The Sida Marine and Coastal Zone Initiative

Review of Population-Related Dimensions in Coastal Area Development and Environmental Management

Bertil Egerö

NATUR/SAREC/INEC

Concept-paper: Review of Population-Related Dimensions in Coastal Area Development and Environmental Management

The Sida Marine and Coastal Initiative

Foreword

This concept-paper on Population-Related Dimensions in Coastal Area Development and Environmental Management has been elaborated on request by the working team for the preparation of Sida's Marine and Coastal Zone Initiative, an intended policy programme with plans of action for development of tropical and sub-tropical marine and coastal areas.

The views presented are those of the author, Dr Bertil Egerö (SODECO Social Development Consultants, Lund) and are not necessarily shared by Sida.

The working team in Stockholm, September 1997

Table of Contents

Introduction

The purpose of this paper is to elaborate on a central dimension of the development/ environment issues in coastal management; population changes in a context of social and economic change.

In many parts of the world, countries and regions with coast lines have a comparatively high proportion of their inhabitants in areas close to the coast. Historically, this reflects more favourable living conditions along the coast. In modern times, the growing internationalisation of trade and production has led to concentrations of economic activities to coastal areas. This in turn has affected demographic dynamics in these areas - rapid city growth and urban migration, improved living standards and health. Some rural communities along the coast may have experienced improved welfare, others have seen impoverishment due to environmental depletion or increased competition over natural resources from commercial actors, loss of adult labour to urban economies etc.

The environmental effects of increasing wealth are different from those linked to impoverishment. Both need to be taken seriously, not least where the effects are compunded by increases in human numbers.

Examples and illustrations in the paper are drawn primarily from countries along the East African coast. Conditions in this part of the world are likely to be considerably different from those in eg South East Asia (see Figure 1). The format of this report does not permit more than glimpses of the conditions along the East African coast. Besides, references to the coastal regions are not very easy to trace. 'Coast' nowhere figures as a key word or entry in book indexing, in bibliographical reviews or even in comprehensive studies of migration and urbanization[1]. In social sciences, 'coast' apparently does not carry a meaning similar to that in the natural sciences.

1. Background

1.1 Population/development/environment relationships explored

Demographic dynamics is intimately related to economic and social change. Mortality levels change according to living conditions, child-bearing reflects the value of children in given economic and social contexts. Together they result in a net natural increase in human numbers, which acts as an undercurrent of change in society. Emerging economic opportunities within accessible distances attract migrants, and conflicts over local resources may cause an exodus away from a given settlement.

In less wealthy societies, economic development means improvements in health and survival. Thus it inevitably carries a period of sustained population increase, which provides labour for production and services, but also places increasing demand on employment opportunities, land, social services etc. Successful economic development during population increase is equal to higher per capita incomes and higher per capita extraction of resources from the environment. Social transformations along with development include transitions from many to few children per family. Eventually, population numbers stabilize and economic development translates directly into higher per capita wealth.

Increasing per capita wealth is the prime factor behind environmental deterioration. It gets extraction of prime material going, manufacture production expanding, transport intensifying and dump heaps building up. Coastal areas are particularly affected, due to their location in the international exchange going with economic development. Poverty creates its own (localised) environmental damage, exacerbated by increases in the numbers of poor. However, in urban areas, the poor can also work in environmentally friendly directions by recycling wastes and using nutritional left-overs for cultivation.

A few facts can be set down without further discussion:

- More people means more consumption;
- There will be many more people in the South in the foreseeable future;
- People, their ways of producing and their consumption interact in affecting their natural environment.

Population/environment relations are complex and difficult to generalize.[2] In simple terms, changes in human numbers are influenced both by environmental change and by other changes. At the same time, changes in human numbers act in the way of mediating - ie reinforcing or weakening - the environmental effects of other changes.

As an example, shrimp cultivation in ex-mangrove areas and dynamite fishing have been made possible through access to tools and technology. Their effects on the mangrove stock and the coral reefs respectively are linked to market demands from people outside the country, in the cities or in the coastal villages. Human numbers and their consumption power influence the magnitude of environmental destruction, while the new ways of producing shrimps and fish may (at least temporarily) improve human nutritional standards and survival.

1.2 Characterization of 'coastal area'

UNCED's definition of coastal area - 60 km inland from the coast - is a crude measure of limited value in local work. Conditions along the coast vary drastically within as well as between countries. The one common trait is that a coastal area is a meeting point between land and (sea) water, with resulting influences and exchanges between the two. Functional delimitations of coastal areas are different if made by biologists and by social scientists. The latter are primarily interested in patterns of social and economic exchange, which could make coast/hinterland connections as equally relevant to those along a coastline.

Given this, a strict delimitation is necessary. We propose, that 'coastal area' provisionally be delimited to that territory whose inhabitants have a direct contact with the shore. In this territory can in principle be found all the forms of settlements and activities that exist in the rest of a country: cities, towns and villages, single settlements, transports, trade, industry, tourism. Thus, coastal areas can be very heterogenous, containing wealthy cities and poor villages, river deltas and deserts, high density zones and sparsely populated zones with minimal external contacts. In societal terms, there is no immediately visible common denominator between the settlements in coastal areas.[3]

The specific traits of the coastal area are connected with the very meeting between land and water: agriculture *and* mariculture incl fishing, change between land and water transport, a breaking point in trade relations. International influences are generally felt more extensively than upcountry: Maritime fishing influences coastal fishing; pollution of the sea affects the

shores; people are recruited for sea-borne transport work. Global environment problems such as climatic disturbances (short-term hurricanes, long-term temperature increases) may affect coastal populations much more than those living away from the sea.

1.3 Functional relations - along the coast or between coast and inland?

Where coastal areas in a country have fertile soils and access to fresh water, habitats may grow more or less continuously along the coastline. Communications along the coast are good, and urban life develops where ports can be established. Average population densities might be higher than average for the country. This pattern is common in many parts of Asia.

