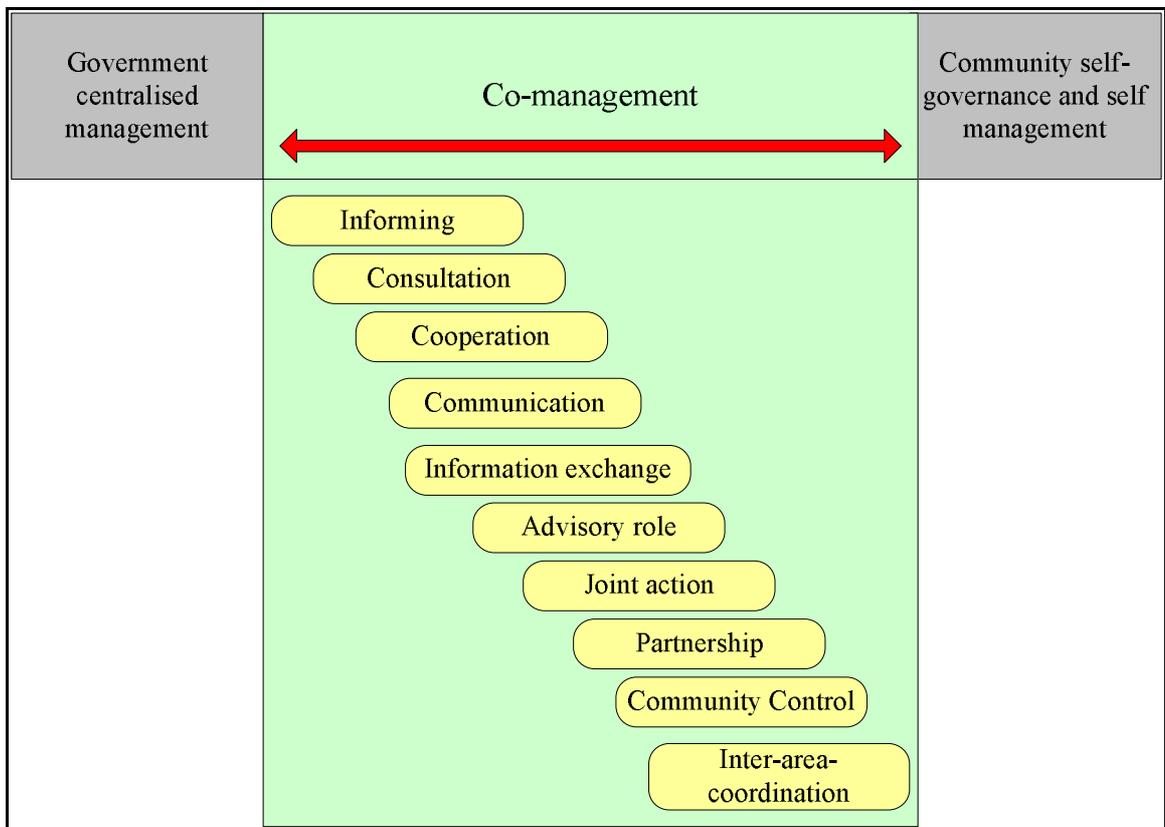
Figure 2.4 Evolution of the main approaches to coastal zone management



2.6.1 Co-management of coastal resources

In co-management systems, decision making, responsibility and authority are shared between the government and the local resource users or community. The degree of power-sharing and the amount of responsibility that the state and the local community will have will differ from case to case, depending on the site-specific conditions (Pomeroy and Williams, 1994; White *et al.*, 1994; Pomeroy *et al.*, 2004; Arthur and Howard, 2005). Figure 2.5 depicts the scale of power sharing possible in a co-management system which ranges from central government informing communities of management decisions to communities managing resources independently and keeping the government informed of their decisions.

Figure 2.5 Sliding scale showing various degrees of co-management, from government informing communities through to fully coordinated local management (From Pomeroy *et al.*, 2004)



According to those promoting co-management arrangements, some of the major advantages of this management system are that it empowers local communities, ensures better compliance of regulations by resource users (as they are engaged in the management process), provides management plans that reflect local needs better, reduces costs of data collection and implementation and assists in conflict resolution in relation to resource use (Arthur, 2005). The main weaknesses encountered in co-management arrangements are that they often tend to be “project” driven rather than “process” driven and therefore long-term sustainability is undermined. They also are over-reliant on external sources of funding and are therefore rarely self-sustainable financially. Moreover since co-management focuses mainly on resources and their sustainable use, and are rarely “people-centred” often more vulnerable groups may be side-lined in the management process (Senaratna Sellamuttu and Clemett, 2003a; Pomeroy *et al.*, 2004).

