



SOMALI JOINT NEEDS ASSESSMENT

PRODUCTIVE SECTORS AND ENVIRONMENT CLUSTER REPORT

April, 2007

ACRONYMS AND ABBREVIATIONS

ADO	Agricultural Development Organization
ACP	Africa, Caribbean, and Pacific (ACP countries are signatories of the Lomé Convention)
BDS	Business Development Services
ARDOPIS	Agricultural Rehabilitation and Diversification of High Potential Irrigation Schemes in Africa
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
BSF	Belgium Survival Fund
CAHWs	Community Animal Health Workers
CDD	Community-Driven Development
CEFA	European Committee for Agricultural Training
CEM	Country Economic Memorandum
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CGIAR	Consultative Group for International Agricultural Research
COMESA	Common Market for Eastern and Southern Africa
DLCO	Desert Locust Control Organization
DSBC	Dubai Somali Business Council
EBA	Everything but Arms
EC	European Community
EEZ	Exclusive Economic Zone
EU	European Union
EXCELEX	Export and Certification of Livestock for Export (Livestock Export Inspection Program for Ethiopia, Djibouti, and Somalia)
FOB	Free On Board
GDP	Gross Domestic Product
GECPD	Galkayo Education Center for Peace and Development
HACCP	Hazard Analysis and Critical Control Points
ICAO	International Civil Airlines Association
ICT	Information and Communication Technology
ITU	International Telecommunication Union
IUCN	World Conservation Union
IFAD	International Fund for Agricultural Development
FAO	Food and Agriculture Organization
FEWS	Food Early Warning System
FSAU	Food Security Analysis Unit
JNA	Joint Needs Assessment
JOSS	Jowhar Off-Stream Storage
KEPHIS	Kenya Plant Health Inspectorate Services
MDG	Millennium Development Goal
MFI	Microfinance Institution
MoLAE	Ministry of Livestock, Agriculture, and the Environment
MPAs	Marine Protected Areas

NECFISH	North East Coastal Fishing Company
NGO	Nongovernmental Organization
NIADP	Northwest Integrated Agricultural Development Project
OIE	Organization Internationale Epizootique
PACE	Pan African Campaign for the Control of Epizootics
PACSU	Project Assistance, Capacity Building and Supervision Unit
PSE	Productive Sectors and Environment
SAHSP	Somalia Animal Health Services Project
SAGRA	Somali Agricultural Association
SATG	Somalia Agricultural Technical Group
SLSS	Somali Livestock Sector Strategy
SMEs	Small and Medium Enterprises
SNRS	Somali National Region States
STA	Somali Telecommunication Association
SWALIM	Somalia Water and Land Information Management
TFG	Transitional Federal Government
TRA	Telecommunications Regulatory Authority
UNEP	United Nations Environmental Programme
UAE	United Arab Emirates
USAID	United States Agency for International Assistance
UNDP	United Nations Development Programme
UNCLOS	United Nations Convention on the Laws of the Sea
VDC	Village Development Committee
VSF	Veterinaire sans Frontieres
WB	World Bank
WTO	World Trade Organization
WUA	Water Users Association

Table of Contents

ACRONYMS AND ABBREVIATIONS	i
ACKNOWLEDGEMENTS	vi
FOREWORD	viii
SUMMARY	ix
Conclusions.....	x
<i>The Environment</i>	x
<i>The Livestock Sector</i>	Error! Bookmark not defined.
<i>Agriculture and Watersheds</i>	xi
<i>Fishing Industry</i>	xii
<i>Women in the Productive Sectors</i>	xii
<i>Implementation Capacity</i>	xiv
<i>Investing for Results</i>	xv
Recommendations.....	xv
1. INTRODUCTION.....	1
Objectives and Scope.....	1
Linkages of the Productive Sectors to the Environment and to Other Clusters <>	1
Achieving Millennium Development Goals	2
Building on the Paris Declaration	2
Structure of Report.....	2
2. NATURAL RESOURCES AND THE ENVIRONMENT	3
Overview of Priority Issues	3
Severe Stress on Water Resources	4
Forests and Rangelands under Sustained Attack	5
<i>Natural Forests and Rangelands</i>	5
<i>Charcoal Production</i>	6
<i>Gums and Resins</i>	8
Marine Resources Unsustainably Exploited.....	8
Biodiversity and Protected Areas.....	9
Waste Management.....	11
Legal Systems and Institutional Framework.....	12
<i>Judicial Practice</i>	12
<i>Institutions</i>	13
International Environmental Agreements <>	13
Regional Cooperation <>.....	15
Conclusions.....	15
<i>Common Challenges</i>	15
<i>Principles for Actions to Achieve Results</i>	16
Recommendations.....	16

3. PRODUCTIVE SECTORS IN THE ECONOMY	17
Agriculture Dominates the Value of Production	17
Agriculture the Basis for Most Exports	18
Agriculture Accounts for Most Employment	19
4. OPPORTUNITIES AND CHALLENGES FOR AGRICULTURE	20
Somaliland	20
<i>Livestock</i>	Error! Bookmark not defined.
<i>Crops and Watershed Management</i>	35
<i>Fisheries</i>	38
Puntland	Error! Bookmark not defined.
<i>Livestock</i>	Error! Bookmark not defined.
<i>Crops and Watershed Management</i>	40
<i>Fisheries</i>	44
South Central Somalia	Error! Bookmark not defined.
<i>Livestock</i>	Error! Bookmark not defined.
<i>Crops and Watershed Management</i>	47
<i>Fisheries</i>	57
5. PRIVATE SECTOR DEVELOPMENT	60
Introduction	60
Vision for the Future	62
Future Initiatives Built on Experience	63
<i>Investment Laws</i>	63
<i>Investments</i>	63
<i>Telecommunications</i>	63
<i>Airlines</i>	65
<i>Foreign Direct Investment</i>	65
<i>Chambers of Commerce</i>	65
The Financial Sector	68
<i>Known Prospects for Mineral Development</i>	70
<i>Capitalizing on Prospects for the Use of Natural Resources</i>	73
Role of the Public Sector in Support of the Private Sector	74
Priority Public Investments	75
Women in the Productive Sectors	76
<i>Livestock Enterprises</i>	76
<i>Fishing Enterprises</i>	77
<i>Agriculture</i>	77
<i>Conclusions</i>	77
6. INVESTMENTS FOR RESULTS	79
Field Assessments and the Productive Cluster	79
Criteria for Choice of Investment Programs	79
Summary of Project Costs	81
Summary Results Matrix and Matrices for Three Somali Areas	82

List of Tables

3.1: Estimated Gross Domestic Product for 1990	17
3.2: Value of Main Merchandise Exports	18
4.1: Costs of Livestock Marketing, Hargeisa to Berbera	Error! Bookmark not defined.
4.2: Trader Returns from Cross-Border Trade of Cattle to Kenya.....	Error! Bookmark not defined.
6.1: Summary of Cost Estimates for Somaliland, Puntland, and South Central Somalia (US\$ million)	81
6.2: Productive Sectors and Environment Results Matrix.	83

List of Figures

4.1: Production Trends for Major Food Crops and Bananas	48
---	----

List of Boxes

2.1: Mist Forests of the Golis Range in the North.....	5
2.2: High Demand for Charcoal by Households in Major Cities	6
2.3: International Conventions to which Somali Regions Are a Party	14

ACKNOWLEDGEMENTS

This report was prepared by a team comprised of Jack van Holst Pellekaan, Hassan Jibril Ahmed, Haji Abdi Abdi Osman, Abdikarim Hassan Osman, Roselyne Ayoo Odicoh, Jamal Haji Ahmed, Mohamed Jama Ali, Mohamoud Askar Jama, Christopher F. Baker, Gerry Mc Carthy, Svet Tintchev, and Mohamood Abdi Noor, plus Somali technical experts listed in the following paragraph. Staff from the United Nations Environmental Programme, namely Maliza van Eeden, David Jensen, Grant Wroe-Street, Mohamed Abdel Monem, and Nehemiah Rotich prepared a special report on the environment in Somalia. Chapter 2 in this cluster report is largely based on a report prepared by the United Nations Environmental Programme (UNEP). This Productive Sector and Environment Cluster team worked under the overall Somali Joint Needs Assessment coordination of Lloyd McKay and David Bassiouni.

The team was joined by technical coordinators in each area, namely: Abdi Sahardid and Ismail Hussein Omer in Somaliland, Ismail Warsame and Mohamed Farole in Puntland, as well as Jamal Haji Ahmed, Mohamed Jama Ali, Ibrahim Mohamed, Abdikarim Hassan Osman, Nurto Sheikh Mohamed, Ali Hussein Osman, and Hassan Abukar Haji Hassan in South Central Somalia.

In addition this cluster received considerable support from a group called “The Friends of the Productive Cluster” in Nairobi whose core members were Vittorio Cagnolati, Graham Farmer, Cyril Ferrand, Davide Signa, Luciano Mosele, Friedrich Mahler, Edda Costarelli, Zoltan Balint, and Isabel Candela. On a number of occasions the Somali Aid Coordination Body assisted the team by efficiently arranging meetings of subsectoral working groups such as Livestock and Fisheries, which proved very helpful in providing an environment for vigorous discussions on policy and technical issues. Many staff from the United Nations Development Programme (UNDP) (Somalia) in Nairobi generously assisted the cluster team throughout its work with data and advice. Various UN agencies also assisted the cluster teams as they traveled in Somalia and thanks go in particular to Safia Jama and Ramaha Mohamed and their staff in UNDP in Hargeisa and Garowe for their generous help to the mission, and to the UNICEF staff in Jowhar.

The cluster team is also particularly grateful to the many stakeholders throughout Somalia who met the cluster missions in small and large groups and engaged in detailed discussions of constraints and challenges facing the subclusters. These groups included leaders and ministers in the transitional federal government (TFG). The mission was also privileged to meet with the President of and Deputy President of Puntland, his senior ministers, the Governors of Bari and Mudug regions, and the Mayors of Bossaso and Galkayo. In Hargeisa the mission met with the Deputy President of Somaliland; numerous senior ministers and officials in the government of Somaliland concerned with agriculture, livestock, environment, and mining; governors from the regions in Somaliland; and many representatives from the private sector at a special Joint Needs Assessment (JNA) workshop.

Many others, including women's groups, businessmen, commodity traders, chambers of commerce, environmental groups, and many pastoralists, farmers, and fishermen all gave generously of their time to provide the cluster mission their views on a host of issues.

The cluster members were also grateful for the assistance from a number of nongovernmental organizations such as the Pastoral and Environmental Network in the Horn of Africa; the Agricultural Development Organization in Hargeisa, an umbrella group for women in Berbera; Horn Relief and Candlelight in Bossaso; and the Galkayo Education Center for Peace and Development (GECPD). The cluster team also appreciates the assistance of Abdighani Jama of the Somali Telecommunication Association and Mohamed Djirdeh Hussein of the Somali Business Council in Dubai for arranging useful meetings with the Somali business community in the United Arab Emirates (UAE).

The draft report was carefully reviewed by a substantial number of Somali stakeholders, the donor community, and international nongovernmental organizations, at various meetings and validation workshops during July and August of 2006. The team wishes to acknowledge the written comments received from the European Commission, (EC); Alex Hamming of EC's Project Assistance, Capacity Building and Supervision Unit (PACSU); Francesco Rosa of Agrosphere; Andrew Harberd, the JNA Cluster Leader for Livelihood and Solutions for the Displaced; Riccardo Costagli of Terra Nuova; the Livestock Working Group of the Somalia Aid Coordination Body (SACB); and Pablo Ruiz Hiebra of the UN Resident Coordination Office, Sri Lanka. In addition, the report was also reviewed by the participants of JNA Validation Workshops held in Garowe, Baidoa, Beletweyne, and Hargeisa. The team would like to acknowledge the Somali Zonal Coordinators and facilitators of the validation workshops, namely: Ismail Warsame, Abdi Sahardid Askar, Abdishakur Sheikh Hassan, Abdisalad Mohamed, Ibrahim Dagane Ali, Abdi Jama Karinle, and Saman Mohamed Sh. Dahir.

FOREWORD

This cluster report is part of the technical background work of the Somali Joint Needs Assessment (JNA). Cluster reports are technical assessments and should not be thought of as a final output of the Somali JNA. Prioritization is a two-part consultative process (first, technical and second, political), and this report is primarily concerned with technical prioritization. Political prioritization is incorporated in the integrated Reconstruction and Development Programme (RDP).

This draft cluster report is the outcome of an exhaustive technical exercise involving extensive consultations with Somali stakeholders, ranging from civil society groups to national and local authorities and parliamentarians. It has been produced by an integrated team of Somali and other technical experts to review priority needs and develop reconstruction and development proposals to address those needs. The report draws on information from (i) existing sources, (ii) consultation workshops, (iii) selected field visits and meetings with a wide array of Somali groups and individuals, and (iv) questionnaire-based fieldwork undertaken by Somali experts in all regions. It responds to specific local needs by providing differentiated suggestions for South Central Somalia, Puntland, and Somaliland. Moreover, it reflects the importance of three key cross-cutting issues—peace-building and conflict prevention, capacity building and institution development, and human rights and gender—by addressing them as an integral part of the proposed initiatives to achieve desired reconstruction and development objectives.

The RDP will present a proposed set of initiatives to address priority needs from among the wider set of needs. Clearly, not all needs can be addressed immediately or within the five-year time frame of this RDP. Implementation capacity and likely resource availability will both be considered in developing RDP initiatives. But behind all this is the fundamental objective of supporting Somalis in deepening peace and reducing poverty as quickly as possible in a sustainable way.

SUMMARY

1. This report is a contribution to the Somali Joint Needs Assessment mentioned in the Foreword. It is aimed at providing a reconstruction and development program for the productive sectors in the economy and for the environment. The program is composed of actions on policy and investment—public and private. The main outcomes from the program of proposed investments are increased income generation, higher levels of employment, poverty reduction, and improved food security, with a heavy focus on isolated areas. The analysis of major issues in agricultural are considered separately in Somaliland, Puntland, and South Central Somalia because, despite a number of similarities, there are a number of different circumstances in each area which require specific attention. On the other hand, for the environment, livestock and private sector development, the three areas were discussed together because the issues were so similar and to avoid tedious duplication. In this summary the issues will be discussed without separate focus on the three areas because conclusions and recommendations apply to all areas. Conclusions and recommendations that are different between areas are discussed in the relevant sections. In all areas progress in the pastoral, agricultural, and fisheries subsectors will be dependent on infrastructure development and improved social services. These issues are addressed in other cluster reports.

2. The focus in this report has been on development opportunities and the way in which these opportunities can contribute to improving the welfare of all Somalis. Despite the destruction and human suffering of the last 15 years there are considerable opportunities in all three areas covered. One reason for optimism about the future is the indefatigable energy and imagination that still exists among Somali leaders and entrepreneurs. Indeed, while many Somali physical, human, and social capital assets have been substantially depreciated; the Somali spirit is still strong. This report is clear about issues facing the environment and problems in the pastoral, agricultural, and fisheries subsectors, but it is optimistic that there is still time to take actions that will address most of the problems and lead to reconstruction and sustainable development—assuming a broad-based peace agreement.

3. Two major themes emerged from this work: first, the major significance of the destruction of the environment and the urgent need to take action to recover as much as possible of the former rich Somali natural resource base; second the importance of generating growth in the pastoral, agricultural, and fisheries subsectors for the viability of the whole Somali economy and to achieve employment, income generation, and poverty reduction. This cluster report therefore links to the foundations of the livelihoods and welfare for all Somalis. The challenge is to achieve sustained improvement and management of the environment and a growing agricultural sector that together will generate the income to fund social services and infrastructure development.

CONCLUSIONS

The Environment

4. The environment has been severely damaged because of the absence of competent private and public institutions and irresponsible exploitation by powerful groups and individuals. Huge areas that were once tree-covered rangelands have been reduced to treeless plains, with the result that wildlife has all but disappeared and soil erosion is common. Charcoal is still being exported from major Somali ports despite the existence for many years of a national export ban. Marine resources have been plundered over the last 15 years through unregulated over fishing by foreign vessels and individual local fishermen. The damage to marine habitat is such an extent that many marine species are on the verge of extinction from the Somali water unless substantial corrective actions are taken very soon. It is therefore recommended that an urgent and rigorous action plan to address these and other environmental issues should be part of the overall reconstruction and development program, starting with a field-based “State of the Environment” report, which would include an assessment of all marine resources.

The Livestock Sector

5. Livestock production, trade and marketing - a key source of household incomes and livelihoods in Somalia, providing revenue for public administrations, and contributing to the development of secondary and tertiary sectors, have been threatened by several factors. Recurrent droughts and floods, degradation of the environment and encroachment of key natural resources by agricultural production and difficult animal movements due to insecurity and other barriers have weakened the productive natural assets on which mobile animal production is based and impaired coping mechanisms of pastoralists. Inadequate support services and applied research, fluctuating and unfavourable terms of trade have deprived Somali pastoralists and agro-pastoralists of an important source of livelihoods. The absence of sector policies and regulatory framework, lack of specialized public and private support institutions, dearth of specialized human resources, paucity of reliable data on animal health and production, and the absence of processing capacity to transform and add value to products of animal origin, have all contributed to the increasingly reduced importance, in terms of GDP and households’ livelihoods, of the livestock sector in Somalia.

6. Extensive field surveys have been conducted in recent years by private veterinary personnel, under the supervision and guidance of INGO and local veterinary authorities, on major trans-boundary diseases, namely Rinderpest, Rift Valley Fever, *Peste des Petits Ruminants* and Contagious Bovine Pleuro-Pneumonia (CBPP), showing localized distribution of transboundary diseases, possibly due to segregation of domestic animal populations. Efforts should be made to collect new and scientifically reliable data as it is the first step towards designing control strategies and systems and lending credibility to any animal health certification systems.

7. The recent ban imposed by the Kingdom of Saudi Arabia and other Arab countries on the imports of Somali livestock has further shown that the opportunistic and mercantilist

approach that has been so far pursued by Somali livestock traders and administrations is no longer viable. Priority initiatives should focus on the establishment and strengthening of public and private institutions, at different administrative levels and staffed with competent and skilled personnel, to govern livestock productions, disease monitoring and control, trade, marketing and processing. At central level, a competent veterinary administration will be a prerequisite to the establishment of an internationally recognised animal health certification system that will report to the World Organization for Animal Health (OIE). The OIE will, in turn, share updated and reliable information on the animal health situation in Somalia with neighbouring countries and trading partners. Public institutions will also be tasked with designing sectoral strategies that are environmentally sound strategies, developing and enforcing regulations, monitoring and coordinating livestock development interventions, and designing training programs for human resources development.

8. There is a need to develop a human resources development strategy of Somali staff for the medium to long terms. In the short-term, however, it is necessary to engage international experts in establishing and operating robust systems and institutions as well as providing on-the-job training to Somali staff. The private institutions will have a critical role in strengthening and expanding animal health services and in providing relevant services along the production chain from producers to consumers, and in enhancing public health and food safety. Private institutions will also need to foster coordination and partnership with the public sector and to self-regulate the provision of support services, trade, marketing and processing. In order to add values to products of animal origin in the country, to create employment and to foster internal recycling of organic matter, the Somali livestock sector will need to increase and diversify the processing capacity of the livestock industry both for domestic consumption and export purposes.

9. Of particular importance will be the establishment of a reliable and cost effective animal health inspection and certification system based on sound surveillance with initial focus on trans-boundary animal diseases and diseases that affect domestic production. Robust field research will also be required on the applicability of the “compartmentalization approach” in pastoral areas along the processing and marketing chains of the livestock industry. Finally, a livestock data information system, starting with a statistically reliable estimate of the livestock population, will be required and essential as the first step towards the development of any strategies, policies, planning and interventions for the livestock sector.

Agriculture and Watersheds

10. The heart of the agricultural sector is also in the heart of the remaining conflict zone in the South Central area. As a result farmers in this area still suffer from destroyed flood-control levees and dysfunctional irrigation systems, unreliable supplies of inputs such as fertilizer and seeds, uncertain markets and prices, and no resolution of land disputes resulting from unlawful appropriation of land by warring parties. This report ***concludes*** that the rehabilitation of destroyed flood-control levees and irrigation systems in the Shabelle and Juba river basins would be economic investments on the basis of previous profitability, strong growth in demand for domestically produced food in Somalia, and access to export markets for sesame, bananas, and grapefruit.

11. Associated with the traditional field and tree crop production, there are considerable prospects in various Somali regions for a number of high-value specialized crops such as dates, vegetables, fodder plants, frankincense and myrrh, gum arabic, honey, and a range of medicinal plants that could all be developed into significant sources of income for farmers and pastoralists. This report *concludes* that because of the economic importance of these field and tree crops, their production and marketing should be supported by governments through the establishment of public and private extension programs.

Fishing Industry

12. During the last 15 years the marine resources along the Somali coastline have been regularly plundered by between 500 and 1,000 trawlers and other types of ships, few of which are licensed and most of which break international fishing laws. For example, the once substantial and valuable lobster resources have been almost wiped out. It is estimated that for Somaliland, Puntland, and South Central Somalia combined, about US\$95 million in export revenue each year is lost to illegal fishing, which is about 25 percent of the value of the estimated potential annual catch. Artisanal fishermen have also suffered from illegal fishing close to shore because of the damage it does to their nets and the disruption to their own fishing, which means they find it extremely difficult to sustain an adequate livelihood.

13. This report *concludes* that governments should take a holistic approach including the establishment of legal and regulatory frameworks and institutional capacity for effective marine resource management, strengthening the measures to enforce licensing of all vessels (international and national) fishing in Somali territorial waters, establish a coast guard to monitor licensees and their fishing practices, and provide public infrastructure such as jetties, navigation aids, and access roads in isolated coastal towns along the Somali coast.

Women in the Productive Sectors

14. Women are crucial contributors to private sector development in all Somali regions. However, women work under extremely difficult conditions because in general they are marginalized from many of the opportunities presented to men. Invariably the women need to earn a supplementary income for their families to avoid poverty. Very often, they are widows as a result of the war, have children or elders to care for, and want education for their children. They usually have no independent means of transport, no access to capital, and are involved in time-consuming work like herding goats and sheep (assisted by children). Many women are butchers and fish retailers. They work long hours in value-added or service-type enterprises—often selling perishable products such as meat, vegetables, fish, milk, and other foods in town markets where there were no toilets or childcare facilities. They are appalled by the destruction of the environment as a result of charcoal production and over fishing, but understand the pressures to overuse natural resources, even though much of the income generated goes to pay for Khat. They are not looking for subsidies, but are looking for better infrastructure such as roads, water supply, and markets. In one Somali area the lack of women's representation in local government was deplored.

15. A number of *conclusions* emerged from the mission's discussions with numerous women's groups that are relevant to a strategy for improving the prospects for women in Somali society, particularly in the productive sectors.

- (i) **Nontraditional employment.** Most of the income-generation activities that women engage in are in the nature of small enterprises that require some capital, are very time consuming, and take women away from the household and create problems for child care. With economic growth, jobs in service industries should in theory emerge quickly in the economy. But for those future jobs a number of skills will be needed and hence adult education of various kinds may be an important public sector strategy to prepare women for nontraditional employment opportunities.
- (ii) **Microcredit.** For those intending to establish small businesses microcredit will be important. The pilot credit program previously financed by the European Commission in Somaliland and Puntland, despite the problems expressed by religious leaders over their interpretation of fixed charges as *riba* (usury) for the use of this credit, may be a useful model for small-scale credit, because 70 percent of its borrowers were women—mainly in urban areas.
- (iii) **Toilet and child-care facilities.** Providing improved toilet and child-care facilities in markets is an obvious strategy for relieving stress on women and improving their opportunities to function for long hours in markets. Local governments should be responsible for constructing the facilities with public funds, and vendors at markets should pay a levy for maintenance.
- (iv) **Technology.** Relieving women of tiring and time-consuming manual labor in agriculture and other enterprises will be an important part of enhancing the welfare of women. Much of this could be done through the adoption of available technology, which could be disseminated by the appropriate ministry in the Transitional Federal Government (TFG).
- (v) **Education of young children.** The education of young children will be a focal point for the JNA and is covered by another cluster. Targeted assistance programs, such as subsidized community child care, should be established to ensure that women who work (particularly women who are at or below the poverty line) do not at the same time prejudice their chance to ensure a basic education for their children and so contribute to human capital development.

16. Somaliland and Puntland, and to a lesser extent South Central Somalia, have a range of known mineral resources such as coal, gypsum and limestone, sepiolite and meerschaum, and various gemstones, as well as precious and base metals such as gold, copper, nickel, lead, and zinc that should be further investigated since they present prospects for income and employment generation. Even oil production is said to be a realistic possibility based on oil finds in Yemen on lands with similar geological structures as in Somalia. Another potential opportunity for the use of the marine resources is tourism. With its beautiful shoreline and mountains in the hinterland, northern Puntland could become an outstanding tourist location.

The report *concludes* that these natural resources should be exploited; but the challenge is establishing a competent and transparent public contracting authority within the central government to manage the decisions over rights by the private sector to exploit these public resources.

17. The private sector has been the source of entrepreneurial energy and income that has kept all Somali areas afloat economically for the last 15 years and this energy can be harnessed to generate considerable income from the apparent substantial mineral wealth. Agriculture and livestock production are at the core of the private sector and have kept at least 70 percent of the Somali population employed during some part of the year. During the civil war the nonagricultural part of the private sector was also highly productive; it provided most essential services such as power and water supplies, all transportation, social services such as health and education, informal financial services, and a highly effective telecommunications system.

18. The success of a range of private investments has proven that governments need not always invest in the provision of services. The main service missing at this time in the Somali economy is a formal banking and insurance sector. This seriously limits regular commercial trade. The private sector has also drawn attention to the absence of formal commercial banking facilities as a major impediment to private sector investment. Without a commercial banking system barter trade will remain dominant. Another cluster report has addressed the actions required to establish formal banking and insurance services. Nevertheless, other actions to encourage private investment are critical. This report *concludes* that the private sector will expand if governments establish clear regulations on matters such as phytosanitary standards for food exports as well as quality standards for all major exports, ensure a transparent legal system to resolve trade disputes, and invest in essential infrastructure such as roads and water supplies that helps establish an enabling environment for private investment.

Implementation Capacity

19. A reconstruction and development program, which will be implemented by the public sector, will include analysis and decisions on public policy and expenditure. In the last 16 years Somali government institutions have had little experience in either policy analysis or public expenditure management. The competence of Somali institutions currently are at different levels depending on their history and experience. Those in Somaliland are generally at a higher level of competence and effectiveness because of their more comprehensive experience in a government; Puntland is close behind. There is no government in South Central Somalia. In comparison with government institutions in other sub-Saharan countries at similar levels of development, the institutions in Somaliland are sound, even though they may not have the range of experience as other countries. The Ministries of Livestock, Agriculture, and Environment in both Somaliland and Puntland have very limited competent staff, but there is virtually no capacity to implement any programs or projects at the regional and district level. Many districts are remote with few communications and hence even a dialogue between such districts and the central ministry will be very difficult.

20. In the light of the weak institutional capacity, the RDP for the productive sectors and the environment includes a number of capacity-building components. There is a proposal for strengthening Somaliland's environmental agencies and the Ministry of Fisheries and Coastal Development and the Marine Police, including both equipment and training, which will cost an estimated US\$1.1 million and US\$2.1 million, respectively. Similar programs are proposed in Somaliland, like a proposal for training district administrators (estimated to cost US\$200,000); such programs need a strong implementing agency. In general, the public sector's weak absorptive capacity to use external assistance is the core issue that needs to be addressed through capacity building.

Investing for Results

21. Reconstruction and development costs related to the needs of the productive sectors and the environment are considerable because of the massive destruction of physical capital during the civil war. A substantial amount of capital will come through the private sector as the investment climate improves and as governments establish policies on sector development, the respective roles of the public and private sectors, and other specific issues. Clearly, however, there are essential public investments that should be made in the short run to rehabilitate public infrastructure to support the largely private productive sectors in the economy. Those investments are the focus for this report.

22. It has been estimated that over a five-year period, a priority public investment program amounting to US\$296 million would be needed for Somaliland, Puntland, and South Central Somalia in the productive sectors and the environment. About US\$98.2 million of this investment would be for crop production, including flood control and the rehabilitation of public irrigation schemes (both pump irrigation and rainfed) in the Shabelle and Juba valleys. Obviously the investment would need to be phased over a number of years because absorption capacity is weak—although absorption capacity could be strengthened with technical assistance. It is estimated that about US\$53 million would be appropriate in the first year of a program, US\$89 million in the second year, and the remaining US\$154 million over the following three years.

RECOMMENDATIONS

23. The following is a list, compiled from this report, of the priority recommendations for policy and institutional changes, along with recommended investments. These recommendations also apply to all Somali areas. There are many other recommendations in the report that apply to individual regions. They will be found in the relevant sectoral chapters.

24. **Environment.** The main recommendations made in the report are as follows:

- Strictly enforce the public licensing of charcoal production and enforce the charcoal export ban.
- Intensify pilot reforestation programs under various soil and climatic conditions.
- Strictly enforce wildlife conservation laws.

- Complete a thorough “State of the Environment” report.
- Investigate the alleged toxic waste sites south of Gara’ad.
- Clean up the chemical contamination at the former Desert Locust Control Organization site in the Ayaha Valley.
- Investigate chemical contamination at the former missile site in Berbera and other sites; if necessary draw up and implement a plan for decontamination.
- Establish a broad-based National Environmental Coordination Committee with representative membership from all area governments.

25. **Livestock.** The main recommendations made in the report are as follows:

- Develop long term strategies and policies for the livestock sector, based on a regional (Somali eco-system) approach and on sound and scientifically reliable data on livestock production and distribution, including a statistically reliable estimate of the livestock population;
- Rebuild/strengthen Public and Private institutions supporting and regulating the Somali livestock industry (production, disease monitoring and control, trade, marketing and processing);
- Develop/strengthen animal disease surveillance, inspection and certification systems to enhance food safety and public health;
- Promote PPP for the provision of livestock specialized services (veterinary services, marketing, research) and the establishment of value adding plants (processing and branding) for animal commodities;
- Support better integration of livestock production and agriculture by understanding and addressing factors affecting the integration;
- Foster the intensification of livestock production (e.g. dairy, poultry, honey) in high potential and peri-urban areas, promote environmentally sensitive animal rearing practices in the rangelands, and maintain linkages between different livestock keeping systems (rangeland, high potential and peri-urban areas);
- Facilitate linkages and cooperation between Somali public and private institutions with similar bodies in neighboring countries and trading partners, and regional and international specialized organizations;
- Develop a human resources development strategy of Somali staff for the medium to long terms in order to address the shortage of veterinary personnel at various levels (veterinary doctors, veterinary assistants, diploma holders);
- In the short-term, identify needs and support recruitment of external experts for the establishment and operation of robust livestock services delivery systems and institutions in order to maintain the Somali competitiveness in the international trade in livestock and livestock products. The external personnel would also provide on-the-job training for Somali staff.

26. **Crops and Watersheds.** The main recommendations made in the report are as follows:

- Rehabilitate the public flood levees and irrigation systems in the Shabelle and Juba Valleys.
- Improve rainfed and pump irrigated crops in all areas.
- Establish strong public and private research and extension services for crop producers in all Somali areas.

27. **Fishing Industry.** The main recommendations made in the report are as follows:

- Enforce the licensing of all boats fishing in Somali territorial waters.
- Establish a public or private coast guard with jurisdiction over all Somali territorial waters to monitor licensees and their fishing practices, and to eradicate piracy.
- Provide public infrastructure such as jetties, navigation aids, and access roads to support artisanal fishermen in isolated coastal towns along the Somali coast, subject to commitments by communities to regularly maintain the infrastructure.
- Add a maritime resource management component as part of a integrated costal management program
- Add the facilitation of linkages with regional institutions and programs

28. **Women in the productive sectors.** The main recommendations made in the report are as follows:

- Ensure that all public market places have adequate toilet and child-care facilities for women.
- Assess the options for providing enhanced technology to women engaged in weeding, harvesting, threshing, grain milling, and collection of wood and water to facilitate their activities and reduce their enormous labor input into these activities.
- Explore the applicability of microfinance institutions to the needs of women for microcredit for small-scale businesses.

29. **Other Private Sector Development.**

- Governments should support exploitation of national mineral resources through the establishment of competent and transparent public concessions system and procedure that are used for contracting the rights of the private sector to exploit mineral resources.

- Governments should support private sector investment in the following ways: establish clear and transparent legal and regulatory frameworks, encourage the establishment of private commercial banks and insurance companies to support formal trade and investment, ensure an efficient legal system to resolve disputes, design a consistent land policy, and invest in essential infrastructure such as roads that help improve the enabling environment for private investment.
- The private sector should establish independent chambers of commerce as vehicles for opening a dialogue with governments on issues such as the costs of doing business, the investment climate, economic policy, and trade policy.

SOMALI

JOINT NEEDS ASSESSMENTS

PRODUCTIVE SECTORS AND ENVIRONMENT CLUSTER

1. INTRODUCTION

Objectives and Scope

1.1 The objective of this report, prepared by the Productive Sectors and Environment Cluster (PSE Cluster) of the Somali Joint Needs Assessment (JNA), is to assess the prospects for the productive (real) sectors in Somalia to develop, grow, generate employment, and contribute to poverty reduction and food security. Prospects for development will depend crucially on peace and the reduced risks and uncertainty that peace will bring for investors, sound economic and social policies, the opportunity to make profits, and the levels of public and private investment. The extent to which development prospects will be realized will also depend heavily on the extent to which the serious degradation of natural resources environment can be reversed since most of Somalia's current productive capacity is dependent on the sustainable use of these resources.

1.2 The PSE Cluster activities cover livestock, agricultural crops, fisheries, and forestry as well as manufacturing, telecommunications, and the general development of the private business sector (large-, small- and medium-size enterprises) in the widespread and diverse Somali regions. The report will emphasize the prospects for agroprocessing industries and productive uses of mineral resources such as coal, tin, gypsum, gemstones, and oil. The cluster will also focus sharply on the appropriate roles of the public and private sectors in establishing the incentives for investment and hence the conditions for production and growth. It will also pay particular attention to environmental issues that need to be addressed by the public sector in the context of the extensive use by the private use of natural resources.

Linkages of the Productive Sectors to the Environment and to Other Clusters

1.3 Income generation and the creation of wealth—through the production of livestock, crops, fisheries, forestry, mining, and other productive activities that process and manufacture goods from raw materials—depend on the sustainable use and good management of Somalia's considerable natural resources. The status of the environment is an indicator of the way natural resources are being used. Employment, incomes, and livelihoods of families throughout Somalia are linked to the performance of the productive sectors and hence also to the environment. The success of the productive sectors, however, is in turn strongly linked to the performance of other clusters around which the JNA analysis is organized, namely: the achievement of peace, security, and political stability; the capacity governmental and nongovernmental institutions to deliver dedicated governance and equitable laws; the soundness of macroeconomic and sectoral policies, including the establishment of an attractive enabling environment for private sector investment; equal

economic and social opportunities for men, women, and clans; sufficient high-quality infrastructure; and provision of effective and reliable education and health services. Strong performances of all these activities will stimulate broad-based growth of the Somali economy, improve the welfare of all households, reduce poverty, and thereby ensure universal food security.