Where coastal areas are less amenable for agriculture, human settlement and communications follow different patterns. Small settlements may develop where river water or other conditions permit. Urbanization occurs where port facilities can be created. Communications are extended between the coast and its hinterland, rather than along the coast. This pattern is common in East and Southern Africa. In Kenya, Tanzania and Mozambique, colonial railway constructions were meant to connect coastal ports with inland production centres. No coast roads exist from Dar es Salaam to Tanga in the north or Mtwara to the south. Existing roads from the central Mozambican port of Beira northwards are built inlands, far from the coast.

River systems connecting the coast with its hinterland are often used for transport. They also carry sewage and other products, in one direction - towards the coast. Changes in river flows are related to human activities upstreams (deforestation, dam construction), and may significantly influence economic activities downstream.

Taking the inland/coast connections as a point of departure, a typology of coastal zones could be developed, in line with the following:

a. The urban settlement developing where a river system meets the sea;

b. The rural settlement developing in a river delta land;

c. Coastal city connected with the interior only through land transports;

d. Rural settlement connected with the interior only through land transports;

e. Coastal zone closed off from easy contact with the interior (through mountains, forests, desert)

The typology might need to be complemented with - international - contacts or influences over the sea. International trade is a direct connection closely linked to urban settlement. Among indirect connections may be found high sea fishing close to the coast, commercial aquaculture, offshore oil and gas exploration etc., where influences are felt in coastal settlements.

Typologies such as the above should be part of pre-management studies to identify functionally different coastal areas and their development/environment problems.

2. Population-related dimensions

The most relevant dimensions will be discussed briefly, with illustrations primarily from Kenya and Tanzania Mainland.

2.1 Rural densities and change

There are no simple relations between population density and environmental change. 'Carrying capacity' is an elusive concept, difficult to apply to any given situation.[4] High as well as low rural densities can both be linked to varying degrees of environmental impact. However, increasing densities which are not accompanied by adjustments in methods of resource allocation and use may well lead to environmental deterioration.

Thus, the capacity of local communities to respond to increasing numbers of households and people with appropriate changes in the use of natural resources is an important dimension, where enabling conditions may be created through external management programs.

Coastal areas are often described as more densely inhabited than inland areas of the same country and region. This view is reflected in recent Worldwatch writings[5] and again in the Lindén and Moffat 1996 report to Sida[6]. Both reports cite East and South East Asia as examples. Parts of North America and much of Europe could have been added (see Fig. 1). In SubSaharan Africa however, only a few coastlines (in Nigeria and parts of South Africa) seem to conform with this generalisation.

High or low population densities is an indicator of conditions of life in coastal areas. Kenya's coast is in one study (NRI 1990) estimated to house around 1 million rural people (see Fig.2[7]). Densities are higher in the areas around Mombasa and lower in the north. According to the study, overall population density in 1979 was around 30 persons per km^2, with some locations reaching 300 persons per km^2. The study reports, that "There are few signs of serious population pressure." Still, "...potential for expansion is limited by soil fertility and rainfall variability" (NRI 1990:14-15).

Thus, low rural population densities - as on the Kenyan coast - do not necessarily imply untapped potentials. With rapid population increase, environment depletion may occur unless - as also recommended by NRI - production increases can be achieved through intensified management and inputs. Household conditions - access to labour, education, sources of cash income etc - are essential to the success or failure of such interventions.

Tanzania's long coast shows a great deal of variation. In the northern part, population density is low except in the hinterlands of Tanga and Dar es Salaam. Further south, low densities prevail except in the areas close to the border with Mozambique (see Fig.3[8]). Hot climate and unreliable rainfall add to the problems of increasing production caused by low soil fertility and tsetse infestation. Many societies are isolated; the road from Dar es Salaam to the south is regularly closed for several months due to the flooding of the Rufiji valley.

The coastal populations of Kenya and Tanzania had by 1995 grown to around four times their size in 1950, along with distinct improvements in human wellbeing and higher life expectancy. In the midst of a fourfold increase in numbers, people have found ways to make a living and

contributed to increased economic activity. Much of the economic activities in the coastal areas is linked to events outside the coastal area itself. Examples are transit handling of national imports and exports, and production to serve a growing population in the interior of the country. The resulting labour demand is one of the ways a growing coastal population has been absorbed.

Compared to national averages, coastal populations in East Africa normally have higher mortality and around average fertility. This gives a lower rate of natural population increase than the national average. The same goes for migration, where both older and more recent evidence point at low levels of movement between the coast and the hinterland.[9] There is no reason to expect higher than average population increase in the rural parts of the coastal areas.[10] In fact, if urban areas continue to grow as projected eg by the UN, no major increases in rural coast populations will occur.

A hypothetical calculation is made in Table 3. In Kenya, departing from the 1 million inhabitants in 1979 as presented above, the rural population on the coast would today be around 1.5 million, growing to a maximum of just over 1.8 million in 2020. In Tanzania, under similar assumptions the rural population on the coast would grow from today's 2.3 million to 3.1 in 2020 (see Table 3).

2.2 Urban size and change

Urban growth in coastal areas reflects the concentration of international trade and related production to the coast. Where no natural barreers exist, coastal cities tend to generate a densely populated semi-rural hinterland, often located along the major routes to the interior. The very process of rapid urban growth gives the appearance of more than average density increases in the whole coastal area. Such an assumption always needs to be tested.

In Kenya, Mombasa has grown significantly through labour migration from the inland as well as from neighbouring coastal areas. In relative terms, Mombasa's growth rate 1969-89 is much below the national average, and even lower than that of Malindi, the only other urban area along the coast (see Table 1). Recent short-term projections 1980-2000 show that Kenya's coastal urban areas are expected to retain their share of the national urban population, while in Tanzania the coastal share will decline (see Table 2).