There has been extensive research undertaken on different coastal resource co-management systems around the world and they can be broadly categorized into three

groups: consultative co-management where the government interacts with the community but makes all the decisions; collaborative co-management – where the government and community stakeholder groups work closely together and share decisions; and delegated co-management – where the government allows formally organised stakeholder groups to make major decisions regarding resource use. In countries such as the Philippines and Indonesia in South East Asia where more mature co-management arrangements exist, delegated co-management systems are employed, while in Africa and the Caribbean where it is a relatively new concept, a more consultative system is currently operational (Pomeroy *et al.*, 2004). In Sri Lanka a collaborative co-management system has been developed (De Cosse and Jayawickrama, 1996; CCD, 2004).

Establishing successful co-management is rarely immediate. Like most participatory processes it requires a great deal of time and attention. A large amount of literature exists on both successful and unsuccessful co-management in fisheries and other coastal resources. For example, Pomeroy *et al.* (2001) undertook a comprehensive review of factors influencing the successful implementation of fisheries co-management initiatives in several countries in Asia, including Vietnam, Philippines, Indonesia, Thailand and Bangladesh. Their work revealed that there are a number of conditions that if satisfied, provide a greater chance for successful implementation of co-management. These factors were broadly divided into three categories: supra-community (those beyond the community-level), community level, and household or individual level. Hauk and Sowman (2001) undertook a review of ten coastal and fisheries case studies involving co-management in South Africa and presented factors that enhance or impede the successful implementation of these initiatives. Pomeroy *et al.*, (2004) present a comparative analysis of coastal resource co-management in the Caribbean region. From these different reviews it appears that there are some common factors affecting the success (and failure) of co-management in these different regions of the world (see Table 2.1).

Table 2.1. Summary of some of the key factors that influence the success or failure of co-management [adapted from Hauk and Sowman (2001), Pomeroy et al., (2001) and Pomeroy et al., (2004)]

Factors that enhance co-management	Factors that impede co-management
<ul style="list-style-type: none"> • Government action to establish supportive policies, legislation and an institutional framework 	<ul style="list-style-type: none"> • The government institutions being unsupportive of the participation of resource users in managing the area.
<ul style="list-style-type: none"> • Presence of an external facilitator to play a catalytic role – guiding the community and liaising with the government institutions and other stakeholders. 	<ul style="list-style-type: none"> • Selection of facilitator that is not accepted by the community or one who is unable to liaise with the government institutions or other stakeholders.
<ul style="list-style-type: none"> • Strong local leadership – providing the impetus and direction to the co-management process. 	<ul style="list-style-type: none"> • Total reliance on one individual or community leader has led to the failure of co-management
<ul style="list-style-type: none"> • Empowerment of community - enhancing their access to information and allowing them to work on equal terms with local elite and other more 'powerful' stakeholders. 	<ul style="list-style-type: none"> • Changes in the local 'power' structure may not be acceptable to everyone.
<ul style="list-style-type: none"> • The existence of community organizations that can represent different resource user groups. 	<ul style="list-style-type: none"> • Establishment of new user groups within communities that already have a number of local cooperatives or committees is inefficient and can lead to problems.
<ul style="list-style-type: none"> • The support of the local level government and institutions and also the backing of the local politicians. 	<ul style="list-style-type: none"> • Political influence leading to some groups being marginalized
<ul style="list-style-type: none"> • Adequate financial resources to support implementation, coordination, enforcement, raising awareness and monitoring. 	<ul style="list-style-type: none"> • Inadequate financial resources leading to implementation difficulties at local level and disillusionment of communities.
<ul style="list-style-type: none"> • The existence of suitable conflict management mechanisms – to resolve issues that may arise between user groups or within user groups. 	<ul style="list-style-type: none"> • The lack of training in conflict resolution mechanisms leading to resource users being unable to solve problems.
<ul style="list-style-type: none"> • Clear objectives that will help steer the co-management process in the correct direction. 	<ul style="list-style-type: none"> • The lack of problem recognition by resource users.
<ul style="list-style-type: none"> • An incentive structure at the individual level that includes tangible benefits of an economic, social or political nature will encourage individuals to participate in the process. 	<ul style="list-style-type: none"> • If no tangible benefits are perceived to be apparent in either the short or long term, it is unlikely that individuals will show interest in participating in the process.