Achieving Millennium Development Goals

1.4 Growth of the productive sectors and achieving the sustainable use of Somalia's natural resources will contribute to meeting a number of the Millennium Development Goals (MDGs) established in 2000 by the United Nations General Assembly. Specifically the agricultural and nonagricultural productive sectors can contribute to growth in employment and hence poverty reduction and food security, export income to finance a range of imports including new technology, tax revenues for all levels of government to finance the provision of improved social services, and many infrastructure services such as roads, electricity, and water supplies.

Building on the Paris Declaration

1.5 The Paris Declaration of April 2004 reaffirmed a commitment among donors to harmonize and align aid delivery. The commitment was to accelerate progress in a number of areas, namely strengthening partner country development policies, aligning aid with partner priorities, enhancing accountability, eliminating duplication of efforts, reforming and simplifying procedures, and defining measures and standards of performance.

1.6 The donors also made commitments to address a number of other issues, namely to assist the development of implementation of results-driven national development strategies, provide more predictable aid flows, decentralize responsibility for donor activities to field staff, integrate global programs into national development agendas, and address corruption and lack of transparency.

1.7 The JNA is an opportunity to incorporate the main elements of the Paris Declaration in the development of an assistance program for Somalia.

Structure of Report

After an introduction (Chapter 1), Chapter 2 discusses what is arguably the most important issue after broad-based peace—the status of natural resources and the environment. Chapter 3 briefly reviews the relative importance of the main productive sectors in the economy. Chapter 4 assesses various opportunities and challenges facing the agricultural sector, which includes livestock, crops, watersheds, forestry, and fisheries. In Somalia agriculture is the dominant part of the economy and the core of the private sector. Chapter 5 reviews the progress and prospects of the nonagricultural private sector, which covers manufacturing and mining activities, telecommunications, airlines, and small-scale enterprises, as well as the business environment and strategies to support the private sector. Finally, Chapter 6 examines the strategic actions that are necessary to achieve results. The strategy will be a mixture of public policy, building institutions and their capacities, public investment, and ensuring an enabling environment for private sector investment.

2. NATURAL RESOURCES AND THE ENVIRONMENT

Overview of Priority Issues

2.1 Somalis have always depended on natural resources for most of their production and incomes.¹ This continues to be the case. Nomadic pastoralism and crop-based production of livestock have always been a key activity and the source of most domestic and export income. In addition, the South has always been the main agricultural and food-producing area and in the late 1980s started to produce exports of substantial value such as fruit and sesame. After the start of the civil war, lobster, fish, and charcoal emerged as important sources of local private income and export revenue.

2.2 This chapter recommends a number of urgent researches to establish reliable scientific data on certain priority environmental issues. They will arise repeatedly throughout the report as it examines the use of Somalia's natural resources for the generation of employment and income in the productive sectors. The issues are as follows:

- Massive degradation of natural resources—the result of deforestation, overgrazing, inadequate soil conservation, over fishing, and destruction of wildlife habitat—has created a serious threat to biodiversity as well as livelihoods and future development.
- Absence of legal and regulatory frameworks as well as weak institutional capacity at federal, regional, and local levels for more sustainable natural resource management.
- Authoritative high-level commitments need to be made to ensure environmental accountability in all development projects, including prescreening of projects for potential negative environmental impacts. Also, there should be accurate monitoring of environmental conditions and the trends in those conditions.
- The lack of waste management infrastructure and resulting hazardous dumping of waste, and a number of sites containing chemical contamination, pose significant health risks and need to be urgently decontaminated.
- A thorough field-based “State of the Environment” report is required as the starting point for any environmental interventions.

¹ Most of the material in this chapter was drawn from a background paper prepared for the JNA by UNEP, titled “Somalia Joint Needs Assessment: Environment Sub-Cluster Report,” May 2006, draft for comment. The UNEP report is based on information obtained during its mission to Bossaso and Hargeisa between March 27 and April 3, 2006, as well as on other background work and references cited in the report. A questionnaire (reproduced in the UNEP report) was also sent to environmental umbrella organizations, whose members are active across Somalia, to extend the coverage of information collection in Bossaso and Hargeisa. The responses received were analyzed and included in UNEP's report where appropriate. The UNEP report is available on request. The support of The World Conservation Union (IUCN) is also gratefully acknowledged.

Severe Stress on Water Resources

2.3 Somalia is to a large degree arid or semiarid with irregular rainfall and water resources that vary in quantity and quality according to location. In much of the north and northeast, subsurface water is saline and often the only permanent source of sweet water is found in deep boreholes. In the south, however, water is obtained from rivers and shallow wells. Extensive, permanent swamps and floodplains occur on the Shabelle River, while additional swamps abut the Juba River. These are the two large perennial rivers which rise across the border in Ethiopia and flow across the southern part of Somalia. The Juba reaches the Indian Ocean and the Shabelle ends in a swamp. Both are important sources of water for domestic consumption, irrigation, and livestock. The area between the two rivers is the country's main rainfed agricultural zone.

2.4 Temporary watercourses, known as *lachs* or *laks*, drain the southeast sloping plateau of northeastern Kenya into southern Somalia, the main ones being Lach Awaro, Lach Bogal and Lach Dheere (Hughes and Hughes, 1992). Cisterns (*berkeds*) are another source of surface water for at least a few months of the year, these being pans or dams whose bottoms and sides are cemented and covered to ensure that water is not lost to evaporation and seepage (Amuyunzu, 1997). Underground aquifers are also widely exploited, either through boreholes, shallow wells, or at natural springs. There are also seasonal rivers exist in Northern Somalia that can play a potentially important role if catchments mechanisms are to be built.

2.5 UNDP estimated that only about 5 percent of the population has secure access to water throughout the year (UNDP, 1998). An estimated 31 percent of the population has access to safe drinking water in the northwest, while comparable figures for the northeast and southern parts of the country, albeit not secure, are 19 percent and 20 percent, respectively. In Mogadishu, the figure is not more than 35 percent in the urban area and 10 percent in rural Benadir (UNDP, 1998).

2.6 The Human Development Report for Somalia (UNDP, 2001) estimated that Somalia's annual renewable fresh water fell from 2,500 cubic meters per person per year in 1950, to 980 cubic meters in 1990, with a prediction of 363 cubic meters by 2025. It is generally accepted that when this value falls below 1,000 cubic meters per year, water scarcity begins to hamper health, economic development, and human well-being; below 500 cubic meters per year it becomes life threatening.

2.7 Water provision in the major cities is either privately owned and supplied or communal. In some cities such as Hargeisa current water supplies are limited and costly. The Infrastructure Cluster will provide more details on urban water supply and demand. Part of the demand for urban water supplies is met by transport of water to rural areas from urban distribution systems, a phenomenon usually due to subsidized water sales in urban areas. In rural areas water is collected in cement catchments (*berkeds*) or obtained from wells or boreholes that may be communal or private. An active system for water delivery has developed, spanning very small operators with wheel barrows or donkeys to operators with one or more trucks. For example, there are over 800 *berkeds* in Eastern Sanaag alone, 350 shallow wells, and 27 boreholes. A drum of 200 liters of water typically sells for US\$0.50–1,

but can cost several times that price after prolonged droughts. Destitute and poor families traditionally do not pay for water; those with slightly more funds borrow from relatives in difficult times. The UN estimated that of the average current indebtedness of an Eastern Sanaag family, after 4 years of drought and at prices for water of US\$3.8 per drum (October 2003), are US\$50–100 per family to water providers alone. Consider this in relation to average per capita incomes for all Somali regions of about US\$230 per year, or about US\$1,150 per household.

Forests and Rangelands under Sustained Attack

Natural Forests and Rangelands

2.8 Stands of closed forests are limited to Southern Somalia and occupy only about 2.4 percent of the country (IUCN, 1992). However, if the *Juniperus* forests and evergreen tracts in the mountains in the north are included, the total forest coverage would probably amount to around 14 percent (90,000 square kilometers) of the land. Important among these are the mist forests of the Golis Range (see Box 2.1). There used to be vast stretches of rangelands covered by various species but predominantly acacias and native grasslands. Most of the trees on these rangelands have disappeared.

Box 2.1: Mist Forests of the Golis Range in the North

The mist forests of the Golis Range of Somaliland are some of important remaining centers of biological diversity and species endemism. On account of their biological richness, mist forests—so called because of their ability to remove moisture from the air as it blows in from the coast and rises above the plateau—are also important resources for pastoralists during dry seasons and periods of drought.

Gacaan Libax, a highland area reaching 1,719 meters in northwestern Somalia, hosts one of the largest and most intact mist forest areas in Somalia. Local people are well aware of the importance of these forests to their livelihoods, especially for the grazing and water resources they provide.

However, people are forced to demand more and more from these forests due to the loss of traditional grazing lands to private livestock enclosures, an increased number of livestock, and the lack of law enforcement. According to a case study by the NGO Candlelight for Health, Education and Environment (CLHE), the mist forest areas were previously protected, but the management system was disrupted by the civil wars and the absence of government protection mechanisms. This led to indiscriminate tree cutting and over-grazing. In addition, the undesirable blue flowering vine *ipomoea* sp. (Morning Glory—locally known as “Badhi-beeto”) became abundant in the area. It causes illness and death in animals forced to graze on it in the absence of other plant species. The plant’s dry leaves are, however, a good dry season feed. Since this area is communal land it is particularly vulnerable to land enclosures. See Chapter 4 and Box 4.2 for a more detailed discussion of the impact of enclosures.

Source: UNEP, 2006.

2.9 Virtually all of the tropical floodplain forest that once existed along the Shabelle River has been cleared for smallholder agriculture and sugar and banana plantations, except for a small patch set aside as a reserve at Balcad by the Somali Ecological Society. Aerial photographs from 1960, 1983–84, and 1987 reveal a drastic acceleration in cleared forests in the Juba valley as well—probably encouraged by irrigation and drainage schemes. Only the poorly accessible Middle Juba, with its predominantly saline, alkaline, impermeable soils, has retained significant areas of relict floodplain forest. Compared with surrounding woodland and bush,

these floodplain forests are floristically rich and are notable for their diversity of specialized birds and animals (Madgwick, 1989).

2.10 A number of mangrove stands have been reported, the best areas being between Saada Din Island and Saba Wanak in the estuaries of three watercourses that reach the sea west of Bossaso, and in the three estuaries just north of the Kenyan border (Hughes and Hughes, 1992). These and other stands, however, have been seriously depleted for firewood and construction timber. Some have been completely denuded and are now salt marsh ecosystems. Overall the regenerative capacity of the mangrove ecosystems may have declined in recent decades—a result that will almost certainly affect the capacity of these areas to function as breeding and nursery sites for near- and off-shore fish, crustaceans, and mollusks. These areas would now also provide less protection to the coastline.

2.11 In 2000 about 60 percent of the country was covered by very sparse savannah woodlands (see Annex A) and since then the percentage has no doubt declined significantly. Forests and woodlands have always been important as sources of household energy and construction materials. Frankincense from *Boswellia* species growing in the north east, *Commiphora* that produces myrrh in the southwest and the northeast, gum arabic from *Acacia* spp, and *Cordeauxia edulis* (thought to be endangered) that produces *yicib* nuts in central regions are also important revenue-producing wood products (UNEP, 1984).

Charcoal Production

2.12 Charcoal is the fuel of choice in most Somali households (see Box 2.2) and for certain specific purposes in Gulf country households; these uses create a strong demand. The once majestic acacias and other trees that graced the rangelands have almost disappeared due to the ravages of charcoal production over the last 15 years. In a study on wood-based energy dynamics in Somalia, charcoal output from north East Somalia in 1996 alone was estimated to be in the order of 4.8 million sacks, each weighing 25–30 kilograms, 80 percent of which were exported. Producing such a volume requires cutting down about 2.1 million *Acacia nilotica* trees. At an average density of 60 trees per hectare, this translates into a deforestation rate of 35,000 hectares of land a year.

Box 2.2: High Demand for Charcoal by Households in Major Cities

A country-wide assessment of the scale of charcoal production and consumption has not been undertaken, but a report by the NGO Agricultural Development Organization (ADO) in its paper, “Environmental Degradation, Lessons and Experiences, concluded that annual charcoal consumption in the major cities of Hargeisa, Berbera, Borama, and Burao is approximately 2,309,200 sacks, which require about 1,154,600 trees to produce, equivalent to about 19,240 hectares. Over the last 15 years this would have been equivalent to about 300,000 hectares. Since an estimated 50 percent of charcoal energy is lost in the cooking process and some 95 percent of the urban population uses inefficient metal stoves, there would be enormous benefits for the rangeland environment if consumption of charcoal were reduced by using more efficient stoves that are available, or alternative energy sources such as kerosene or solar systems. See the cluster report on Infrastructure for a discussion of alternative household energy sources.

Source: Agricultural Development Organization, Hargeisa, Environmental Degradation, Lessons and Experiences, Somaliland.

2.13 Most charcoal is today produced in Southern Somalia and illegal exports (about 80 percent of production) constitute a large share of all exports from the South. There has been a rapid expansion in the production of charcoal in recent years, with much of it being exported to meet demand in Saudi Arabia, Yemen, the UAE, and India. The incentives for charcoal exports are clear: charcoal prices in Southern Somali regions are in the vicinity of US\$3–4 per bag, while in the Gulf States the same bags sell for US\$10 each.

2.14 The destruction of the rangelands for charcoal production has naturally led to scarce wood resources and conflict for control of them. Among other goods, acacia trees provide important dry-season forage for all animals, and their roots fix nitrogen that enriches the soil close to the trees. However, relations between charcoal producers and local communities are complex. In many cases producers are members of the community and in other cases outsiders have taken control of forest resources, production, and sale of charcoal. Many conflicts have arisen and casualties recorded because of competition for both wood resources and markets, according to the Candlelight NGO case study.²

2.15 In its paper on environmental degradation, the Agricultural Development Organization (ADO) based in Hargeisa states that rural communities are heavily involved in charcoal production. In the past, businessmen and cooperatives from urban centers encouraged rural youth to engage in the burning of dead trees for charcoal. With the increasing scarcity of dead trees, live trees were cut in order to satisfy the increasing demand. Since outsiders were not allowed to cut and burn trees in specific areas, incentives were offered to locals—especially decision-making elders—to carry out work in their areas. This was usually coupled with the mobilization and training of rural youth for mass charcoal production, allowing them to support their low-income families and their demand for Khat. Since the incentives for charcoal production were strong, opposition to charcoal production was weak and the practice even stretched to nomads. Hence any efforts to reduce charcoal production and export need to be combined with interventions to support alternative livelihoods and alternative energy supplies including wood lot management.

2.16 Charcoal production is the major cause of deforestation in Southern and Northern areas, in addition to other causes such as the traditional use of wood for household energy and construction. The acacia species (used for charcoal production) does not grow fast enough to replace felled trees. Heavy grazing pressure and insufficient rainfall are the main reasons for lack of natural regeneration. Reforestation programs have been successfully implemented in other arid and semiarid areas, such as Niger, Cameroon, Nigeria, and Chad, and could play an important role in rehabilitating deforested Somali environments (see Annex J for details). A number of Somali pilot projects supported by NGOs have shown that there are sound prospects for community reforestation. It is **recommended** that pilot reforestation programs using a range of species, including the fast-growing legume *Leucaena leucophila* that has already been shown to be very adaptable to a range of Somali agroclimatic conditions, be promoted under various climatic and soil conditions in order to refine the silviculture technology for Somali environments.

² The Candlelight study notes that the government issues charcoal production licenses according to the terms of Environment Conservation and Protection Act No. 04/98. Too many licenses have been issued and the budget of the Ministry of Pastoral Development and Environment is inadequate to ensure proper supervision and monitoring of charcoal production.

Gums and Resins

2.17 Frankincense used to be Somalia's fourth-largest foreign currency export earner, with an annual production of 12,000 tons. Due to their value, *Boswellia* are highly prized trees with tree tenure systems. Although not cut for charcoal or other uses, their natural regeneration is threatened by overgrazing (EC/IUCN, 1997) and today this sector is in a state of neglect. Under the government of Siad Barre, state support to frankincense producers facilitated certain aspects of production and export trade, but this same state control destroyed private trading networks, leaving behind a vacuum when the government collapsed. Now, since production and export is no longer regulated, there are concerns over the scale at which trees are being "tapped."

Marine Resources Unsustainably Exploited

2.18 The coastline of Somalia is 3,025 kilometers long. While about 55 percent of the Somali population lives in major urban centers and rural settlements in the coastal areas, less than 1 percent of GDP is currently generated from the fishery sector. The area of Somalia's continental shelf is 40,392 square kilometers and its territorial sea is 68,849 square kilometers. A subsequent section of this report will discuss the commercial use of Somali marine resources. This part of the report will discuss the status of the marine resources.

2.19 Over fishing is a serious problem, although its extent still needs detailed investigation. Over fishing has been caused by unlicensed trawlers from many nations that have fished Somali waters within the Exclusive Economic Zone (EEZ) unmonitored and have taken substantial amounts of fish. Unlicensed trawlers also come close to shore, where they catch lobster and shark and destroy reefs and other natural marine habitat. Research has made the results clear. Approximately 80 percent of Puntland's original lobster stock is now believed to have been lost (FAO, 2005b). A number of the once-abundant shark species (including saw, hammerhead, white, and mako) have apparently disappeared in some areas, while the average sizes of some other shark species landed have decreased over the past five years.

2.20 Discussions with stakeholders from Bossaso indicated that at any one time in the period from December 2005 to March 2006, between 700 and 1,000 illegal, unregulated, and unreported vessels were seen operating along off shore. Precise numbers are not known because there is no surveillance or licensing system. There is no regulation or enforcement of the catch (the number caught per species) of the method of capture (the mesh size and net type). For example nets 150 meters long by 100 meters deep were reported to be laid, indiscriminately catching all species and resulting in enormous waste. In addition, it was noted that there have been many new entrants to the fishing industry, some of whom have inadequate training and lack knowledge of sustainable fishing methods (including returning undersized fish and using appropriate equipment).

2.21 The absence of a well-financed, effective public sector institution responsible for the management of marine resources has also resulted in a complete absence of defined areas where fishing is prohibited or restricted, such as Marine Protected Areas (MPAs).

2.22 To make matters worse, post harvest losses by weight of fish and shark catches along the Puntland coast are estimated at 60 percent and 70 percent, respectively. Trade in shark products is dominated by fins and to a much lesser extent by dried or salted shark meat. This focus on fins results in large numbers of sharks being wastefully discarded after their fins are taken. Stakeholders in Bossaso advocated the establishment of fish processing factories to help reduce waste from post-harvest losses. In addition they noted that although Puntland has a Puntland Fisheries Regulation (dated April 2005) and a Fisheries/Marine Policy and Strategy (dated April 2004), these are not being enforced. Stakeholders from both Bossaso and Berbera highlighted the need for establishing a strong coast guard to eliminate illegal and destructive fishing being undertaken by either national or foreign vessels.

2.23 According to the International Tank Owners' Pollution Federation about 11 percent of the world's seaborne oil is transported through the Red Sea and Gulf of Aden and the frequency of tanker movements poses a constant threat of oil spills. Somalia has no national capacity to deal with an oil pollution incident of any magnitude, which is a concern given the ecological importance of marine and coastal ecosystems in the region (World Bank, Undated). The closest cleanup equipment is located at the IMO Regional Response Centre in Djibouti for the Gulf of Aden region (UNCTAD, 1998). This facility, however, is awaiting reactivation (World Bank, Undated). Besides the threat of oil pollution, waste pollution, mainly from coastal communities, has been cited in a number of reports (for example, FAO, 2005a; UNDP, 1998). Such wastes range from discarded batteries to household wastes and animal carcasses. There have also been reports of illegal dumping of hazardous waste by foreign enterprises.

2.24 Increased siltation can result from agricultural land use and nonagricultural activities such as limestone quarrying on the coast, beach sand mining, and sediment discharge via the Juba River. Siltation could affect the fishery nurseries in the reefs and mangrove ecosystem. There have not been any coastal environment or fisheries surveys that could help assess changes and effects in these ecosystems. It is therefore **recommended** that a thorough "State of the Environment" report be prepared to assess the status of natural resources and recommend actions to guide future natural resources management.

2.25 At present no Somali area has an effective institution or strategy for the assessment of the coastal and marine environment. None of the Somali areas possess the requisite oceanographic equipment for sampling the marine environment and none have the human resources and institutions with the necessary facilities and instrumentation to carry out rapid assessments and analysis. A similar situation exists for rangelands, forests, and water resources.

Biodiversity and Protected Areas

2.26 Arid and semiarid conditions have persisted in all Somali regions throughout the long-term climatic fluctuations that have affected much of the African continent (Simonetta, 1988). As a result, this region has been an evolutionary center of fauna and flora adapted to these conditions. Early explorers, hunters, and colonial officials traveling through Somalia during the late 1800s reported on the astonishing abundance and diversity of wildlife.

Ruthless overexploitation, however, has meant that many of the country's wildlife species are now endangered or rare, while key ecosystems have been seriously degraded.

2.27 Now only small remnant pockets of wildlife exist, with many species approaching extinction. Some, such as the elephant (*Loxodonta africana*), black rhino (*Diceros bicornis*), lion (*Panthera leo*), and Swayne's hartebeest (*Alcelaphus buselaphus swaynei*) have been wiped out from most of the country, while the wild ass (*Equus asinus somalicus*) population that once numbered in the thousands has been reduced to just a few dozen (Sommerlatte and Umar, 2000). Somalia has ratified the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) (<http://www.cites.org/>), but few if any practical measures are being taken to ensure its implementation. Ten species of birds are threatened, of which two are critically endangered. The country used to have one of the most extensive and least spoiled coastlines in Africa, but important coral reefs, seabird colonies, and turtle nesting beaches are currently unprotected. At the end of the last century there were believed to be large dugong populations and extensive sea grass beds in near-shore waters but they no longer exist. Important seabird nesting sites include Mait Island, Zeila Island, and the Bajun Islands off Kismayo. Other less known species that are endangered may receive even less attention: they include two of the country's 223 reptile species and three of its 331 species of fish (WRI, 2003).

2.28 Despite its harsh physical environment, Somalia is home to some 3,028 species of higher plants, of which 17 are known to be threatened (WRI, 2003). Somalia is considered a center of floral endemism (White, 1983), and of the known species 700 (17 percent) are endemic—a feature only surpassed by the South African floral region. At least 151 plants in Somalia have known medicinal values (IUCN, 1997a). However, data are insufficient to describe the status of these resources or the degree to which rural communities in particular rely on or manage them.

2.29 The Somali people, especially the nomads who live in close contact with the environment, have an extensive knowledge of plant-animal fundamentals (Barkhadle, 1993). Most plants and animals have a local name and their phenology, distribution, and ecological zones are known: the use of virtually every plant within the grazing zone—the *deegaan*, which might range from 200 to 2,000 square kilometers—is known. Latest reports (WRI, 2003) show that there are 14 gazetted protected areas in total, but only one exceeds 100,000 hectares. Eleven protected wildlife areas were declared since 1970 but by 1986 only two have been functional. Less than 1 percent of the country is included in protected areas, much of this being occupied by the Lag Badana National Park. In reality, however, there has been no formal protection offered to any of these sites since the early 1990s due to the civil war and the consequent breakdown in the rule of law and government administration. With such an incomplete network of protected areas—terrestrial and marine—there are serious grounds for concern over the long-term prospects for biodiversity conservation or any form of development based on sustainable use of resources.

2.30 The most important sites in need of protection are Zeila, Las Anod-Taleh-El Chebet (already proposed as a national park), Ras Hafun-Ras Gubah, El Nammure, Hobyo, Haradere-Awale, Jowhar-Warshek, Harqan-Dalandoole, and Lack Dere (also proposed for

national park status) (Government of Somalia and IUCN, 1990). Two mountain sites of particular interest are Gaan Libaax and the Daalo forest; the latter has some *Juniperus* forest.

2.31 Priority wetlands in need of protection include Jowhar-Warshek, Har Yiblame, Eji-Oobale, Awdghegle-Gandershe, Arbowerow, the Boja swamps, Angole Farbiddu (which includes a riverine forest), and Lake Radidi (Government of Somalia and IUCN, 1990). Somalia is not a party to the Ramsar Convention and no wetlands of international importance have been declared in the country.

Waste Management

2.32 As mentioned in previous sections, waste management has deteriorated in many areas and is nonexistent in others. Contamination risks for groundwater as well as marine and coastal areas are increasing. Human and household waste disposal sites are generally close to dwellings and water sources. There is a lack of solid waste management and proliferation of plastics bags littering the landscape (UNEP, 2005). Plastic bags pose a choking risk to livestock, block watercourses, and ultimately add to coastal pollution.

2.33 The most obvious observable effect of failed waste management is the detritus, including countless rubber sandals, livestock remains, and human waste littering the beaches originating from urban areas. In the short term, proper waste management strategies such as controlled landfills accessible to urban areas, but located away from the near-shore zone, would greatly alleviate this problem.

2.34 A UN technical fact-finding mission visited the Puntland region of Somalia on May 25–29, 2005, to investigate allegations of toxic waste hazards uncovered by the tsunami. The mission visited three key populated coastal locations at Hafun, Bandar Beyla, and Eyl. No traces of toxic waste were found, but the mission added that “the urgent need remained for a more comprehensive assessment of the natural environment of Somalia, which would include further investigations of alleged toxic waste sites on land, and dumping of toxic waste at sea” (UN, 2005a). This report *recommends* that this more comprehensive assessment be done as soon as possible south of Gara’ad to the Kenya border. It is also *recommended* that a surveillance system for the existence of toxic waste be established.

2.35 Pesticide storage also poses a serious health and environmental threat. For example, a storage depot formerly belonging to the Desert Locust Control Organization (DLCO) for Eastern Africa in Ayaha Valley in an elevated location 5 kilometers from Hargeisa was abandoned after the collapse of the central government. A significant amount of pesticides, including Dieldrin, Heptachlor, BHC, DDT, Malathion, Fenitrothion, Mevinphos, Diazinon, and Tetrachlorvinphos was stored in that area. Since the abandonment, large quantities of pesticide have spilled either by leakage or intentional emptying of containers by looters. This has caused considerable hazard to numerous people living in the vicinity. Also, thousands of residents who lived and still live in the valley are inevitably affected by contamination of the water catchments area.

2.36 A report by the Kenya Plant Health Inspectorate Service (KEPHIS), made at the request of the government and with UNDP financial assistance, stated that “the

contamination can be classified as an example of a catastrophe of mass proportion.” The report further stated that although no pesticides were detected in the five water samples, the pesticides are “persistent chemicals which can last in the environment for a long time and can cause acute chronic diseases which can damage the nervous system in human beings. Some may eventually cause cancer.”(KEPHIS 2003) The initial recommendations were addressed by UNDP and included building a fence around the contaminated area, building a roof over the contaminated area to prevent runoff, closing a school adjacent to the compound, and increasing the awareness of people about the need to avoid the compound. In addition a cost estimate for the removal and incineration of the pesticide residue is now available. This report *recommends* that decontamination at this site be completed urgently.³

2.37 Stakeholders identified one other area requiring specialist waste management treatment—the former surface-to-air missile base site at Berbera, where rocket fuel was stored and may still be present. In addition, it is understood that similar fuel storage sites may exist in Hargeisa and other cities in Somaliland. It is *recommended* that the Berbera site, and other similar missile fuel storage sites, be carefully investigated for chemical contamination; if it exists, a plan for decontamination should be drawn up and implemented.

Legal Systems and Institutional Framework

Judicial Practice

2.38 The collapse of the central government in early 1991 led to a virtual disappearance of Somalia’s already feeble state structures and to political, legal, and economic disruption and fragmentation. In the absence of a formal legal system, there has been a reversion to customary practices. In the legal vacuum left by the collapse of the state, many Somalis have looked to Islam as the main source of law. Today there is widespread application of customary law in resolving disputes, an increased role of religion in the judicial system, a lack of knowledge, and a pattern of abuse of secular law.

2.39 Somalis, whether they are pastoralists, traditional farmers, fishermen, or frankincense collectors, use the *xeer*, the traditional Somali system of governance, which defines the rights and the responsibilities of individuals within a group bound by ties of kinship to regulate socioeconomic and political relations. It is also used for conflict resolution and fostering unity and mutual cooperation of the subclan and lineage members. Furthermore, *xeer* maintains the peaceful coexistence and cooperation between neighboring clans and within subclans. *Xeer* also envisages the protection of the environment and regulates the use of common resources such as water points, pastures, forests, and grazing land. In short, the *xeer* has legal, socioeconomic, and political functions and defines rules and regulations for perpetuating the clan’s kinship-based organizational structure and social order. The system is perhaps best summed up by the Somali proverb “Tol iyo fardo, tol baan doortay,” which could be translated as “Between wealth and clanship, I choose clanship” (World Bank, 2005c).

³ There may also be storage sites for pollutants such as chlorinated pesticides stored for use in certain southern areas. Without data on the location of these sites and how the chemicals were used, it is impossible to assess the magnitude of the threat.

Institutions

2.40 Until the establishment of the Ministry of Environment and Disaster Management in 2005, the south-central region lacked any central body responsible for these matters. The capacity of the Ministry needs support and strengthening. Prior to the Ministry there was a National Environmental Committee, with representatives from 13 ministries/agencies, which served as the coordination body for environmental governance (Gudel and Mwanza, 1979). Most environmental issues, however, were referred to organizations within the former Ministry of Livestock, Forestry, and Range, namely the National Range Agency. This organization had the authority and capacity to take action on the environment. There are environmental authorities in Somaliland – albeit their capacity is weak.

2.41 Environmental management issues featured in some of the country's earlier development plans, but the first targeted initiative was launched in 1996 when the World Conservation Union (IUCN) began the Somali Natural Resources Management Programme. The Programme was designed to promote sustainable use of natural resources and through it the country began to address specific environmental issues, including fuel-wood conservation, fisheries management, marine conservation, and land-use planning. Coverage in all regions was not possible due to security concerns, but by the time the program ended in 2000 a number of key management issues had been identified, which may allow the core of a comprehensive and integrated environmental management system to be formulated. The future of any such system, however, must fully address the needs of the people in Somalia, whose current livelihoods are heavily dependent on a diminishing and deteriorating natural resource base. This can only be done if there is a comprehensive assessment of the status of the environment. It is therefore *recommended* that a "State of the Environment" report be prepared. Subsequent sections of this report will refer again to the need for investigations of Somalia's natural resources, such as the fisheries. These assessments may be done separately but will also contribute to the State of the Environment report.

2.42 It is therefore *recommended* that a broad-based Somali Environmental Coordination Committee should be created and made functional. The Committee should have broad representation from key stakeholders, including those in fisheries, the Ministry of Environment and Disaster Management, commerce and industry, public health, marine transport and ports, livestock, forestry, and rangelands. This Committee should support the Ministry of Environment and Disaster Management and be part of the Ministry's outreach program to stakeholders. The Committee should, in addition to the key stakeholders mentioned above, include experts and scientists from all Somali regions and neighboring countries. It should facilitate a networked and virtual consultation process among these specialists that will result in solutions, including recommendations to the Ministry, for the enormous environmental stresses facing all Somali regions.

International Environmental Agreements

2.43 A key requirement for sound environmental management is adoption and effective enforcement of a suite of international, regional, and national agreements, which define the country's own responsibilities, as well as those of the international community. The international regulatory framework in Somali regions is poorly developed. Although the

former central government ratified many important international conventions relating to natural resource use and management, others were only signed but not ratified. Both ratified and non-ratified conventions are listed in Box 2.3.

Box 2.3: International Conventions to which Somali Regions Are a Party

Conventions signed and ratified

- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on the Conservation of Migratory Species of Wild Animals
- Regional Convention for the Conservation of the Red Sea and the Gulf of Aden Environment
- Protocol concerning Regional Co-operation in Combating Pollution by Oil and other Harmful Substance in Cases of Emergency
- UN Convention on the Law of the Sea
- Protocol concerning Protected Areas and Wild Fauna and Flora in the Eastern Africa Region
- Protocol concerning Co-operation on Combating Marine Pollution in Cases of Emergency in the Eastern African Region
- Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern Africa Region (Nairobi Convention)

Conventions signed but not ratified

- Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water
- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space including the Moon and other Celestial Bodies
- African Convention on the Conservation of Nature and Natural Resources
- Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa
- Treaty Establishing the African Economic Community

Conventions not signed nor ratified but important for Somalia

- United Nations Convention to Combat Desertification (UNCCD)
- Convention on Biological Diversity (CBD)
- RAMSAR Convention on Wetlands
- World Heritage Convention
- Nor has Somalia signed or ratified the Basel Convention on Hazardous Waste⁴.

Source: UNEP, 1996.

2.44 A number of gaps in the legal system also need to be addressed. For example, there is no reference to a national water act or adherence of the Contracting Parties to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (the London Convention), the latter being especially relevant to the alleged dumping of toxic and hazardous materials in Somalia during 2004 and 2005. The most effective environmental legislative framework would probably include a mixture of enforcement and incentive measures.

⁴ As per May 2006; www/basel.int/ratif/frsetmain.pht

Regional Cooperation

2.45 There are other possible benefits from regional cooperation and coordination on natural resources management. For example, the Indian Ocean Whale Sanctuary and the Protocol Concerning Protected Areas and Wild Flora and Fauna in the Eastern African Region provide a framework for collaboration on the development of marine protected areas and on species conservation programs. Other possible international and regional agreements that could be beneficial (but to which Somali regions are not currently a party) include the following:

- Convention on Biological Diversity
- Ramsar Convention
- FAO Code of Conduct (which relates to the sustainable management of fisheries resources)
- UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks
- Indian Ocean Tuna Commission
- Marine Turtle Conservation Strategy and Action Plan for the Western Indian Ocean

2.46 In addition, the EC-funded project titled “Project Assistance, Capacity Building and Supervision Unit” (PACSU) is preparing a vision for future regional cooperation between Ethiopia, Kenya, and Somalia on cross-border watershed and river management for the two rivers in Southern Somalia.

Conclusions

Common Challenges

2.47 The sustainable management of natural resources and the protection of the environment discussed in this chapter face a number of serious but generally common challenges:

- Legal and institutional frameworks for environmental monitoring and management are weak.
- The devolution of legal mandates for action on environmental monitoring and management from federal government to state, regional and local authorities is usually unclear.
- Where legal and institutional frameworks, the devolution of legal mandates, and the authority to enforce frameworks and mandates are clear, there is often limited or nonexistent implementation and enforcement capacity.
- Inadequate baseline data, absence of research, weak technical capacity, weak knowledge of natural resources and the environment hamper the implementation of environmental monitoring and management programs.

Principles for Actions to Achieve Results

2.48 Interventions to address weaknesses in environmental management should be based on the following common principles:

- Policies, programs, and investments (public or private) that involve the use of natural resources should require an environmental impact assessment (SEA/ EIA) that confirms that neither the natural resources nor the environment will be subjected to destruction or unsustainable use, except under special circumstances such as mining.
- Incentives should be devised that would stimulate proactive, community-based natural resources management and rehabilitation projects as components in water supply and sanitation, livestock, agriculture, fisheries, and forestry projects.
- Environmental legal and regulatory frameworks and the institutional capacity to enforce them should be strengthened to guard against the destruction of natural resources.
- Government ministries, universities, and research institutes focusing on natural resources management and rehabilitation of degraded resources should be encouraged to address the absence of baseline information, and to formulate programs for resource management and rehabilitation.