Such data do not support the views expressed in a recent report on integrated coastal management in Eastern Africa, that "..there is a strong population migration to urban coastal zones from economically depressed inland rural areas...".[11] However, would Tanzania experience a general economic upswing, this would give new impetus to urban growth on the coast.

The hypothetical calculations of Table 3 assume that Kenya's and Tanzania's coastal urban areas will retain their current proportions of the urban population in the country. Kenya's coastal urban population will then grow from 1.4 million in 1995 to 4.2 million in 2020. In Tanzania the corresponding figures are 4.0 and 13.6 million. Compared to current trends, the Tanzania figures are on the high side.

2.3 The significance of urban wealth and urban poverty

Wealth is always concentrated to the cities. The most dramatic ine
qualities between wealth and poverty are also found in urban areas. Any index of household consumption power would show a rapid increase in more wealthy urban strata. The effects are seen in infrastructure development to serve such strata, in traffic trends and in per capita imports of fossil fuel, raw materials and manufactured goods to the cities. They can also be seen in per capita volumes of waste production, much of which may be taken care of by less resource rich urban households.

The urban combination of economic and demographic growth underlines the intimate relation between numbers of people and consumtion per capita as causes of environmental deterioration. To add to this, coastal cities are in the specific situation that they handle the international flow of goods, and therefore are dependent on population/consumption development at the receiving ends of the goods flows. To illustrate this point, growing purchasing power in India could lead the country to import mariculture products from Kenya. Both the rural communities where mariculture is undertaken and the export city Mombasa would then change due to population/consumption changes in India.

The character of urban migration changes with conditions and opportunities. Colonial systems of labour migration regulated the migrant flows as well as the degree of urban settlement of migrant workers. With independence, control mechanisms have weakened at the same time as labour demand has gone down. Migration therefore increasingly reflects a lack of economic opportunities in rural areas. Those who move are often younger people who thereby deprive their home community and family of their labour power. Where the rural community gets some returns (eg remittances, contacts with urban markets, access to education) from the migration, these might balance the loss of labour power. In East Africa, the lack of opportunities in urban areas tends to land the migrants in urban slums, while their home communities lose part of the labour power needed for resource conservation and intensified use of natural resources.

Such processes link rural to urban areas in ways which could be disadvantageous in both ends. Rural households losing their young members do not necessarily answer by reducing their fertility. Thus population increase continues. In both rural and urban areas, local environmental depletion is likely. Making rural economies more viable is an important step with positive repercussions in urban as well as rural areas, not least in environment terms.

3. Proposals on the inclusion of population-related dimensions in scientific studies and management work

The development of integrated coastal zone management requires a similar integration of the knowledge base for plans and activities. Demographic data are an important part of socio-economic data. They not only tell about the magnitude of issues in terms of numbers of people or households. They are indices of living conditions, of gender relations in migration and labour, of future consumption needs but also of the one factor of production; the workers.

Demographic processes are influenced not only by government interventions and regulations, but also by the exchange between market actors. Where specific demographic aims can be formulated, the impact of government and market behavior on changes in the desired direction

can be assessed. One such aim is to seek reductions in population increase, through lower birth rates. Another could be to reduce urban migration, perhaps even to achieve some return migration to rural areas. Cause-effect relations are often complex, and in many countries the state has lost much of its power to implement strategies for a desired development. Nevertheless, the effort has to be made. 'Integration' means exactly to identify the links between different parts in a whole, and to consider the effects in one part of actions directed at another part.

Little systematic work has been done to elaborate such 'integrated' frameworks of demographic impact. We propose that the methodology of 'Environment Impact Assessments' (EIA) be studied for its relevance in the elaboration of methods for what may be called 'Demographic Impact Assessments' or DIA.[12]

3.1 The need for time series

In analogy with the requirements for measuring environmental change, time series are required on social and demographic change. Official statistics is produced and published on the basis of administrative divisions. The poor coincidence between administrative divisions and functional delimitations of 'coastal area' provides limitations, which often can be satisfactorily handled through re-processing of basic data.

National population censuses have in many countries been undertaken with approximately ten-year intervals. Low-level administrative divisions often remain unchanged over periods of time, and could serve for the reconstruction of data with good comparability. Census data would permit estimates of changes in human numbers and densities, rural/urban distribution, fertility and growth rate levels. Normally some migration data are collected, which might permit estimates of flows and directions over time.

Household budget surveys and similar socio-economic studies are often done at regular intervals, and may permit time series on social and economic conditions of coastal households. *Agricultural or farming surveys* could give related information on primary production. *Data on infrastructure development and communication* would give essential information for the analysis of trends in for instance migration.

Most countries have a record in *regional development planning*. Earlier planning exercises build on data which could be of value in comparative time series studies. For Kenya, see for instance the 1971 physical development plan for Coast Region[13]. For Tanzania, see for instance the 1975 integrated rural development plan for the Coast Region[14], and the 1977 water master plans for Mtwara and Lindi Regions[15].

3.2 Identification of coastal areas according to typology

The issue of area typology has been discussed in section 1.3 above. Although the methodology of integrated coastal zone management is common to all coastal areas, the concrete problems and priorities will have to be defined in relation to each particular area. Similarly, experiences learnt in one area may have applications in other areas of the same kind, but of less value in areas with very different characteristics.

Section 1.3 gave examples of a rough initial classification of coastal areas. Inventories of areas in a management programme should be guided by pre-programme elaborations of relevant characteristics in the area concerned, including in its relations to other areas in the country (social exchange, migration, economic exchange).