2.7 Sri Lanka's coastal zone management policy

As an island nation, Sri Lanka's coastal areas are considered to be some of the most important areas in the country, in both social and economic terms. As mentioned previously, according to the 2001 census in Sri Lanka, 25% of the population lives in the coastal region.

In line with global trends, since the early 1980s there has been a strong government commitment towards improving the management of marine and coastal resources in the country. In a South Asia context Sri Lanka appears to be in a more mature phase of

integrated coastal zone management overall, than other countries in the region (ADB RETA, 2003). A comparison of the main policy and institutional frameworks that currently exists for coastal and marine resource management in some countries in South Asia is given in Table 2.2.

Table 2.2 An overview of the main ICZM policies and institutional frameworks that exist for coastal and marine resource management in some countries in South Asia

Country	Main policies and institutional frameworks
India	<ul style="list-style-type: none"> • The Federal Government in the Ministry of Environment and Forests issued guidelines for the protection of beaches in India in 1984. • The Environmental Protection Act of 1986 envisaged developing provisions for the protection of the coast. • The Coastal Regulation Zone Notification Act of 1991 declares areas of coastline comprising of seas, bays, estuaries, rivers, etc as the Coastal Regulation Zone and Integrated Coastal Zone Management (ICZM) plans are made them. Development activities within these zones are regulated through the ICZM plans. • While there is no integrated coastal zone management policy adopted at the national level, the National Environmental Policy (Draft 2004) advocates that ICZM plans need to be comprehensive and prepared on scientific basis, with the participation of local communities both in formulation and implementation of the plans. <p>ADB RETA, 2003; Ministry of Environment and Forests, 2004.</p>
Pakistan	<ul style="list-style-type: none"> • There is no one institution that overlooks coastal zone management and regulation of activities. The main agency is the Environment and Urban Affairs Division within the Ministry of Housing, Works, Environment and Urban Affairs. • A Coastal Environmental Management Plan was drawn up in 1989 by UN-ESCAP-NIO. A set of recommendations in respect to implementing the management plan were prepared in 1994 but were not still implemented in 2003 • A comprehensive ICZM programme for Pakistan had not been prepared in 2003. The Balochistan Conservation Strategy prepared by IUCN Pakistan and the Government of Balochistan's Planning and Development Department in 2000 incorporates a policy framework for the conservation and management of the marine and coastal environments in Balochistan. An ICM plan that covered a High Priority Area on the 350km coastline of the Sindh Province was developed with the support of the ADB RETA in 2003. <p>Balochistan Conservation Strategy, 2000; ADB RETA, 2003.</p>
Bangladesh	<ul style="list-style-type: none"> • An ICZM project was set up in the country in 2001 to promote the adoption of an integrated approach to managing coastal issues. • The Coastal Zone Policy for Bangladesh was published in 2005. This document sets out a framework for initiating a national ICZM programme. Prior to this, activities in the coastal area were dealt with on a sectoral basis through various ministries under their different policy frameworks, e.g., Environment Policy (1992) and Implementation Plan (1992), National Tourism Policy (1992) and National Fish Policy (1998). • A Coastal Development Strategy was approved in early 2006 and sets out how the implementation of the Coastal Zone Policy will be undertaken and priority actions. <p>Ministry of Water Resources, 2005</p>
Maldives	<ul style="list-style-type: none"> • Responsibility for CZM is spread over several ministries – e.g., the Ministry of Fisheries, Agriculture and Marine Resources, Ministry of Environment and Construction, Ministry of