Recommendations

2.49 Chapter 6 and Table 6.2 will summarize the proposed priority public investment. This chapter has *recommended* the following:

- Intensify reforestation pilot programs in different soils and climatic environments (paragraph 2.16).
- Conduct a thorough field-based “State of the Environment” report to assess the status of the natural resources and to guide future resource management and development decisions (paragraph 2.24).⁵
- Investigate, as soon as possible, the alleged toxic waste sites on land and dumping of toxic waste at sea, including in particular the Somali coast south of Gara’ad, and establish a surveillance system(paragraph 2.34).
- Urgent clean up of possible chemical contamination in the former Desert Locust Control Organization site in the Ayaha Valley (paragraph 2.36).
- Investigate the former Berbera missile base site (and other similar missile fuel storage sites) for chemical contamination and, if contamination is found, a plan for decontamination should be drawn up and implemented (paragraph 2.37).

A broad-based Somali Environmental Coordination Committee made up of the key stakeholders for a sustainable environment should be established to support the federal Ministry of Environment and Disaster Management (paragraph 2.42).

⁵ The State of the Environment Report should build on the forthcoming IUCN Country Environmental Profile.

3. PRODUCTIVE SECTORS IN THE ECONOMY

Agriculture Dominates the Value of Production

3.1 **Value added in agriculture dominates gross domestic product (GDP).** The exact relative importance of the productive sectors in the Somali economy at present in terms of their estimated contribution to GDP is not known. Some assessment can, however, be made on the basis of information available for 1990 and earlier. Table 3.1 shows the contribution of a number of the most important sectors in the Somali economy to GDP; agriculture is dominant in the economy, accounted for about 64 percent of total GDP. About 52 percent of agriculture's share was generated by the livestock subsector and about 37 percent by agricultural crops including fruits. The remainder was accounted for by forestry and fisheries (9 and 1 percent respectively of agricultural GDP). Obviously these shares have changed considerably since 1990, but livestock and crops still dominate.

Table 3.1: Estimated Gross Domestic Product for 1990

Sectors/Subsectors	Projections of GDP for 1990	
	1985, So. Sh. (million)	Shares (percent)
Agriculture	64,470	63.6
Livestock and livestock products	33,751	33.3
of which: Change in stocks	1,992	2.0
Crop production	24,082	23.8
Forestry	5,894	5.8
Fishing	732	0.7
Mining	291	0.3
Manufacturing	4,953	4.9
Electricity and water	83	0.1
Construction	3,266	3.2
Trade and hotels	9,353	9.2
Transport and communications	6,412	6.3
Finance and insurance	446	0.4
Real estate	3,565	3.5
Government services	1,300	1.3
Other services	3,067	3.0
Imputed bank service charges	-785	-0.8
Total GDP at market prices, including stock changes	101,338	97.1

Source: World Bank, 1991.

3.2 With the substantial decline in much of the crop production activity in the South/Central areas because of the civil war resulted in the destruction of irrigation systems, the relative importance of livestock in total GDP has probably increased since 1990. Nonetheless, a substantial part of the decline in GDP from crops would have been

compensated by increases in the value of forestry production (on account of the substantial increase in charcoal production) and the very large increase in the value of fish production.

3.3 In 1990 the nonagricultural sectors of the economy were much less important than agriculture. The most prominent were trade and hotels (9.2 percent), transport and communications (6.3 percent), and manufacturing (4.9 percent). It is difficult to gauge their current shares of total GDP but it is very likely that share accounted for by transport and communications has expanded considerably since 1990. The share of GDP accounted for by the grouping “trade and hotels” (now dominated by trade) has probably also increased on the basis of the recovery in livestock exports and the heavy reliance of the economy on imports, which would have more than compensated for the reduced hotel activity. However, the value added by manufacturing (and hence its share of total GDP today) has almost certainly declined since 1990. Clearly there are regional variations that are not consistent with these generalizations. For example, in Somaliland the share of manufacturing in the GDP may not have declined.

Agriculture the Basis for Most Exports

3.4 The continuing importance of the productive sectors to the economy, particularly livestock, is reflected in the contribution of agriculture to exports from Somalia. Table 3.2 shows that the estimated value of livestock and animal products exports accounted for almost 49 percent of all exports in 2003 compared with about 30 percent in 1990 when banana exports were a substantial 26.2 percent of export income.

Table 3.2: Value of Main Merchandise Exports

	1980	1988	1990	2000	2001	2002	2003	
	<i>(US\$ million)</i>							
Sheep and goats, live	78.8	31.2	32.8	55.2	5.7	28.4	27.5	
Wood, charcoal, and fuel wood	n.a.	n.a.	0.01	10.8	12.3	6.7	8.3	
Fish, crustaceans, and mollusks	0.8	10.1	17.3	0.9	4.6	2.1	8.2	
Hides and skins (except fur skins), raw	5.9	5.6	6.3	3.8	4.9	4.6	5.2	
Chemical wood pulp, dissolving grades	n.a.	n.a.	n.a.	n.a.	3.9	19.7	4.7	
Animals of the bovine species, live	28.1	0.3	n.a.	16.2	2.5	5.3	8.2	
Sesame seeds	0.005	n.a.	2.6	0.6	1.6	0.1	1.8	
Gums and resins	3.3	4.1	5.8	1.8	1.9	2.7	1.7	
Fish, fresh (live or dead), chilled, or frozen	0.02	4.6	10.8	0.5	3.0	0.5	1.6	
Goat and kid skin leather	0.6	0.1	n.a.	0.7	1.2	1.0	0.2	
Meat of sheep and goats, fresh, chilled, and frozen	n.a.	n.a.	n.a.	2.2	0.7	0.04	0.01	
Animals, live, including zoo animals	0.1	n.a.	n.a.	6.8	0.01	0.1	0.1	
Bananas, fresh or dried	15.2	31.0	34.5	n.a.	n.a.	n.a.	n.a.	
Milk and cream	n.a.	n.a.	n.a.	0.05	0.3	n.a.	0.7	
Total exports	160.6	114.8	131.7	108.5	61.5	92.0	84.4	
	1980	1988	1990	2000	2001	2002	2003	2004
Total exports (estimated by the IMF)	166.4	137.4	163.7	68.2	77.6	118.3	157.9	265.5

Source: World Bank, 2006.

Note: Data from IMF Direction of Trade Statistics based on partner data. Also based on Somalia’s trading partners data on imports drawn from UN COMTRADE Statistics, SITC-2; subject to a wide margin of error. Includes re-exports.

3.5 The extent of increases in the values of charcoal and fish production is extremely difficult to assess, but current values can be estimated from export figures in Table 3.2. The value of recorded fish exports was estimated at US\$8.2 million in 2003 compared to US\$17.3 million in 1990; 1990 was an all-time high because of the recently established fish processing facilities on Somalia's north coast. Although the change represented a decline in the recorded value of exports, there has almost certainly been an increase in the value of total exports if the value of illegal fishing (reported to be about US\$90 million per year) is included, even though most of the income from illegal fishing does not accrue to the Somali economy. Despite the illegality of charcoal exports, it is estimated that in 2003 the value of charcoal and fuel-wood exports was US\$8.3 million compared with an estimated US\$0.01 million in 1990 when strict environmental laws and regulations were in place and monitored.

Agriculture Accounts for Most Employment

3.6 Around 70 percent of Somalis are either directly or indirectly employed in agriculture and earn all or part of their income from agriculture (including livestock and fisheries). About 50 percent are associated with the livestock sector either full time or part time. Although it is anticipated that, following a sustained peace agreement, the construction and service industries will grow quite rapidly, agriculture will nevertheless remain a core sector for the economy and hence it will remain a dominant source of employment.

4. OPPORTUNITIES AND CHALLENGES FOR AGRICULTURE

4.1 This chapter will analyze livestock and rangelands, crops and watersheds, and fisheries. It will cover a number of issues facing the agricultural sub-sectors currently and in the future for Somaliland, Puntland, and the South Central Somalia. The analysis will be organized as follows:

- **Vision of future development—status quo or change:** On the basis of research, fieldwork, results from workshops, and surveys in the regions, this chapter will establish a future vision for each main sub-sector. A range of future actions are considered, such as changes from traditional production methods to more modern techniques, different marketing systems, new regulations on private use of public resources, information systems for producers and potential investors for the private sector, or making no changes and reproducing past practices and institutions.
- **Building on the past and future initiatives:** Future strategies will take account of lessons from the past and the incentives for changing traditional approaches to more progressive strategies. There may, however, be very logical and relevant constraints to change such as current policies, production technology, and regulatory systems. These constraints will be evaluated to determine the justification, scope, and method for change and in what time frame. Finally, this section will review cross-cutting issues that are relevant to the productive sectors and the environment, as well as linkages between this and other clusters such as infrastructure.
- **Priority roles of public and private sectors:** The future roles and relative importance of the public and private sectors will need to be evaluated. In this context there will be discussion of how public policy and investment can improve the enabling environment for private investment. Questions will be raised about (i) whether activities currently performed by the public sector could or should be done by the private sector and vice versa; (ii) the constraints to action and the institutional barriers that need to be overcome to energize the government to play its role; (iii) the prospective investments by the private sector; and (iv) the prospects for public/private sector partnerships.
- **Public investment proposals:** Emphasis will be on additional public sector costs. At present public expenditures in Somalia are minimal. Some costs that should ultimately be public may currently be paid by the private sector.

Livestock

4.2 Specific features and problematic issues of the livestock sub-sector will be analyzed for Somaliland, Puntland and Central South, while a common response will be presented for

the three areas. This is in line with the regional dimension (Somali eco-system, comprising Somaliland, Puntland, Central-South Somalia, North-Eastern Region of Kenya, Somali Regional State of Ethiopia and Djibouti) and mode of production of the livestock sub-sector, which is mostly based on nomadic or transhumant pastoralism, with a strong orientation towards exports. The absence of recent and reliable data on livestock production and distribution contributes to a high degree of uncertainty in terms of analyzing and policy recommendation. Therefore the establishment of reliable and updated data and information through robust field research is the essential first step towards the development of any strategies, policies, planning and interventions for the livestock sector.

Somaliland

4.3 Somaliland has an area of about 180,000 square kilometers. Its population is unofficially estimated between 1.7 and 3 million, of which 54 percent are pastoralists, 30 percent agro-pastoralists, and 16 percent urban. Clearly the livestock sub-sector (production, processing, trade and export) dominates the economy of Somaliland and hence one of the most significant sources of employment since much of livestock production and marketing is labor intensive.

4.4 Livestock rearing, trading and exporting represent the dominant productive activity in Somaliland, followed by crops, fisheries, and forestry. The main features of the livestock sub-sector in Somaliland are the low prevalences of important trans-boundary diseases, such as Rift Valley Fever and PPR, the absence of rinderpest, and the dependence on an increasingly degraded, mainly flat, and partly mountainous rangeland that is extremely sensitive to drought. Furthermore, extensive rangeland areas, often the most productive areas of Somaliland, are set aside and fenced (enclosures) to produce fodder for shipped animals and to cater for the forage needs of transit animals, originating either from Somaliland or from neighboring countries. This practice is increasingly constraining free movements of indigenous animals and limiting access to traditional forage reserves, with increased pressure on less productive rangelands.

Box 4-1: Rangeland Enclosures and their Impact

History

In the 1940s and early 1950s there were no rangeland enclosures in any part of the country. Some limited enclosures existed due to the absence of villages and permanent settlements in the mountain and plateau areas, in the north. Colonial administrations made it illegal to have enclosures in communal land. However, there were temporary exclusion zones around nomadic family settlements called *ishimo* or exclusion area, for small and sick animals that could not go to distant grazing areas during the day. These small areas were often respected by the communities that also used the common grazing areas. When the nomadic family moved the exclusion zone did not remain and there was no residual fencing of cut-thorn bushes as is the case now.

Benefits

In the 1950s, the introduction of wells and *berkeds* (water reservoirs) enhanced the partial or complete sedentarization of some nomads, leading to the establishment of enclosures. Most enclosures are for dry-season grazing, commercial fodder production for export animals in Bossaso, and the grazing of lactating animals—no doubt conferring considerable benefits on the few who have established the enclosures. A part of the nomadic family is left in the camp to protect the enclosure. This practice gained momentum throughout Somaliland and Puntland and was copied in many other locations such as the Central Rangelands, particularly close to towns and villages to benefit from the market for milk. As the number of cattle kept in relation to sheep and goats increased, thus requiring more forage, the size of enclosures increased from an average of 2 to

10 square kilometers. In addition, some of the enclosures have been established by internally displaced persons for farming, for the production of fodder for sale, or for keeping livestock.

Negative Impact

Community tolerance for private use of sections of traditional dry-season communal grazing resulted in land degradation due to over-stocking of the remaining areas. A vicious circle occurs: the number and size of enclosures increases precisely because the remaining rangelands become less productive—which leads to more enclosure. Also, the illegal appropriation of valuable resources causes intense conflict.

Solutions

It is suggested that in order to arrest, and possibly reverse, the trend for enclosures, communities and local governments need to take the following community-led initiatives:

- Classify land as agricultural farms and communal rangelands.
- Reconstitute range and livestock associations (which existed in the Central Rangelands) to manage rangelands and forestlands according to the traditionally established right of usage together, and implement modern range-management practices.
- Stop unregulated and illegal enclosures in communal land that is classified as range or forest
- Reintroduce community-managed seasonal grazing reserves with well-controlled stocking rates.
- Establish dry season grazing reserves in each district to reduce conflict over dry-season grazing.
- Introduce technologies for rangeland and forestland regeneration through reseedling, community agroforestry, and soil and water conservation measures such as contour bunding for water harvesting.
- Encourage the cultivation of forage species in oasis agriculture to cater for peri-urban livestock production (such as milking cows) and to maintain export livestock in holding grounds.

Source: Prepared by PSE mission

Productivity under these harsh conditions, measured in terms of lambing or kidding rate, is believed to be low at around 60 percent for mature females. The current age of turn-off of small ruminants is between 2 and 5 years, which mean that turn-off rates are also very low at around 25 percent of the total flock. Most sheep and goats are sold as live animals to Gulf countries, with an unknown number slaughtered at an abattoir in Burao registered with the UAE as suitable for export to Dubai.⁶

Table 4.1: Costs of Livestock Marketing, Hargeisa to Berbera (2005)

Item	Sheep/Goats	Cattle	Camels
Purchase price from pastoralists at Hargeisa (US\$ per head)	25–30	150–200	250–300
Taxes and overheads (So. Sh. per head)			
Sales tax (local government)	1,000	5,000	10,000
MoL	150	1,000	1,000
Transport (Hargeisa to Berbera)	2,000	10,000	20,000
Loading charges	200	3,000	3,500
Water charges	300	1,000	1,000
Total (So. Sh. per head)	3,650	20,000	32,500
Total (US\$ per head) ^a	0.6	3.0	5.0
Purchase cost by exporter (US\$ per head)	25.6–30.6	153–203	255–305
Customs tax	60	400	500
Local government tax (water)	100	1,000	1,000

⁶ No data on production and exports from the abattoir in Burao are published, but it is understood that the abattoir, constructed in mid-2004, has a slaughtering capacity of 1,250 two-year-old goats/sheep per day.

Local government tax (cleaning)	500	2,000	3,000
Veterinary inspection costs	10	50	50
Port charges	200	1,000	1,500
Loading charges	200	1,500	2,000
Sub-total (So. Sh. per head)	1,070	5,950	8,050
Sub-total (US\$ per head) ^a	0.17	0.92	1.24
Development tax (US\$ per head)	3.50	12.50	17.50
Total costs (US\$ per head)	3.67	13.42	18.74
Price to exporter (US\$ per head, fob) 2005 (est)	30–35	250	350
Price to pastoralists as percent of export price	83–86	60–80	71–86

Source: Price to exporter based on Somalia CEM (World Bank, 2006, Annex Table 53), and supplementary information collected by the cluster mission.

a. US\$1.0 = So. Sh. 6,500.

4.5 While there is considerable uncertainty about the number of livestock, the Food Security Analysis Unit (FSAU), as quoted in the Somali Livestock Sector Strategy (FAO/EU/WB, 2004), estimated that in 1999 Somaliland had an estimated 5.8 million head of sheep (50 percent of the estimated total sheep in all Somali regions), 4.8 million goats (30 percent), 1.3 million camels (21 percent), and less than half a million cattle (7 percent).⁷ In 2000 a serious drought began that lasted until 2004, which no doubt resulted in considerable animal deaths and significant migration towards less affected areas. Since then it is said that there has been a remarkable recovery in livestock numbers and that they may now again be close to the 1999 levels.

Puntland

4.6 Despite the substantial increase in the importance of fishing, livestock production and trade are still the dominant economic activities in Puntland. Livestock production has increased rapidly since the end of the four-year drought in 2004 and there has been a substantial diversification of the market for Somali live animals and carcass meat despite the ban on the import of Somali livestock into Saudi Arabia (see Box 4.2).

4.7 As in Somaliland, there is considerable uncertainty about livestock numbers in Puntland. Nevertheless, the FSAU (as quoted in the Somalia Livestock Sector Strategy) estimates about 3.45 million sheep, 7.10 million goats, 0.44 million cattle, and 1.35 million camels in Puntland.

4.8 On the health side, the persistence of Rift Valley Fever (RVF) antibodies observed in young animals reared along the Nugal valley, even during periods of prolonged drought,

⁷ The FSAU estimates of livestock numbers are according to regions in Somalia. The North West region is assumed here to be the equivalent of Somaliland. The last census of livestock was in 1975 and since then estimates of livestock numbers have been made by the government of Somaliland using assumed annual growth rates of 2.4, 1.7, and 1.1 percent per year for goats, sheep, cattle, and camels; but these growth rates were not adjusted to reflect droughts and other factors that affect sheep numbers. On this basis the estimated number of sheep, goats, cattle, and camels in Somaliland in 1999 was 5.66, 10.69, 5.51, and 2.82 million respectively, which is a larger number of sheep and a much larger number of goats.

requires further investigation, especially to identify determinants favoring the circulation of the RVF virus. PPR antibodies have also been detected almost throughout Puntland, while no evidence of RP virus circulation has been detected in recent years. Incidences of other trans-boundary diseases need to be further investigated among resident animals and on risks associated with the transit of export animals through the Bossaso port. This should be within the framework of functional disease surveillance and reporting systems that are capable of providing early warning for effective control of epizootic diseases.

4.9 The deterioration of the rangelands has reduced carrying capacity, mainly because the protection of the nitrogen-fixing acacias no longer exists. Consequently, grass will disappear more rapidly during the dry season and wind erosion will become more severe. Camels will be particularly susceptible to drought, as they can no longer browse the tops of trees and will have to compete with goats for forage at the low shrubs.

4.10 **Vision for the future.** Livestock production, processing, trading and exports will continue to dominate the economies of Somaliland and Puntland as the most important source of household income and economic growth for decades to come. But circumstances have changed and are expected to change further, including but not limited to foreseen negative effects of climate changes. The latter might be dramatic within years and should be considered in the development of the sub-sector vision. The main changes are the absence of the once plentiful acacia and other tree species, very little shade for livestock, increased prevalence of thorny shrubs, and a harsher environment for annual and perennial grasses, substantial soil erosion, and greater overall vulnerability of the rangelands to drought. In these circumstances it is unlikely that the sustainable carrying capacity for small ruminants and camels, and to a lesser extent cattle, can increase much beyond current levels. The question therefore arises whether, with the deterioration in grazing condition of the rangelands and foreseen limited private investments in livestock supporting practices in the rangelands (soil and water conservation, fodder production, veterinary services), the historical pattern of livestock production and trade can be sustained in the future. However, the rapid urbanization and development of major urban settings, such as Hargeisa, Berbera, Burco, Boroma, Erigavo and Laas Anod, coupled with changing eating habits of urbanized Somalilanders and returnees from the Diaspora, may create formidable incentives for intensification of livestock productions, especially dairy and poultry, in peri-urban areas and on more fertile rangelands. This in turn may foster additional investments in the agro-industry, especially in the processing of livestock commodities (meat, dairy and livestock by-products) and the processing industry for agricultural and fisheries by-products used for commercial feeds, to meet the internal demand for more sophisticated products of animal origin and the likely expansion of the export sector, in particular processed livestock commodities.

4.11 However, sectoral policy decisions will also need to include mitigation measures to minimize expected negative impacts of the livestock intensification process on environmental pollution, public health and employment conditions. Intensification of livestock production is usually characterized by higher investments on infrastructures and technological innovations, and imposition of stricter public health measures on products of animal origin. This is often followed by a drastic reduction of employment in the sub-sector, crowding out of subsistence livestock keepers, and unfavorable conditions for poor producers and pastoralists. A typical

example is the dairy ring supplying milk to large urban centers like Hargeisa. The establishment of specialized dairy farms around Hargeisa may have some negative impacts on many small traditional livestock dairy producers, particularly women, who supply milk daily to the town. If development in the dairy sector in Somaliland is to take place, its primary focus should be to attract private investments in milk collection centers in the peri urban areas of towns like Hargeisa in order to improve the collection and quality control of milk gathered from the already existing network of small producers. High demand for fresh cattle milk may encourage and justify the establishment of dairy farms with irrigated fodder in Somaliland.

Box 4-2: Impact of the RVF Import Bans by Saudi Arabia on the Livestock Industry

The import bans imposed on Somali livestock by Saudi Arabia have been devastating to the livestock sector and the incomes of those associated with livestock production and marketing. The first ban was imposed in 1997 and was lifted in 1999; the second ban was imposed in 2000 and is still in force. These bans were first imposed to reduce the risk of spreading RVF virus from Somalia to KSA following the 1997-98 RVF outbreak and the second on a suspicion that an outbreak of Rift Valley Fever in Saudi Arabia had been caused by Somali livestock. The ban caused serious problems in the short term, such as substantial declines in prices for pastoralists. On the other hand it stimulated diversification and a careful review of the real long-term reliability of Saudi Arabia as a trading partner. Some of the results were the construction of additional meat works like the one in Burao, and a substantial focus on trade with the UAE, predominantly through Dubai.

Prior to the ban Somalia exported 3.0–3.5 million animals per year to Saudi Arabia and Yemen. Although some livestock continued to be exported to Yemen, Oman, and the UAE, which lifted their ban, the oversupply to these markets initially depressed the prices of livestock and resulted in considerable economic loss in the marketing chain, and had also negative impacts on foreign currency earnings and the revenues of both Somaliland and Puntland governments.

More recent data indicate that livestock exports have recovered impressively. Sheep and goat exports have increased from 600,000 head following the ban in 2001 to more than 3 million head in 2005/6 despite the continued ban by Saudi Arabia. The domestic prices of livestock have recovered to almost pre-ban levels of US\$138 for camels, US\$80 for cattle, and US\$20–30 for sheep and goats (FSAU, 2004, Annex 3; FAO/WB/EU, 2004). This trend in recovery seems to be continuing based on preliminary export numbers from Bossaso and Berbera for 2004 (FSAU/FEWS, 2004 and unpublished data provided to the mission in 2005) with a substantial increase in numbers exported from Bossaso. These increases took place despite the ban and the four-year drought in the north and the center of the country, although an unknown (but probably large) number of sheep originated from Ethiopia as well as a sizable number from the central and southern regions. The higher numbers of livestock exported from Bossaso compared to Berbera are probably due to (i) the higher port taxes levied in Berbera; and (ii) the proximity of the UAE and Oman markets to Bossaso, which became more important following the closure of the Saudi market. The Saudi market would logically be supplied by Berbera, which is closer to Saudi Arabia.

Source: FAO/WB/EU, 2004; SLSS ; FSAU

4.12 The future of the livestock sector needs to be considered in relation to the most effective use of natural resources and improved approaches to export inspection and certification. It is not likely that the numbers of sheep and goats can be increased much beyond current levels because the natural resource base has changed significantly for the worse. As discussed in the section on Somaliland, the main changes are the absence of the once-plentiful acacia and other species, almost no shade for livestock, increased prevalence of thorny shrubs, a harsher environment for annual and perennial grasses, substantial soil

erosion. Overall, the rangelands are more vulnerable to drought. Another negative development is the unregulated opening of roads by trucks through important grazing land, which has resulted in gully formation. The government needs to regulate and plan the rural road network to mitigate soil erosion and gully formation. For these reasons, the sustainable carrying capacity of the rangelands for sheep, goats and particularly camels does not seem to be able to increase much beyond current average levels.

4.13 While there is lack of empirical evidence on the livestock capacity of the rangelands, some existing information indicates the severity of those problems faced by pastoralists. While the number of sheep and goat exports has been rising in recent years, the available information suggests that conditions of the rangelands in an area such as Sanaag (about 4.9 million hectares or the size of the Dominican Republic) is in a severely degraded condition. For example, Africover used aerial photography to estimate that in 2000 only 37 percent of the Sanaag area could be classified as “Very Open Trees, Shrubs and Woody Vegetation” and 52 percent was classified as “Shrub Savannah” (<http://www.africover.org/>). Reforestation and soil conservation can be used to achieve substantial changes, but it will take considerable resources and time. The long term sustainability of the export of live animals may be seriously compromised by the limited availability of good fodder supply to feed animals while resting at the vicinity of the port and on the ship. Supplying animal feeds from distant areas may soon become uneconomical, especially if traditional export ports, such as Mogadishu and Kismayo will resume livestock export activities.

4.14 The vision for the livestock sub-sector depends on the socio-economic developments in the areas and future evolutions in South Central Somalia. Proximity to large and diversified animal commodity consumption centers in and around the Horn of Africa Region and the Arabian Peninsula may favor the development of an important livestock processing industry for native and imported animals from neighboring regions. The expansion and urbanization of local populations may prove a strong incentive for intensification on animal production, especially in peri-urban areas and in the most productive rangelands. Oasis agriculture in more arid areas may also become an important source of fodder to sustain intensification of animal production and overseas export.

South Central Somalia

4.15 The area known currently as South Central Somalia stretches from South Galkayo to the border with Kenya. It is bordered to the east by the Indian Ocean, to the north by Northern Mudug of Puntland, to the south by Kenya and to the west by Ethiopia. It consists of 11 regions and 56 districts, excluding the Banadir region (CRD, 2004). South Central Somalia covers a larger area than either Somaliland or Puntland and is endowed with considerable agricultural resources between the country’s only two permanent rivers—the Shabelle and Juba. The area is also home to the most productive agro-pastoral activity in the Horn of Africa, possesses zones of acacia forest (though presently threatened by excessive charcoal production), and features a long coastline with rich fish resources that are also threatened. South Central Somalia covers a wide spectrum of environments, climates, landforms, and natural resources, from the dry central rangelands to irrigated areas along the Shabelle and Juba rivers to the lush forests of the Upper Juba.

4.16 South Central Somalia has been the most severely affected by the 15 years of civil war. This area is home to a wide spectrum of warlords, different militias, and political factions. Frequent land and property disputes, competition for natural resources, forced displacements of ethnic minorities, and expropriation of their lands through coercive action by warlords and rival clans make the South Central area still prone to armed conflict and severe violence. A number of critical issues, such as land disputes over the most fertile areas of South Central Somalia, are still unresolved and continue to be one of the most serious obstacles for the recovery of the productive capacity in this area.

4.17 The livestock sub-sector in South Central Somalia is divided into four distinct zones: the extensive pastoral, rain-fed agro-pastoral, irrigated crop-livestock, and coastal. The production and marketing issues are very different in each of these zones and hence the needs and investment priorities also vary.

4.18 Apart from the Central Rangelands, the livestock sub-sector in this region is different from Somaliland and Puntland. There are also substantial differences within the region such as the Central Rangelands, the agro-pastoral areas of Bay, Bakool and Gedo, the irrigated areas supported by the Shabelle and the Juba rivers, and finally the coastal plains. The four major livestock production systems are summarized in Box 4.3. The variations between livestock management systems are caused by different climate, topography, soil, and water resources. Generally, however, one significant difference between South Central Somalia and Somaliland and Puntland is the much higher agricultural and livestock productivity thanks to higher rainfall, availability of permanent rivers and better integration between crop production and animal keeping.

4.19 A second difference is the much higher number and proportion of cattle among the total livestock numbers. The Lower Juba region, with an important network of alluvial plains, *laq*, is sustaining one of the highest concentrations of transhumant cattle in Africa. In 1999 this region was estimated to have had about 2.55 million sheep, 4.28 million goats, 2.87 million cattle, and 3.64 million camels.⁸ Another feature is the more diversified production and marketing framework. On the production side livestock grazing in the Central Rangelands is similar to the Northern Rangelands, but in the South production systems also include intensive feeding in urban and peri-urban areas for milk production, the use of highly productive pastures, and the use of crop residues as animal feeds in the irrigated and agro-pastoral areas and riverine zones. Finally, marketing is also more diverse, with four abattoirs (three of which are in operation) that produce for both the local and export markets, and vibrant cattle markets in Kenya as well as trading of animals to the north to Bossaso for sale in Gulf markets.

Box 4-3: Summary of Livestock Production Systems in South Central Somalia

Extensive Pastoral Zone

This system, comprising mainly camels and goats, is the predominant land-use system in the drier, interior thorn bush zone. It consists of the interior Haud plateau and western Hiran, offering browse vegetation for camels and goats. Sheep are also kept to utilize all available ecological niches, minimize risks, and for meat production. Cattle are rare in this zone and more or less limited to areas close to the Shabelle River. The main production objectives are subsistence and exchange of animal products for

⁸ FAO, Food Security Analysis Unit.

sorghum, rice, and sugar. However, the tendency towards commercialization of livestock and diversification (mainly cultivation of water melons or urban employment) is increasing. Land degradation is evident, particularly around permanent water points. The deciduous plant cover seems to be protected from severe overuse by defoliation, but the evergreen plant species which provide fodder in the dry season are threatened.

Agropastoral Zone

Two principal and interrelated land-use systems are practiced in this system: pastoralism and shifting cultivation, which spreads into Western Hiran. Crops (mainly sorghum and cowpea) are grown in thorn bush-fenced enclosures to prevent livestock from entering the field crops. Single plots are cultivated for 3 to 8 years, depending on potential soil fertility. Thereafter the farm is fallowed for 15 to 20 years although it may be used to confine livestock as long as the thorn bush fences are maintained. For the last 200 years, the primary shifting cultivation areas have moved across the region in a very swift manner. Typically, a particular productive area is used by many agropastoralists until fertility is exhausted. Then a mass movement to another area takes place and after probably 100 years, the original locality may be used again. Whether these long-term fallows are now possible can neither be supported with solid data nor proven by empirical observation. In addition to the shifting cultivation practice, most farmers own a mixed herd of camels, goats, cattle, and sheep. The herds depend on grazing communal rangelands close to the cropping area for most of the year, but benefit greatly from sorghum and local cowpea crop residues during the dry season.

Smallholder Crop/Livestock Zone in the Shabelle and Juba River Valleys, Bay, and Bakool

In areas close to the river, irrigated agriculture with river water is practiced, while farther away, rainfed agriculture is predominant. Pastoralists also use areas quite distant from the river, but need access to the river for watering their animals. In terms of ecology, this area, and particularly the alluvial plain, is distinct from other areas due to its long history of intense settlement and cultivation, and long and uninterrupted use of livestock. As a result of these two factors, the present vegetation deviates vastly from its natural vegetation state and has the poorest range resources of all other regions of the Central Rangelands. The range conditions improve with increasing distance from the river towards the escarpment. The main reasons for the degraded state of the range can be sought in shifting cultivation, indiscriminate tree cutting, and heavy stocking rates.

The Coastal Plains

The major economic activity in this system is migratory pastoralism, complemented with traditional fishery. Cattle, sheep, goats, and camels are raised, but sheep dominate and camels are relatively few. Livestock movements reflect rainfall occurrence, its temporal and spatial variations, outbreaks of biting flies, and the presence of permanent water resources in the dry season. Grazing animals (sheep and cattle) use the coastal grass nearly all year round. The economic development of the coastal areas is greatly hampered by poor infrastructure and lack of marketing opportunities. Large-scale sheep herding with large herd sizes (estimated herd size is over 200 animals) is widespread along the coastal areas, but a regular turn-off of these herds is severely hampered by the absence of regular market links due to the poorly developed infrastructure and the current insecurity. Ambitious plans from the early 1980s to develop the coastal economy for large-scale livestock exports have apparently failed, and since 1989 these areas seemed to be lying outside of the interests of any group. Another environmental concern affecting particularly the coastal areas is the wind-borne movement of sands and the increased formations of mobile sand dunes in the narrow coastal strips.

Source: Little, 2003.

Vision for the future. Assuming broad-based reconciliation and peace, the livestock sub-sector is expected to return as a vital part of a mixed agricultural/livestock economy in South Central Somalia. The first aspect of the vision is the rehabilitation of the four production systems (Box 4.3) that were buoyant and remunerative before the civil war—each with their own strengths and challenges. Apart from the Central Rangelands and the coastal plains,

livestock elsewhere are likely to be again well integrated with crop and fodder production if key factors affecting the integration are effectively addressed. The second aspect of the vision is the strengthening of veterinary services to monitor and control major infectious trans-boundary diseases and those diseases affecting domestic production. The third aspect of the vision is the substantial diversification and expansion of cattle markets from the traditional market of Mogadishu to new market opportunities at Garissa in northern Kenya. This market opportunity will likely continue because of the rising demand for beef in Kenya for domestic consumption but also for re-exports. Trade in Somali cattle at Garissa has developed in close collaboration with Somali cattle traders in Kenya.⁹ The fourth aspect of the vision is the adding of values to processing and branding of livestock commodities. With the largest population residing in Central South Somalia, the rapid urbanization towards large (Mogadishu) to medium towns (Kismayo, Galkayo, Baidoa, Beled Weyne, Merca), better infrastructures for export purposes (ports, airports and slaughtering/processing plants) and fodder resources, the livestock sub-sector could greatly benefit from improved peace and security and large private investments. Support should go towards intensification and diversification of animal production to cater for increasing demands for both live animals and products of animal origin such as hides, skins, meat, milk and leather. The higher purchasing power of urban residents especially in Mogadishu, the different eating habits of dissimilar segments of the local population, expansion of the agro-processing business, and supermarketization of the distribution system may also stimulate demand for more sophisticated and diversified products of animal origin. The availability of abundant pasture along the alluvial plains of the Shabelle River may become an important source of fodder for intensive dairy and beef production for local consumption or for export purposes. Another potential way of adding values to the Somali livestock sub-sector is the promotion of genetic and productive traits of the vast and varied Somali animal breeds and populations through better characterization.

Table 4.2: Trader Returns from Cross-Border Trade of Cattle to Kenya

Item	Cattle (US\$ per head)	Return to operators (%)
Initial purchase price from herder	108.00	
Purchase price from middlemen (Afmadow)	128.0	
Transport costs (Afmadow to Garissa)	3.00	
Hired herd labor	1.60	
Security/transit fees	0.40	
Water, 50 @ \$0.08 per day	4.00	
Medicine/dips	1.82	
Fodder (Garrisa market, dry only)	0.60	
Risk from loss (theft, drought, etc.) 6%	7.68	
Broker fee (Afmadow)	1.25	
Broker fee (Garissa)	1.67	
Council tax (Kenya)	1.33	
Currency transaction/conversion fees	5.28	
Costs for Somali trader	156.63	
Sale price, Garissa	176.00	
Return for Somali trader		15
Transport cost (Garissa to Nairobi)	20.15	
Movement permit fees	1.33	
Hired labor	0.33	

⁹ During 1998 the value of cattle sales in the Garissa market had reached about US\$11.78 million.