3.3 Human settlements and their changes

Human settlements along a coast are of four radically different kinds:

- The isolated homestead, one or a few households living in near-subsistence conditions, with minimal effects on the environment;

- The farming village with coastal connections, exchanging farm products for sea food, perhaps using boat transport to markets, linked through labour migration to urban centres along the coast;

- The fishing village and the little town with fishing as its main economic activity. Demographic dynamics depends on what happens to the fishing - if catches go down, people may have to move, if they go up, migrants may arrive from other small settlements to seek employment. The settlement is highly dependent on the impact on coastal fishing from deep sea fishing, from marine pollution, from commercial competition over fishing waters, coastal reefs or mangrove forests. Fishermen may - often out of necessity - engage in destructive methods of fishing, deforestation etc, and may need better security of control over natural resources in order to engage in sustainable forms of exploitation;

- The coastal city, a port and often a center of regional or national administration. A market for goods from the hinterland, often attracting more migrants than the labour market can absorb. Such cities pollute the sea, have relatively high per capita consumption of fresh water, and produce large volumes of waste. Urban expansion is often a cause of conflict with rural communities. The cities are dependent on the economic dynamics of its own hinterland, and on fluctuations in import and export. They may have a significant industrial sector, whose economic fortunes influence urban migration and urban poverty.

- In Tanzania, both Tanga and Dar es Salaam have had cycles of economic and demographic upswing related to production swings in the country. Tanga lost much of its importance with the closing down of sisal production in the hinterland, and suffered another blow when railway connections to Kenya were closed. Dar es Salaam has retained its character of primate city despite losing its formal status as national capital. Migration to the city has declined, while medium-sized cities in the interior experience more in-migration. Mtwara and Lindi in the south grew in response to a colonial groundnut project in the 1930s, and have never since returned to a more dynamic phase of expansion.

Identification of human settlements and their characteristics is part of the typological work proposed under 3.2. Demographic trends are an essential part of the characteristics, and also dependent on the dynamics - or stagnation - of the local economy. Economic growth entails environmental threats, but would also give the resources and thereby the potential for better

environmental management. Economic stagnation combined with population increase incites more short-sighted use of natural resources, which may be difficult to influence unless the possible economic returns of better practices can be convincingly demonstrated.

3.4 Rural communities, population increase and environmental threats

Like inland areas, rural areas along the coast show signs of local environmental deterioration, often linked to increasing population densities and unsuitable forms of land and water utilisation. Intensive social studies are required to provide concrete insights into strategies of survival, resources for change, dependencies on migration and other features of relevance for cooperation in improved natural resource management. As a rule, various local studies have already been undertaken and reported, which contain valuable information for basic planning of both research and management cooperation. Thus, a thorough inventory of social research would be a worthwhile effort.[16]

The basic mechanisms linking population increase to negative - or positive - changes in the natural resource base of a community are the same in coast as in inlad communities. The Kenyan case of Machakos[17], a district close to Nairobi, gives important insights into the conditions under which negative trends can be turned into positive. Applying these insights to rural coastal areas could give a better understanding of how the problems can be attacked there.

3.5 Commercial exploitation and its implications

Urban centers along the coast are focal points of transit goods handling and related commercial activities. Their location may also give them a higher share of industrial invcstments than other cities in the country. Again, national economic stagnation due to internal or external/international conditions, inevitably affect their economies, with concomitant effects on population parameters.

Labour migration increases the urban population, and often also means stronger links between rural communities and urban labour markets. Economic returns to rural areas may lead to investments in means of production (fishing tools, cattle etc) which result in overexploitation of available natural resources. However, the same returns enable changes to more sustainable forms of local resource use. By implication, loss of labour opportunities in urban areas could have both positive and negative effects on population/environment relations in rural communities.

As a rule of thumb, commercial exploitation always entails threats of negative effects for local communities. It may also entail opportunities for economic and social improvement, and for better resource management. Such effects will be found in the vicinity of sites of exploitation, but repercussions can often be identified much further away.

EIA studies of proposed commercial ventures need to include DIA assessments of their impacts on labour markets, migration and settlement, and on natural resource use both close to the venture and in migrant sending areas, as well as other effects on local adjustment processes.

Rural communites along the coast may be affected by commercial projects on or near the coast, eg oil and gas explorations, mineral extraction etc. Tourist ventures are known to be mixed blessings for rural communities, providing work opportunities and at the same time interfering in natural resource control and use. Even here, DIA studies are recommended.

3.6 Development planning, infrastructure development and population changes

One of the more powerful measures for a government to influence migration and resource use lies in infrastructural development. To open a new road might give access to markets for local products, facilitate labour migration, improve contacts with modern technology and ideas etc. Impacts on local communities may be both positive and negative - loss of young adults who migrate is often a distinct cost for both households and the community as a whole. Access to a market could on the other hand improve cash crop production and give women essential economic empowerment.

In countries like Kenya and Tanzania, where land shortages are common, people's options to move depend on the economic opportunities in areas with land in access. Southern Tanzania is today deprived of all-year communications, and valuable natural resources remain to be better exploited. Low population densities and poor access to markets are efficient obstacles to economic advancements.

Regional and national infrastructure development should aim to create enabling conditions for local economic advancement and facilitate desired population movements. Supplementary programmes should aim at strengthening the positive and reducing the harmful impacts of infrastructural development, for instance strengthening women's position while providing the young with impetus to stay.

Given that the poor and the rural communities have the highest birth rates, interventions should be assessed for their impact on factors related to fertility levels and change.

3.7 Conflicts and population-related dimensions

Conflicts over natural resources are increasingly common. Two factors work in this direction; growing international demand for goods, and growing numbers of poor people and households deriving their livelihood directly from land, forests and water. Conflicts are often open and visible, as between a commercial mariculture producer and the local communities affected by this venture, or between fishing communities competing over shrinking coral reefs. Conflicts may also be indirect, as when deforestation or poor river management upstreams cause flooding close to the coast, or when dam building prevents seasonal flooding with nutritional effects.