Country	Main policies and institutional frameworks
	<p>Atolls Development, Ministry of Planning and National Development. Therefore management of tourism, fisheries, coral reefs and coastal engineering works are carried out on a sectoral basis. The dispersion of responsibility has meant that the formulation of a comprehensive ICZM programme has yet not taken place.</p> <ul style="list-style-type: none"> • An ICZM approach has been supported by national planning documents, e.g., the second National Environmental Action Plan, the Maldivian National Development Plan and the National Biodiversity Action Plan. • Key legal and regulatory instruments include the Environment Protection and Preservation Act of 1993 and the Fisheries Act of 1987. <p>ADB RETA, 20003; UNEP, 2005b</p>
Sri Lanka	<ul style="list-style-type: none"> • The Coast Conservation Act of 1981 provided the regulatory framework for the management of activities in the coastal zone. • A Coast Conservation Department was set up in 1984 and was responsible for the administration and implementation of provisions in the Coast Conservation Act, therefore making it the primary agency responsible for coastal management issues in Sri Lanka. • The first Coastal Zone Management Plan (CZMP) for Sri Lanka was published in 1990 and focused mainly on erosion control and the degradation of critical habitats. • The ICZM concept was first introduced in the policy paper ‘Coastal 2000: Recommendations for a resource management strategy for Sri Lanka’s coastal region’ prepared in 1992 and endorsed by the Cabinet in 1994. • The CZMP has been revised twice – 1997 and 2004 and includes devolution of responsibility of coastal resource management through the Special Area Management process. <p>CCD, 2004; Clemett <i>et al.</i>, 2004</p>

Sri Lanka’s Coastal Zone Management Plan (CZMP) is the action plan adopted by the Ministry of Fisheries and Ocean Resources, through its Coast Conservation Department (CCD) for management of the coastal zone during a five year time frame. A regulatory system mandated under the Coast Conservation Act No. 57 of 1981 and amended in 1990, it remains the primary management tool prescribed for the implementation of the CZM policies (Wickremeratne and White, 1992). Its objective is to ensure the sustainable use of the coastal environment and its resources in the long-term, while satisfying the national development goals at the time (CCD, 2004). The CZMP addresses a set of specified coastal issues and problems at a national level and provides policy guidelines for alleviating and solving these problems. While the first national CZMP was published in 1990, revised versions of the CZMP were prepared in 1997 and 2004⁵.

⁵ The latest CZMP document was ready to be published in December 2004. However due to the Tsunami, publication was placed on hold as a review of coastal setback standards was expected. The document had not yet been published in February 2006.

Although the CZMP is primarily concerned with management of the legally defined coastal zone⁶, the issues addressed by the CZMP however extend beyond this limit, both inland and seaward. It recognizes the fact that the CCD is one of a number of institutions that have jurisdiction over coastal resources. The CCD has as a result adopted an integrated coastal zone management approach for its work, in line with international trends, as most actions proposed by the CZMP have to be carried out in a collaborative effort between a number of state agencies (at the national, regional and local levels) and with the support of non-governmental organizations and local communities. Sri Lanka's CZMP policy has therefore evolved over the years to incorporate greater levels of community participation, particularly through the introduction of the Special Area Management approach (CCD, 2004). The need for a participatory approach for the management of coastal resources, to ensure sustainable development is now widely believed to be essential.

The strong commitment of the government over the last three decades to establish good governance and an enabling environment for coastal management has benefited the country in terms of international recognition and donor assistance to this sector. However although a comprehensive policy is in place, implementation has not always been an easy task. For example with the devolution of responsibility to provincial and local bodies, problems have occurred due to the lack of human resources. In addition political interference and patronage are also noted as impediments to proper decisions being taken. Financial prioritization of activities based on informed decisions being made in terms of ecological and economic needs are also an issue (ADB RETA, 2003). Moreover, due to the lack of government control in the North and East of the country, the implementation of the CZMP in these areas is marginal or non-existent in certain cases.

2.7.1 Co-management of coastal resources in Sri Lanka

To deal with coastal resource management issues at specific sites that were of economic and ecological significance, a new mechanism was recommended in the early 1990s called the 'Special Area Management' or 'SAM' Process. The process is an example of collaborative co-management. The government institutions and other planning institutions

⁶ The 'coastal zone' comprises of the narrow belt of land extending 300 m interior from the high water mark, and the belt of sea along the coastline extending up to 2 km from the high water line. Along estuaries however the coastal zone extends up to 2 km inland (CCD Act 1981).

take on the role of facilitator providing technical and financial assistance to the local community management effort. The local community groups are considered the custodians of the resources being managed under the SAM process. A basic assumption of SAM is that local communities will manage natural resources if they perceive that they derive tangible benefits from better management” (White and Samarakoon, 1994). The major objective of SAM is to resolve competing demands of natural resources within a specific geographical boundary by planning out optimal sustainable use of resources. The approach allows for mediation and conflict resolution among competing resource users in multiple resource use areas and builds consensus and agreement on what uses can ensure or optimize overall sustainability (Wickremaratne and White, 1992).