Water	1.00	
Fodder (Garissa and Nairobi)	0.60	
Market/municipal tax, Nairobi	1.33	
Broker fees (Garissa)	1.67	
Broker fee (Nairobi)	2.50	
Costs for Kenyan trader	204.91	
Sale price, Nairobi	233.00	
Return for Kenyan trader		16
Margin between purchase from Somali middleman and final market price in Nairobi	105.00 (82%)	

Source: Little, 2003.

4.20 The vision for sheep and goats is a continued growth in the demand for animals for export sales of carcass meat to the Gulf countries and others, using abattoirs that already exist in South Central Somalia. However, they will require upgrading to ensure certification by authorities in purchasing countries. Demand for sheep and goats may also be increased if processing plants to transform carcasses of small ruminants, cattle and camels will be established in Central-South Somalia to satisfy internal and regional demands for processed products of animal origin. (see Box 4.3) One area for which it is presently difficult to establish a vision is the future of camel rearing and marketing. The browse available for camels has declined because of extensive destruction of tree and shrub areas, but the development of crop land and the expansion of various commercial uses of land results in the further dwindling of browse species that camels thrive on. Therefore, without successful reforestation, the camel population is likely to continue declining. At the same time, the interest in camel products such as camel milk continues to grow and this may provide a valuable avenue for diversification of the livestock sector in the South Central, although serious production constraints such as feeding will need to be addressed.

4.21 **Future initiatives built on experience.** The priorities for sustained development and income generation for most livestock enterprises in low-income countries are the quality of grazing, sound animal health, efficient marketing and the presence of strong, well organized and competent private and public institutions. Similar conclusions have been reached in the Somali Livestock Sector Strategy (SLSS), which suggests that, based on past experience, the future strategy for the livestock sector in all Somali regions should be based on three pillars and one cross-cutting issue. The three pillars are (i) livestock management and diversification of production, feed supplies, and nutrition; (ii) animal health and disease control; and (iii) livestock marketing and trade. The cross-cutting issue is human resource capacity building and institutional strengthening (FAO/EU/WB, 2004). Box 4.4 discusses in more detail the genesis of the SLSS and the conclusions and actions that emerged.

Box 4-4: Somali Livestock Sector Strategy

Background

In 2004, the World Bank, FAO, and EU agreed to finance the preparation of the Somalia Livestock Sector Strategy (SLSS). The formulation of the SLSS was a participatory process with all the key stakeholders involved. The process included field visits, four regional workshops in Somalia, and a Consultative Stakeholder Workshop in Nairobi with Somalis and representatives from the international scientific and donor community participating.

Agreed Strategy

Four interdependent strategic pillars were identified as the basis for the livestock strategy: (i) animal production

and related ecology, (ii) animal health and disease control, (iii) livestock trade and marketing, and (iv) human resource capacity building and institutional strengthening.

Follow-up Initiatives Underway

- The Puntland Pastoralist Program (PPP), funded by the World Bank's Low Income Countries Under Stress (LICUS) program and the Swiss program Humanitarian Aid, and implemented by CARE and VSF-Suisse, was initiated in November, 2004, in Bari, Mudug, and Nugal regions of Puntland. The project aims to achieve (i) increased access to essential animal health services for the target pastoral communities, and (ii) improved understanding and consensus among stakeholders on natural resources management needs.
- The Sheikh Technical Veterinary Institute was established in 2001 by the Italian NGO Terra Nova, with funding from the EU/Government of Italy in Sheikh, Somaliland, to train new generation of middle-level animal health professionals. Students come from all parts of Somalia. The Institute had its first student intake in 2005.
- A program called Export and Certification of Livestock for Export (EXCELEX), funded by Italy, was launched in 2003 with the objective of harmonizing regional inspection and certification of livestock exported from the Somali National Region States (SNRS) of Ethiopia, Puntland, and Somaliland. The project has collected livestock data, trained 60 veterinary staff from the SNRS, conducted an epidemiological survey of Rift Valley Fever, and established serum banks in Somaliland and SNRS. See the Web site for more information (http://www.fao.org/tc/tcdm/italy/op_int811_en.asp).
- The World Bank's LICUS has funded support to Livestock Boards, implemented by UNDP and FAO. The project has three components: (i) support for Somaliland and Puntland Boards, and eventually a Benadir Board; (ii) capacity building for national veterinary officers involved in export inspection and certification of livestock; and (iii) development of plans and design for livestock holding grounds and quarantine stations in Somaliland and Puntland. Progress made includes the following: (i) in Somaliland, draft Board Act prepared, Board members nominated and Field Manager, National Veterinary Officer, and Certification Monitor recruited—all based in Hargeisa; preparation of Veterinary Code well advanced; (ii) in Puntland, draft Board Act prepared, Board Members being finalized with stakeholders, and Veterinary Code also in process and well advanced; and (iii) in South Central Somalia, plans for a Livestock Board being considered.
- An overall Somali Livestock Board is also being considered but would only be feasible if there were a comprehensive peace agreement.
- SAHSP, TN-Livestock Trade and Marketing, FAO –pastoral livelihoods project (meat), VETAID-VSF Somali Pastoral Dairy Development Project, BBC Livestock Livelihoods Distance Learning Project to be included

Source: FAO/EU/WB, 2004.

4.22 Albeit peculiarities and specific problematic issues were identified in Somaliland, Puntland and Central-South Somalia, similar interventions will be required to strengthen the livestock sub-sector within the three zones. Furthermore, taking into account the fact that Somali animals are reared and marketed over a much larger area (i.e. the Somali-ecosystem, composed of Somaliland, Puntland, South-Central Somalia, North-Eastern Province of Kenya, Somali Regional State of Ethiopia and Djibouti) a regional approach to address livestock production and health, trade and marketing is deemed to be more appropriate and effective.

4.23 Somali livestock production may remain a sustainable source of livelihoods for Somali people, and a substantial contribution to national wealth if a number of conditions are

fulfilled. These include unrestricted animal mobility; improved terms of trade, in monetary and caloric terms, between livestock producers and consumers; availability of specialized support services designed for pastoral production systems; presence of competent, transparent, democratic and accountable private and public institutions serving and governing the production, trading, marketing and processing of livestock commodities; presence of suitable regulatory frameworks and long term policies guiding the sub-sector and favoring private investments in infrastructural development and technological innovations for processing, marketing of livestock commodities and the provision of specialized services; a clear integration and harmonization of livestock practices at regional level, at least within the Somali eco-system. Substantial investments will be required to sustain and to strengthen the sub-sector with competent human resources along the chain, from producers to consumers, and in the public administration. Some key strategic areas of interventions will be:

- Develop long term strategies and policies for the livestock sector based on a regional (Somali eco-system) approach based on sound and reliable data on livestock distribution, including a statistically valid estimate of the livestock population and productions. A sectoral livestock strategy has already been developed by WB/FAO/EU (see box 4.4) but a more focused and longer term framework is required, especially in terms of strategic objectives (mass production or niche/organic markets) and modalities to achieve them in the next 10-15 years. The development of sound policies and strategies and their monitoring will urgently require the generation of reliable data on animal production, health status and livestock distribution/density.
- Rebuild/strengthen Public and Private Institutions supporting and regulating the Somali livestock industry (production, trade, marketing and processing). Democratic, transparent, accountable and competent public institutions at different administrative levels (Federal, State, Region and District) and private organizations/associations are required to regulate and guide livestock development. The public sector should mostly focus not on implementing but instead on devising and monitoring in partnership with the private sector, designing sectoral policies and strategies, developing regulatory frameworks, funding, supporting initiatives such as surveillance of important epizootic and zoonotic diseases, animal health inspection and certification, quality control systems, and maintaining institutional links with other relevant Ministries and public administrations and international public organizations. The private sector (producers, processors, traders and other service providers) should become more organized and should be able to supply, to finance most of support services (curative veterinary services and vaccination programs), and to self-regulate the sector and implement animal disease surveillance programs under contract and with supervision from the public sector. The private sector may also become a very important actor in establishing “livestock chain compartments” and ensuring the enforcement of bio-security measures.
- Develop/strengthen animal disease surveillance, inspection and certification systems to enhance food safety and public health. Organized and well trained public veterinary services will be required to design, coordinate, supervise and partly fund animal disease surveillance programs; develop inspection, certification and external quality assurance systems for livestock commodities, either for domestic consumption

and use, or for export purposes. The surveillance system should be initially targeted at important domestic or regional trans-boundary diseases, domestic zoonosis and other food borne diseases, and animal diseases that are part of regional or global control or eradication programs. Public veterinary services should, as much as possible, contract the private sector to carry out surveillance (disease monitoring, surveys and control measures) related activities. The structure of public veterinary services should be able to effectively perform this role without building a huge bureaucracy just for the sake of employment creation. Surveillance systems should also be supported by a network of diagnostic facilities. While it is important to build local capacity for routine disease diagnosis and laboratory testing, in the short and medium terms, the use of regional reference laboratories should be explored in order to better prioritize and target longer-term investments in this endeavor. The use of accredited regional diagnostic facilities may also increase transparency of the Somali animal health certification system and enhance the confidence of trading partners and other veterinary authorities while facilities in Somalia are under development. In consideration of the prevalent Somali livestock production mode, nomadic and transhumant, novel epidemiological tools, adapted to very mobile animal production systems, should be developed and internationally validated to sustain the health inspection and certification system. Furthermore, the possibility of establishing “chain compartments” in the livestock sub-sector, from primary markets to export outlets and processing plants, should be strongly pursued. The compartmentalization of some animal productions may overcome one of the major constraints in the establishment of disease/infection free zones in an area like the Somali ecosystem, where high animal mobility and the absence of reliable natural or artificial barriers seriously hinder the creation of zones. The compartmentalization approach has also the merit of giving a prominent role to the private sector in the establishment of compartments and enforcement of biosecurity measures. The public sector will however maintain the responsibility of verifying the application of biosecurity measures and certifying health standards and procedures. The risk prone nature of the livestock sub-sector in the Somali eco-system strongly advocates for the establishment/strengthening of emergency preparedness and response systems, contingency planning and establishment of contingency funds to address disasters. Finally, the development of new technical veterinary cadres, to staff the public administrations and to be engaged in the private sector, will require major investments to establish/strengthen a veterinary faculty and/or veterinary technical schools.

- Promote PPPs for the provision of livestock specialized services (veterinary services, trade, marketing, processing and research), the rehabilitation of infrastructures and the establishment of value adding plants (slaughtering, processing and branding) for animal commodities. Major investments for the rehabilitation of livestock related infrastructures should remain under the sole responsibility of the private sector. Important infrastructures are required to enhance livestock intensification and diversification (dairy and poultry farms), to support marketing and export (water supply, shelters, holding grounds, loading ramps), to add value to animal products, (abattoirs, processing plants, branding and development of new products) and by-products (offal, hides, skins, bones). The public sector should only develop legal and regulatory frameworks to foster, regulate and protect long term investments. In the

initial phase, when technical competence is still limited, the public sector may be encouraged to conduct feasibility studies to identify investment opportunities in the livestock sub-sector and to develop business plans to be offered to the private sector. The provision of livestock support services (veterinary services, marketing, research and development) should be privatized as much as possible, either through sanitary mandates to private veterinary professionals and/or contracting out most veterinary interventions. Research priorities and activities should be defined by the public sector, in strong consultation with the private sector, but should be financed by the latter. This will ensure that research investments will only address immediate needs.

- Support better integration of livestock production and agriculture by addressing key factors affecting the integration such as tsetse fly transmitted trypanosomiasis. In order to increase animal productivity and improve the sustainable use of rangelands, better integration of crops and their by-products with animal keeping is required. While this is often the case with agro-pastoralists, some problems are appearing in high potential areas, especially irrigation schemes, where permanent segregation between crop and animal productions is often attempted. Policies to favor a flexible and integrated use of fallow lands, service areas and post harvest re-growth in irrigation schemes should be developed. The promotion of agri-business industries should also take into account the possibility of processing crop and abattoir/ fisheries by-products locally, so as to generate by-products that can become an important source of feeds for the livestock industry.
- Foster the intensification and diversification of livestock productions (e.g. dairy, poultry, honey) in high potential and peri-urban areas, the promotion of environmentally sensitive animal rearing practices in the rangelands, and the maintenance of linkages between different livestock keeping systems (rangelands, high potential and peri-urban areas) and stratification within the eco-system. The likely expansion of local demand for products of animal origin, due to increased population and enhanced purchasing power, coupled with the likely strong expansion at the regional (Horn of Africa and Middle East regions) and global levels, will offer strong incentives for the livestock industry to intensify and diversify production. The emerging niche markets for organic animal products and the additional ethical and religious values attached to certain animal keeping practices, especially among Muslim consumers, may create additional market opportunities for Somali animal productions. The Somali livestock industry is in a position to benefit from these strong incentives, especially organic production and ethical/religious practices, providing that livestock qualities are not compromised by pollution, often associated with the intensification process, and the traditional mode of production is not substantially changed. Intensification and diversification will most likely be only possible in high potential and peri-urban areas, but should affect dairy and poultry productions only. The low availability of grains and animal proteins for feeding chickens and dairy animals may however pose serious constraints to the expansion of these two enterprises. By-products of local fishing industries and low quality dry fish meal may become an important source of cheap animal proteins. Instead of promoting intensification or diversification of animal production in the more arid rangelands, where high risks associated with unpredictable weather conditions and fodder

availability are common, it is believed to be more appropriate to focus on interventions that can improve terms of trade between producers and consumers and add value to animal production. Local processing and branding of products of animal origin, especially for the export sector, may increase livestock values at the producers' level and better integrate marginal pastoral communities in the mainstream economy. Furthermore, local processing will create additional employment opportunities in the industry and favor better recycling of biomasses (rumen contents, animal non-edible by products) at local level.

- Facilitate linkages between Somali public and private institutions with similar bodies in neighboring countries and trading partners, and regional and international specialized organizations. The survival and expansion of the Somali livestock industry cannot be guaranteed at the national level, but require strong integration at regional, eco-system- level, due to its prevalent mode of production and trade. External linkages, at commercial and technical levels, are therefore becoming important for the industry and Somali institutions, public and private, requires skills and resources to engage with trading partners and technical bodies to promote export and gain the confidence of trading partners and neighboring countries on the quality and safety of animal commodities through the establishment of the proper and internationally recognized certification systems.

Crops and Watershed Management

4.24 About 39,000 families are involved in crop production in Somaliland. Rainfed crops include sorghum, maize, cowpeas, groundnuts, and sesame. Irrigated crops are citrus, papaya, guava, watermelons, and vegetables such tomatoes, onions, cabbages, carrots, and peppers.¹⁰ Cereal production declined from 35,700 tons in 1988 to 18,500 tons in 2001, or a decrease of 50 percent, due to the displacement of farming families during the civil war (ADO, undated). However, as a result of the prevailing peace and the return of displaced farmers with considerable experience in rainfed and irrigated oasis crop production, both cultivated areas and traditional crop production are expected to increase in western areas such as Awdal (World Bank, 2006). There also is potential for expansion of rainfed and irrigated oasis agriculture along the entire coast from the Awdal region in the west to the mountainous parts of the Sanaag region in the east. In addition to cultivated crops, the Sanaag region has the potential to produce substantial quantities of frankincense and myrrh for export.

4.25 **Vision for the future.** Agricultural crops will never be a major subsector in Somaliland, which will almost certainly remain a net food importer financed by exports of livestock, fish, and forest products. This would be an efficient strategy given the high cost of producing food in most parts of Somaliland and its comparative advantage in the production

¹⁰ The area with high potential for producing crops, both rainfed and irrigable, is estimated to be about 50,000 hectares. However, currently only 15,400 hectares are rainfed and 2,000 hectares are irrigated. In order of importance, crop cultivation in the regions of Somaliland are as follows: West (9,800 hectares rainfed and 800 hectares irrigated), Together (2,400 hectares rainfed and 250 hectares irrigated), Sanaag (1,800 hectares rainfed and 350 hectares irrigated), Awdal (1,350 hectares rainfed and 700 hectares irrigated), and Sool (50 hectares rainfed). Source: ADO, undated.

of livestock. Nevertheless there are opportunities in rainfed areas such as the Awdal region and oasis agriculture throughout the regions for the production of increased quantities of fruits, vegetables, grain crops, and fodder. The vision is for higher yields in these locations along with reduced variability of both yields and production, which should result in higher returns to investment and contribute to income generation, poverty reduction, and food security. In mountainous areas there are sound prospects for the efficient production of frankincense and myrrh, so long as problems of environmental degradation (mentioned in Chapter 1) and marketing (which is made difficult by remoteness and rough roads as well as inadequate market information) are resolved.

4.26 Future initiatives built on experience. Irrigated oasis and rainfed agriculture based on contour bunding for soil and water conservation in the Awdal and Hargeisa regions were introduced during the colonial period. These practices were expanded and improved by the North West Agricultural Development Project funded by the World Bank in the 1970s and 1980s, and currently are sustained by the International Fund for Agricultural Development (IFAD), with the support of the Belgian Survival Fund (BSF), and other donor grants.

4.27 The civil war resulted in the displacement of many farming communities, members of which took refuge in neighboring Ethiopia. However, following the Boroma peace agreement in 1993, some recovery was achieved in both rainfed and irrigated oasis agriculture. This recovery included the Northwest Integrated Agricultural Development Project (NIADP), implemented by the BSF and IFAD, and additional support from several international and local NGOs that provided valuable technical and financial assistance to farming communities. One such initiative in the Dur-Dur Watershed of the Baqi district (Awdal region) was carried out by the NGO German Agro Action (GAA) and funded by the EU. The initiative could be expanded to the Lughaya district on the coast, where more oasis agriculture is feasible (GAA, 2006). It helped prevent soil erosion and promote watershed development, developed *wadi*¹¹ and oasis agriculture in mountain areas, provided women's training, and funded small rural enterprises. Investments are envisaged to build on and scale up these past and ongoing activities using proven and new technologies applied to wadi and oasis agriculture.

4.28 *Incentives for change* include a growing demand for food by an increasing urban population, as well as a growing demand for animal fodder by the pastoralists in dry season and for export livestock. These factors, together with improved technologies, provide the incentives for the intensification and expansion of production and marketing of crops for both human consumption and livestock fodder. In a food deficit area the marginal net benefits of efficient additional food production are likely to be high and hence additional investment should be economic if the focus is high-value crops such as fruits and vegetables in addition to high-quality fodder crops.

4.29 *The main constraints* facing crop production are as follows: (i) arid and semiarid environment and the risk of droughts and irrigation water scarcity; (ii) lack of immediately available, up-to-date agricultural technology such as improved seeds and planting material, along with relevant inputs and services such as fertilizers, pesticides, farm equipment, and

¹¹ A wadi is a stream bed that is usually dry except during the rainy season, when it often forms an oasis.

agricultural credit and extension; (iii) degradation of land in both rainfed and irrigated areas resulting from the removal of tree cover for charcoal production and the absence of soil conservation structures; and (iv) lack of access roads in some agricultural areas such as Sanaag and Awdal.

4.30 The priority roles of public and private sectors. Crop production and marketing are (and should be) completely private and will continue to be so, however, there are vital roles that the public sector must play in order to enhance the productivity and the sustainability of the subsector and to create a positive environment for private sector investment in crop production, processing, and marketing. Options include the following: (i) a research and extension system funded by the public sector but implemented by universities, (such as the Faculty of Agriculture at Amoud University), the IFAD project, agricultural associations such as ADO, and international and local NGOs; (ii) improvement of rural access roads; (iii) facilitating availability of agricultural inputs by providing a favorable environment for their importation and marketing; and (iv) community-driven soil and water conservation measures (Qassim, 2006).

4.31 The government, with funding from the donor community, could establish a competitive fund for the financing, adaptation, and generation of innovative agricultural technologies. Institutions that provide agricultural services could apply for funding. In addition, links could be established with the Association for Strengthening Agricultural Research in East and Central Africa (ASARECA) and the Consultative Group for International Agricultural Research (CGIAR), which are research centers that are backstopping ASARECA's regional networks, in order to access existing technologies and germplasm.

4.32 Public investment proposals. On the basis of the issues facing crop production in Somaliland a number of priority project proposals for a five-year period have been designed and are *recommended*. They are discussed in more detail in Chapter 6 and in Table 6.2 in the results matrix for Somaliland. The proposed investment program aims to improve the capacity of community, local, and national service providers to provide agricultural support services and safe water; support activities aimed at increasing agricultural and livestock production; and establish sustainable mechanisms for on-farm and off-farm income-generating schemes in rural and peri urban areas. The program is an extension of activities of NIADP into the potentially high-production regions of southern Awdal, south western Galbeed, northern Togdher, and northern Sanaag.

4.33 Investment is *recommended* in the coastal, highland, and plateau areas and would focus on enabling communities to implement watershed management, such as contour bunding, oasis irrigation, and agroforestry. The program also *recommends* technical support for introducing intercropping, crop rotations, and diversification of crops, including the domestication of frankincense, composting and manure utilization, fodder production and preservation, new ploughing techniques, and postharvest technology. The technical support should also facilitate introduction of a few coastal access rural roads, rural water facilities, rural financial services, and capacity building of rural government and community workers through community-driven development (CDD). Technical assistance should cover the

Guban coastal plain, mountain areas, and the plateaus of all Somaliland regions. The total cost of the proposed five-year program is estimated at US\$19.6 million.

Fisheries

4.34 Somaliland has a promising fishing sector in fairly good condition except for the lobster resource, which is considered to be in a state of depletion. Fresh fish are harvested out of Lodo, Zaila, Berbera, Karin and Las Qorey.¹² In the Lodo/Zaila area, fishermen have penetrated the Djibouti market, where they sell their fish through informal arrangements. Fishing operations ownership, management of fishing gear, and industrial fishing are male-dominated activities. Women dominate the sale of fresh fish in local markets. There are, however, an increasing number of women who are using snap-freezing facilities and mobile freezer trucks to supply domestic markets in Burao, Hargeisa, and Berbera, and international markets in Ethiopia and Djibouti. Quantities per entrepreneur can be as high as 100 metric tons per month in both domestic and international markets.

4.35 The total annual fish production potential from all boats, including local- and foreign-licensed boats, is estimated at between 13,000 and 19,000 tons for all species. Large pelagic fish such as tuna and kingfish account for 43 percent of production, compared with the total potential catch for all Somali regions of between 162,000 and 233,000 tons (see Annex H, Table H1). These estimates reflect the much shorter coastline that Somaliland has compared with the two other regions. Indeed, Somaliland has only 8 percent of the total EEZ. At a fob price of US\$2 per kilogram based on current practices and sales in Gulf markets, the average annual value of the potential fish catch for Somaliland would be about US\$32 million; but much of this is being acquired and sold by off-shore foreign vessels without a license and outside the regular channels. Compare this with the value of exports of one million sheep and goats in a year from Berbera, which could have an annual value of around US\$67 million. If appropriate export certification for fish could be obtained through the establishment of modern fish processing plants, the value of the fish catch might be doubled.

4.36 **Vision for the future.** The Ministry of Fisheries and Coastal Development envisages that the fishing industry could become a good source of employment and income generation based on a strong role by the private sector, including foreign investment (Republic of Somaliland, 2006). Growth of the fishing sector should be a force for poverty reduction for the relatively poor Somalilanders along the north coast. This vision encompasses important roles for both artisanal fishermen and large-scale commercial fishing enterprises, whether they are Somali or foreign financed. A strategy for the sector should focus primarily on the development of legal and regulatory frameworks for effective marine resource management while infrastructure investments for this sector should be left to the private sector. A Policy White Paper on Marine and Coastal Resources in Somaliland was endorsed by the then President of Somaliland on December 12, 2000. The paper sets out principles and objectives for the use of marine and coastal resources.

¹² Note that there is no clear agreement whether Laas Qoray is within Puntland or Somaliland. This report has therefore chosen to discuss activities in Laas Qoray as part of both Puntland and Somaliland.

4.37 **Future initiatives built on experience.** Fishing on the coast of Somaliland has had a long history and ports such as Zaila, Berbera, Karin, and Las Qoray have been important fishing centers and the locations of substantial fish processing centers.¹³ The former North East Coast Fishing Company (NECFISH) plant in Berbera, financed by the World Bank and other donors, has been leased by the Somaliland Fishing Authority to an Italian fishing company (Nicola Fishing). Preparatory works and procurement of most of the equipment and machinery required for operation of a rehabilitated fish processing plant have been completed. The company's aim is also to upgrade the fishing skills as well as improve fish handling and mechanical repair of boats and equipment among artisanal fishermen. Daily fish procurement is projected to be 5 to 7 metric tons of whole fish during the non-monsoonal fishing season, which, the PSE cluster mission was advised, will be processed, frozen, and exported by ship or air to countries in the European Community. The factory's continued operations and access to European markets will depend on regular certification by EU inspectors, who, if satisfied that the factory is in compliance with EU standards, will issue periodic export certificates. The company's plan is to collect up to 100 percent of its fish requirements from about 40 local fishermen.¹⁴

4.38 There are a number of smaller commercial fishing ventures along the north coast that are selling frozen fish to Ethiopia and Djibouti. These ventures are within relatively short distances from Berbera and therefore have access to a range of purchased inputs and also to urban markets. These enterprises have been financed in various ways, such as local NGOs and from the Diaspora. The major requirement for artisanal fishermen, who operate about 200 motorized boats off the shores of Somaliland and employ about 1,000 fishermen, will be improved facilities on shore. The nature of improvements will vary depending on the location. A report commissioned by UNDP in 2005 reviewed all aspects of the Somaliland fishing industry and recommended the development of the artisanal fishing industry with on-shore processing facilities and an adequate institutional framework for private sector investment (UNDP, 2005, p.18). But costs to implement the recommendations and financing were not estimated or discussed in that report.

4.39 In order to establish control over commercial fishing off the coast, the Ministry of Fisheries and Coastal Development of Somaliland is understood to have issued long-term fishing licenses to 36 medium-size Egyptian fishing vessels, which are operating along the coast of Berbera, with an estimated average catch per boat of about 30 tons monthly. It is understood that annual licenses for these boats cost US\$50,000 each. No information could be obtained about the number of other licensees but since many other boats fish in Somaliland waters it is almost certain that other commercial fishing boats such as trawlers are licensed, as well as the many boats from Yemen that specialize in collecting and transporting fish caught by Somali artisanal fishermen to Salaana for processing. Somaliland does have a surveillance capacity to monitor fishing that is taking place illegally, but this capacity is limited. Enforcement of fish licensing requirements within the EEZ is much more limited.¹⁵

¹³ There are about 15 permanent settlements on the coast where fishing is the main source of livelihood.

¹⁴ As of the first week of May, 2006, the company had not started operations.

¹⁵ Somalia has an Exclusive Economic Zone (EEZ) as defined by the United Nations Convention on the Laws of the Sea (UNCLOS) that extends 200 nautical miles. Within the EEZ the Somaliland government has the

4.40 *The main constraint to change is a lack of information about the fisheries resources off the Somaliland coast.* The change envisaged is a fishing industry that is well controlled in terms of its use of natural resources, particularly the type and volume of fish being caught and the areas in which fish may be caught within Somaliland's territorial waters. However, in order to establish the appropriate guidelines it is necessary to have information about the fisheries resources available in the seas off the Somaliland coast. Without such information the number of commercial licenses and the conditions associated with those licenses cannot be established. Similarly, information on the coastal fisheries resources will be needed to establish rules and regulations for artisanal fishermen, such as limits on catch, species that are protected, and defined fishing areas. Therefore it is **recommended** that a careful inventory of the fisheries resources be prepared for Somaliland's territorial waters. This should be incorporated into the general "State of the Environment" report recommended in Chapter 3, followed by a marine resource management plan

4.41 **Priorities for public investment.** The available evidence, advice from many fisheries experts, and the conclusions and recommendations in previous reviews indicate that the fisheries industry in Somaliland, while having a growing commercial on-shore fish processing industry with the potential for substantial expansion, is not providing artisanal fishermen with adequate incomes, and is receiving minimal benefits from the annual harvest of fish by foreign vessels that operate year round (often without valid licenses) within Somaliland's EEZ. Moreover there are major concerns about the impact of the intensive fishing activity by foreign vessels on the sustainability of the once-abundant marine resources.

4.42 Both the paper provided by the Ministry of Fisheries and Coastal Development to the PSE Cluster mission (see paragraph 4.41) and this report suggest the development of the fisheries subsector in the short and medium term through a combination of capacity building of Somaliland authorities, improving the capacity of the Berbera College of Fisheries and Maritime Studies to train artisanal fishermen, and finally promotion of investment in artisanal and semi-industrial fish production and processing. Government should have a strengthened role in the assessment of Somaliland's marine resources, management of the fisheries resources to support a large-scale commercial fishing industry based on comprehensive licensing and monitoring of fishing techniques and harvests, and promotion of commercial artisanal fishing in villages and towns along the coast. Other support would include the enabling environment to stimulate private sector investment in ice making, fish processing, and boat and engine maintenance in towns such as Berbera, Maydh, Lughaye and Las Qoray.

Crops and Watershed Management

4.43 Puntland is an arid and semiarid land with rainfall ranging from 50 millimeters in the Eastern lowland up to 400 millimeters in the west and mountain areas (CARE & VSF-Suisse, 2004; Mohamoud, 2005). This aridity severely limits rainfed crop production to the west,

power to issue fishing licenses to all fishing vessels that are from "distant waters fishing nations." Within the EEZ is the 12-nautical-mile zone of Somali territorial waters, in which foreign fishing vessels may not fish irrespective of their license. There is also a 6-mile limit that is reserved for small-scale local fishermen.

whereas some oasis agriculture is practiced throughout Puntland. Historically crop production was limited to dates, which were introduced about 300 years ago from Arabian countries that were the major trading partners of the northern Somali coastal communities (Chazee, 1990; Nur, 2005).

4.44 There are about 27 date palm oases in Puntland; the most important include Geesaley, Haabo, Galgala, Hamur, Seyn Wein, and Seyn Yar. During establishment, date palm seedlings are irrigated from shallow wells (4–6 meters deep) along the coast or springs in mountains. Date palms are salt tolerant and do well under high temperatures, low humidity, ample sunshine, and irrigation, especially during pollination.

4.45 Most date palms in Puntland were grown from seeds; therefore, there is considerable variability in quality and yields. In recent years imported seedlings have been used, mainly because of the Integrated Palm Project that was initiated by the French NGO, Association Francaise de Volontaires de Progress (AFVP), in the mid-1980s with funding from France and the EU. The project introduced a number of innovations including cleaning and removing of offshoots; improving of irrigation canals; provision of hand tools and water pumps; the introduction of companion crops such as vegetables, fruits, and forage crops; and the introduction of improved date varieties. This project revitalized oasis agriculture. In 1988 production of dates was estimated to be 900 tons from an area of 350 hectares (Chazee, 1990). Annual date production in 2004 was estimated at 1,450 tons from 180,920 palms or 905 hectares. In 2001 about 3,460 tons were imported through the port of Bossaso, mostly from Iraq (Nur, 2005). The trend so far shows increases in both area under date palm and production, although the yields are low.

4.46 The most important companion crops to date palms are onions, tomatoes, peppers, carrots, lettuce, watermelons, lemons, and papaya. The expansion of crop production was assisted by the construction of the Bossaso port and road, and the movement of people with farming experience from the South after the civil war. Oasis agriculture in Puntland expanded and generated additional revenue. Gums and resins are also a major source of supplementary income for rural people in Puntland and are discussed in Box 4.4.

Box 4-5: Frankincense and Myrrh

History

Puntland and Somaliland produce the largest quantities of frankincense in the world.^a Myrrh is a gum of lower value and of less importance for which Somaliland was, with Ethiopia, the largest exporter in the world before the recent civil war. Gum arabic, also a natural gum, is less important in Somalia than countries such as Sudan and Chad but small quantities are produced in Puntland and consumed in Bossaso. All gums and resins are produced from traditional tree crops, and the “plantations” are owned (or claimed) by families that have inherited rights to harvest (tap) these trees for centuries. Conflicts over rights to harvest have been common.

Production

Production figures for frankincense are vague but it is understood that export levels from Bossaso before the civil war were as high as 14,000 tons. Today the exports are said to be about 4,000 tons, of which 25 percent was reported to be the highest grade of frankincense (*beyo*). Prior to the civil war frankincense and myrrh marketing was nationalized and the government reportedly conducted a lucrative trade with China, France, and Germany. Since then Saudi Arabia has emerged as the most important trader of gums but information is sketchy. No data on gum arabic production are available.

Prices

Prices for gums are said to have fallen since before the civil war and centralized marketing, but adulteration of gums is said to have taken place (thus leading to price discounts), and data on current production, trade, and prices are scarce.

Marketing

The market for frankincense is very specialized. Traditional market relationships and links of various kinds are important but closely guarded, and hence generalizations are risky. While the marketing chain from producer to ultimate user in China and Europe is not clear, it is clear that the demand is strong and prices are buoyant. It is therefore likely that frankincense and myrrh could be extremely important as a source of supplementary income for families that live in some of the driest and forbidding parts of the world.

Source: ILO/IFC/World Bank, 2005.

a. It is said that frankincense was traditionally sold to the Egyptians who named this part of the north the “Land of Punt,” which means “land of incense.”

4.47 **Vision for the future.** The vision for crop production in Puntland is a major increase in the quantity, quality, and diversity of specialized areas of rainfed and oasis agriculture. Increased production of a range of high quality fruit (including tree crops such as dates and frankincense), vegetables, and forage crops will help meet growing urban demand, improve the livelihood of the farming communities and pastoralist, and thus help alleviate poverty and achieve food security. However, crop production will never match the importance of livestock and fisheries in Puntland, regardless of its significance in specific production niches such as oases.

4.48 **Future initiatives based on past experience.** The main sources of water for Puntland’s crop agriculture are rain, springs, and shallow wells. But since the mid-1980s the area under oasis agriculture has increased and this trend is likely to continue with assistance from a number of ongoing initiatives supported by international NGOs such as CARE, VSF-Suisse, Horn Relief, European Committee for Agricultural Training (CEFA), and so forth. These NGOs have helped communities benefit from permanent springs and shallow wells, and have introduced seeds and other planting material. CEFA introduced 1,200 tissue culture date palm seedlings from the UAE and supported the formation of a Farmers’ Input Supply Association (FISA). Additional support for the farming communities to expand the production of dates through increased area planted. Higher yields can be achieved through the introduction of high-yielding tissue culture seedlings. The same is potentially possible for other fruits and vegetables, and the domestication of high-value spontaneous native species such as frankincense and myrrh. If introduced across Puntland, these crops would expand and increase crop production (Nur, 2005). Of course, honey production would benefit enormously from acacia reforestation.¹⁶

4.49 *The main incentives for change* that resulted in the expansion of oasis agriculture over the last 20 years was the increasing rate of urbanization and, in late 1980s, the construction of the Garowe-Bossaso road and Bossaso port, which improved market access for farmers to sell their produce and to import inputs such as equipment and vegetable seeds. As a result horticultural production along this corridor has increased—particularly since the onset of the

¹⁶ See Chapter 2 and Annex J.

civil war, which made the supply of fruit and vegetables from the South extremely difficult and hence extremely costly. Access roads were improved in the Horn area, as well as the eastern mountains, including Galgala, Ga'an, Kandala, Geesalay, Habo, Alula, Seyb Wein, Seyn Yar, Hafun and Bender Bella. Better roads and market access could provide incentives for increased production of fruits and vegetable; fodder crops such as *Leuceana leucophila*, Sudan grass, and indigenous grass species; and frankincense and myrrh. Increased fodder crops would in turn strengthen livestock production. It is clear that since Puntland is well endowed with natural resources, but at the same time a food deficit region, relatively high food prices provide significant incentives for farmers in unique locations such as oases to produce food for the Puntland market in competition with food produced in Central and Southern Somalia.