Conflict analysis is rarely a simple task. Apparent causes may well hide more deep-seated origins of a conflict. Catalyzing factors are often different from the underlying causes. Population increase and ensuing imbalances between human numbers and land are never easy to translate into conflict terms. Not even in a case such as the Rwanda conflict can very high population densities and rapid population increase be convincingly demonstrated as causes of the massacres a few years back.[18]

A more meaningful approach to conflicts is to analyse their impacts on demographic dynamics. Conflicts over land or water often affects migration and settlement patterns. Long-lasting conflicts may prevent necessary adjustments in local production methods or extractions of natural resources, worsening local living conditions while weakening the resource base.

Studies of conflicts - real or expected - and their impacts should cover similar aspects as those proposed for DIA studies above.

4. Population dimensions and Integrated Coastal Zone Management (ICZM)

Writings on coastal area management usually contain brief references to population numbers and changes, with little or no elaboration on the interaction with environment changes. Important dimensions such as urbanisation and migration are sometimes ignored altogether, in general guidelines[19] as well as in publications referring to specific countries[20]. Basic work is thus required to give concrete meanings to population dimensions in this context.

Sida's 1997 position paper on population, development and cooperation[21] identifies a wide range of actions related to the long-term aim of reducing population increase. Similarly, implications of continued population increase for development are specified, and fields for action listed. The paper provides a comprehensive short list of the activity areas to be considered in order to integrate population dimensions in ICZM programmes.

Experiences from decades of population policy making could be summarized thus: Population policies can be made operational where they do not interfere with policies in other sectors. The existing order of priorities in government generally does not give much room for serious consideration of demographic implications of for instance economic growth policies or industrial investment programmes. Thus, population policies are in practice often reduced to sex education and the provision of contraceptives. Similar conflicts of interest may emerge between environment conservation policies and population policies.

It needs emphasising, that the latter conflicts of interest are only apparent. As confirmed in the programme of action from the UN population and development conference in Cairo 1994, if the welfare of people is guiding such policy formulations, the contradictions can be sorted out. Therefore, a first question to be dealt with in an ICZM programme is, who are the principal benefactors of ICZM? If they are seen as the people living in and/or depending on natural resources in the coastal areas, then their long-term welfare interests and conservation interests will merge. More modest rates of population increase is one of the means to both these ends.

Urbanisation is an active process of development. It can in certain circumstances be a cost for rural areas. It also provides the focal point of economic activities which could stimulate rural economic development. Down to the level of individual households, rural/urban exchange could hold both negative and positive dimensions. The important thing in ICZM programmes is to identify these dimensions and their character in concrete local cases, and act so as to strengthen positive dimensions. Such ambitions require direct cooperation with local communities as concerns all aspects of the sustainability issue, including matters of local increase in the number of households and people.

Table 1 **Urban population growth (%) in Kenya 1969-1989**

Area	Growth 1969 -1989 (%)
Kenya urban population (1970-1990)	370
Mombasa	88
Malindi	227

Sources: *World Urbanization Prospects*. The 1994 Revision, UN, New York, 1995.
Republic of Kenya, *Economic Survey 1991 & Population Census 1979.*

Table 2 **Percent of total urban population in coastal urban agglomerations 1980 and 2000 in selected SS African countries***

Country	1980	2000
Somalia	85,7	90,9
Kenya	19,0	19,4
Tanzania	66,7	56,0
Mozambique	68,8	66,7
South Africa	30,7	33,7

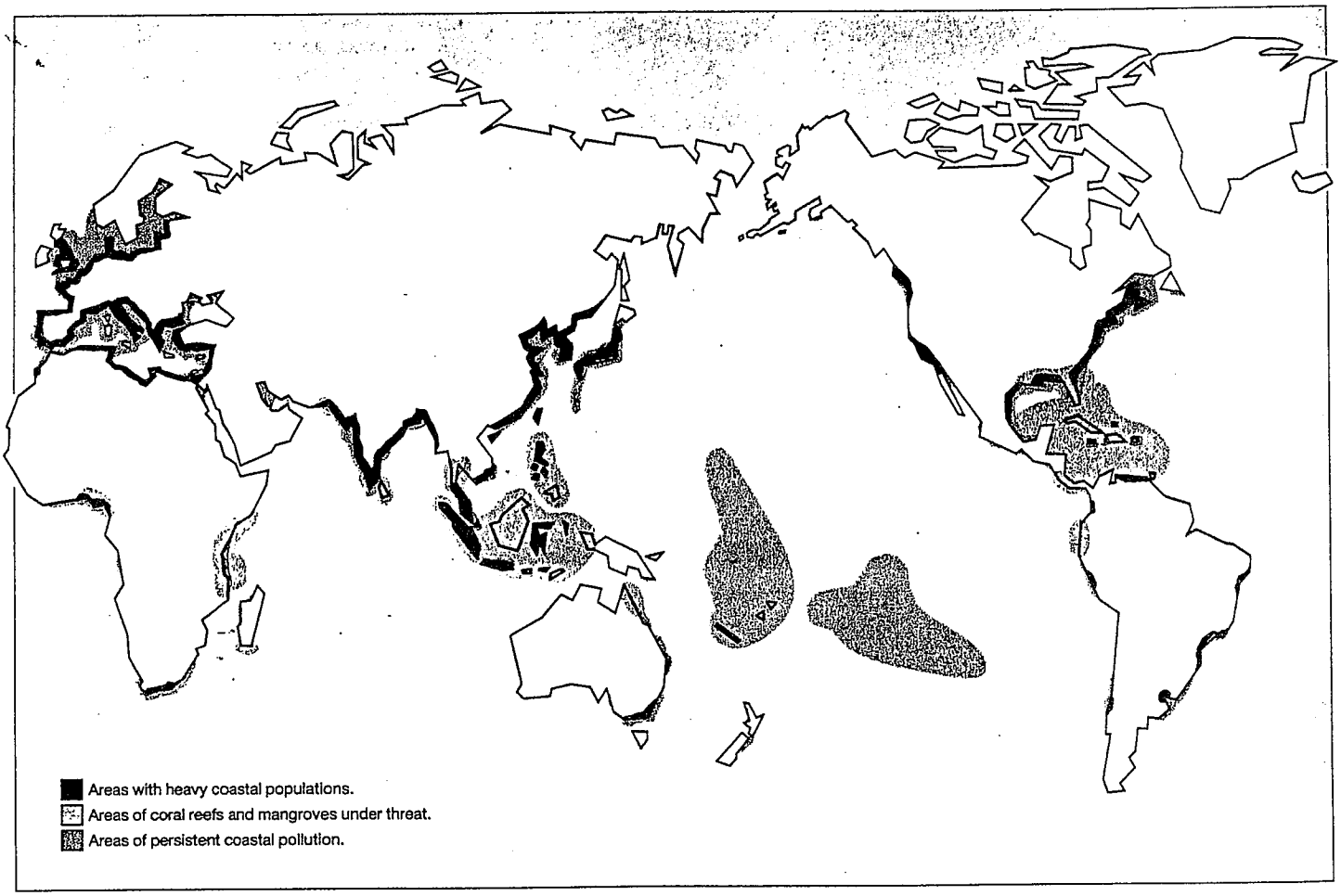
*/ As the two sources use information from different editions of World Population Prospects, the figures should be treated with some caution.
Source: Table 22.6, *World Resources 1994-95*, WRI, New York, 1994;
Table A.3, *World Urbanization Prospects*. The 1994 Revision, UN, New York, 1995