2.7.1.1 Evolution of the Special Area Management (SAM) Process

The Special Area Management (SAM) concept emerged through a review undertaken in the USAID funded Coastal Resources Management Programme in Sri Lanka, which involved the Coast Conservation Department of Sri Lanka and the University of Rhode Island, USA (Lowry *et al.*, 1997; Jayatilake *et al.*, 1998).

The SAM concept adopted in Sri Lanka is built upon a management strategy termed “special area planning” that has been used in the management of coastal resources and environments in both developed countries (e.g., San Francisco Bay, USA) and developing countries (e.g., integrated coastal swamplands initiative in Sumatra, Indonesia). The distinguishing characteristic of a special area is its geographic coverage, where its boundaries are determined based on two factors. First it is expected to cover national resource or development issues that cross the boundaries of state or local governments. Second, the area should encompass a significant coastal ecosystem such as an estuary, lagoon or river basin (Sorenson and McCreary, 1990).

In the Sri Lankan context, SAM evolved to represent not only a locally based, geographically specific planning process, but also one that allows for the comprehensive management of natural resources with the active involvement of the local community as the main stakeholder group. Therefore at least in theory, SAM is considered a highly participatory practice (De Cosse and Jayawickrama, 1996).

Today, SAM is considered a key component of Sri Lanka's coastal zone management policy. The adoption of SAM planning in Sri Lanka was preceded by the implementation of two pilot projects at the Rekawa lagoon and the then Hikkaduwa marine sanctuary⁷, where the viability of the SAM approach in the local setting was tested⁸. Based on the outcome and experience gained from these initiatives, in 1997 the CZMP dedicated a chapter to the SAM process and included twenty-three sites to be designated under the SAM category. The sites were given a priority rating based on a simple ranking process in four different categories, namely: severity of issues (the relative extent of the environmental, social and economic issues of concern at the site); biodiversity (the relative richness of biodiversity at the site); viability (legal, institutional factors and location and size of site that could influence management under SAM); and economic significance (the potential or existing value of economic development at the site) (CCD, 1997).

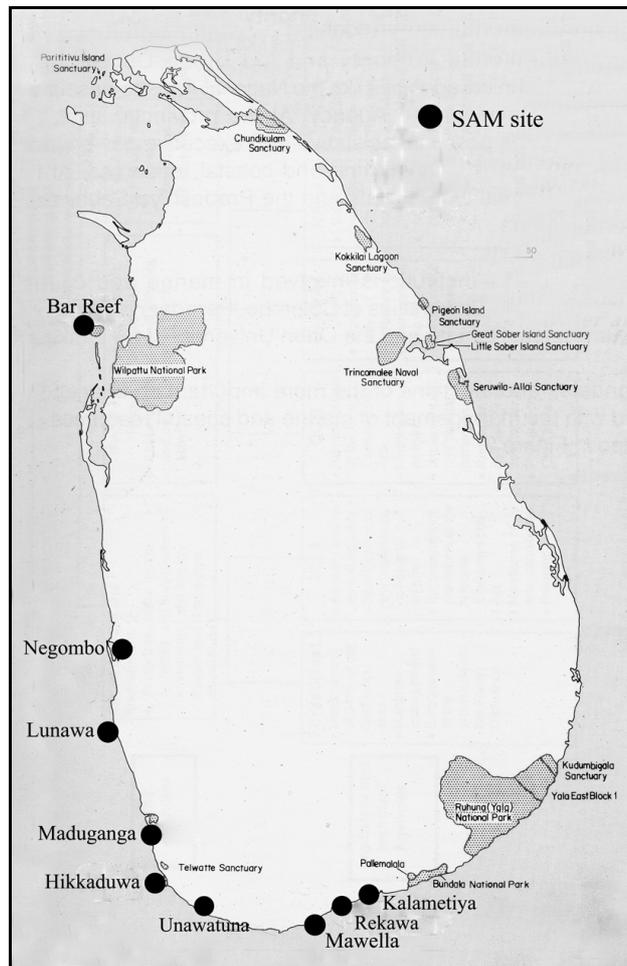
In the coastal zone management revision process that took place between 2000 and 2004, the list of SAM sites was revised, and a total of 57 sites were identified for management, of which 26 sites were identified as potential SAM sites thereby increasing the number of potential sites by three. In the CZMP 2004, SAM site selection was based on objective criteria and through a six month survey of the coastal zone, using a participatory process. Moreover, the CCD, under the auspices of the Coastal Resources Management Project (CRMP9) of 2000-2005, initiated the SAM process in eight sites, namely the Bar Reef, Negombo Estuary/Muthurajawala Marsh, Lunawa Lagoon, Madu Ganga, Hikkaduwa Nature Reserve, Unawatuna Bay including Koggala Estuary, the Mawella and Kalametiya Lagoons and the coastal stretch in Hambantota (Figure 2.6). The CCD is also currently recommending the incorporation of SAM activities into district and national level development projects (CCD, 2004).