4.50 *The main constraints* facing the sector are completely inadequate agricultural support services, scarcity of domestic water supplies, and inadequate supply of improved seeds, planting materials, and other agricultural inputs. For gums and resins the main constraint for producers is the uncertainties they confront in marketing their crops, given few buyers and unclear market alternatives. The removal of these constraints that bedevil crop producers could result in increased yield and production. However, crop production will always be much less important in comparison with the livestock and fisheries subsectors in Puntland. Reducing marketing uncertainties for gums and resins will also be critical for establishing solid incentives for producers in remote areas to harvest from trees that grow on rocky outcrops—a dangerous occupation.

4.51 **The priority roles of public and private sectors.** Crop production is in the domain of the private sector. In Puntland, it is mostly practiced by small-scale, part-time farmers who engage in many other activities such as urban trading, frankincense collection, livestock production, and fishing. Such diversification of income generation is extremely important in the harsh and unpredictable climate in the north. This multi-sector activity has in recent years become easier for land holders as a result of the influx of experienced farm laborers from Southern Somali regions and from Ethiopia. This trend in the movement of labor is likely to continue in the foreseeable future. The most important role of the public sector is to provide support services and improved infrastructure that reduce isolation and reduce agricultural production costs, widen market potential, and make crop production more profitable and therefore sustainable. Support services and infrastructure needs include identification of land that is suitable for cultivation (land use assessments), land titling, agricultural research and extension, support to the farmer and community associations such as advice on their access to input and output markets, improvement of public infrastructure such as access roads, and primary social services.

4.52 One possible avenue of support for technical and management extension programs that would involve both the public and private sector could be through the provision of technical support from national and international NGOs, professional associations such as the Somali Agricultural Association (SAGRA), and the East Africa University, all of which undertake studies of socioeconomic issues and agricultural production (Noor, 2005).

4.53 **Public investment proposals.** The proposed priority investment program for crop production and watershed management will build on the lessons learned, ongoing initiatives

in rainfed and oasis agriculture, the domestication of high-value indigenous crops, and the introduction of high-yielding food and fodder crops, including the introduction of agroforestry in oasis agriculture in the coastal, mountain, and plateau areas (for more detail see Chapter 6 and Table 6.2, which contain the results matrix indicating the expected results from the proposed programs and investments). The proposed program would in addition study the hydrogeology of areas with high underground water potential. The program would also strengthen the capacities of communities and the government authorities to provide essential public-good agricultural services such as research, extension, land titling, and the facilitation of the availability of agricultural inputs, to be provided by the private sector and farmers' association, agricultural associations, the East African University, and international and national NGOs. The estimated total cost of the proposed investment program for five years is US\$29.5 million.

Fisheries

4.54 The fishing industry in Puntland, based on the rich fishing grounds around its coast, has grown rapidly in recent years. With a coastline of about 1,300 kilometers, a substantial continental shelf, and about 47 percent of the EEZ for the whole country, Puntland has the most abundant and varied fisheries resources compared with other Somalia regions and much of the African continent—estimated to be capable of an annual sustainable catch of almost 200,000 tons.¹⁷ Yet the large fish harvests provide few direct benefits for Puntland's people or its government. Most benefits go to private, large-scale fishing operations owned by foreign companies that pay very little (and often nothing) for their fish harvest from within Puntland's EEZ, and generate no value added to their fish catches through processing in Puntland. As emphasized in Chapter 2, it is strongly suspected that Puntland's fishery resources are under serious threat of permanent destruction as a result of illegal trawling and over fishing (UNDP, 2005, p. 8). In recent years it has been regularly reported that catches made by small-scale artisanal fishing units have become more arduous, measured by the longer periods at sea in order to catch the same quantity of fish compared with previous years.¹⁸ Concurrently, there has been a high level of activity by Somali and foreign fishing boats of various sizes including trawlers, long liners, purse seiners, and mother ships—often fishing within the EEZ without official licenses and using fishing methods that contravene international agreements.

4.55 It is uncertain whether the decrease in catches by artisanal fishing units has been due to the increased activities of numerous industrial fishing boats resulting in a permanent reduction in the size of fish stock. Nevertheless, if the reductions continue some fishermen will be forced to stop fishing and find alternative livelihoods. Monitoring fishing practices is one activity that is essential for regulating the fishing industry, and hence there is a need to establish a more effective coast guard to check that boats have fishing licenses, control the

¹⁷ FAO, 1999. See Annex H for a summary of the estimated sustainable fish production in all Somali regions.

¹⁸ A comprehensive survey of Puntland's northeast coast was carried out by the Oceanographic Research Institute from Durban, South Africa in 1998 to assess the in-shore lobster resources between Foar and Eyl. The survey concluded that the fishery for tropical lobster was overexploited. The results of this research are to be found in Fielding and Mann, 1999.

number of licenses, control the areas in which boats fish, and monitor the fishing methods used.¹⁹

4.56 Vision for the future. The fishing industry in Puntland could become the basis for a major diversification of the Puntland economy, making it less susceptible to drought and generating additional income and employment. This vision encompasses important roles for artisanal fishermen, large-scale industrial fishing, and the on-shore processing of fish products for export whether Somali or foreign financed. A strategy is proposed in the report for the implementation of this vision to provide opportunities for all levels of fishing operations that will ensure the sustainable use of Puntland’s rich fishing grounds for future generations.

4.57 Future initiatives based on past experience.²⁰ Fishing in Puntland has had a long history and ports such as Laas Qoray, Bossaso, Candala, Bereda, Alula, Bender Baila, and Eyl have been important fishing centers and the locations of fish-processing operations of various scales with mixed success. Small-scale artisanal fishermen catch fish along the coast for their own consumption and they also sell their significant surplus to the wholesale and retail markets at sea, on beaches, and in urban areas. Most of the surplus is sold to Yemeni boats that come to the Somali coast in large numbers. They purchase exclusively kingfish, grouper, and snapper; pack the fish in ice; and transport them to Yemen for processing.²¹

4.58 At present in remote areas, and even in Bossaso, the dominant market is alongside the Yemeni boats. In this market artisanal fishermen are at a huge disadvantage since there is virtually no other option for selling—particularly at sea. It is understood, for example, that fishermen receive less than 10 percent of total final proceeds whereas the Yemeni buyers and intermediaries rake in over 90 percent. The average annual income for an individual fisherman can be as little as US\$1,000, for an employer of skilled fishermen it could be around US\$5,000, and for a boat owner up to US\$10,000 per year.

4.59 Licensing of commercial fishing in Puntland is in the hands of the Ministry of Fisheries, Ports, and Marine Transport. The Ministry issues, or delegates the issue of, licenses to the operators (or their Somali agents on shore) of all boats that fish within the 200-nautical-mile EEZ. In early 2006 some 50 fishing licenses had been issued through Somali agents for 2006. The licensees are based in Thailand, Vietnam, the Republic of Korea, and many other countries. The annual license fee for fishing with a large commercial boat in Puntland’s territorial waters is understood to be US\$50,000. Licenses are issued on condition that boats comply with a number of conditions established in Puntland’s fisheries

¹⁹ Puntland’s Ministry of Fisheries, Ports and Marine Transport has recently endorsed a “Fisheries/Marine Policy and Strategy” dated April 2004 which focuses heavily on the sustainable use of marine resources and conservation of the marine environment. The Ministry’s concerns about the destruction of the state’s marine environment are underlined in a position paper, “Environmental Change Evaluation,” issued by the Ministry on 25 January, 2006.

²⁰ Readers are reminded (as mentioned earlier in this chapter) that there is uncertainty at present about the boundary line between Somaliland and Puntland and hence discussions of prospects for areas such as Laas Qoray appear in discussions on both Somaliland and Puntland.

²¹ In early January 2006 there were 73 small (4- to 10-ton capacity) licensed Yemeni boats, which typically collect the three types of fish (kingfish, snapper, and grouper) caught by artisanal fishermen (unpublished information from Ministry of Fisheries, Ports and Marine Transport, January, 2005).

policy (see Annex K). It is inevitable that there are numerous boats that have not applied for, or have not received, an official license from the Ministry and because policing official licenses is virtually impossible with the Puntland government's current resources. Boats may be in possession of a license, but it may have been issued by a coastal warlord or other self-styled authority rather than the Puntland Ministry of Fisheries. There is a Puntland Coast Guard (a private company), which is paid for its services by the Puntland government. The company owns three boats that collect and monitor licenses on behalf of the Ministry, but for clan reasons their authority is limited to the stretch from Eyl to Gara'ad on the Indian Ocean coast. Other authorities and agents of the Ministry issue licenses for boats operating along other stretches of the coastline within the EEZ.

4.60 It is apparent that the achievement of effective public management of Puntland's fisheries resources faces serious difficulties. The consequences of the weak public capacity are the destruction of the fisheries resources. *There are reasons for bringing about some major changes.* First, public management of fisheries (such as the identification of "no take" zones)²² cannot improve unless the serious lack of accurate information about Puntland's marine resource is addressed. It is therefore necessary to have information on (i) the extent to which coral reefs and other marine habitats on the continental shelf are being damaged by current fishing practices and the impact of this on marine life, and (ii) the quantities of fish and crustaceans that are being harvested and whether the annual quantities harvested are sustainable in the medium term. Information on marine resources will be needed to establish rules and regulations for industrial and artisanal fishermen, such as the limits on catches as well as fishing areas and species that are off limits. Information on resources will also be an incentive to improve public management of off-shore industrial fishing licenses and the enforcement of license conditions. Second, an effective licensing system, backed up by an authoritative coast guard, should be established. Finally, in terms of Puntland's regional development, incentives should be provided to the private sector by the government to encourage investments in ice plants and fish-processing factories at strategic locations along Puntland's coastline to process fish caught by artisanal fishermen.

4.61 *As underlined already an important constraint facing the Puntland government is the lack of information on Puntland's marine resources and the current inadequate human and capital resources to manage an efficient and equitable fishing license system. Therefore it is **recommended** that a careful inventory of the fisheries resources be prepared for Puntland's territorial waters. This inventory should be harmonized with the "State of the Environment" report recommended in Chapter 2. A typical constraint is the absence of proper legal and regulatory frameworks for effective and sustainable marine resource management. Puntland already has a draft Fisheries/Marine Policy and Strategy which, among other things, includes policies on environmental protection, coastal management, fisheries facilities, and surveillance and compliance. The Puntland Fisheries Regulations associated with Somali Republic Fisheries Law No. 23 have been approved by Puntland's Parliament. It is therefore **recommended** that a capacity-building program for the government should include a focus on the Ministry of Fisheries, Ports, and Marine Transport.*

²² For example, see < <http://www.cefas.co.uk/Publications/files/notakezones.htm> > for an article by Simon Jennings, "The Case for No-Take Zones."

4.62 **Priority roles for the public and private sectors.** Marine resources are “common pool resources.” All fishermen have access to these resources but access is not exclusive. Artisanal fishermen who fish for their own consumption have always had unlimited, though not exclusive, access to the sea without any licensing requirements. Under Puntland’s fisheries regulations those fishing for reasons other than their own consumption are required to obtain a license from the government. In Puntland commercial artisanal fishermen are not licensed; it is acknowledged that the licensing of industrial fishing vessels is not complete. The public sector responsibility is clearly to establish a much more effective licensing system and also the monitoring of fishing activities to ensure that all commercial fishing vessels are in compliance with conditions of their licenses.

4.63 **Public investment proposals.** Development priorities for the fisheries subsector in the short and medium term are a combination of detailed marine resource surveys, capacity building (through training and the provision of equipment) of Puntland government authorities responsible for managing fisheries resources, and promotion of private sector investment in artisanal and semi-industrial fish production and processing. A strengthened government would be able to contract marine survey work, and manage an industrial fisheries subsector based on licenses to foreign vessels and companies. At the same time, the government could provide the enabling environment for the development of on-shore fish processing at strategic locations along the coast and thus support the fishing activities of artisanal fishermen. The government also could strengthen public and private institutions that can provide technical support (such as advisory services and training) to artisanal fishermen in towns and villages such as Las Qoray, Bossaso, Qandala, Caluula, Xaafuun, Eyl, and Garacad. Another form of support would be to provide the enabling environment for private sector investment in support services for the fishing industry, such as ice making, boat and engine maintenance, and the supply and repair of fishing gear. Finally, the government could also support the activities of associations of artisanal fishermen through advisory services and advice as well as market information using modern communications systems.

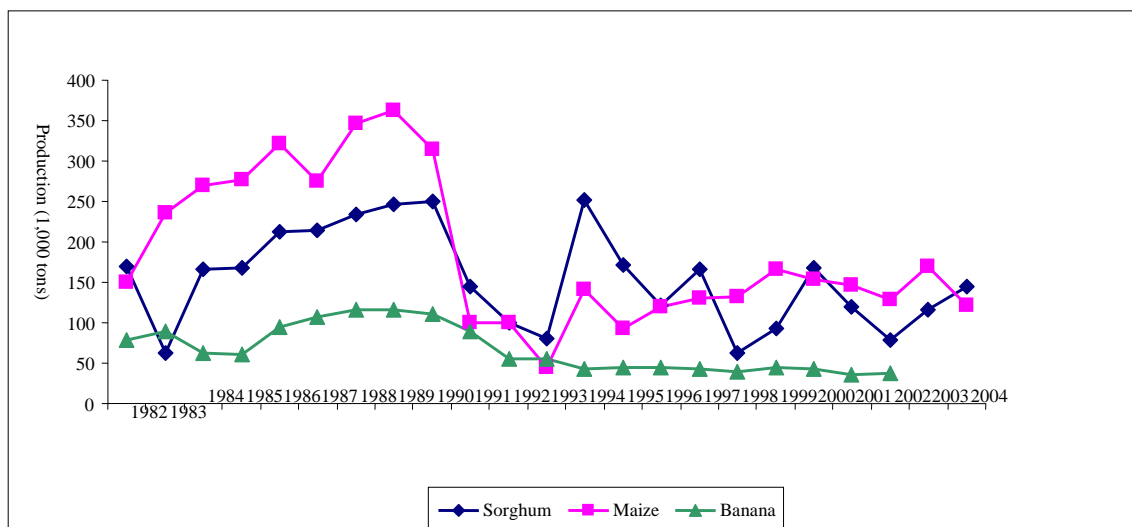
Crops and Watershed Management

4.64 The most important food crops in South Central Somalia are sorghum, maize, sesame, cowpeas, sugarcane, and rice and most of these crops are grown in the South. Before the civil war, commercial crops included bananas, citrus (grapefruit and lemon), vegetables, and cotton. About 90 percent of the cereal production takes place in the South from where it is marketed throughout all other regions. Food crops are predominantly produced by smallholders. Prior to the civil war, the exported banana and associated crops of grapefruits and watermelons were vertically integrated. Production was carried out by large private farms that depended on the support of Somalfruit, a joint marketing company owned by Italian and Saudi companies. Banana producers and the government had a minority share. The company provided inputs, technical assistance, and marketing. Lemons, which do not require inputs, are dried and exported by traders and were not adversely affected by the war. Sugarcane production and the associated processing plants were run by government parastatals and were mostly used for domestic consumption. Sugar is no longer produced and the processing plants were looted and exported as scrap metal.

4.65 Pre-war annual cereal production averaged about 490,000 metric tons (SACB, 2004, World Bank, 2006). As shown in Figure 4.1, highest cereal production amounting to 625,000 metric tons was obtained in 1989. This was associated with increases in the production of other crops such as banana, grapefruit, grain legumes, and sesame, which were a response to structural adjustment and agricultural policy reforms in the mid 1980s. Production declined immediately following the start of the civil war. There was partial recovery in crop production in 1994 to about 70–80 percent of prewar levels due to combination of reduced fighting resulting from the arrival of international peacekeeping forces, good rains, and considerable assistance from donors and NGOs. However, the withdrawal of these forces led again to reductions in production. The average annual production of cereals dropped from 395,000 metric tons in 1994 to 265,000 metric tons in 1995–2003 (SACB, 2004). A recent report by FSAU/FEWS shows that cereal production in 2004 was only 43 percent of the postwar era (1989) and amounted to only 267,000 metric tons (FSAU/FEWS, 2005). This was due to insecurity, poor rains, reduced irrigation, and damaging floods in 2004 “Der” season, which further caused considerable damage to standing crops and livestock throughout Somalia.

4.66 **Rainfed farming.** The most important rainfed farming system is found in the inter-riverine regions of Bay and Bakool and along the two rivers where irrigation infrastructure is not developed. Farmers often use soil and water conservation measures to enhance their productivity. In addition, in the 1980s, considerable innovations in enhancing soil fertility and the introduction of drought-tolerant varieties contributed higher yields (Haji, 2005; University of Wyoming, 1990). However the civil war, the recurring droughts, the lack of adequate agricultural services such as research, extension, improved seeds, and other inputs have reduced the productivity of rainfed agriculture in all the key areas in southern Somalia. Therefore, improving these support services will be essential to the recovery of productivity.

4.67 Figure 4.1: Production Trends for Major Food Crops and Bananas



Source: FEWS for sorghum and maize data, FAO/FSAU for bananas.

4.68 **Irrigated farming.** In 1990 about 165,000 or 15 percent of the estimated cultivated land of 1.1 million hectares was under irrigation (FAO, 1991). Irrigated agriculture is mainly along the two perennial rivers of Juba and Shabelle that originate in the eastern Ethiopian highlands. The areas with traditionally controlled irrigation, in the order of importance, are Lower Shabelle, Lower Juba, and Middle Shabelle regions. Limited small-scale pump irrigations are practiced in Middle Juba, Gedo, and Hiran regions. Most of the irrigated areas of the Shabelle valley extending from Hiran to Balad in Middle Shabelle, are owned by small farmers. The area between Balad and Afgoye has pump-irrigated plantation farms. The area between Afgoye to Bariray is occupied by small-scale farmers; in the eastern side of the river from Bariray to Bulo Mareerto there are large plantations, whereas the western side is dominated by small farms. Downstream of Bulo Mareerto to Hawaii are only small farms. The Juba Valley it is dominated by small farms, with the exception of the area downstream of Jilib that consists of former state farms and plantations.

4.69 Several methods of irrigation were used along the Juba and the Shabelle rivers, including pump irrigation, gravity-fed irrigation, and controlled and uncontrolled flood inundation. Several major irrigation schemes were in place prior to the civil war. In the Shabelle valley there were four main colonial barrages, and four newer ones that were constructed in recent years. On the Lower Juba River there were four major irrigation schemes: the Fanoole Irrigation and Hydroelectric Scheme, the Juba Sugar Project, the Mugambo Irrigation Project, and the private banana plantations.

4.70 Both Juba and Shabelle rivers are susceptible to flooding during the rainy season and to scarcity of water during the dry season. The war also stopped the collection of hydrological data along the Shabelle and Juba rivers. The network of staff gauges and automatic water-level recorders that were positioned in key sites along the two rivers are no longer functional, resulting in reduced capacity for flood early warning. The available hydrological data clearly show the need for enhancing the storage capacity and flood control and plans were underway, before the civil war, to address them. The EC-funded ongoing Somalia Water and Land Information Management (SWALIM) project aims at developing a soil- and land-management database. This includes a hydrological network with staff gauges and automatic water-level recorders and will be eventually transferred to relevant government institutions.

4.71 The Shabelle had a storage capacity of 200 million cubic meters at the Jowhar Off-Stream Storage (JOSS), which due to the civil war and lack of repair and proper management became dysfunctional. On the Juba, there was a proposal for the construction of the Baardheere Dam, which if built, would impound flood flows and store some 5,000 million cubic meters of water, irrigate 200,000 hectares, and generate 105 megawatts of hydroelectric power. The implementation of this project was interrupted by civil war (Noor, 1996). While there is considerable capacity to increase the irrigated area in the Juba, the capacity to increase the irrigated area in the Shabelle valley is limited due to less water storage potential. In both valleys, however, the efficiency of irrigation could be improved from the current 30 percent to 60 percent through improvement in the irrigation practices, and there is potential to double the current intensity of cropping through multiple cropping throughout the year.

4.72 Despite this potential, drastic reduction in the area under controlled irrigation has resulted from the looting of irrigation assets; lack of maintenance of the physical infrastructure for water storage, distribution, and flood control; inadequate agriculture services; and the displacement of plantation owners and experienced farmers. Therefore, according to recent reports from Lower and Middle Shabelle regions, as much as 85–90 percent of the originally irrigated land is now used for rainfed agricultural production (Abikar, 2004). Somali professionals made presentations about the status of irrigation and road infrastructure in the Juba and Shabelle basins for the Somalia Country Economic Memorandum (CEM) in 2006, and highlighted the extreme damage caused by years of neglect and disrepair (World Bank, 2006). The above-mentioned factors were cited as the main causes of drastic decrease in the irrigated area and the marked increase in the frequency of flooding (EU, 2003). However, some wasteful flood irrigation for recession farming is still feasible and practiced at the lower reaches of both rivers. The rehabilitation of the major irrigation, drainage, and flood control assets in Middle and Lower Shabelle and Lower Juba as well as the road infrastructure that links these agricultural areas to urban markets are high priorities once peace is reestablished, an equitable land-tenure system is put in place, and clan-based land disputes are resolved, in order to minimize risk to the proposed investment. The ongoing EC-funded Diversification of High Potential Irrigation Schemes (ARDOPIS) has a labor-intensive feeder road component to be implemented by the International Labor Organization (ILO). The local and central governments should enlist clan elders and religious leaders to establish committees for land conflict resolution. Once conflicts are resolved, an efficient cadastral survey and mapping capacity need to be put in place. Such an initiative could draw on the similar experience in Somaliland, where Cadastral Survey, Ltd., has made considerable progress in farmland registration and titling (Cadastral Survey, Ltd., 2004).

4.73 The lower reaches of the Juba and Shabelle rivers cut through rich alluvial vertisol soils. In addition, the Shabelle valley has the potential and the history for a well-developed, gravity-irrigated farmland. In the order of importance, the crops produced under controlled irrigation prior to the civil war were bananas, maize, grapefruit, sugarcane, cotton, and rice. Flood irrigation and recession farming were and are still used to grow maize and sesame. Maize is used for domestic consumption. Most sesame is exported to the Gulf countries for oil extraction, and then sold to North America.

4.74 **Banana production.** A recent study by the EU indicated that the production of bananas in Somalia declined drastically and the export mostly stopped by 1998, with the exception of small quantities that are being exported to Libya and the Gulf countries. This stoppage was attributed to the civil unrest, illegal occupation of farmland by armed groups without agricultural experience, the pullout of foreign partners that marketed banana, damage from the El Niño floods of 1997–98, and the deterioration of irrigation and processing infrastructure (EU, 2003). The same report indicates that the terms of trade for bananas worldwide have experienced deterioration in the past two decades and that further deterioration is foreseen to result from the anticipated gradual removal of quota and preferential entries for Africa, Caribbean, and Pacific (ACP) banana producers into the European market, starting in 2006 and ending in 2008, due to WTO regulation. The EU study recommends diversification from banana cultivation to food crops. Other more positive reports indicate that EU is introducing a tariff preference under the tariff-only policy that will

give advantage to ACP countries. The measure will remove quotas and impose tariffs on non-ACP countries and will result in African bananas becoming even more competitive, especially those with vertically integrated production systems, of which Somalia was one prior to the civil war (World Bank, 2000, Borrell and Bauer, 2004, Borrell, 2004).

4.75 In addition, on November 8, 2005, the European Commissioner in charge of trade announced that member countries of the ACP group can continue to export a quota of 775,000 tons of bananas to EU without paying customs duties (World Bank, 2005a). In addition to the predicted positive outcome of the EU action, the high potential yields of about 35–50 tons per hectare for well-managed plantations of Somali bananas, the suitability of current and potential irrigated areas in the South for banana production, the proximity of production areas to ports in Mogadishu and Kismayo, and the location of Somalia close to major maritime routes would make Somali bananas profitable and competitive in comparison with annual crops such as maize. Bananas and grapefruit have higher value per area planted than maize, the preferred alternative annual crop. The value of 9,000 hectares of bananas, in 1990, was US\$96.0 million, and 3,890 hectares of grapefruit produced US\$24.8, whereas it took 315,000 hectares of maize to produce a value of US\$35.7 million (Somalia, 1990). This scenario does not conflict with the recommended diversification of crops, which is also desirable. Since bananas at peak production in 1990 occupied only 8–9,000 hectares on 141 farms of average size of 40 to 300 hectares, only partially used for bananas at any given time (EU, 2003), there is additional irrigated land that can be used for diversification into high-yielding and high-value crops such as grapefruit, papaya, vegetables, sugarcane, sesame, and rice. The ultimate decision in any case will depend on producers and their partners.

4.76 **Grapefruit production.** Since the onset of the civil war there has been a marked reduction in the area under grapefruit, which was expanded in 1980s to complement the banana export. In the 1980s, with support from the European Union, seedlings of high-quality export varieties were multiplied and given to plantations by the Ministry of Agriculture. The area under grapefruit increased from about 1,000 hectares to 3,890 hectares with an average yield of about 9.3 tons per hectare and total production increased from 9,500 tons to 36,200 tons. The apparent low yields are due to the fact that some of the farms did not reach production, which takes about 4–5 years, at the time. Yields of fully mature young fields can reach 40–50 tons per hectare. The producer price in 1990 was US\$21.16 per ton (US\$197 per hectare) and the local consumer price was US\$39.27 per ton (US\$365 per hectare) (Somalia, 1990). The export of grapefruit and bananas was carried out together. Grapefruit was put on the deck while bananas were put in cold chambers, thus reducing the cost of transport. Somali grapefruit is usually ready for the market in September, at a time when most Mediterranean grapefruits are out of the market. South Africa was the only potential competitor at the time. In 2000, South Africa produced 240,000 tons of grapefruit from an area of 4,360 hectares and a yield of 55 tons per hectare (USDA, 2001). Somalia needs to rehabilitate its grapefruit industry and increase yield through the application of efficient irrigation and agricultural inputs. Therefore, expanded cultivation of grapefruit and other high-value fruits and vegetables should be associated with the proposed rehabilitation and diversification of the banana sector, to which grapefruit was already a successful companion crop. In addition, grapefruit can grow in association with vegetables and short-duration fruits such as papaya, which intensifies production and provides employment for farm workers.

4.77 Sugarcane production. Before the civil war sugarcane was also commercially produced by two state-owned enterprises, one in Middle Shabelle and the other in Lower Juba. The yields of sugarcane were also quite high and averaged about 100 tons of cane per hectare or about 10 tons of sugar per hectare. In 1989, the two sugar enterprises produced 375,000 tons of sugarcane or about 37,500 tons of sugar, with total value of US\$24.84 million. This was one of the most important sources of tax revenue for the central government and met most of the country's sugar requirement (Somalia, 1990). However, after the civil war, the processing plants for sugarcane were looted and sold as scrap. This crop could be restarted with private initiatives to meet the domestic need. Some of the land in the two sugar estates could be distributed to farmers in the area and the private enterprises could plant the rest. The two enterprises could be owned by private sector companies with strong sugar industry backgrounds, in partnership with the local private sector. This would contribute to poverty alleviation while meeting the domestic sugar requirements. In addition, any surplus could be marketed, a benefit of a recent decision to allow the 48 least developed countries duty-free access to the EU sugar market by 2009 through its Everything But Arms (EBA) initiative. Or, the surplus could be exported to a Common Market for Eastern and Southern Africa (COMESA) country such as Kenya, which imports considerable quantities of sugar (Mitchell, 2004).

4.78 Other fruits and vegetable production. There has also been a reduction in vegetable production because of the civil war, with the exception of onions, tomatoes, hot and sweet peppers, and some leafy vegetables that are used in local urban centers. One major factor of this reduction is the lack of seeds and other inputs that are essential for successful vegetable production. Dried lemons and lime from the Shabelle valley are also exported to the Gulf countries and onions are marketed in Northern and Central Somalia. This limited production is from small farms as well as disputed large farms. Tree species that were used as wind-break and mango are being cut for furniture making, because of the high cost of importing timber from abroad (Abikar, 2004) and the lack of market access for mango fruits due to insecurity and the deterioration of roads.

4.79 The general decline in agricultural production in the irrigated areas, due to the civil war, deterioration of the irrigation infrastructure, and recurring droughts and floods caused structural food insecurity, more frequent famines, and internal population displacement. Therefore, the rehabilitation of irrigated agriculture should be a priority for assessment and implementation. A combination of infrastructure rehabilitation and use of improved and innovative agricultural technologies are needed to increase productivity and reduce poverty. This would also reduce the need for horizontal expansion of cultivation into marginal areas, which in turn would lead to environmental degradation.

4.80 Vision for the future. South Central Somalia should return to being the core producing area for food and fruit for all other areas because it has a comparative advantage in producing these products under irrigation. This region is therefore also the most logical area for food processing. Any investment should therefore be aimed at increasing the sustainable productivity of irrigated and rainfed crops in order to contribute to the return to high levels of efficiency and high incomes of producers, increased employment, poverty reduction, and food security for all regions. The production target associated with this vision is to reach production levels comparable with the 1990s for both the domestic and export market in five

years and to then lay the foundation for subsequent steady growth. In the Central Rangelands the target outcome is to restore the rangelands to an effective base for efficient, drought-resilient livestock production with animals sold through a modern and export-based marketing system.

4.81 Future initiatives based on past experience. The vision for the crop production sector in South Central Somalia has a sound precedent in the Shabelle, Juba, and Bay regions. In these regions, food crop and fruit production, both irrigated and rainfed, has been successful and widely adopted. This conclusion is based on considerable research. Based on the assumption of peace and security the core strategy proposed is the rehabilitation of irrigation and flood control systems, roads, and other marketing infrastructure. A number of donors have already been assisting the process of rehabilitation of irrigation and flood control systems; these donors and their work will provide valuable experience and starting points. Such initiatives include the completed Improved Food Security and Water Resources Management program in Lower Juba, funded by the EU and Italy, which was implemented by Agrosphere. In addition there is the ongoing ARDOPIS program in Southern Somalia and the PACSU capacity-building initiative funded by the EU. In order of priority, the suggested investment initiatives are discussed in the following paragraphs.

4.82 Peaceful resolution of land conflicts is essential. Assuming widespread peace and security, rehabilitation of irrigation areas and flood plains cannot start until there has been a resolution of conflicts over disputed land in the valuable Lower Shabelle and Middle and Lower Juba. Land policy issues will be addressed by the Governance and Rule of Law cluster, but clearly the TFG, regional authorities, and clan elders will need to find a way of resolving the many land disputes. This conflict resolution process will take time but perhaps an interim solution can be found that allows production and income generation using the land, without the implication that current land occupancy and use implies legal ownership. The Land and Property Committee of the Somali Reconciliation Conference held in Kenya from late 2002 to late 2004 (see Box 4.6) issued suggestions for the federal government in addressing land policy. It is *recommended* that these suggestions be pursued.

Box 4-6: Land Policy and the Somali Reconciliation Conference

Background

The Land and Property Committee was one of six committees of the Somali Reconciliation Conference held in Kenya from late 2002 to late 2004. The Committee assessed all issues relating to the misappropriation of land and property throughout the colonial period, the post-independence civilian and military governments, and looting of public and private properties during the civil war to the present.

Recommended Solutions

The Committee declared and called for reconciliation among the various Somali communities and the return of private and public land and properties to their rightful owners. It issued the following suggestions as a way forward for the federal government in addressing land policy:

1. Appeal to all Somalis to reconcile and return public and private properties to the rightful owners.
2. Establish a proper land tenure system in consultation with the communities and use the experience of other countries.
3. Warn those who continue to hold, illegally, public and private property after the Committee's declaration that they will face legal action.

4. Uphold the principle of the equality of both genders in conformity with teachings of Islam and the Universal Declaration of Human Rights.
5. Form an inter-ministerial committee to study the land and property damage done during the colonial period and ask for compensation from the governments concerned.
6. Instruct regional and federal courts to resolve conflict during the period 1960–69, based on the laws that existed.
7. Issue a declaration by the federal and regional governments, elders, religious leaders, sultans, and women, to those holding illegal land and property acquired after 1991 through force and intimidation, to return these properties to the rightful owners, within a specified period of time and punish those who do not comply. Two Committees, one for land and settlement and another for farmland, should be established by the federal government one month after its formation. The decision of these committees can be appealed to the courts.
8. The government should establish a special fund to help with cost of repairs, if the holder has no means to pay for such repairs.
9. All public property inside and outside the country shall be repossessed by the government.
10. All militias occupying territories of other communities by force must be ordered to withdraw so a meaningful solution can be found. The government shall establish a high-level committee to determine the ownership of land by communities.
11. The federal government should establish a register of all public property and regulate the use of natural resources by communities, in order to assure sustainable use of resources. Such regulation must be used on rational land-use classification.
12. Protect the national heritage of forestry, wildlife, pastureland, water, and rich marine resources, through the establishment of inter-ministerial committees of concerned institutions.

4.83 *Rehabilitation of the irrigation, flood control and drainage infrastructure is a priority*, and should be sequenced with the aim of restoring the simplest tasks first and then gradually addressing more complex engineering activities later. The most urgent rehabilitation is flood control, including repair of river embankments and flood relief channels. Irrigation rehabilitation is the next priority, involving repair of gates of the main barrages that are still in good physical shape, desilting of the main irrigation canals and barrages, and reconstruction of rural roads. These activities would make a substantial contribution to peace building. They can be based on current initiatives by a number of donors and NGOs and should be participatory—involving the communities concerned, including the establishment of water users associations and regional/national irrigation water authorities. Such activities will upgrade crop production from current subsistence levels to more productive prewar levels. In addition to enhanced productivity and profitability, such interventions would reduce the hazards of flooding, water-borne diseases, and drought, and thus result in income generation, employment, and improved food security.

4.84 For rehabilitation of irrigation systems (even at the simplest level), the following priorities and their sequencing are *recommended*. The first priority should be flood control combined with high river flow storage on the Shabelle, to reduce the probability of floods and increase river flow during the dry season. To this end, the Jowhar Offstream Storage Project (JOSP) and the Duduble Irrigation and Flood Relief Channel, upstream of JOSP,

should be priorities.²³ The Middle Shabelle is relatively peaceful and has had far less land conflict than the Lower Shabelle and Lower Juba, and these projects would benefit the entire reach of the Shabelle River.

4.85 In parallel with the first stages of rehabilitation, the empowerment of stakeholder organizations such as water user associations (using technical assistance from NGOs), professional agricultural associations, and international consulting companies should begin. The stakeholder associations should reflect their commitment by contributing labor to the activities, paying water charges, and eventually managing the rehabilitated systems. The combination of community mobilization and technical assistance are essential for success. Collaboration between regional, state, and national government administrations could also enhance the process, using the principle of subsidiarity.

4.86 The second plausible priority is rehabilitation of the remaining seven irrigation barrages, two broad-crested weirs, and the associated main canals on the Shabelle. These include the barrages of Balad, Jenale, Gaywerow, Qoryooley, Fakeerow, Kurtun Wareey, and Sablaale and weirs of Jowhar and Hawaii.