Table 3 **Estimates of future rural and urban population along the coasts of Kenya and Tanzania (mil)**

	1995		2020		2025	
	Rural	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**
Kenya	**1,5**	**1,4**	**1,8**	**4,2**	**1,8**	**4,9**
Tanzania	**2,3**	**4,0**	**3,1**	**13,6**	**3,2**	**16,5**

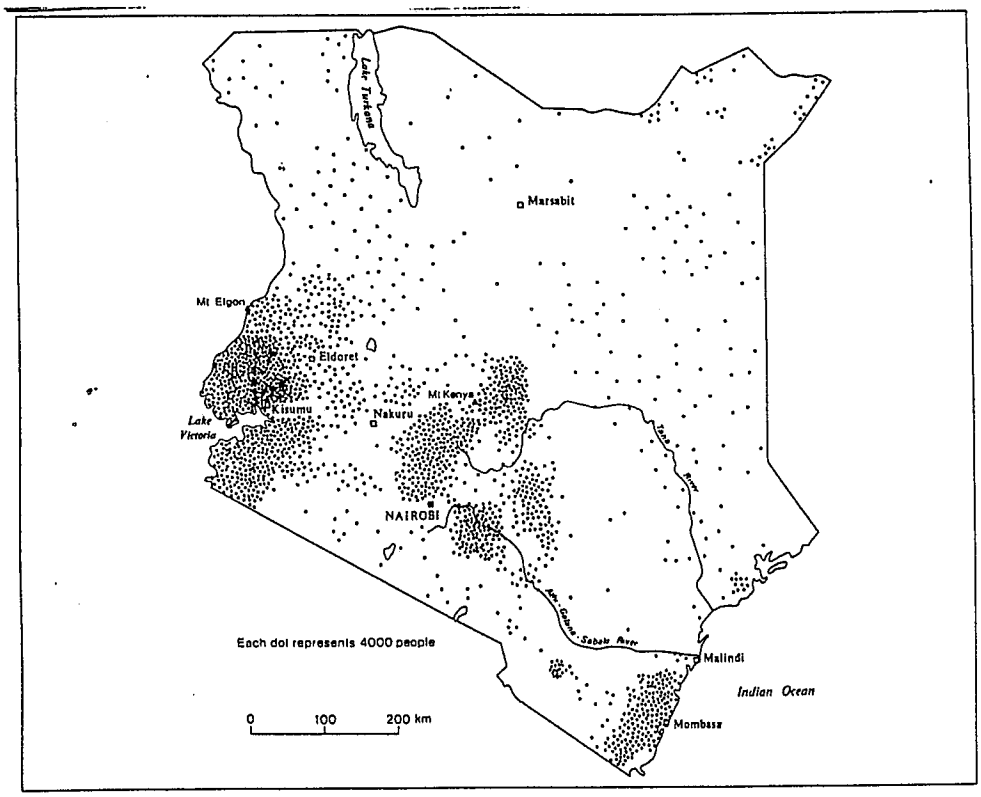
Assumptions: Rural coast population is in Kenya 7,5%, in Tanzania 10%, of the country's rural population.Urban coast population is in Kenya 19%, in Tanzania 55% of the country's urban population.
Projections of total and urban populations respectively are taken from *World Population Prospects 1996*, UN 1997, and *World Urbanization Prospects*, The 1994 Revision, UN, New York, 1995.

Figure 1 **Areas with heavy coastal population, persistent coastal pollution and areas of coral reefs and mangroves under threat.**