⁷ Hikkaduwa Nature Reserve since 1999.

⁸ The planning phase of the Rekawa and Hikkaduwa pilot SAM sites took place from 1991 - 1995

⁹ CRMP is a major initiative of the Ministry of Fisheries & Aquatic Resources with financial support of US \$ 80 million in total from the Asian Development Bank, the Netherlands Government and the Government of Sri Lanka. The CRMP comprises of four components, namely: (i) coastal stabilization, (ii) coastal environment and resource management (CERM) (iii) fisheries resource management and quality improvement (iv) institutional strengthening. Implementation of SAM and review of the CZMP was undertaken by CERM.

Figure 2.6. Map of Sri Lanka indicating the SAM sites that are currently being implemented (map adapted from IUCN Sri Lanka, 1998 and CERM, 2003)



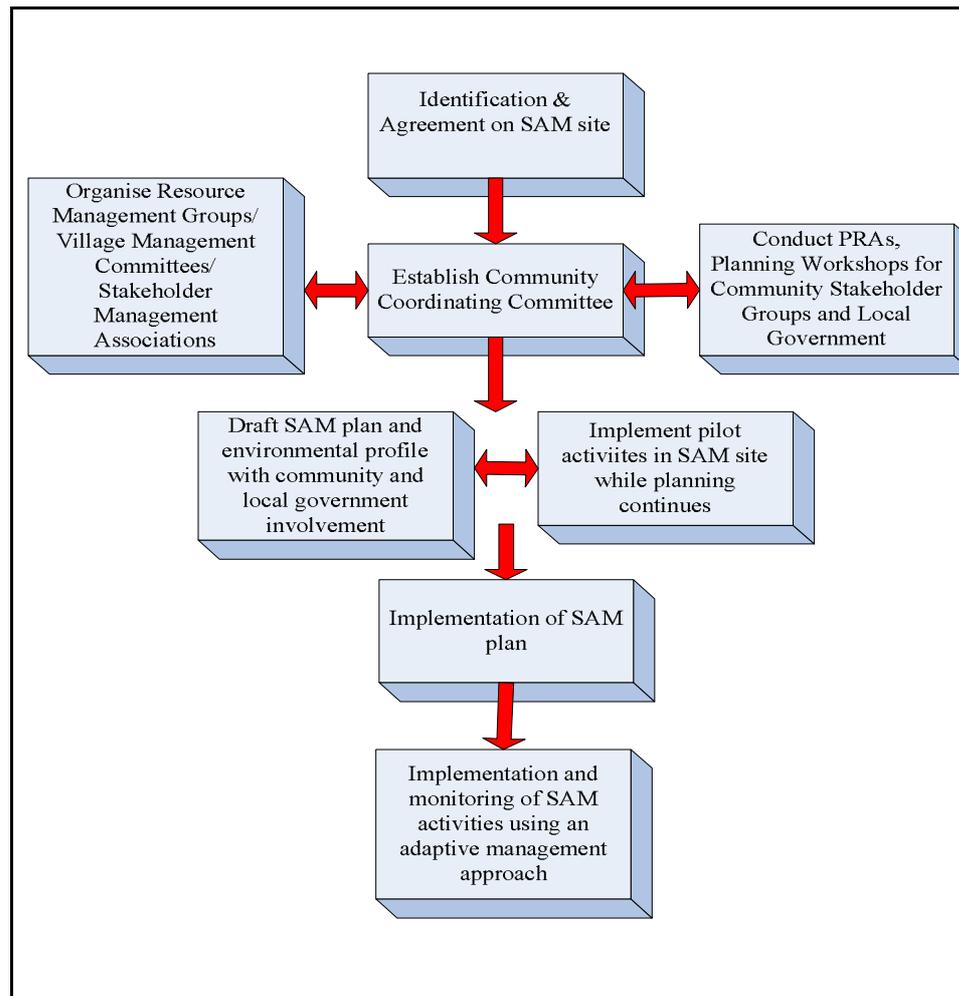
2.7.1.2 Evaluation of the SAM process

Since its introduction, only a preliminary assessment has been carried out on the actual success and effectiveness of the SAM approach and this took place in late 1996 and covered only the initial implementation stage of the two pilot SAM sites in Hikkaduwa and Rekawa (Lowry *et al.*, 1997; Lowry *et al.*, 1999). Since then while evaluations have been carried out under the CERM component of the CRMP in terms of progress of implementation activities within SAM sites, in essence this only covers the outputs on a project level, not on the success and sustainability of the overall SAM process (CERM, 2004).

2.7.1.3 Mechanism adopted for planning and implementing of the SAM process

The SAM process is meant to be dynamic and adaptive and involves a number of overlapping steps. The main steps adopted in the SAM approach are indicated in Figure 2.7.

Figure 2.7 The Main Steps adopted in the Special Area Management Approach (Adapted from CCD, 2004)



Under the SAM process, an institutional mechanism is set up to ensure that implementation of the SAM plan takes place properly. The community is broadly organized into a number of coastal resource user groups or stakeholder groups (such as sea fishers, lagoon fishers, women's societies) and village level committees are set up to represent each village. An overall management coordinating committee is established for the site with the assistance of the facilitator organization – in this case the Coast Conservation Department (Wickremeratne and White, 1992). The management committee, referred to a Community Coordinating Committee (CCC) which is established