4.87 The third priority would be rehabilitation of the natural flood relief channels on the Shabelle and Juba, in conjunction with the exclusion of farming in their command areas and restricting the use of natural depressions called desheks (since they also contribute to flood control) along the Juba to allow for recession farming. These relief channels include the Beledweyn By-Pass, Farwaaley (downstream of Buulabarde), Awdegle and Shangani on the Shabelle, and Far Wamo on the Juba. In addition, technical support should be provided for pump-irrigated farms in the Hiran, Middle Juba, and Gedo regions; rainfed agricultural and agropastoral communities in Bay and Bakol; and the area along the two rivers where irrigation infrastructure is not developed. Technical assistance also should be provided for improvement of agricultural services and crop diversification through the acquisition of available technologies from international and regional organizations as well as countries with similar agroecological conditions. Collaboration mechanisms should be established among the regional and national administrations, and enhanced using the principle of subsidiarity. It is *recommended* that a national river water authority with the membership of regional river water authorities and farmer-led water associations, including small farmers, should be established.

4.88 The fourth priority is the rehabilitation of Fanoole Dam and irrigation system, the Juba and Jowhar Sugar Estates (in the medium term - with private investment), and the Mogambo Rice Project, involving farmers associations. Long-term goals include

²³ The reservoir at JOSP has a storage capacity of 200 million cubic meters. A study with engineering designs commissioned by the EU in 1996 and carried out by Mott MacDonald Group put the cost of rehabilitation at US\$4 million (Mott MacDonald Group, 1996 - unpublished). Another study with engineering design was also formulated by UNDP in 2004 for the rehabilitation of the Duduble Irrigation and Flood Relief Channel, which is estimated to cost about US\$1 million (UNDP, 2004a). This project was actually implemented by UNDP in 2005, with community and local government contributions. These two projects are complementary and can reduce flooding and enhance storage of water for the dry season. The JOSP also will require an additional outlet regulator that empties into the river to avoid severe silting of the Outlet Canal, which needed repeated desilting in the past. In parallel, the flood control embankments in Middle and Lower Shabelle need to be repaired.

development of the Bardheere Dam in order to achieve flood control in the Juba Valley, expand irrigation, and generate electricity to meet the growing energy requirements and reduce the use of charcoal. Finally, the issue of riparian rights of the Shabelle and Juba rivers with Ethiopia will need to be addressed, in order to secure adequate water for agriculture and other uses.

4.89 *Incentives for change* include the devastating impact of about 15 years of conflict, which has reduced production of irrigated and rainfed crop in of Somalia as shown in Figure 4.1. There is a recognized need to regain lost ground and increase the production and productivity of the South Central region, which is the bread basket for all other regions and the source of valuable commercial crops for export and national income generation. With the return of peace, security, and the rule of law, and the rehabilitation of essential agricultural infrastructure, the private sector will invest in agriculture again because in the past a broad spectrum of crops were shown to be highly profitable and able to generate considerable income, employment, and poverty reduction.

4.90 The priorities discussed above provide the basis for investment of public resources to rehabilitate public flood control structures and irrigation systems using up to date technologies. Detailed engineering and economic analysis would of course need to be completed to determine exactly what scale of investment is justified as well as the locations for such investment. In other words, this report recommends the rehabilitation of flood control structures and irrigated agriculture, but this does not necessarily mean an exact replication of the previous systems.

4.91 **The priority roles of public and private sectors.** Crop production is dominated by the private sector; however, the role of the public sector has been amply demonstrated by the absence of government in the past 15 years. The lack of agricultural policy, the absence of enforcement of regulation, the deterioration of agricultural service, the disrepair of the irrigation and other supportive infrastructures, and the absence of peace and security, which were due to the absence of government, have led to decreased production and productivity. Therefore, the role of both the private and public sector to enhance crop production is essential.

4.92 The role of government would be to provide the necessary public infrastructure and services and to create the enabling environment for private investment in crop production. Agricultural services could be undertaken, on a contract basis, by the existing universities, agricultural associations, international and local NGOs, the private sector, and other civil society groups. The government could encourage public/private partnerships that would be a powerful source of energy to reestablish production and marketing for commercial crops such as sugar and bananas, and the associated crops like grapefruit and watermelon, which also require vertically integrated production and marketing systems. Other commercial crops such as vegetables also require processing for domestic consumption; and it is assumed, as in the past, that the government will provide the enabling environment for the private sector (Somali or foreign) to produce, process, and market such crops, whether in partnership with the government or not.

4.93 **Public investment proposals.** Chapter 6 will summarize a proposed program for priority public investment based on the previous discussion. The main conclusions are that the most urgent priority is to rehabilitate the infrastructure that was built to support irrigated agriculture, subject to engineering and economic analysis. Provisional estimates of the cost of a rehabilitation program for irrigation and the cost of support for improving the agricultural sector and watershed development are US\$98.2 million.

Fisheries

4.94 South Central Somalia has a coastline of about 1,200 kilometers and about 45 percent of the EEZ. This makes the sea area over which South Central Somalia has jurisdiction larger than its land area of about 324,600 square kilometers. The fisheries resources have an estimated annual sustainable catch of about 12,500 tons of large pelagic fish, including tuna and kingfish. The estimated annual sustainable catch of small pelagic fish such as sardines, anchovies, scad, and horse mackerel is about 39,000 tons. The annual catch of sharks and rays is about 13,500 tons. Demersal (bottom fish) fish stocks are also present including scavengers, grouper, snapper, grunt, sea bream, lizard fish, and threadfin bream. It has been estimated that some 22,500 tons of large demersal fish per year could be taken on a sustainable basis in this region.

4.95 Annual inshore lobster catches could total around 500 tons per year, while deep-sea lobster could yield 680–900 tons per year. Small quantities of prawns are found in the region, including near the Juba River outlet at Kismayo and at Ras Chiamboni near the Kenyan border. The total seasonal availability of all fish has been estimated at between 73,000 to 105,000 tons.

4.96 The fishing communities in South Central Somalia are located in around 35 villages and towns along the coast between Hobyoy in the north and Ras Chiamboni at the Kenyan border (FAO, 2005d). The present distribution of fishermen is immigrant fishermen (1,125), seasonal fishermen (4,437), and permanent fishermen (15,164)—making a total of 20,726 people involved in fishing at some time of the year.

4.97 **Vision for the future.** South Central Somalia should develop a sustainable fishing industry that is based on a combination of artisanal and industrial fishing. The industrial fishing should be legally licensed and operate within the limits of the available marine resources. The results from this framework for the fishing industry should be the achievement of remunerative incomes for artisanal fishermen.

4.98 **Future initiatives based on past experience.** Artisanal fish catches have been as high as 12,653 metric tons (the catch in 1986). The fishing gear used is mainly hand lines, gill nets, and long lines. South Central Somalia also has a deep-sea trawling venture using 10 factory trawlers with a capacity of around 680 gross tons per day. This group has operated since the mid-1970s. In the 1980s, another venture operated 3 stern trawlers that targeted deep-sea lobster, but fish were also taken. Catch rates for fish were in the range of 5 to 7 tons per day while lobster catches ranged from 1.5 to 2.5 tons per day. In general, industrial fishing peaked in 1985 with a catch of close to 12,000 tons per year, and for lobster

in 1980 when the catch peaked at 1,800 tons. For lobster the rate in 1980 was about twice the current estimated sustainable catch.

4.99 Over the past decade, Somalia's rich marine fish resources have been over fished. Over fishing off Mogadishu, for example, is reported to be seriously affecting the sustainability of the lobster population. It is reported that the current lobster business is dominated by so-called "big men" who have the financial resources to (i) purchase the lobster catches at relatively high prices and (2) to package and transport the finished product to high-paying overseas markets. The economic return is reported to be very high and therefore the buyer can afford to source product from even isolated places, and from stocks that are depleted. With this kind of pressure of use, lobster populations will inevitably be reduced to quite low levels.

4.100 Endangered species like turtles and dugongs are also threatened. These animals are easily entangled in the nets that are used by both artisanal and industrial fishermen. Another threat throughout all Somali regions has come from industrial fishing within Somalia's 200-nautical-mile EEZ by local and foreign motorized vessels operating in joint fishing ventures with Somali business people and faction leaders (UNDP, 2001).

4.101 Fish-processing facilities are available in the main towns such as Adale, Merca, Barawa, and Kismayo. During February 2005, a fact-finding tour of Somalia by a team of World Bank consultants studying the productive sectors spent some of its time in Adale gathering information on the Somali coastline and the marine fisheries activities. People in the Adale community managed to salvage a refrigerated container, two stand-by generators, and a processing center that were part of an FAO-financed fish processing plant built in the 1980s. However, the poor traditional methods of catching and holding fish mean that the product available for processing is not up to the standards required for export. Fishermen need to be trained in modern fishing methods in order to improve quality of product and overall productivity.

4.102 In South Central Somalia, warlords issue "fishing licenses" in all areas. For example, warlords in the vicinity of Kismayo issue licenses to foreign vessels in the name of the state of Jubaland even though the licenses are worthless because they are not supported by any kind of policy, law, or system of government. Ships that hold these licenses are still vulnerable to piracy, which has been a rampant and extremely serious problem along this part of the Somali coast in recent years.

4.103 Also, it is known that there are a significant number of foreign vessels operating in this area illegally. The District Officer of Adale informed the mission that many unlicensed fishing trawlers were operating in Adale waters mainly at night. Efforts to control these clandestine activities have been unsuccessful.

4.104 *There are numerous constraints* facing the fishing industry in South Central Somalia. The following are probably the most important:

- lack of an effective monitoring, control, and surveillance system to manage the fisheries resources and activities of local and foreign fishermen

- lack of a proper fish marketing system
- stringent food processing regulations imposed by overseas countries
- lack of fisheries infrastructure such as cold stores, ice plants, fish processing factories, roads, seaports, airports, and so forth
- lack of private sector fishery organizations
- lack of fishery statistics
- poor skills of fishermen (Sabriye, 2005, p. 27–29)
- illegal fishing by foreign vessels

4.105 The problems, constraints, and issues raised above are daunting in a context of weak and relatively powerless public administration responsible for the marine resources and the fishing industry. Four actions are recommended. First, produce a competent assessment of the marine resources, which has already been recommended for Somaliland and Puntland and could be done in the context of the “State of the Environment” recommended in Chapter 3. Second, establish an appropriate public policy for the fishing industry and institute legally valid licenses to qualified fishing boat operators within the EEZ. Third, establish a coast guard to monitor the operations of licensees, combat piracy, and ensure safety at sea. Fourth, the government should establish a formal inspection system of fish-processing plants as well as an inspection system for any fish product that is exported. In addition to these largely administrative responsibilities of the government, it will also be necessary to provide the right enabling environment and incentives for the private sector to establish on-shore fish-processing and ice-making plants at suitable coastal sites; such an environment will help ensure demand for the catches by artisanal fishermen.

4.106 **Role of the public and private sectors.** Since marine resources are shared public resources, the government has a responsibility for ensuring that they are used judiciously. It therefore has the responsibility for formulating public policy on the use of marine resources and issuing licenses for their use. The role of the private sector is to use marine resources subject to these policies.

4.107 **Public investment projects.** It is proposed that priority institutional and capital investments cover the development of the fisheries subsector in the short and medium term through a combination of policy formulation, development of legal and regulatory framework for sustainable marine resource management, capacity building of government authorities, and promotion of investment in artisanal and semi-industrial fish production and processing. A strengthened government would be able to monitor an industrial fisheries subsector based on licenses to foreign companies while promoting the development of semi-industrial and artisanal enterprises.

5. PRIVATE SECTOR DEVELOPMENT

Introduction

5.1 **There was significant pre-war private sector activity but substantial public controls.** As noted in the recent Country Economic Memorandum for Somalia (World Bank, 2006), before the civil war broke out in January 1991 livestock and crop production, small manufacturing, many of the service sectors such as retailing and hotels, construction, and even schools were in the private sector.²⁴ All agricultural markets had been decontrolled. Exports such as livestock were generated mainly by the private sector. On the other hand the government controlled a number of production and trading monopolies and services that seriously reduced the efficiency of the economy and hampered the enabling environment for private sector investment. For example the government controlled shipping services for livestock exports; had a monopoly on the processing and export of hides and skins; controlled frankincense and myrrh exports; and controlled fuel, fertilizer, and vegetable seed imports. The only airline was owned by the government; power and water supplies, telecommunications, and banking were also government controlled; and there were still a number of government farms. In 1988 the government reintroduced domestic price controls on agricultural products, but the disastrous impact of this policy on production, and the black markets that developed leading to higher consumer prices, convinced the government to abandon these price controls.

5.2 **The civil war brought decontrol.** When the government collapsed in 1991 the economy was freed of all controls and regulations and very soon the private sector, which had already been heavily involved in crucial parts of the economy, also took over activities previously in the government domain. The extent to which the private sector took over these activities varied depending on the region. In Somaliland, for example, where the impact of the anarchy was not nearly as intense as in Puntland and South Central Somalia, the private sector was a dominant force in rebuilding Hargeisa and Burao, which were violently destroyed by the former government in 1988.²⁵ Bossaso developed rapidly as its port became a hub for exports and imports following the effective closure of Mogadishu's port. Investments by the private sector in all these cities resulted in the delivery of goods and services such as electricity, telecommunications, domestic water supplies, and urban waste disposal. At the same time the livestock and fisheries industries also flourished.

5.3 **The private sector was hampered by insecurity.** In South Central Somalia the private sector was hampered by high insecurity and the consequent difficulties associated with transport and the delivery of inputs and supplies, not to speak of the lack of reliable power, water supplies, and sanitation. But even here the private sector managed to do business because in times of civil war all kinds of services are still needed and private entrepreneurs were able to find profitable niches. In terms of the productive services, banana

²⁴ Like the environment, the private sector knows no boundaries and therefore this chapter will cover issues related to the private sector in all Somali regions.

²⁵ The private sector in Somaliland flourished despite some early resistance by the authorities to its dominant role.

exports from Mogadishu were possible through part of the civil war, with the assistance of and payments to warlords, until conflict created untenable export conditions and unscrupulous land acquisitions reduced production.

5.4 Large areas of Puntland also experienced insecure and unstable conditions in the early years of the civil war but, following favorable political changes, conditions gradually became more peaceful and similar results to those in Somaliland were achieved. In Puntland the core livestock export sector was able to continue at some level, even during the worst of times and has been booming in recent years despite the import ban by the Saudi authorities. The port town of Bossaso developed rapidly as it benefited enormously from the livestock trade and from the trade in other goods that was made possible by the excellent road (a public investment) that connected Bossaso with the southern Puntland and the Central regions. If Mogadishu port were to re-open some trade currently moving through Bosasso would be diverted to Mogadishu.

5.5 **Unsustainable Use of Natural Resources.** While the well-known Somali initiative generated the energy behind the explosion of private sector investment in Somaliland and other areas, it still depends heavily on the country's natural resources. In Somalia, as in most countries, there were laws and regulations that manage and control the use of natural resources from land to wildlife. Before the civil war there was a general adherence to these laws. For example, all major investments required environmental assessments before government approval and registration. The civil war heralded the start of an "open season" on all Somalia's natural fauna and flora.

5.6 After the government's collapse, there were no longer any controls and the quest for earning incomes and the freedom of the private sector resulted in the replacement of the previous rapacious government with an equally rapacious private sector. Fragile but valuable forests and rangelands were plundered by charcoal producers. At the time this report was originally written charcoal was still being illegally exported by freelance traders, although it is reported that the Union of Islamic Courts is currently enforcing this ban in Mogadishu. What is now left of the common rangelands is being partly appropriated by individuals or groups in enclosures (see Box 5.2) for their own enrichment leaving the remainder of the range for those less fortunate and subject to higher stocking rates, a higher probability of environmental destruction, and a high probability of conflict. Marine resources are arguable over-used, although the impact is not as visible as in the treeless rangelands, but the dangerous foreign exploitation of fish and lobster stocks still continues. The waste from private enterprises including health clinics and restaurants in towns and villages is dumped in haphazard ways resulting in further desecration of the environment and creating the potential for the spread of disease. As underlined already in this report, there is also no systematic monitoring and control of livestock diseases nor have there been adequate procedures for the inspection and certification of livestock sold on the export market. This resulted in the current six year-old import ban for Somali livestock by the Kingdom of Saudi Arabia and there is still not a system in place that is likely to satisfy Saudi authorities.

5.7 **Somali Transitional Charter.** The same spirit of entrepreneurship that motivated private investors (albeit recklessly at times) during periods of relative peace in Somaliland, and even during conflict throughout all regions, should be harnessed during the

reconstruction and development phase to generate growth, employment, poverty reduction, and food security. There is little doubt that the private sector, in close partnership with the public sector, can deliver a peace dividend for all Somalis if it is given the chance. The Somali Transitional Charter states that “the system of economy for the country shall be based on free enterprise” and also “The Government shall encourage, support and provide full guarantee to foreign investment in the country as specified by law.”²⁶ The first and most critical condition for a more vigorous and broader future development of the private sector is peace and security and this chapter will proceed on the assumption of broad-based peace and security. A discussion of the other constraints that need to be resolved will follow below.

5.8 Structure of Chapter. The next sections of this chapter will (i) lay out a vision for the future of the private sector; (ii) review the past as a baseline, consider medium-term initiatives, and identify the constraints that need to be overcome; (iii) identify the respective roles of the public and private sectors; and (iv) suggest proposals for public sector investments that are needed to support the private sector. This is the same framework used for agriculture in Chapter 4 where the role of the private sector in agriculture is preeminent, and where it is shown also that agriculture is dependent for its sustainable development on many elements of the private sector outside agriculture.²⁷

Vision for the Future

5.9 The overall vision is for strong, private sector-led growth in the economy. The growth will be based on vastly improved public policy to enhance the enabling environment for investment in the private sector, diversification of economic activity, and efficient minimalist government regulatory interventions to address market failures. As mentioned already, this vision assumes the existence of broad-based peace and security. A number of intermediate outcomes will be required to reach the ultimate vision. First, establishing and stimulating investment climate. Second, increased foreign direct investment. Third, enabling and facilitation of impact- and demand-driven business development services (BDS), including the reconstruction of effective and independent chambers of commerce and other business representative bodies that will, in collaboration with governments, address constraints impeding private sector development, with the resolution of constraints leading to an improved investment climate.²⁸ The final intermediate outcome should be an increase in employment in the private sector—the result of a macroeconomic policy that encourages labor-intensive investment.

²⁶ Somali Transitional Charter, Transitional Federal Charter for the Somali Republic, Article 27 (Somali Reconciliation Conference, 2004).

²⁷ The following sections will make use of information in the CEM (World Bank, 2006) and also the report on the Somali private sector prepared by a consultancy team led by the ILO.

²⁸ A simple preliminary measure of the investment climate is an assessment of the “ease of doing business,” which is measured in member countries on the basis of interviews with knowledgeable accountants, lawyers, and so forth. Results are published on a regular basis by the World Bank (<http://www.doingbusiness.org>). More detailed surveys measure investment climate for each country and these surveys are published individually for each country.

Future Initiatives Built on Experience

5.10 This section first summarizes the baseline of activities in the private sector, focusing on sectors other than agriculture. It will then discuss the need for various future initiatives to stimulate the private sector across all regions to achieve the vision sketched out above.

Investment Laws

5.11 The Somalia CEM reviewed the investment law and other legal legislation and, while noting the improvements needed, concluded that “old laws can do in the near term”. Therefore an acceptable investment law is available to all Somali regions. Certainly investment laws will need to be reviewed and achieving such reviews will be an important part of the intermediate outcome that seeks to establish the enabling environment for private sector investment.

Investments

5.12 In terms of information on actual investments by way of the registration of firms, there are limited data available. Annex I provides a listing of small-scale manufacturing enterprises in Somaliland that underlines the relative importance of the service industry. This listing excludes large-scale service industries such as telecommunications, electricity, and water supply. In Mogadishu there were 23 functioning manufacturing plants in 2002 covering a range of activities in food processing and light manufacturing.²⁹ Other characteristics of these companies were that they were usually owned by a small number of shareholders, there had been no or little formal business planning, sources of capital were closely guarded but often had originated in Somalia, total investments appeared to be usually less than US\$200,000, and the technically qualified workers were in short supply (Marchal, 2002).

Telecommunications

5.13 The public telecommunications system was almost completely destroyed or dismantled by the civil war. Annex L provides a summary of rapid developments in the telecommunications industry since 1991 and describes its current structure, challenges, and the potential future developments. This section of the report is aimed at addressing the challenges the industry faces today and the strategic way forward.

5.14 A number of private telecommunications services emerged quickly after 1991 but growth at the beginning was haphazard and resulted in many weaknesses. For example, the allocation of frequencies between different company networks was chaotic, it was not possible to make calls between different networks, fee collections from consumers were problematic, and technical inadequacies resulted in high costs and declining margins for operators. The problems facing the private, competitive, but disorganized telecommunications sector led, with the support of UNDP and the International

²⁹ Since then a few enterprises have been added, such as the Coca Cola factory, an additional abattoir, two water bottling plants, and a plastic bag company (personal communication—Roland Marchal 2006).

Telecommunications Union (ITU), to the establishment in Dubai in November 1999 of the Somali Telecommunications Association (STA).³⁰

5.15 The STA provided the telecommunications industry with the means for self-regulation, collaboration, and in-house training. The support of the ITU and UNDP provided opportunities for international training and advisory support that improved the skills of Somali managers and engineers and hence enhanced the efficiency and profitability of the industry. The result is that today Somali private operators have invested in the latest technology and, using primarily wireless and satellite network facilities, provide the lowest international calling rates on the African continent. Despite this growth of competitive service provision, some significant issues remain to be addressed, namely full interconnection between networks and more efficient allocation of frequencies to operators.

5.16 The telecommunications sector is part of a larger framework of information and communications technology (ICT) in Somalia and the world. The proliferation of ICT entities has been predominantly managed by the private sector. For the purpose of their own interests the private sector may disregard ethical and other standards, and may also sometimes preempt access to public resources. The possibility of such activities requires a public regulatory entity to establish public policy on standards, interconnection of networks, access to public resources, and enforcement of compliance with standards and license obligations thereby ensuring an environment for fair competition.

5.17 At present there is no Somali-wide national strategy on ICT and telecommunications in particular. It is *recommended* that such national ICT strategy and policies are elaborated and debated with all stakeholders such as service providers, government, and end users. The agreed policies should ultimately be reflected in legislation for a Telecommunications Act that would include provision for the establishment of a Telecommunications Regulatory Authority (TRA), to be independent of both the government and the private telecommunications sector. Currently the role of such regulatory authority to a great extent is performed by the STA. The STA provides basic prerequisites for interconnection, oversees proper standards application and frequency spectrum utilization, and is a kind of arbiter in ICT industry disputes. This specific role of STA in the complicated context of Somalia should be supported in the interim period, with the goal of creating a proper public regulator (TRA) that among other things will ensure more efficient frequency allocation, promotion of technology convergence, effective interconnection between networks, licensing of operators where necessary, compliance with equitable business practices, human capacity building in the ICT sector, and advocacy on behalf of the industry in international fora. The establishment of an independent ICT industry public regulator should in no way undermine freedom of telecommunications, broadcasting, access to Internet services, and large-scale involvement of the private sector. Indeed such an authority should be designed to support the private sector, to ensure universal access, to monitor the ICT sector's activities, and to ensure a "level playing field" for further private sector investments and competition.³¹

³⁰ The STA was based on a Memorandum of Understanding signed by 10 Somali telecommunications companies.

³¹ Annex M provides more detail about the suggested roles and responsibilities for the TRA.

Airlines

5.18 The Somali Airlines Association has an unimpressive history. It was established after an initial meeting in Dubai which was followed by further consultations with the International Civil Airlines Association (ICAO). Though all airlines operating in Somali regions agreed in principle to the new association, none dedicated the time and resources to getting it started. Today, the situation seems more favorable. First, ICAO has had a staff change, and the new people in charge are eager to get involved. Second, the conditions of operation have changed: Dubai/Sharjah airport allows only jet aircraft to transport passengers; Mogadishu airport is reopened but the security level 5, as defined by the UN, hampers the operations (no plane can stay there for more than a couple of hours). A Somali Airlines Association could tackle those issues in partnership with ICAO and other agencies. For example, security standards could be defined for Somalia and compliance with international rules and regulations agreed upon. The issue of registration and the use (and misuse) by all operators and governments of former agreements concluded with Somali Airlines (the national carrier until 1991) should be put on the agenda as well.³²

Foreign Direct Investment

5.19 In the 1980s Somalia did not have significant direct foreign inflows. Over the last 15 years there are no records of foreign direct investments, which is consistent with the findings of Marchal (2002) for Mogadishu, even though some investments must have been financed by the Diaspora to establish various high-cost manufacturing enterprises in Mogadishu and Somaliland (for example water bottling plants, electricity generation plants, and the abattoir in Burao). In addition there is a large annual flow of remittances into Somalia; this was estimated to be about US\$1 billion in 2004 (60 percent of GNP), of which some is likely to have resulted in private sector investment. If broad-based peace and security can be achieved then there are sound prospects for a substantial increase in the flow of private sector investment in Somalia.

Chambers of Commerce

5.20 Box 5.1 provides some information on the Somaliland Chamber of Commerce, Industry and Agriculture, which indicates that there is a legal basis for the registration of businesses in Somaliland. The only legislation in Puntland is the Foreign Investment Law of Puntland. Entrepreneurs in Puntland advise that the old Somalia company legislation applies to Puntland companies and registration is with the Ministry of Commerce and Industry. Municipalities issue business licenses. The socioeconomic mapping studies completed in Somaliland and Puntland during 2004–05 confirm that business licensing is not pro-poor. For example, the annual collection of daily fees paid by petty traders is substantially higher than the collections of annual license fees from larger enterprises. There is no functioning chamber of commerce in South Central Somalia, for which Mogadishu is still the main commercial hub. Despite the devastating turmoil in Mogadishu until recently, it is arguably still the dominant commercial center among all Somali areas.

³² Based on written contributions by Roland Marchal (2006).

Box 5-1: Somaliland—The Chamber of Commerce and its Members

Legal and Institutional Framework

Somaliland has a Companies Act and the Somaliland Investment Law. For private sector development, company and business licensing registrations are processed by the Ministry of Commerce in Hargeisa. For most business licenses it is necessary to become a member of the Somaliland Chamber of Commerce, Industry and Agriculture. In addition exporters and importers need to come to the Chamber offices before receiving their first licenses. The Chamber is legally independent of the Somaliland Government. It had a paid-up membership of 700 in January, 2006. Membership fees are US\$10 per month, but the Chamber's main income is derived from taxes on the certification of livestock exports—income that has fluctuated with the fortunes of the livestock export trade in recent years. Rural business license applications and fee payments are made through local municipality representatives. They lodge license applications with District Councils for approval (information supplied includes name and nature of business, location, and contact person details); the Councils in turn forward the information to the Ministry of Commerce in Hargeisa for processing. The Chamber provides few services to its members, which is a cause for concern. Discussions are ongoing to find ways to improve services to members and to strengthen its advocacy role regarding the government.

Large-Scale Enterprises

There are an unknown total number of large enterprises such as the telecommunications companies, money transfer companies, and commercial airlines.

Small- and Medium-Scale Enterprises

A summary of small-scale industries/enterprises operating in Somaliland prepared by the Ministry of Commerce shows 48 enterprises in 2005, of which 46 percent produced building materials or furniture, 41 percent produced processed food of various types, and half of the remainder were leather processors. There is little manufacturing since most of the building company suppliers rely on imported finished products. There is some local furniture manufacture but again it depends on imported wood. Among the food processors, the production of bottled water and fruit juices is important and dependent on local materials apart from the containers. Other food processors use imported materials such as flour. Apart from the leather tanners and bottled water producers there are only three substantial employers among the medium-size enterprises in Somaliland, namely the Las Qoray fish processing factory close to the disputed boundary between Somaliland and Puntland, the fish processing factory in Berbera, and the sheep and goat abattoir in Burao.

Micro Enterprises

There are numerous traders and micro businesses producing goods and services in all Somalia regions. Although there is no information available on how many micro enterprises exist and what their turnover might be, one needs only to look at Hargeisa's commercial center to make it clear that micro enterprises make up a very large proportion of the business and service sector in Somaliland. The Chamber's membership number of 700 suggests that the official list of micro enterprises from the Ministry of Commerce is incomplete or that the list covers only medium-scale enterprises. It cannot be assumed that all micro enterprises in Somaliland are members of the Chamber and hence there must be many more than 700 private enterprises of all sizes in Somaliland. There are, for example, few female members in the Chamber even though there are numerous female-owned and managed businesses.

Sources: Mission discussions in Somaliland and Puntland in 2005–06.

5.21 Chambers of commerce in Somaliland and Puntland at present are weak in terms of the services they offer and are far too dependent on governments. It is suggested that they would be more effective if they made major changes in their management structure, leaving themselves free of government appointees, and broaden their membership among the business community. It is also suggested that the chambers (including sub chambers for

important trade groups) should focus on becoming effective advocates on behalf of various business interests with the various governments. To do this successfully the chambers will need to broaden their membership, increase the scope of their activities, strengthen their capacity to identify and analyze the concerns of the private sector, respond with BDS facilitation, and improve their ability to represent their members with the government. If they do not make these changes other business representative bodies should, and will, emerge to take their place.

5.22 During the PSE cluster mission visit to Hargeisa in mid-January, 2006, a Business Forum was held to discuss the future role of the Somaliland Chamber. In brief it was agreed to (i) redefine the Chamber's mission and vision and strengthen its capacity, (ii) put together a strong program for assisting the business community, and (iii) promote public-private partnerships. Actions are being taken to implement this program. An example of services the Chamber could very quickly provide for the business community, including the agricultural sector, is to ensure that there is a satisfactory and transparent market information system and involve many more businesswomen in their activities.

5.23 The Somali Business Council based in Dubai (which is the destination for most of Somalia's exports and the source for most of its imports) is a business organization that parallels the chambers of commerce in Somaliland and Puntland. It has received technical assistance from donors for the purpose of facilitating the establishment of a chamber of commerce in Mogadishu, and a constitution has been drafted. But the extremely unsettled political situation in Mogadishu would need to change considerably before such a chamber, even if established, could do useful work.

5.24 The Dubai Somali Business Council (DSBC) was set up in late spring 2000, just before Carta's government. The idea was raised in the first gathering of the Somali business people organized at the Dubai Chamber of Commerce in May 1998. The DSBC has been used by various groups to assist in making assessments of Somalia's business and trading and activities. The DSBC has limited finances and staff and hence the real work of the Council has been done voluntarily by a few members. Politics has also been an increasing problem. Since the DSBC wanted to represent the whole Somali business community, it had to steer clear of politics. The TNG did not last long enough to create difficulties but concerns were raised about the DSBC leadership's involvement in TFG politics. Somalilanders and others opposed to the TFG resented this involvement as a breach of rules that governed the creation of the DSBC. When a new leadership was supposed to be elected late in 2005, a crisis broke out and elections could not take place. Up till now, no solution has been reached to reconcile the two parties.³³ Irrespective of the outcome, the establishment of the DSBC is an example of the emergence of an alternative business representative body mentioned in paragraph 5.21.

5.25 If the chambers and the SCBC are there to assist the business community there is no shortage of problems that need to be addressed. Constraints to private sector development are listed in Box 5.2 and can be broadly summarized as the extremely limited availability of

³³ Roland Marchal, who made these observations about the DSBC, suggested that this crisis could be seen as the product of some success on the part of the DSBC. If resolved, the current crisis could also be interpreted as a significant phase in its continued growth.

BDS and providers.³⁴ But in the face of this withering list one could question how the many Somali businessmen, mainly traders and merchants, make a living and stay in business. The answer lies in their energy and ingenuity that makes them able to overcome many difficulties. Businessmen and businesswomen have learned to cope with many constraints, have learned to live with uncertainty, and are prepared to take risks with their investments. Nevertheless, the establishment of small businesses is known to be risky even in ideal business environments. For example, it is generally agreed that worldwide a high proportion of small-scale enterprises fail within a year of start-up, even in countries free of conflict. It is not known how many fail within a year of start-up in Somalia. The availability of BDS would be a major benefit for all businesses and reduce the failure rate.

5.26 One of the main contributions the chambers of commerce, or alternative business representative bodies, could make is to promote capacity building in the considerable range of skills that are important to the Somali private sector. The availability of trained craftsmen and women in a range of skills will be a crucial ingredient in the development of the public and the private sector. Investment in skills training in agriculture, livestock, and fisheries has already been highlighted the previous chapter. The demands for training in management of enterprises will no doubt grow as the Somali economy expands all regions. But skills in almost all crafts are also in short supply. Another report addressing technical training and the chambers of commerce will make an important contribution by assessing demand for different skills in the private sector.

The Financial Sector

5.27 A persistent issue facing the private sector, already underlined for the agricultural sector in Chapter 4, is the need for an effective financial sector that provides reliable banking and insurance services. The broader issues in respect of the financial sector, except microcredit, will be addressed in a separate report and will therefore not be discussed here. It is, however, important to stress that without effective financial services normal trade is severely constrained and it ends up as a barter arrangement, which some experienced traders in Dubai have described as “trading goats for bottles of water”—and certainly Bossaso port is crowded almost every week of the year with goats and bottles of water.

5.28 *Microcredit for small-scale traders*, other entrepreneurs, and farmers/pastoralists are also dependent on a larger financial sector. In 1998 an EC-funded Somali Microfinance Institution (MFI) was established as a pilot to (i) improve the living conditions of the poor in Somaliland and Puntland, (ii) assess how microfinance would be received in these two Somali areas, and (iii) study the impact it would have on the livelihoods of the poor and on business development.

5.29 *About 70 percent of MFI borrowers were women.* Since 1998 the MFI has provided loans to over 5,000 households in three main urban areas of Hargeisa, Bossaso, and Galkayo. Most of the women borrowers were small-scale traders said to have benefited from the program over eight years.

³⁴ Some changes providing more detail have been added to some items.

5.30 *Microcredit is not plain sailing.* The MFI did attract considerable criticism from religious leaders, who objected to the service charge for the loans describing it as *riba* (usury) and therefore unacceptable. In addition the repayment rate for the MFI dropped to about 50 percent during the pilot program but climbed up again to almost 90 percent. Despite some critical reviews, the program has been regarded by many as successful. One of the Somali experts with sound knowledge of the MFI program considers that the *riba* issue can be dealt with through a dialogue with religious leaders to achieve an understanding that it is consistent with Islamic principles. The repayment issue was resolved by an awareness-raising campaign to underline that credit was not a grant and needed to be repaid. Independent consultants contracted to review the pilot concluded that it had generated a positive impact, although the implementing agency had performed poorly. Finally, it is being proposed that the NGO which ran the program be transformed into a business venture to operate the credit program in future (see Box 5.2). Given the lack of a banking system, it is **recommended** that this microfinance business venture is worth examining further with a view to replicating it in the future.