Source: People & the Planet 3(1994): 1

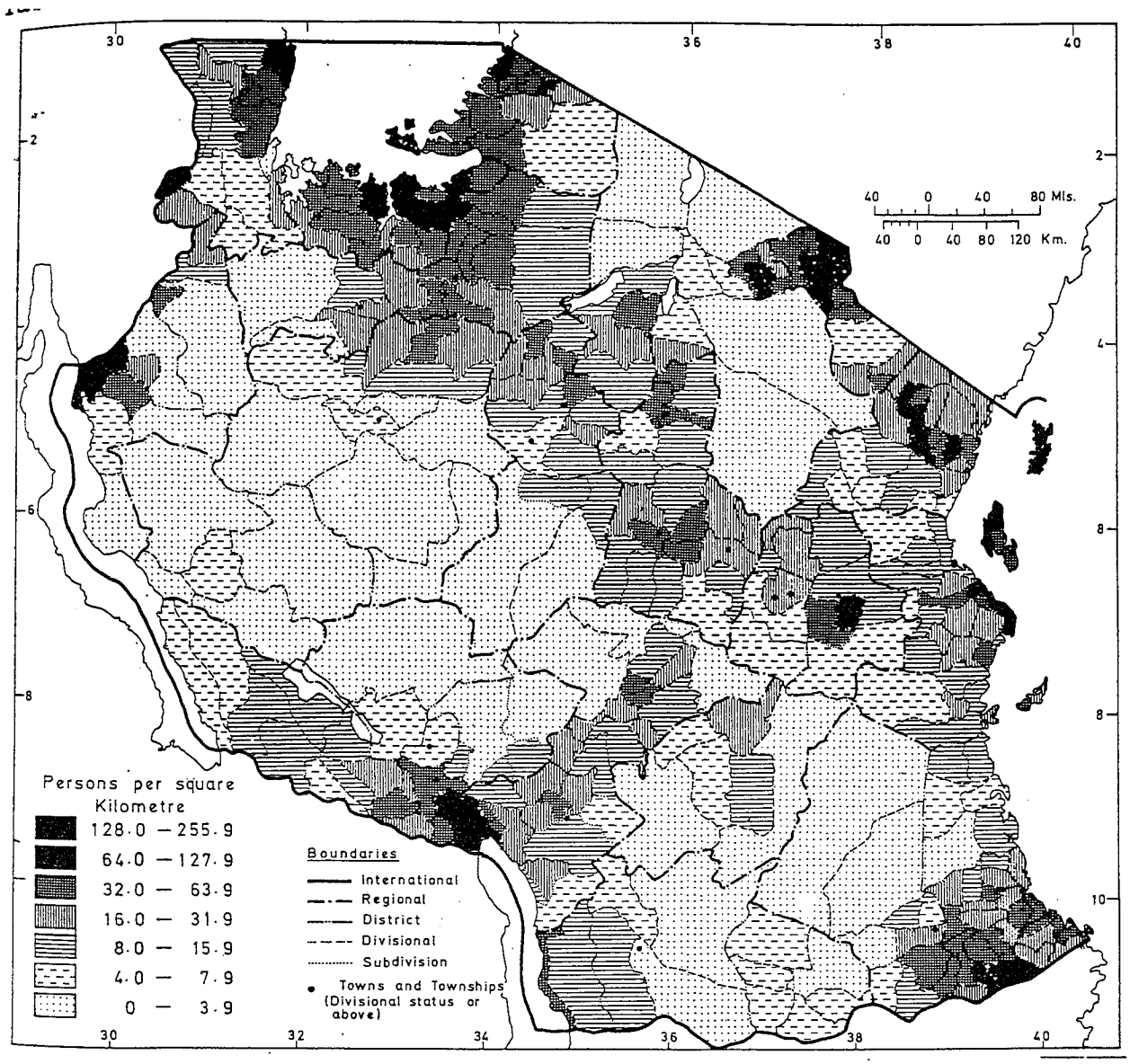
Figure 2 **Kenya's population distribution**



21.1 *Kenya: rural population distribution, 1977*

Source: Clarke John et al, *Redistribution of Population in Africa*, Heineman, London, 1982

Figure 3 **Rural population density in Tanzania**



Source: Egerö, Bertil & Roushdi Henin (eds), *The population of Tanzania: an analysis of the 1967 population census.* Bralup and Bureau of Statistics, Dar es Salaam, 1973

Notes

1. See eg Stren et al. vol. 1-4.

2. There is no lack of material. See for instance the contributions by eg Cohen 1995, Harrison 1992, Lindberg/Hammarskjöld 1993, Murdoch 1980.

3. Rural areas along the coast may have sociologically relevant similarities eg in ethnic identity, language and religion. Swahili and Islam characterise many coastal communities in Kenya and Tanzania.

4. See all the definitions of carrying capacity in Cohen 1995, summarized in PROP/Sodeco, *Nytt om befolkning och miljö*, Rapport 1997:1 till Miljöpolicyenheten, Sida.

5. P. Weber 1993 p.24, 59.

6. See Lindén and Moffat 1996 p.17.

7. From Bernard 1982. Note that although population intensities are higher today than in the 1970s, the relative patterns of density variations can be assumed to be the same.

8. From Claeson and Egero 1973, p.47. See also comment in note 8.

9. According to Ominde 1968, p. 265, few people leave Coast province and relatively few move to the province; net migration is positive but small. Similar observations on Kenya are reported by Gould 1995, p.127. For Tanzania see eg Claeson and Egero 1973, p. 65f.

10. Thus, research gives no support to statements such as that of a 1993 workshop in Arusha on integrated coastal zone management, that: "...a much larger but younger population can be expected in the coastal zones in the near future." Technical Recommendations..., Arusha 1993.

11. Quoted from the same source as in note 10.

12. See the discussion on DIA in Egerö 1994, p 26f.

13. *Coast Province; regional physical development plan* 1971.

14. *Coast Region Integrated Rural Development Plan* 1975.

15. *Mtwara-Lindi water master plan* 1977.

16. For Kenya, see for instance Hoorweg et al 1988, Jensen and Khasakhala 1993, Waaijenberg 1994. For Tanzania, see for instance the various investigations made by Marja-Liisa Swantz (eg Swantz 1989). FAO has recently summarized interesting recommendations, see FAO 1996.

17. Tiffen et al. 1994. See also Djurfeldt et al 1996.

18. Leif Ohlsson, PADRIGU, University of Göteborg, work in progress.

19. See for instance the OECD/DAC Guidelines from 1996; or the World Bank Framework of 1996.

20. See for instance Okidi and Westley 1978 for Kenya, and the Israel and Thailand coast cases reported in UNEP 1990.

22. Currently available in a Swedish version (Sida 1997), soon to be published in English.

References

Frank E. Bernard, "Rural Population Pressure and Redistribution in Kenya", in John I. Clarke and Leszek A. Kosiński, eds, *Redistribution of Population in Africa*, Heinemann, London 1982, pp. 150-156.