at each of the SAM sites to function as the SAM planning and implementation body. The CCC comprises of representatives of all resource user groups in the area, resource 'guardians' such as non-governmental organizations (NGOs) and community based organizations (CBOs) and resource managers such as government, semi-government and local government authorities. The Divisional Secretariat of the area generally chairs the committee (CCD, 2004). The CCC therefore operates as the main decision-making body in the SAM process. It approves initiatives within the SAM site and also provides a forum for different stakeholder groups from within the SAM site to discuss issues or problems that are affecting them and make decisions regarding solving these matters. The CCC therefore should ideally be a strong and dynamic forum, as it plays an important role in ensuring the success of the SAM process (CERM, 2004).

In reality however there are several problems that impede the smooth functioning of the CCC. These have been highlighted in various studies (for example, Lowry *et al.*, 1999; Senaratna Sellamuttu and Clemett, 2003a; Clemett *et al.*, 2004 and CERM, 2004). For instance, the success of the CCC has depended greatly on the effectiveness of the chairperson of the committee. Not all Divisional Secretaries have been actively engaged in promoting the SAM process. In fact some have viewed involvement in the SAM CCC as over and above their call of duty and have therefore shown a sense of apathy towards the process. In other cases, the transferring of active Divisional Secretaries and other relevant government officers from the SAM site has been one of the major constraints with regards to implementation of SAM activities. In some SAM sites there has also been a certain degree of politicization of the CCC that has caused problems. Some stakeholder groups that have strong political backing can 'hijack' the democratic process followed in the CCC and gain favour over other groups due to their stronger political influence. Another issue that has emerged with regards to the CCCs is that although the CCC members take certain decisions, since some SAM interventions are actually implemented through other government agencies, it is not easy to get these activities expedited in the given time frame of the SAM implementation schedule and there are several delays as a result. This is partially due to the lack of awareness about the SAM process among other government agencies. This has caused disillusionment of the SAM process among local community-level stakeholders. Furthermore, although the CCC is in theory expected to provide a platform for different user groups to discuss and resolve issues arising from resource use conflicts within the SAM site, in reality it is not clear what conflict

resolution methods will be used in an actual case of conflict and exactly who will play the role of mediator - for example, will it be the chair or other committee members.