Box 5-2: List of Constraints Facing the Private Sector

<p>General</p> <ul style="list-style-type: none"> • No formal private banking and insurance services • Poor infrastructure and logistics for trade • Limited product range available from imports or domestic production • Lack of subcontracting and other linkages with larger enterprises • Lack of inter-firm linkages among private enterprises • Lack of representation and participation in public policy debate • Very shallow technological level and experience • Absence of public or private business advisory services • Absence of business and market news and information systems and services • Limited micro-finance institutions capacities and outreach to remote areas • Absence of certification capacities for export markets, especially standards of compliance • Poor understanding of international market requirements and opportunities • Widespread insecurity and lawlessness in South Central Somalia
<p>Small-, Medium-, and Large-Scale Enterprises</p> <ul style="list-style-type: none"> • Difficult to raise business capital (fixed and working capital) to start/expand businesses • General absence of partnership/multi-shareholder culture limits large-scale capitalization • Absence of formal credit institutions causes cash flow/liquidity problems • Difficult access to markets because of isolation • Products produced domestically are of poor and fluctuating quality • No information on domestic market demands and new products • Difficult to compete on domestic market with imports because of better packaging • Local purchasing power is generally low due to widespread unemployment and poverty: consequently, most stocks of goods are small and of low quality to meet weak consumer demand • Small number of clients, very irregular sales <p style="text-align: center;">Box 5.2: List of Constraints Facing the Private Sector (continued)</p> <ul style="list-style-type: none"> • Raw materials not always available • Very difficult to find competent employees • Clan relationships can strongly influence trading and investment opportunities and success/failure

<ul style="list-style-type: none"> • Unclear land policy leading to slowdown in investment • Unclear taxation policy leading to reticence by investors
<p>Owner/Management Level Issues</p> <ul style="list-style-type: none"> • Poor business planning skills • Lack of partnership culture and understanding • Lack of modern business experience • Lack of technical management know-how.. • Lack of access to training for business management <p>Rural and Microenterprise Levels</p> <ul style="list-style-type: none"> • Lack of information on livelihood opportunities based on small-scale enterprises. • No institutional capacities for delivering support services (e.g. extension and credit). • Lack of access to markets because of isolation. • Producers not organized and marginalized in most supply chains resulting in high market margins. • Lack of competition in supply chains (compounded by too many chain traders and clan trading loyalties). • Lack of access to training and appropriate and intermediate technology and limited availability of locally skilled human resources. • Poor, unreliable input supply resulting in lost opportunities to improve productivity • Poor-quality products resulting in low prices to producers • Women are poorly supported by interventions despite playing a key role in microenterprise activity <p>Trade, Legal, and Regulatory Issues</p> <ul style="list-style-type: none"> • No knowledge of future trade policy, including tariffs • Absence of clear legislation on important development issues (for example, mining law in Puntland) • Limited judiciary capacities resulting in costly litigation • Legislation too complex (for example, mining legislation in Somaliland) • License fees a barrier to entry for the poor (for example, artisanal mining license costs in Somaliland) • Annualized cost of daily petty trade license fees in Somaliland and Puntland are substantially higher than annual costs for SME licenses • Development Tax a disincentive to exporting through Berbera • Licenses and permits obtainable only in main towns • Weak capacity of governments to evaluate investment proposals that use natural resources <p><i>Note:</i> This list is not in order of priority.</p>

Known Prospects for Mineral Development

5.31 The 2005 IFC/World Bank report provided an excellent overview of numerous possibilities for private sector development of all sizes in Somaliland and Puntland.³⁵ The

³⁵ The Charter of the Transitional Federal Government provides that the natural resources of Somalia are public property and that a law is to be enacted which defines their use for the common good. The TFG has authority over natural resources throughout the Somali Republic.

following is a list of prospects based on that report (excluding the agricultural sector and trading) with brief commentaries.³⁶

- **Coal.** Somaliland has significant coal resources, reportedly of the same type as coal mined in Nigeria and Germany (that is, below what would be considered international export quality but adequate for domestic and some industrial use). The largest known reserves are located in the Onkar area near Berbera (in the Hodmo Valley). Coal is reportedly close to the surface. There are also reserves reported around Harirad in Awdal, in the Erigavo District, and in the coastal hinterlands of East Sanaag but there is no information on quantities and quality or about the respiratory hazards that may be ahead if coal is used in unventilated houses. In Puntland, coal reserves are similar in quality to those in Somaliland and are reported along the Gulf of Aden coastline at Alula, Candala, and Dhurbo (where the Italians were mining coal during the 1920s and 1930s). There is no known current production of coal anywhere in Somalia.
- **Oil.**³⁷ There is international oil exploration activity near El Gal in Eastern Awdal Region and also near Berbera that is reportedly showing promise. Prior to the war, Conoco allegedly found natural gas reserves in the Nugal Valley and sunk an oil well in Taleh in Eastern Sool Region. There are probably confidential data available on the findings from various drilling activity in Somaliland and Puntland. The opinion of some experts, however, is that the geological formations are similar to those in Yemen where oil has been found and that prospects are therefore promising for oil deposits in northern regions. Yemeni oil is generally good-quality light crude although mixed with substantial quantities of water, which increases the cost of recovering oil considerably.
- **Limestone and gypsum.** The limestone deposits at Suria Mableh in Somaliland were mined for use in the cement plant. Other known limestone deposits that may be suitable for cement raw material are found in the central zone near Beletweyne and in the south at Bur Anole and Markabley. Lower-grade limestone deposits are found in the north and along the coast near Mogadishu. Somalia also has significant gypsum deposits, of which the largest known deposit occurs at Suria Mableh. Material from the Suria Mableh deposit has been used to make calcinated gypsum, school chalk, and medical plaster. Other gypsum deposits occur in Southern Somalia close to the Beletweyne and the Bulo Burti areas.
- The cement plant managed by the Berbera Cement Agency closed in 1991 because of the civil war and since then the company has imported all its cement needs. The International Cement Review estimated the country's cement consumption to be 100,000 tons in 2000. It is reasonable to assume that annual consumption has

³⁶ This material has been drawn from the 2005 IFC/World Bank report. This report focuses on northern regions and hence references to South Central Somalia are few, but this does not mean that good prospects for oil and mineral production there do not exist there.

³⁷ The prime minister recently announced that the Petroleum Law has been drafted and will soon be considered by the Council of Ministers (<http://www.laasqoray.net/>, 13 June, 2006).

increased over the past few years given the pace of urban residential construction fuelled by Diaspora investment. There are suggestions that coal near Berbera could be used to power a rehabilitated or new cement plant in the area. A European entrepreneur who packages cement plant investments in developing countries confirmed there was potential in Puntland and advised that the desired commercial production capacity to service local and regional market opportunities is 0.5–1.0 million tons yearly. It was also suggested that rehabilitation of the existing plant would not be an economic proposition and that a second-hand plant might be the best option. Apparently the cost of a second-hand plant available in Europe to produce up to 1 million tons per year is likely to cost about €20–30 million.³⁸ The Ministry of Commerce and Industry in Hargeisa reported that there has been interest from various consortia in investing in the cement industry.

- **Gemstones.** Somaliland is located at the end of the “Mozambique Belt” and has an interesting variety of marketable gem resources including emerald, ruby, aquamarine, garnets, sapphire, alexandrite, tourmaline, zircon, red spinel, and others. While production of opal is reported in Somaliland, the source appears to be Ethiopia. Rural socioeconomic studies completed during 2004 by ILO in the Awdal Region confirm sizeable artisanal gem mining activity in the Garbodadar/Gargara area (about 1,000 miners) and Boon (about 300 miners), and unknown activity in areas around Abdiqadir and Harirad. Studies in Sanaag confirm there are an estimated 300 artisanal miners active in gem and other mineral mining in the mountains between Las Qorey, Badhan, and Ceelayo. Diamonds of low quality are also reportedly mined in this area. Previous trade fairs and technical training for mining group leaders in Hargeisa indicate that a few hundred artisanal gem miners are active in rural locations off the Boroma-Hargeisa-Berbera corridor. Most miners in West Somaliland appear to operate in groups of 10–20 miners and are licensed by the Somaliland Ministry of Minerals and Water, but in East Sanaag mining is unlicensed.
- **Precious and base metals.** Somaliland has gold, platinum, copper, nickel, lead, and zinc: there is no commercial history of mining these metals. Most of their known occurrence is in West Somaliland. There is artisanal gold mining activity in Somaliland at Arabysio near Hargeisa, and reportedly in the area around Gudmo Biyas-Hiis-Mait in West Sanaag. Gold and copper are reportedly mined in the coastal hinterlands of East Sanaag between Las Qorey-Badhan-Ceelayo. There is no information available on gold production levels, trading or gold purity levels. Gold mined in Ethiopia and South Sudan has a high purity level of about 95 percent.
- **Industrial minerals.** There also a number know deposits of minerals used in industry such as tantalite, columbite, tin, uranium, feldspar, kaolin, kyanite, lead, quartz crystals, and glass sand. Tin mining was operational before the civil war in an area west of Bossaso, but there is no longer any tin-mining activity there.

³⁸ Per international cement plant developer interviewed in Bossaso.

- **Salt.** Salt brine deposits (from evaporated seawater) in northwestern Somalia near Zeyla have been exploited for many years. Other brine deposits are found at Horio, Gesira, and Karan. Salt deposits are also found near lakes (Obbia and Agherrar in the southwest), salt springs (Heis Dagah and Darraboh in the northwest), and rock salt (Yet in the southwest). Salt is produced from salt wells in Lughaya and tidal seawater capture in the Berbera area. There are several large hills of pure crystal salt in Hafun dating back to Italian production prior to World War II. Salt produced in Hafun was previously connected across a lagoon to Hurdiyo by 15 kilometers of mechanical cable cars, which were looted by the British along with factory processing equipment for World War II steel needs. The site was originally selected because of fast, favorable salt production conditions including highly saline lagoon water, flat land, and sun and wind. Small-scale salt production was conducted there until the tsunami hit in late 2004 when there was considerable destruction of the salt-making infrastructure. There are probably a few hundred participants involved in producing unprocessed sea salt along the northeast and north coasts mostly for the local market. Two women entrepreneurs near Berbera have built concrete salt beds to improve and increase production from tidal flows. One advised that currently exports were about 500 tons annually to neighboring Ethiopia, a major net importer of salt. Production in all Somalia was estimated to be 1,000 metric tons per year from 2000–04. There is no salt crushing, grinding, or iodization capacity.

5.32 Most Somali regions have interesting mineral and energy exploitation opportunities that would not be feasible for artisanal mining because of their large size. However, they could be attractive to international junior mining companies if the existing cumbersome mining code were simplified in a manner that also allows domestic small-scale activities to flourish alongside. Modern digital geological information is also important for attracting investment. It is understood that about 80 percent of Somaliland’s geological information is already available in this format at relative low cost. Investment in coal production should be promoted and assisted at the earliest opportunity to provide a bulk alternative to charcoal.

Capitalizing on Prospects for the Use of Natural Resources

5.33 If the TFG is interested in the productive exploitation of large mineral resources, then this report ***recommends*** that there are advantages in establishing a formal process for inviting, evaluating, and awarding contracts to companies for either exploration or exploitation of public natural resources. The basis for such a system existed before the civil war and followed regulations established by the previous governments whereby prequalified firms were invited to submit proposals.³⁹ These proposals would then need to be evaluated by an independent committee using pre-announced evaluation criteria. Governments should focus on establishing the capacity to implement these procedures and for the final drafting of contracts with successful bidders. If an effective and transparent system can be established for arriving at contracts for environmentally neutral exploitation of mineral resources, then

³⁹ A World Bank–assisted project provided assistance to the then national government to support the government’s efforts to intensify exploration for petroleum resources and to improve its planning capacity in the energy sector. World Bank, 1980 – “Petroleum Exploration Promotion Project”, approved November 7, 1980 for US\$6.0 million, Credit 1043-S0.

governments will have an important source of revenue with which to jump start budgets and the delivery of services.

5.34 It is also *recommended* that attention be given to enabling and facilitating local BDS to enhance prospects for artisanal mining to generate income and employment. The artisanal gem sector in Somaliland appears, for example, to have good potential to create and improve large numbers of rural livelihoods. The gem subsector is a primary target for group building and training and marketing support for miners and other key actors. Site technical assessments need to be completed in both Somaliland and Puntland for gem-miner training needs, and to identify any other small-scale mining products that could be easily developed. There may be opportunities for fair-trade branding of Somaliland gems, and for pre-feasibility profiling and providing technical assistance for the establishment of a semiprecious gem-cutting business. The sector does, however, need some international image building.

Role of the Public Sector in Support of the Private Sector

5.35 The public sector role is to provide the enabling environment for private sector investment. From the point of view of private sector development in the short to medium term (excluding the specific requirements of agriculture mentioned in Chapter 4), the following action plan by Somali governments would address the most binding constraints on private sector investment and contribute to stimulating broad-based growth through a range of multiplier effects throughout the economy—again on the assumption of a broad-based peace and security:

- **Ensure a sound legal framework.** The 2006 World Bank’s Somalia CEM reviewed the legal framework and, while noting the improvements needed, concluded that “old laws can do in the near term”. However, at the appropriate time the current laws should be reviewed in detail to ensure their relevance to current circumstances and support public-private partnership.
- **Establish sound economic policy.** Sound macroeconomic, sectoral, and public expenditure policies that provide incentives for investment and production as well as opportunities for public-private partnerships, along with capacity building for the evaluation of natural resource-based investment proposals and promotion of broad-based employment generation.
- **Encourage banking and insurance services.** Commercial banks and insurance companies provide core services for the private sector. Full private banking services are necessary to provide the basis for modern commercial transactions. It is also crucial to have insurance institutions, so that lenders can have loans insured and traders can insure letters of credit for exports and imports.
- **Facilitate trade.** Open and transparent trade and tariff policies as well as efficient and non-corrupt goods clearance companies will reduce transactions costs and encourage the private sector to invest in enterprises that generate exports.

- **Ensure transparent regulations.** Establish or reestablish government regulations that provide adequate powers to guard against market failure.
- **Ensure core infrastructure is available.** Design infrastructure development policy to ensure, through public or private sector investment, access to critical main roads, sea ports, airports, water, and power and their maintenance with an eye on reducing isolation so as to encourage non-urban investment by the private sector.
- **Promote vocational training.** Develop partnerships with the private sector to establish demand-driven and fee-paying vocational training programs in regions that will generate responses to the demand for craftsmen and women in various areas.
- **Facilitate Credit for Small and Medium-Sized Enterprises.** Establish credit schemes for innovative initiatives such as agroprocessing, salt production, and mining. Also provide resources for developing the operating arrangements that support guarantee funds for activities such as matching venture/loan capital investments by SMEs. These could be based on public-private partnerships.⁴⁰

5.36 On the basis of research by the World Bank are a number of important issues that must be addressed by the public sector in the short term to improve the prospects that entrepreneurs will be prepared to invest in Somalia irrespective of the outcome of the action plan outlined in the previous paragraph. These issues relate to the common hurdles that investors face when exploring the requirements for starting a business, which even in some developed countries have proved onerous.⁴¹ They are:

- Simplify business registration procedures.
- Clarify taxation obligations for investors.
- Abolish redundant licensing requirements.
- Clarify powers of different local authorities in regard to land acquisition or rental.

Priority Public Investments

5.37 Macroeconomic policies and infrastructure, along with investment in capacity building, social capital, governance, and the rule of law, are all the responsibility of other clusters. Judicious strategies in those clusters will improve the incentives for the private sector investment. There are a few issues, however, that this cluster would like to see addressed to support the private sector that are outside the direct responsibility of the other clusters. These issues mainly involve strengthening and complementing the capacity of

⁴⁰ Aspects of microcredit programs will be discussed under the heading of “The Financial Sector.”

⁴¹ See World Bank, *Doing Business*, various years.

entrepreneurs and supporting their growth as managers. The next paragraph makes some suggestions.

5.38 The main objective of any public program to support the private sector should be to provide an enabling environment that will stimulate investment and growth, diversification of production, and the creation of employment and sustainable livelihoods. These ends can be achieved by a combination of the following actions: (i) increase the availability of information on business and market opportunities (including those opportunities that contribute to biodiversity conservation and renewal) and promote investment in related enterprises of scale; (ii) enable the development of BDS and improve access for entrepreneurs and investors (including gender and youth) to these services, including a range of technical and financial services; (iii) strengthen business institutional capacities and the skills base of human resource; (iv) help create an enabling environment for promoting investment and encouraging entrepreneurship by establishing business development services; and (v) without compromising profitability, maximize opportunities for employment creation and local business development through the use of labor-based technologies and community contracting (most of which should support the development of the private sector in remote coastal locations).

Women in the Productive Sectors

5.39 The mission listened to hours of stories about the difficulties and frustrations faced by women in Somaliland and Puntland. Invariably the women needed to earn a supplementary income for their families to avoid poverty. Very often, they were widows as a result of the war, had children or elders to care for, and wanted education for their children. They usually had no independent means of transport, no access to capital, and were involved in time-consuming work like herding goats and sheep (assisted by children). Many women were butchers and fish retailers. They worked long hours in value-added or service-type enterprises—often selling perishable products such as meat, vegetables, fish, milk, and other foods in town markets where there were no toilets or childcare facilities. They were appalled by the destruction of the environment as a result of charcoal production and over fishing, but understood the pressures even though much of the income generated went to pay for Khat. Women were not looking for subsidies, but were looking for better infrastructure such as roads, water supply, and markets. In one Somali area the lack of women’s representation in local government was deplored.

Livestock Enterprises

5.40 In the livestock industry in the north men tend to own camels and cattle, while women own sheep, goats, and poultry. Women often use their children to tend to the sheep and goats. While this relieves women to attend to agricultural activities and home duties, it also means that children spend more time with sheep and goats than going to school. Since women usually own the sheep and goats it is not surprising that many are also involved in butcher’s shops—either on their own account, as partners, or as employees. At the same time it was reported that many households are withdrawing from livestock production and moving to urban areas. Urbanization will provide more opportunities for children’s education but it is not likely to make it any easier for women to earn additional income.

Fishing Enterprises

5.41 In the artisanal fishing subsector close to main towns such as Bossaso, men invariably do the fishing while women dominate fish markets and small open-air fish restaurants. Yet, in those markets it is the men who do the heavy cutting of tuna and kingfish for cash payment.

Agriculture

5.42 In the agricultural sector women undertake much of the seeding, weeding, harvesting, and other fieldwork whereas men do the plowing and other heavy physical work. Women, dominate in agricultural markets but, as in urban areas, toilets and resting facilities where women can attend to young children are not provided.

Conclusions

5.43 A number of conclusions emerged from the mission's discussions that are relevant to a strategy for improving the prospects for women in Somali society.

- **Nontraditional employment.** Most women's income-generation activities are small enterprises that require some capital, are very time consuming, and take women away from the household and create problems for child care. Although help with child care from extended families can be a solution, finding employment opportunities for women that have a minimal impact on family life will be important. These types of jobs in service industries should in theory emerge quickly from growth in the economy. But these nontraditional jobs of the future will require new skills and hence adult education of various kinds may be an important public sector strategy.
- **Microcredit.** For women intending to continue with a small business microcredit will be important. The pilot credit program previously financed by the European Commission in Somaliland and Puntland, despite the problems expressed by religious leaders over their interpretation of fixed charges as *riba* (usury), may be a useful model to replicate for providing small-scale credit because 70 percent of its borrowers were women—mainly in urban areas.
- **Toilets and childcare facilities in markets.** Providing improved toilet and childcare facilities in markets is an obvious strategy for relieving stress on women and improving their opportunities to function for long hours in markets. There is often no financing available for such amenities and it is therefore suggested that all vendors (male and female) should contribute to a levy to pay for the maintenance of toilets at markets, but local governments should be responsible for constructing the facilities with public funds.
- **Technology.** An important part of enhancing the welfare of women will be relieving them of tiring and time-consuming manual labor in agriculture and other enterprises. Much of this could be done with available technology. This

report recommends studying technologies that can enhance women's productivity and hence reduce their working hours in such activities as weeding, harvesting, threshing, grain milling, grain storage, fish processing and storage techniques, and the collection of wood and water. The time saved by improved technology could release women to pursue other income-earning activities, or devote the saved time to the crucial role of educating young children in life skills.

- **Education of young children.** The education of young children will be a focal point for the JNA. Targeted assistance programs, such as subsidized community child care, should be established to ensure that women who work (particularly women who are at or below the poverty line) do not at the same time prejudice their chance to ensure a basic education for their children and so contribute to human capital development.

6. INVESTMENTS FOR RESULTS

6.1 The purpose of this chapter is to first set out the details of the proposed investment program in the light of (i) the field assessments in the three regions, and (ii) the investment proposals outlined briefly in the text above under the headings “Public Investment Proposals.” The chapter will then present the results matrices for the environment and the three regions. Finally, the chapter will present monitoring matrices for each area or region.

Field Assessments and the Productive Cluster

6.2 Large numbers of Somalis fanned out into regions and districts during the Joint Needs Assessment with standardized questionnaires to discuss with people individually and in groups their views on the constraints they faced in their lives and as participants in the various subclusters in the productive sectors. They were also asked about priority actions that would make it easier to achieve their goals in activities such as livestock, crop production, and fisheries, with additional questions about particular problems facing women in the productive sectors. The field assessments were made in remote as well as nearby areas and provided a much broader coverage of the three Somali areas than the smaller missions of experts who had preceded the field missions to the main cities and towns.

6.3 Annex M provides detailed summaries for each area covered by the JNA with information by regions and districts. Six broad conclusions emerge from these summaries:

- (i) Most of the issues raised by the respondents in field assessment were also raised during the JNA mission Productive Cluster mission.
- (ii) Respondents expressed consistent concern about the degradation of the environment.
- (iii) There is a general and strong hunger for many types of information, from markets to technology.
- (iv) There is pervasive interest in ways to improve the position of women.
- (v) There is a strong concern about the need for peace and security.
- (vi) There is deep concern about the livestock import ban into Saudi Arabia and the associated issues of rebuilding the veterinary service and improving holding grounds for livestock.

Criteria for Choice of Investment Programs

6.4 Chapters 4 and 5 have discussed a range of development issues for the major sectors in each of the three areas. Of course it will not possible to provide assistance programs for all of them. Each section in each chapter has considered the priorities, has come to

conclusions, and has made recommendations on the most relevant and important public investments. Conclusions and recommendations were based on the assumption of a broad-based peace, and a number of criteria.

6.5 The first criterion was the extent to which projects would contribute to reconstruction and development and hence growth, employment, income generation, poverty reduction, and food security. In reality almost all investments in the three Somali areas will have some impact on these objectives. The subtext for this first criterion is therefore also the issue of “need.” Hence readers will notice some bias toward remote fishing villages. In this case the isolation and low incomes of fishing communities and consequently their extreme deprivation became the dominant criteria. Indeed isolation is a pervasive geographical and political issue for Somalia but one that is difficult to address because, although the construction of a road would be the logical solution to isolation it would probably also be the most expensive.

6.6 The choice of these programs has also been influenced by the obvious need to ensure that the environment is used sustainably in the context of a strong drive for high growth rates. In other words the focus was kept on achieving sustainable growth, rather than growth at all costs. This is particularly important for Somalia because almost all income is in some way derived from the use of natural resources—and in some cases the unsustainable exploitation of these resources.

6.7 It has been made clear throughout the report that proposals for the productive cluster and the environment need to be congruent and linked with proposals for other clusters. Recommendations on livestock marketing have been made in the light of the likely conclusions of the infrastructure group. The need for a competent financial sector has been emphasized knowing that this is a crucial issue for the macroeconomic cluster. Developments in isolated areas will depend heavily for their sustained existence on the social services that are provided. At the end of the day the growth of various productive sectors is the basis for people’s livelihoods and hence the Productive Cluster has sought to ensure the enabling environment is right for sustained livelihoods. The eradication of the tsetse fly in the riverine areas of South Central Somalia is an example of this.

6.8 A final note on the set of proposals. First, the team that produced this list is very aware that other options could be just as logical and justifiable even using the same criteria. In the end the proposals are the result of the best judgments available. Second, the team received many project proposals from communities and individuals. All these proposals were reviewed and some of the ideas were incorporated in the discussion on the projects chosen, but it has not been possible to respond to each proposal submitted. Finally, the cluster team is very conscious that in the synthesis report more choices about priorities will need to be made on projects. Hence readers should not assume that all the project proposals included in the results matrices will automatically find their way into a final set of projects in the synthesis report, which will be prepared for the donor conference.

Summary of Project Costs

6.9 A summary of the costs of those proposals for each area is shown in Table 6.1 below. These estimates are presented for the main programs and projects that emerge as priorities.

Table 6.1: Summary of Cost Estimates for Somaliland, Puntland, and South Central Somalia (US\$ million)

1. Somaliland

Subclusters	Phase I (2007 & 2008)			Phase II (2009–11)	Total (2007–11)
	2007	2008	Subtotal		
Removal of toxic wastes	1.2	6.0	7.2	—	7.2
Sustainable natural resources management	2.6	4.2	6.8	4.7	11.5
Animal health services and livestock marketing	4.0	5.4	9.4	3.7	13.1
Crop production and watershed management	3	6	9	10.6	19.6
Fisheries production and marketing	3.0	1.5	4.5	1.2	5.7
Private sector development	0.9	0.9	1.8	2.2	4.0
Totals	14.7	24	38.7	22.4	61.1

2. Puntland

Subclusters	Phase I (2007 & 2008)			Phase II (2009–11)	Total (2007–11)
	2007	2008	Subtotal		
Sustainable Natural resources management	2.3	4.5	6.8	5.6	12.4
Animal Health services and livestock marketing	3.3	5	8.3	3.1	11.4
Crop production & watershed management	5.4	8.2	13.6	15.9	29.5
Fisheries production and marketing	3.0	3.3	6.3	1.8	8.1
Private sector development	3.7	3.5	7.2	8.0	15.2
Totals	17.7	24.5	42.2	34.4	76.6

3. South Central Somalia

Subclusters	Phase I (2007 & 2008)			Phase II (2009-11)	Total (2007-11)
	2007	2008	Sub-total		
Sustainable Natural Resources Management	2.9	5	7.9	6.7	14.6
Animal Health Services and Livestock Marketing	5.0	8.6	13.6	6.4	20.0
Crop Production and Watershed Management, Rehabilitation of Irrigated Agriculture	4.7	19.6	24.3	73.9	98.2
Fisheries Production and Marketing	2.9	2.8	5.7	1.4	7.1
Private Sector Development	4.7	4.5	9.2	9.0	18.2
Totals	20.2	40.5	60.7	97.4	158.1
Total for all Areas	52.6	89	141.6	154.2	295.8

Source: PSE mission estimates

Note: The estimated costs need to be verified on the basis of detailed on-site assessments and quantity surveys. Costs in this table are capital costs only. They do not include costs for operations and maintenance, which would usually, and logically, be paid through user fees or other mechanisms for cost recovery.

Summary Results Matrix and Matrices for Three Somali Areas

6.10 The Paris Declaration (see paragraph 1.5) was a commitment amongst bilateral and multilateral agencies to, among other things, assist the development and implementation of results-driven national development strategies. Agencies also made a commitment to address the current lack of transparency in developing programming, to eliminate duplication of efforts, and to define measures and standards of performance. These objectives can be incorporated into a results matrix which, simply put, identifies the chain of events (results chain) from the articulation of an expected outcome (result) from a program or project to the achievement of the outcome (result).

6.11 The purpose of a results matrix therefore is to concisely summarize the expected results from programs and projects and how the results will be achieved. Inevitably programs and projects arise out of a strategy that can usually be defined in terms of major themes. For the Productive Sectors and Environment Cluster there are two major themes that have run consistently through this report: first, restoration and sustainable use of the environment; and second, growth in the pastoral, agricultural, and fisheries subsectors that will contribute to aggregate economic growth as the basis for reducing poverty and achieving broad improvements in welfare of the Somali people. Within the two themes there are sub themes that are the equivalent to the issues covered for each subclusters that provides the structure of much of the report. The matrix below (Table 6.2) provides the outcomes that are expected to be achieved by the end of Phase II of the reconstruction and development program. The matrix also shows the baseline constraints that need to be overcome, actions required to achieve the final outcomes, and intermediate outcomes that should be the focus of short-term programs.

Table 6.2: Productive Sectors and Environment Results Matrix.

Summary Results-Based Matrix

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
<p>A1. Natural Resources</p> <p>► Regeneration and improvement of Somali natural resources such as wildlife, water, wetlands, soils, rangelands, forests, marine life, and reefs to their prewar state</p> <p>► 200,000 hectares of community reforestation</p>	<p>It is accepted that many core natural resources have been destroyed or seriously depleted and hence the environment has been degraded substantially since 1990.</p> <p>FAO/Africover (http://www.africover.org/) information on land cover can provide an indicator of land use, but these data are not in time series (see Annex A, Table A.1). Recent aerial photos could be used to provide an updated baseline from which to develop more specific target outcomes.</p> <p>Information on water resources in the three areas is available but needs to be consolidated.</p> <p>Land cover information in aerial photos is available from the earlier Africover</p>	<p>Most of the degradation is probably reversible but it will require good policies and aggressive implementation to achieve initial results by 2011.</p> <p>Data on the quality of the marine environment are weak and need to be assembled.</p> <p>Data on wildlife are not strong either and also need to be assembled.</p> <p>Lack of real community effort to ensure that areas reforested are areas where animal grazing will be controlled for a short period.</p>	<ul style="list-style-type: none"> • Cross government agreements to harmonize core environmental policies and strategies for action achieved • Present land cover and land use, and land degradation over the past 25 years assessed • Review of environmental policies, legislation, regulations, and their implementation completed • Capacity of government bodies responsible for natural resources management assessed and strengthened • Public awareness programs for private sector and communities (including youth and women groups) on sustainable land, water, soil, and forest resource use developed • Community reforestation programs established in potentially favorable areas 	<ul style="list-style-type: none"> • Community-driven and managed projects to rehabilitate degraded lands, forests, and water resources for future sustainable use identified, designed, and implemented • Livestock management programs to best manage rangelands and prevent long-term overgrazing developed • Dry-season grazing management regimes for wet-season grazing reserves developed • Illegal enclosures in the rangelands removed • Pastoral associations established/reestablished • Fisheries policy developed that ensures conservation of crucial fish species • Community reforestation program members trained • Nurserymen trained and seeds provided on grant basis 	<ul style="list-style-type: none"> • Comprehensive strategy and policy framework (including environmental legislations) for sustainable management of natural resources implemented • Natural resources management capacity strengthened • Ownership of former wet-season grazing reserves reinstated and transferred to the local communities • Pastoral associations to manage wet-season grazing reserves on a full cost-recovery basis • Environment information centers established • Progress made towards satisfying international conventions • All new public projects (and private projects above US\$1 million) subjected to environmental impact evaluation • Tree-planting campaigns

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
Cost: US\$24.1 million	program. The proportion of land area covered by forest was estimated to be 12% in 2000-2002 (World Bank, 2006).		where communities have expressed a demand <ul style="list-style-type: none"> Nurseries and public procurement of seed established Cost: US\$4.5 million	Cost: US\$9.4 million	commenced and completed by 2011 Cost: US\$10.2 million
A2. Charcoal: ► Complete elimination of charcoal exports Cost: US\$12.4 million	Declining forest cover. No reliable baseline data available. Evidence of charcoal imports from recipient counties indicates US\$8.3 million worth of charcoal and wood exported from Somalia in 2003.	Controlling exports of charcoal is extremely difficult. It is shipped from small ports without records. High export prices and lack of alternative income sources drive charcoal producers and agents to illegal trade.	<ul style="list-style-type: none"> Baseline estimate of charcoal exports established Public relations campaign on improved charcoal stoves developed Options for alternative livelihoods and energy for household explored Cost: US\$2.9 million	<ul style="list-style-type: none"> Charcoal exports reduced by an estimated 50 percent from 2007. Support to alternative livelihoods and energy. Cost: US\$3.9 million	<ul style="list-style-type: none"> Charcoal export is reduced to minimum. Training programs to promote alternative livelihood and sources of energy continued. Cost: US\$5.6 million
A3. Fisheries: ► Complete (100 percent) licensing of all off-shore fishing vessels and their compliance with all fishing regulations ► Registration of all artisanal fishermen selling commercially and their compliance with regulations Cost: US\$6.8 million	Unsustainable exploitation of fishery resources	Inadequate licensing and regulatory capacity Inadequate information in fish and marine resources	<ul style="list-style-type: none"> Development of legal and regulatory frameworks for sustainable and effective marine resource management. Ministries of Fisheries strengthened in all areas 	<ul style="list-style-type: none"> Development of legal and regulatory frameworks for sustainable and effective marine resource management continue. International and regional fishing laws implemented and enforced Training program of fisheries inspectors started and completed Cost: US\$2.6 million	<ul style="list-style-type: none"> Development of legal and regulatory frameworks for sustainable and effective marine resource management continue. Effective 100 percent licensing and regulation of all Somali fisheries resources in place All artisanal fishermen who sell a surplus registered Progress made towards the signature, ratification, and implementation of the Basel Convention. Cost: US\$1.6 million

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
			Cost: US\$2.6 million		
<p>A4. Biodiversity:</p> <ul style="list-style-type: none"> ▶ Halt further deterioration of biodiversity ▶ Licensing of all hunting and export of wildlife <p>Cost: US\$2 million</p>	No comprehensive data available on wildlife or biodiversity	<p>No licensing or surveillance system in place on hunting or the export of wildlife</p> <p>Ineffective management of national parks</p>	<ul style="list-style-type: none"> • Policy on wildlife management and biodiversity protection developed, including a review of national parks <p>Cost: US\$0.4 million</p>	<ul style="list-style-type: none"> • Legislation and regulatory framework in place for control of public use of wildlife resources and preservation of biodiversity • Community-based projects promoting the sustainable management of wildlife resources initiated and supported <p>Cost: US\$0.4 million</p>	<ul style="list-style-type: none"> • Support to community-based projects promoting the sustainable management of wildlife resources continued • Existing national parks rehabilitated • Sites rich in biodiversity identified for new protected areas • Community-based programs in biodiversity conservation developed <p>Cost: US\$1.2 million</p>

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
A5. Toxic Wastes: ► Remove toxic wastes from the Ayaha Valley and former Berbera missile base ► Investigate and then address the east coast toxic waste spill issues - south of Gara'ad Cost: US\$7.2 million	Toxic waste pollution at former Desert Locust Control Organization camp at Hargeisa and missile fuel and parts dumped at abandoned site near Berbera Airport Rumors of toxic waste dumping along coast.	No capacity and resources to deal with toxic waste	<ul style="list-style-type: none"> Site investigations, remediation design, and removal and neutralization of toxic residues Full assessment of the alleged hazardous waste dumped along the east coastline south of Gara'ad completed Cost: US\$1.2 million	<ul style="list-style-type: none"> Excavation, packaging, transportation, disposal/incineration, and so forth of toxic wastes completed Cost: US\$6 million	

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
B1. Livestock: ► Achieve international export inspection and certification standard ► Eradicate tsetse fly	Export system adopted is a rolling quarantine system. It complies with neither the subregional standard (EXCELEX) nor the international standard (OIE) Tsetse fly, which carries trypanosomiasis, is widespread in the riverine areas of Southern Somalia	Lack of adequate number of qualified veterinarians, para-veterinarians (CAHWs) and adequate holding yards The main constraint to the eradication of tsetse fly is the considerable number of natural habitats among bushes and trees in the riverine areas and as a result the fly is quite resistant to spraying	<ul style="list-style-type: none"> Current rolling quarantine (based on a modified EXCELEX system) as an interim measure improved Make plans for a program of control of epizootic diseases Make plans for an intensive spraying program in the riverine areas, based on successful spraying programs in the same areas in the 1980s 	<ul style="list-style-type: none"> Continue with interim export inspection and certification system Start implementing disease control program Implement the spraying program again the tsetse fly 	<ul style="list-style-type: none"> Start phasing in a simplified export inspection system based on progress of the control program Continue spraying programs to eradication in 2011