Claes-Fredrik Claeson and Bertil Egerö, "Migration", in Bertil Egerö and Roushdi Henin, eds, *The Population of Tanzania: An analysis of the 1967 population census*, BRALUP and Bureau of Statistics, Dar es Salaam 1973, pp. 56-75.

Coast Region Integrated Rural Development Plan. Canadian International Development Agency, Dar es Salaam 1975.

Coast Province; regional physical development plan. Ministry of Lands & Settlement, Republic of Kenya 1971.

Joel E. Cohen, *How Many People Can the Earth Support?* Norton & Co., London 1995.

Göran Djurfeldt, Bertil Egerö and Mikael Hammarskjöld, *Perspectives on population and food security in Eastern and Southern Africa*, PROP, University of Lund 1996.

Bertil Egerö, "Reproctive Change is a Social Process", in Bertil Egerö and Mikael Hammarskjöld, eds, *Understanding Reproductive Change: Kenya, Tamil Nadu, Punjab, Costa Rica*, Lund University Press, Lund 1994, pp. 9-30.

FAO 1996, *Population Dimensions of World Fishery Issues*, SD Dimensions/Women and Population/Analysis, FAO (Internet) 18 July 1996.

W.T.S. Gould, "Migration and Recent Economic and Environmental Change in East Africa", in Jonathan BaKer and Rade Akin Aina, eds, *The Migration Experience in Africa*, Nordic Institute of African Studes, Uppsala 1995, pp. 123-145.

Paul Harrison, *The Third Revolution: Environment, Population and a Sustainable World.* I.B.Tauris, London 1992.

Jan Hoorweg, Ted Kliest and Rudo Niemeijer, *Seasonality in the Coastal Lowlands of Kenya Part 1: Research Objectives and Study Design*, African Studies Centre Leiden 1988.

An-Magritt Jensen and Anne A. Khasakhala, *Too many Children? Fertility and Family Planning in a Muslim Society of Kenya*, Report 1993:15, Norwegian Institute for Urban and Regional Research, Oslo.

Staffan Lindberg and Mikael Hammarskjöld, "Befolkning och miljö i tredje världen: Vad är orsak? Vad är verkan?", *Den Ny Verden*, vol. 26 no. 3, 1993, pp. 96-111.

Olof Lindén and David Moffat, *Environment and Natural Resources in Coastal Areas of Developing Couintries*. Department for Research Cooperation, Sida Stockholm, May 1996.

Mtwara-Lindi water master plan, Annex G and H respectively: Administration, population and infrastructure. Ministry of Water Development, Energy and Minerals, Government of Tanzania 1977.

William W. Murdoch, *The Poverty of Nations: The Political Economy of Hunger and Population*, Johns Hopkins University Press, London 1980.

NRI 1987, *Tanzania: Profile of Agricultural Potential*, Natural Resources Institute, Overseas Development Administration, London 1987.

NRI 1990, *Kenya: Natural Resources Profile*, Natural Resources Institute, Overseas Development Administration, London 1990.

OECD/DAC Guidelines, *Guidelines for aid agencies on global and regional aspects of the development and protection of the marine and coastal environment*, OECD Paris 1996.

C.O Okidi and Sidney B. Westley, eds, *Management of coastal and offshore resources in Eastern Africa: Papers presented at the workshop held at the Institute for Development Studies, University of Nairobi, April 26-29 1977*, Occasional Papers vol 28, IDS Nairobi 1978.

S. H. Ominde, "Some aspects of population movements in Kenya", in John C. Caldwell and Chukuka Okonjo, eds, *The Population of Africa*, Longmans 1968, pp. 264-269.

People and the Planet, IPPF London, vol. 3 no. 1, 1994.

PROP/Sodeco, *Nytt om befolkning och miljö*, Rapport 1997:1 till Miljöpolicyenheten, Sida.

Sida 1997, *Positionspapper Befolkning, utveckling och samarbete*, Maj 1997 (forthcoming English version: Sida's position paper on Population, Development and Cooperation)

Richard Stren, ed, Urban Research in the Developing World vol.1-4, University of Toronto 1994-95.

Marja-Liisa Swantz, *Grassroots strategies and directed development in Tanzania: The case of the fishing sector*, WIDER working papers, University of Helsinki 1989.

Technical Recommendations of the Workshop on Integrated Coastal Zone Management in Eastern Africa including the Island States 21-22 April 1993 Arusha, Tanzania, SAREC et al., 1994.

Mary Tiffen et al., *More People, Less Erosion. Environmental Recovery in Kenya.* J.Wiley & Sons, New York 1994.

UNEP 1990, *Coastal Management, Desert Afforestation and Ecological Farming: Striving for Sustainable Development*, Exchange of Environmental Experience Series Book 3, United Nations Environment Programme, Nairobi 1990.

Henk Waaijenberg, *Mijikenda agriculture in Coast Province of Kenya: Peasants in between tradition, ecology and policy*, Royal Tropical Institute, Amsterdam KIT Press, 1994.

Peter Weber, *Abandoned Seas: Reversing the Decline of the Oceans*, Worldwatch Papers no. 116, Worldwatch Institute, Washington DC 1993.

World Bank, *A framework fo integrated coastal zone management in sub-Saharan Africa*, vol 4 of the series Towards environmentally sustainable development in sub-Saharan Africa, World Bank, Washington D.C. 1995.

STYRELSEN FÖR INTERNATIONELLT UTVECKLINGSSAMARBETE
105 25 Stockholm, Sweden
Tel: 08-698 50 00. Fax: 08-20 88 64
Hemsida: http://www.sida.se