The SAM approach also defines the different 'stakeholders' in the broadest terms, and with respect to the community stakeholder groups, limited disaggregating could mean that more vulnerable groups remain hidden and do not derive any benefit from the SAM process. For example, having one stakeholder group representing all 'sea fishers' who are assumed to share unanimous priorities and perspectives on fisheries management issues may not do justice to the poorer, more vulnerable fishermen. For instance, those engaged in near-shore sea fishing using a traditional canoe, would face a different set of problems compared to the better-off fishers that use larger, outboard engine fiberglass boats, but the latter are likely to gain a more prominent representation in the CCC. The genuine problems faced by the poorer fishers may therefore not be addressed by the CCC. The heterogeneity and complexities that exist in communities that in turn may lead to different levels of access to various natural resources and varying combinations of use patterns need to be paid more careful attention during implementation of these co-management arrangements.

In recognition of the fact that the CCC at each SAM site needs to remain a strong and active forum beyond the implementation phase of the CERM project, a number of recommendations were made during the midterm review of the CERM project in 2004. It was recommended that a set of guidelines and a clear overall strategy be developed to ensure the long-term sustainability of the CCC, which in turn is crucial for the success of the SAM process in the long-term (CERM, 2004).

For each SAM site there are a number of site-specific issues related to coastal resource management that will be addressed during the implementation of the SAM plan. The facilitator of a SAM site is responsible for the identification of these issues by undertaking stakeholder consultations. Participatory methods such as PRAs (Participatory Rural Appraisals) and SWOT (Strengths, Weaknesses, Opportunities and Threats) analyses are usually employed during stakeholder consultations (CCD, 2004). However there could be certain shortcomings when using these types of participatory methods in development processes as described by Stirrat (1996) and Mosse (2003) that are discussed in Chapter 3 (see Section 3.3). An adaptive management approach is expected to be used

where the implementation of SAM activities are monitored and decisions for the continuation of implementation made based on the success (or failure) of the different activities (CCD, 2004).

An overall issue that is dealt with under the SAM process is ensuring that sustainable livelihood practices are adopted, that allow for sustainable natural resource use and management within the designated SAM site (Lowry *et al.*, 1999). In a broad sense the SAM approach looks to ensure both the economic and social well-being of the local communities as well as the ecological well-being of the natural ecosystems through sound natural resource management.

2.7.1.4 Relationship between sustainable livelihoods and the SAM process

In the SL framework, SAM would be considered a transforming policy process that operates from the national level down to the household level. SAM does not focus directly on poverty reduction, but associates it more as a positive outcome linked to the sustainable use of natural resources. SAM addresses poverty issues at the site-level by providing incentives in the form of tangible benefits such as basic 'poverty reduction' commodities to encourage communities to participate in the co-management process. In addition, SAM introduces alternate livelihood activities to improve the income levels of local community groups with the assumption that this will also divert people away from unsustainable resource use practices. While the target groups of the SAM alternate livelihood programmes have been mainly resource abusers and those considered to be from the poorer segment of the community (CERM, 2004), no specific criteria appear to have been developed to use at the different SAM sites to identify the poor or distinguish among those suffering from chronic and transient poverty. Although different interventions would be required in order for these different groups to overcome poverty (Tudawe, 2002; Hulme and Shepherd, 2003), this is not taken into consideration under SAM. More vulnerable and marginalized groups within the community may therefore remain invisible, as the SAM process places more emphasis on the natural resources and their users. Providing alternative income generating activities is presumed to alleviate poverty more or less by default. The alternate livelihood activities have not been successful or sustainable in the long-term in the case of the Rekawa SAM site (Senaratna Sellamuttu and Clemett, 2003a) as discussed in Chapter 4, Box 4.1 and perhaps one

reason that caused its failure may be the insufficient disaggregating of target groups (for example distinguishing between coral miners who were solely dependent on mining as a source of income as opposed to those that engaged in this activity only part-time; or those that were very poor as opposed to those that were better-off). Using the same interventions for these different groups may not have been appropriate. In Kalametiya since alternate livelihood programmes were only introduced in 2005, it is too early to evaluate its success (CERM, 2004).

While Chapter 2 sets out the background to the different methodological concepts from which I derive my analytical tools and indices, as well as the specific context the methods are applied in (i.e., two coastal sites where communities are involved in managing natural resources), the next chapter discusses the overall methodology that was adopted to collect the data needed to test these tools/indices and analyse their merits and limitations.