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
Cost: US\$44.5 million		programs	Cost: US\$12.3 million	Cost: US\$19 million	Cost: US\$13.2 million
<p>B2. Crops: ▶ Raise agricultural crop yields by 50 percent through rehabilitation of irrigation in the south and effective support services</p> <p>Cost: US\$147.3 million</p>	<p>Despite the high theoretical potential for crop production, productivity is low.</p> <p>Gender-disaggregated data on crop production are lacking.</p> <p>Significant decrease in the amount of irrigable land available to farmers because of deteriorating flood control and irrigation infrastructure.</p> <p>Key crops in the future will be the same as those that were historically important, including rice, maize, sugar, bananas, citrus, frankincense, myrrh, gun Arabic, and dates.</p>	<p>Agricultural support services are lacking and although the basic technologies are available, irrigation systems are destroyed, seeds are not available, and fertilizer is expensive compared with product prices, which are depressed because of marketing uncertainties.</p> <p>Loss of productive topsoil due to land degradation and soil erosion has also been a factor leading to lower yield.</p> <p>Some of the highly productive land is occupied by strangers with livestock.</p>	<p>Building on ongoing initiatives by a number of donors, the following intermediate outcomes could be achieved in the first year:</p> <ul style="list-style-type: none"> • Improved planning of irrigation rehabilitation through the establishment of a National Water Authority and Juba and Shabelle River Boards • Survey and design flood control structures, barrages, and weirs • Develop a land policy (including a process for dispute resolution) • Determine the impact on women of the rehabilitation of irrigation systems <p>Cost: US\$13.1 million</p>	<p>Bearing in mind the past and current activities of donors, the following intermediate outcome could be achieved:</p> <ul style="list-style-type: none"> • Commence program to rehabilitate flood control structures • Start the work of reinforcing the barrages and weirs • Form water users associations for operating and maintaining irrigation systems • Establish “farmers learning groups” supported by extension departments of local universities and private extension agents • Begin rehabilitating rural infrastructure (access roads, bridges, domestic/livestock water supplies, village markets, and so forth) <p>Cost: US\$33.8 million</p>	<ul style="list-style-type: none"> • Complete rehabilitation of irrigation infrastructure and other infrastructure will likely result in higher yields and higher farm incomes from crops and also from livestock, which will also benefit from higher agricultural yields • Generation of employment, which is crucial given that unemployment rates are high even by the standards of sub-Saharan Africa • Private sector investment in agroprocessing, leading to higher income for surplus crop production <p>Cost: US\$100.4 million</p>

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
<p>B3. Fisheries:</p> <p>► Increased and sustainable production of fish and fish products to 50 percent of estimated sustainable catch. Have at least one-third produced in Somali fish-processing factories</p> <p>► Reduction of 75 percent in wastage of fish caught</p> <p>Cost: US\$14.1 million</p>	<p>High potential for fish production but low yields, high wastage and postharvest losses, lack of markets, and exploitation by foreign intermediaries</p> <p>Low levels—but increasing—of internal consumption of fish products</p>	<p>Lack of basic infrastructure (roads, airports and port facilities, potable water, and refrigeration facilities)</p> <p>Lack of data and knowledge in fish processing and marketing</p> <p>Lack of a marine resources management plan and considerable amount of illegal and unregulated fishing</p> <p>Absence of banking and insurance services</p>	<ul style="list-style-type: none"> • Evidence of a nascent capacity-building program in the key Ministries of Fisheries, such as a vision for the future of the fishing industry, an effective licensing system, and clarity on regulations • Development of standards for fishing, transportation, processing, packaging, and so forth of fish products <p>Cost: US\$6.3 million</p>	<ul style="list-style-type: none"> • Enforce territorial waters and area fishing licenses • Standards established for certification procedures that guarantee product safety in export markets • First intake for rehabilitated marine technical schools <p>Cost: US\$5 million</p>	<ul style="list-style-type: none"> • Coast guard financed and established to monitor use of Somalia’s fishery resources within the EEZ, and enforcing licensing. • Capacity building of fishing associations, training members in fish processing, marketing, and business development, reflected in the emergence of a number of small-scale private fish processing companies. <p>Cost: US\$2.8 million</p>
<p>B4. Other Private Sector Development:</p> <p>► Annual 10 percent increase in the registrations of companies over the five years to 2011</p>	<p>Productive sector activities are entirely in private sector hands since the early 1990s. But investment has been very low and production stagnant. Focus has been on trade and services rather than local manufacturing, though a few enterprises have been established.</p> <p>Mineral resources exist such</p>	<p>High cost of doing business due to persistent insecurity and deterioration of infrastructure</p> <p>Low skills of workforce</p> <p>Absence of financial services</p> <p>Absence of insurance</p>	<ul style="list-style-type: none"> • Explore options for attracting foreign commercial banks to participate in joint ventures • Negotiate with international companies that are prepared to invest in all three Somali areas • Establish Business Development Service Centers to assist potential investors 	<ul style="list-style-type: none"> • Establish a user-friendly regulatory authority and put market-friendly foreign investment guidelines and regulations in place • Establish a systematic, transparent tendering system for potential investors in the mining of various minerals • Establish a number of commercial banks and 	<ul style="list-style-type: none"> • Increase the number of commercial banks and insurance companies • Expand supporting information and business services (whether they be mining, manufacturing, or service activities) to small-scale producers, with special programs for women

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
Cost: US\$38.9 million	as coal, gypsum, and limestone, plus various gemstones.	services Absence of clear regulations pertaining to foreign investment and mineral rights	<ul style="list-style-type: none"> • Develop a clear mining policy framework and establish an authority to implement it • Expand the number of chambers of commerce by establishing them in additional locations Cost: US\$9.3 million	insurance companies <ul style="list-style-type: none"> • Establish microcredit operations supported by commercial banks Cost: US\$8.9 million	Cost: US\$19.2 million
Total Cost: US\$295.8 million			Total Cost: US\$52.6 million	Total Cost: US\$89 million	Total Cost: US\$154.2 million

South Central Somalia Results Based Matrix

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
<p>A1. Natural Resources ► Regeneration and improvement of Somali natural resources such as wildlife, water, wetlands, soils, rangelands and forests, marine life, and reefs to their prewar state</p> <p>Cost: US\$8.6 million</p>	<p>Many core natural resources destroyed or seriously depleted since 1990.</p> <p>FAO/Africover information on land cover provides an indicator of land use, but data not current. Recent aerial photos provide an updated baseline from which to develop target outcomes.</p> <p>Information on water resources available but in need of consolidation.</p>	<p>Most degradation likely reversible. To achieve initial results by 2011, good policies need to be in place and aggressive implementation under way</p> <p>Data on the marine environment and wildlife weak and in need of consolidation</p>	<ul style="list-style-type: none"> • Collection and interpretation of photos on land cover commenced (US\$0.5m) • Somaliland Environmental Coordinating Committee established; review of environmental policies, legislation, regulations, and their implementation completed (US\$0.3m) • Capacity of government bodies responsible for natural resources management assessed, training started (US\$0.6m) • Support provided to MoLAE for removal of enclosures in collaboration with pastoral associations (US\$0.1m) <p>Cost: US\$1.5 million</p>	<ul style="list-style-type: none"> • Complete interpretation of land cover photos undertaken, map/report prepared (US\$0.4m) • Training of government environmental staff completed (US\$1m) • Cross-government dialogue completed, agreements to harmonize environmental policies achieved (US\$0.4m) • Illegal enclosures in the rangelands continue to be removed and grazing rights reinstated, rotational and temporary enclosure of cultivated range and forest land tested, watershed management improved, options for wadi development and erosion control explored, sand dune fixation undertaken (US\$1.6m) <p>Cost: US\$3.4 million</p>	<ul style="list-style-type: none"> • Illegal enclosures in the rangelands continue to be removed and grazing rights reinstated, rotational and temporary enclosure of cultivated range and forest land tested, watershed management improved, options for wadi development and erosion control explored, sand dune fixation undertaken (US\$3.7m) <p>Cost: US\$3.7 million</p>
<p>A2. Charcoal: ► Outreach program on costs of deforestation carried out</p>	<p>Declining forest cover. No reliable baseline data available. No data on charcoal exports.</p>	<p>Weak community support for export ban due to importance of charcoal for generating incomes in South Central Somalia</p>	<ul style="list-style-type: none"> • Vigorous outreach program and dissemination of information on the long-run costs of deforestation carried out (US\$0.9m) 	<ul style="list-style-type: none"> • Outreach program continued (US\$0.9m) • Education on and promotion of alternative livelihood and energy 	<ul style="list-style-type: none"> • Outreach program completed (US\$1.5m) • Education and promotion of alternative livelihoods and energy sources

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
<p>► Awareness campaign on alternative energy sources carried out</p> <p>Cost: US\$5 million</p>	No accurate data on energy consumption.	Corrupt port officials and no records	<ul style="list-style-type: none"> Education on and promotion of alternative livelihoods and energy sources initiated (US\$0.3m) Cost: US\$1.2 million 	sources continued (US\$0.5m)	completed (US\$0.9m)
<p>A4. Fisheries:</p> <p>► Complete licensing of all off-shore fishing vessels and their compliance with all fishing regulations</p> <p>► Registration of all artisanal fishermen selling commercially and their compliance with regulations</p> <p>Cost: US\$2.2 million</p>	Unsustainable exploitation of fishery resources	<p>Inadequate licensing and regulatory capacity</p> <p>Inadequate information on fish and marine resources</p>	<ul style="list-style-type: none"> Capacity building of key public and private sector institutions to effectively regulate fish production, by issuing licenses and enforcing license conditions <p>Cost: US\$1 million</p>	<ul style="list-style-type: none"> International and regional fishing laws implemented and enforced Regional marine and fisheries institutes capable of studying and monitoring management of marine resources rehabilitated <p>Cost: US\$0.7 million</p>	<ul style="list-style-type: none"> Effective 100 percent licensing and regulation of all Somali fisheries resources within the EEZ All artisanal fishermen who sell a surplus registered Progress made towards the signature, ratification, and implementation of the Basel Convention <p>Cost: US\$0.5 million</p>
<p>A5. Biodiversity:</p> <p>► Halt further deterioration of biodiversity</p> <p>► Licensing of all hunting and export of wildlife</p> <p>Cost: US\$1 million</p>	No comprehensive data available on wildlife or biodiversity	<p>No licensing or surveillance system in place on hunting or the export of wildlife</p> <p>Ineffective management of national parks</p>	<ul style="list-style-type: none"> Policy on wildlife management and biodiversity protection developed, including a review of national parks <p>Cost: US\$0.2 million</p>	<ul style="list-style-type: none"> Legislation and regulatory framework in place for the control of public use of wildlife resources and the preservation of biodiversity Community-based projects promoting the sustainable management of wildlife resources initiated and supported <p>Cost: US\$0.2 million</p>	<ul style="list-style-type: none"> Support to community-based projects promoting the sustainable management of wildlife resources continued Existing national parks rehabilitated Sites rich in biodiversity identified for new protected areas Community-based programs in biodiversity conservation developed <p>Cost: US\$0.6 million</p>

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
<p>B1. Livestock:</p> <ul style="list-style-type: none"> ▶ International export inspection and certification standard achieved ▶ Tsetse fly eradicated ▶ Rinderpest eradicated ▶ Incidence of epizootic diseases reduced 	<p>Current export system is a rolling quarantine. It complies with neither the subregional standard (EXCELEX) nor the international standard (OIE).</p> <p>Tsetse fly, which carries trypanosomiasis, is widespread in the riverine areas of southern Somalia.</p> <p>Rinderpest still present and is an obstacle to export of Somali cattle.</p>	<p>Lack of adequate number of qualified veterinarians, para-veterinarians (CAHWs), or adequate holding yards.</p> <p>The main constraint to the eradication of tsetse fly is the considerable number of natural habitats among bushes and trees in the riverine areas. The fly is quite resistant to spraying programs.</p>	<ul style="list-style-type: none"> • Analysis of options for future livestock production in Central Rangelands, the riverine and interriverine areas in South Central Somalia carried out, consensus reached (US\$0.3m) • Export studies completed (US\$0.6m) • Private and government veterinarians trained, laboratories rehabilitated, CAHWs trained and upgraded, Veterinary Faculty of Hiraan University strengthened (US\$1.6m) • Major transboundary diseases identified, status of epizootics assessed, CAHWs trained in disease reporting, emergency response program developed (US\$0.5m) • Current rolling quarantine system improved as an interim measure. Current marshalling and holding yards in Mogadishu and Somalia/Kenya border rehabilitated, Livestock Board staff trained, livestock support services strengthened (US\$1.8m) • Plans for an intensive spraying program in the 	<ul style="list-style-type: none"> • Training of veterinarians and CAHWs, and rehabilitation of laboratories continued (US\$1.7m) • Assessment of status of epizootics continued, CAHWs trained in disease reporting, emergency response program developed, support built for control of epizootic diseases (US\$0.7m) • Interim export inspection and certification system continually improved. Rehabilitation of current marshalling and holding yards completed, Livestock Board staff trained, animal products market information designed, livestock support and fodder services strengthened (US\$3.9m) • Spraying program against tsetse fly implemented (US\$2m) • Intensive Rinderpest surveillance and eradication continued (US\$0.3m) 	<ul style="list-style-type: none"> • Training of veterinarians and CAHWs and rehabilitation of laboratories completed (US\$1.3m) • Assessment of status of epizootics completed, CAHWs trained in disease reporting, emergency response program completed, support built for control of epizootic diseases (US\$0.8m) • Intensive Rinderpest surveillance and eradication continued, increased number of zones where Rinderpest is eradicated (US\$1m) • Livestock support services strengthened and high quality fodder production ensured, simplified export inspection system based on progress of the control program phased in (US\$0.3m) • Spraying programs continued (US\$3m)

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
			riverine areas outlined • Rinderpest surveillance strengthened and eradication plan developed (US\$0.2m)		
Cost: US\$20 million			Cost: US\$5 million	Cost: US\$8.6 million	Cost: US\$6.4 million
<p>B2. Crops:</p> <ul style="list-style-type: none"> ▶ More efficient crop production and watershed management ▶ Flood water control structures in Shabelle and Juba valleys rehabilitated ▶ Irrigation scheme structures renovated ▶ Juba River Hydro-Electric Dam renovated ▶ Water users associations formed ▶ Land titling benefited 4,500 households ▶ Strengthening of agricultural support services benefited 4,500 farmers 	<p>Despite high potential for crop production, productivity remains low.</p> <p>Significant decrease in the amount of irrigable land available to farmers because of deteriorating flood control and irrigation infrastructure.</p> <p>Major disruptions to land rights.</p>	<p>Agricultural support services are lacking and while the basic technologies are available, irrigation systems are destroyed, seeds are not available, and fertilizer is expensive compared with product prices, which are depressed because of marketing uncertainties.</p> <p>Loss of productive topsoil due to land degradation and soil erosion has also been a factor leading to lower yield.</p> <p>Some of the highly productive land is occupied by strangers with livestock.</p>	<ul style="list-style-type: none"> • Current status and design of Shabelle and Juba valley water controls and storage checked, reconstruction of earth works commenced (US\$2.2m) • Survey of precise condition of barrages and weirs in Balad, Gianale, Gehliro, Koriolay, Abdi Ali, Garowle, Sablaale, Jowhar, and Hawaii (US\$0.2m) • Renovation plan for Fanoole Irrigation and Hydro-Electric dam on Juba River prepared (US\$0.1m) • Rural infrastructure within irrigation command areas planned (US\$0.1m) • Water Users' Associations (WUAs) formed, bylaws agreed to (US\$0.2m) • Farm surveys for land titling carried out (US\$0.4m) • Marketing surveys for potentially high-yielding crops carried out (US\$0.4m) 	<ul style="list-style-type: none"> • Reconstruction of various structures of the Shabelle valley water controls completed (US\$4.1m), restoration on Juba valley continued (US\$0.6m) • Designs and plans for rehabilitation of seven barrages and two weirs prepared (US\$3m) • Interim engineering study to determine initial restoration works on Fanoole Irrigation and Hydro-Electric dam completed (US\$0.4m) • Construction of irrigation command area infrastructure underway, training of beneficiaries in operation and maintenance ongoing (US\$2.2m) • WUAs established and strengthened (US\$2m) • Land mapping and database registration for land titling carried out (US\$0.7m) • Agricultural revolving 	<ul style="list-style-type: none"> • Reconstruction of various structures of Juba valley water control and storage completed (US\$5m) • Construction on seven barrages and two weirs commenced with completion planned by 2011 (US\$8.2m) • Initial renovation and reinforcement of dam and spot improvements to primary canals carried out, in-depth engineering study carried out (US\$9m) • Construction of irrigation command area infrastructure under way, training of beneficiaries in operation and maintenance continued (US\$13.4m) • WUAs continue to be established an institutionally strengthened, training of WUA members carried out (US\$8.9m) • Land registration with the Ministry of Agriculture, issuance of land titles (US\$2.2m)

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
			<ul style="list-style-type: none"> • SWALIM Phase III supported, capacity of national Water and River basin Authority built (US\$0.8m) • Training in governance conducted for district traditional leaders and 54 administrative staff, 36 village development committees (VDCs) formed (US\$0.2m) • Water management committees (WMCs) formed, training of representatives carried out (US\$0.1m) 	funds managed by WUAs created, demand-driven and competitive agricultural research created (US\$3.9m) <ul style="list-style-type: none"> • SWALIM Phase III support continued, capacity of national Water and River Basin Authority built (US\$1.5m) • District traditional leaders continue to be trained, VDCs continue to be formed (US\$0.4m) • 108 ballies (natural surface storages) and 38 shallow wells constructed, WMCs technical skills developed (US\$0.8m) 	<ul style="list-style-type: none"> • Public and private sector service providers identified and strengthened, SAA[[not defined]] and Somalia Agricultural Technical Group (SATG) strengthened, entrepreneurial farmer groups formed (US\$23.5m) • SWALIM Phase III support completed, capacity building of national Water and River basin Authority completed (US\$1.5m) • Training of traditional leaders, administrators, and VDC members consolidated (US\$0.2m) • Cost-recovery mechanisms created (US\$2m)
Cost: US\$98.2 million			Cost: US\$4.7 million	Cost: US\$19.6 million	Cost: US\$73.9 million
B3. Fisheries: <ul style="list-style-type: none"> ► Sustainable production of fish and fish products increased to 50 percent of estimated sustainable catch ► At least one-third of fish products produced in Somali fish-processing factories. ► Wastage of fish caught reduced by 75%. 	High potential for fish production but low yields, high wastage and postharvest losses, lack of markets and exploitation by foreign intermediaries. Low, albeit increasing, levels of internal consumption of fish products.	Lack of basic infrastructure (roads, airports and port facilities, potable water, and refrigeration facilities). Lack of data and knowledge in fish processing and marketing. Lack of a marine resources management plan and considerable amount of illegal and	<ul style="list-style-type: none"> • Strategy and plan for the sustained development of South Central Somalia industrial and artisanal fisheries prepared (US\$0.4m) • Survey undertaken assessing fish stocks and marine environment conditions (US\$0.6m) • Rehabilitation of Mogadishu Maritime School started (US\$0.7m) 	<ul style="list-style-type: none"> • Rehabilitation of Mogadishu Maritime School completed, linkages to Berbera and Bossaso schools established (US\$1.4m) • 20 new/existing fishing associations strengthened, training in marketing and business management offered, 500 fishermen continue to be trained (US\$0.7m) 	<ul style="list-style-type: none"> • Strengthening of 20 new/existing fishing associations completed, training in marketing and business management finalized, training of 500 fishermen completed (US\$0.9m)

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
<p>► Income generating capacity of artisanal fishermen improved.</p> <p>Cost: US\$4.9 million</p>		<p>unregulated fishing.</p> <p>Absence of banking and insurance services.</p>	<ul style="list-style-type: none"> • 20 new/existing fishing associations formed/empowered, 500 fishermen trained (US\$0.2m) <p>Cost: US\$1.9 million</p>	<p>Cost: US\$2.1 million</p>	<p>Cost: US\$0.9 million</p>
<p>B4. Other Private Sector Development:</p> <p>► Annual increase of 10 percent in the registrations of companies over the five years to 2011</p>	<p>Productive sector activities are entirely in private sector hands since the early 1990s.</p> <p>Investment has been very low and production stagnant.</p> <p>Focus has been on trade and services rather than local manufacturing, though a few enterprises have been established.</p> <p>Mineral resources such as coal, gypsum and limestone, plus various gemstones exist.</p>	<p>High cost of doing business due to persistent insecurity and deterioration of infrastructure.</p> <p>Low skills of workforce.</p> <p>Absence of financial services.</p> <p>Absence of insurance services.</p> <p>Absence of clear regulations pertaining to foreign investment and mineral rights.</p>	<ul style="list-style-type: none"> • Development of information systems that will generate publications for potential investors supported • Advisory services and technology resource centers established for local ICT providers for upgrading services that can be used for exchange of business information • BDS centers established to assist potential investors • Additional chambers of commerce established (all above: US\$0.9m) • BDS established in Mogadishu, Jawhar, and Kismayo, small/medium enterprise technical assistance and training established (US\$1.9m) • Training of public officials on efficient procedures for contract issuance, registration and support of investors carried out (US\$1.9m) 	<ul style="list-style-type: none"> • User-friendly regulatory authority established • Market-friendly foreign investment guidelines and regulations put in place • Information systems that will generate publications for potential investors continue receiving support • Systematic, transparent tendering system set up for potential investors in the mining of various minerals • Advisory services and technology resource centers established for local ICT providers for upgrading services that can be used for exchange of business information (all above: US\$0.9m) • Establishment of BDS consolidated in Mogadishu, Jawhar, and Kismayo, small/medium enterprise technical assistance and training established (US\$1.8m) • Training of public 	<ul style="list-style-type: none"> • Information systems that will generate publications for potential investors continue receiving support • Supporting information and business services expanded (whether they be mining, manufacturing, or service activities) to small scale producers, with special programs for women • Advisory services for ITC service providers continued • Reports on successful business start-ups prepared including lessons learned (all above: US\$2.2m) • Consolidation and evaluation of BDS services continued, small/medium enterprise technical assistance and training offered (US\$3.9m) • Training of public officials on efficient procedures for contract issuance, registration and

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
				officials on efficient procedures for contract issuance, registration, and support of investors carried out (US\$1.8m)	support of investors carried out (US\$2.9m)
Cost: US\$18.2 million			Cost: US\$4.7million	Cost: US\$4.5 million	Cost: US\$9 million
Total: US\$ 158.1 million			Total: US\$20.2 million	Total: US\$40.5 million	Total: US\$97.4 million

Somaliland Results-Based Matrix

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
<p>A1. Natural Resources:</p> <ul style="list-style-type: none"> ▶ Regeneration and improvement of Somali natural resources such as wildlife, water, wetlands, soils, rangelands and forests, marine life and reefs to their prewar state ▶ Land degradation accurately assessed ▶ Capacity of government environmental agencies strengthened ▶ Environmental coordinating committee established ▶ Community-based range, watershed, and wildlife management established <p>Cost: US\$7.4 million</p>	<p>Substantial environmental degradation since 1990.</p> <p>May core natural resources destroyed or seriously depleted</p> <p>FAO/Africover and SWALIM aerial photography on land cover available, but not interpreted</p> <p>Information on water resources available but in need of consolidation</p> <p>No data on extent of enclosures but known to be substantial and expanding</p>	<p>Most degradation likely reversible. To achieve initial results by 2011, good policies need to be in place and aggressive implementation underway</p> <p>Data on the marine environment and wildlife weak and in need of consolidation</p> <p>Weak implementation capacity</p>	<ul style="list-style-type: none"> • Collection and interpretation of photos on land cover commenced (US\$0.5m) • Somaliland environmental coordinating committee established, review of environmental policies, legislation, regulations and their implementation completed (US\$0.3m) • Capacity of government bodies responsible for natural resources management assessed, training started (US\$0.4m) • Removal of illegal enclosures under way, grazing rights reinstated, dry-season grazing regimes developed, capacity building for pastoral associations offered (US\$0.5m) <p>Cost: US\$1.7 million</p>	<ul style="list-style-type: none"> • Complete interpretation of land cover photos undertaken, map/report prepared (US\$0.4m) • Training of government environmental staff completed (US\$0.7m) • Cross-government dialogue completed, agreements to harmonize environmental policies achieved (US\$0.3m) • Dry-season grazing management regimes developed, illegal enclosures in the rangelands removed and grazing rights reinstated, soil and water better conserved, pastoral associations reestablished (US\$1.5m) <p>Cost: US\$2.9 million</p>	<ul style="list-style-type: none"> • Illegal enclosures removed, grazing rights reinstated, soil and water better conserved, capacity of pastoral associations strengthened, Geed Deeble National Park rehabilitated (US\$2.8m) <p>Cost: US\$2.8 million</p>
<p>A2. Charcoal and alternative energy:</p> <ul style="list-style-type: none"> ▶ Complete elimination of charcoal exports achieved ▶ Alternative energy sources explored and promoted 	<p>Declining forest cover</p> <p>No reliable baseline data available</p> <p>Evidence of charcoal imports from recipient counties indicates US\$8.3</p>	<p>Controlling exports of charcoal is extremely difficult</p> <p>Charcoal shipped from small ports without records</p>	<ul style="list-style-type: none"> • Baseline estimate of charcoal exports established • Charcoal export ban enforced • Public relations campaign on improved charcoal stoves developed • Options for alternative 	<ul style="list-style-type: none"> • Surveillance of charcoal exports and enforcement of export ban improved • Outreach program and promotion of alternative livelihoods and energy sources continue • Charcoal exports reduced 	<ul style="list-style-type: none"> • Export ban at all ports and beaches by 2011 • Outreach program and programs to promote alternative livelihoods and sources of energy continue (all above: US\$0.7m) • Education and promotion

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
<p>► Public understanding of need for energy conservation improved</p> <p>Cost: US\$3.6 million</p>	million worth of charcoal and wood exported from Somalia in 2003	High export prices and lack of alternative income sources drive charcoal producers and agents to illegal trade	<p>livelihoods and energy for household explored (all above: US\$0.5m)</p> <ul style="list-style-type: none"> • Education and promotion program on energy conservation started (US\$0.3m) <p>Cost: US\$0.8 million</p>	<p>by an estimated 50 percent from 2007 (all above: US\$0.7m)</p> <p>Education and promotion program on energy conservation continued (US\$0.5m)</p> <p>Cost: US\$1.2 million</p>	<p>program on energy conservation completed (US\$0.9m)</p> <p>Cost: US\$1.6 million</p>
<p>A3. Fisheries:</p> <p>► Complete licensing of all off-shore fishing vessels and their compliance with all fishing regulations</p> <p>► Registration of all artisanal fishermen selling commercially and their compliance with regulations</p> <p>Cost: US\$2.1 million</p>	Unsustainable exploitation of fishery resources	<p>Inadequate licensing and regulatory capacity</p> <p>Inadequate information in fish and marine resources</p>	<ul style="list-style-type: none"> • Ministry of Fisheries strengthened in all areas • Capacity of key public and private sector institutions being built to effectively regulate fish production by issuing licenses and enforcing license conditions • Standards for fishing, transportation, processing, packaging, and so forth of fish products developed (US\$0.9m) <p>Cost: US\$0.9 million</p>	<ul style="list-style-type: none"> • Regulatory and legal framework continues to be built • Standards for certification procedures that guarantee product safety in export markets established • International and regional fishing laws implemented and strengthened (US\$0.7m) <p>Cost: US\$0.7 million</p>	<ul style="list-style-type: none"> • Effective licensing and regulation of all Somali fisheries resources within the EEZ in place • Artisanal fishermen who sell a surplus registered • Progress made towards the signature, ratification, and implementation of the Basel Convention (US\$0.5m) <p>Cost: US\$0.5 million</p>
<p>A4. Toxic Wastes:</p> <p>► Remove toxic wastes from the Ayaha Valley and former Berbera missile base</p> <p>Cost: US\$7.2 million</p>	<p>Toxic waste pollution at former Desert Locust Control Organization camp at Hargeisa</p> <p>Missile fuel and parts dumped at abandoned site near Berbera Airport</p>	No capacity and resources to deal with toxic waste	<ul style="list-style-type: none"> • Site investigations, remediation design, and removal and neutralization of toxic residues initiated (US\$1.2m) <p>Cost: US\$1.2 million</p>	<ul style="list-style-type: none"> • Excavation, packaging, transportation, disposal/incineration, and so forth of toxic wastes completed (US\$6m) <p>Cost: US\$6 million</p>	<ul style="list-style-type: none"> • Area safe for habitation and schools reopened

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
<p>A5. Biodiversity:</p> <ul style="list-style-type: none"> ▶ Halt further deterioration of biodiversity ▶ Licensing of all hunting and export of wildlife <p>Cost: US\$0.5 million</p>	<p>No comprehensive data available on wildlife or biodiversity</p>	<p>No licensing or surveillance system in place on hunting or the export of wildlife</p> <p>Ineffective management of national parks</p>	<ul style="list-style-type: none"> • Policy on wildlife management and biodiversity protection developed, including a review of national parks <p>Cost: US\$0.1 million</p>	<ul style="list-style-type: none"> • Legislative/regulatory framework in place for the control of public use of wildlife resources and the preservation of biodiversity • Community-based projects promoting the sustainable management of wildlife resources initiated and supported <p>Cost: US\$0.1 million</p>	<ul style="list-style-type: none"> • Support to community-based projects promoting the sustainable management of wildlife resources continued • National parks improved • Sites rich in biodiversity identified for protection • Community-based programs in biodiversity conservation developed <p>Cost: US\$0.3 million</p>

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
<p>B1. Livestock:</p> <ul style="list-style-type: none"> ▶ International export inspection and certification standard achieved ▶ Progress made towards control of all epizootic diseases ▶ Strong and effective animal health service providers in place 	<p>The baseline is the vision for the Somalia livestock sector, which is probably not realistic</p> <p>Producers and investors have little information about future market prospects and hence have an inadequate basis for diversification strategies</p> <p>The current export system is a rolling quarantine. It complies with neither the subregional standard (EXCELEX) nor the international standard (OIE).</p>	<p>Controversies over future livestock management strategies and transition to an improved inspection system</p> <p>Considerable misconceptions about Somali livestock in the international market</p> <p>Lack of adequate number of qualified veterinarians, Para veterinarians (CAHWs), or adequate holding yards</p> <p>Need for retention of current export system</p>	<ul style="list-style-type: none"> • Analysis of options for future livestock management carried out, consensus reached (US\$0.3m) • Market studies for different products completed, assessment of prospects for domestic livestock processing carried out (US\$0.6m) • Private and government veterinarians trained, laboratories rehabilitated, CAHWs trained and upgraded, Sheikh Technical Veterinary Institute strengthened (US\$1.6m) • Major transboundary diseases identified, status of 	<ul style="list-style-type: none"> • Private and government veterinarians trained, laboratories rehabilitated (US\$1.7m) • Assessment of status of epizootics continued, CAHWs trained in disease reporting, emergency response program developed, support built for control of epizootic diseases (US\$0.9m) • Interim export inspection and certification system continually improved. Rehabilitation of current marshalling and holding yards completed, Livestock Board staff trained, animal 	<ul style="list-style-type: none"> • Training of private and government veterinarians and rehabilitation of laboratories completed (US\$1.3m) • Assessment of status of epizootics completed, CAHWs trained in disease reporting, emergency response program completed, support built for control of epizootic diseases (US\$2.1m) • Livestock support services strengthened and high-quality fodder production ensured (US\$0.3m)

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
Cost: US\$13.1 million	<p>Weak animal health service institutions</p> <p>Somali livestock said to be heavily infected with a number of major epizootic diseases</p>	<p>during an interim period of 5–10 years while epizootic diseases are progressively eradicated</p> <p>Nomadism and movement of livestock make epizootic diseases difficult to control</p>	<p>epizootics assessed, CAHWs trained in disease reporting, emergency response program developed (US\$0.6million)</p> <ul style="list-style-type: none"> • Current rolling quarantine system improved... Current marshalling and holding yards rehabilitated, Livestock Board staff trained, livestock support services strengthened (US\$0.9m) <p>Cost: US\$4 million</p>	<p>products market information designed, livestock support and fodder services strengthened (US\$2.8m)</p> <p>Cost: US\$5.4 million</p>	<p>Cost: US\$3.7 million</p>
<p>B2. Crops:</p> <ul style="list-style-type: none"> ▶ Agricultural crop yields raised by 50 percent through rehabilitation of irrigation in the south and effective support services ▶ Soil and water conservation improved ▶ 6,500 households benefited from land registration and titling ▶ Agricultural support services strengthened 	<p>High potential for crop production, low productivity</p> <p>Significant decrease in the amount of irrigable land available to farmers due to deteriorating flood control and irrigation infrastructure</p>	<p>Agricultural support services lacking and while basic technologies are available, irrigation systems are destroyed, seeds are not available, and fertilizer is expensive compared with product prices, which are depressed because of marketing uncertainties</p> <p>Loss of productive topsoil due to land degradation and soil</p> <p>Some highly productive land occupied by strangers with livestock</p>	<ul style="list-style-type: none"> • 84 district administrators and traditional leaders trained to support farmers organizations and manage provision of public support services, 80 village development committees being formed, administrators' and committee offices rehabilitated (US\$0.2m) • Land policy (including a process for dispute resolution) developed, surveys and mapping under way, land registered with MoA, titles issued (US\$0.4m) • Community-based soil erosion control, group-based water harvesting established, and 	<ul style="list-style-type: none"> • Training of administrators completed and training of traditional leaders continued, 80 village development committees continue to be formed, administrators' and committee offices rehabilitated (US\$0.4m) • Land registration with MoA, surveys and mapping, and issuance of titles continued (US\$0.8m) • Community-based soil erosion control, group-based water harvesting, and domestication of high-value forest species continued (US\$1.7m) • Market surveys and demand-driven competitive research continued, 	<ul style="list-style-type: none"> • Training of village development committees and rehabilitation of offices completed (US\$0.2m) • Land registration with MoA, surveys and mapping, and issuance of titles continued (US\$2.7m) • Community-based soil erosion control, group-based water harvesting established, and domestication of high-value forest species completed (US\$5.2m) • Demand-driven competitive research continued, market information service established, producer marketing groups given responsibility for

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
Cost: US\$19.6 million			<p>domestication of high-value forest species initiated (US\$0.9m)</p> <ul style="list-style-type: none"> • Market surveys and demand-driven competitive research initiated, groups of leader farmers established, with women significantly represented (US\$1.5m) <p>Cost: US\$3 million</p>	<p>producer marketing groups established (US\$3.1m)</p> <p>Cost: US\$6 million</p>	<p>procurement of farm inputs and product marketing (US\$2.5m)</p> <p>Cost: US\$10.6 million</p>
<p>B3. Fisheries:</p> <ul style="list-style-type: none"> ▶ Increased and sustainable production of fish and fish products to 50 percent of estimated sustainable catch ▶ Reduction of 75 percent in wastage of fish caught ▶ Improved income for artisanal fishermen in Berbera, Lughaye and Maydh <p>Cost: US\$3.6 million</p>	<p>High potential for fish production but low yields, high wastage and postharvest losses, lack of markets, and exploitation by foreign intermediaries</p> <p>Low, albeit increasing, internal consumption of fish products</p>	<p>Lack of basic infrastructure (roads, airports and port facilities, potable water and refrigeration facilities)</p> <p>Lack of data and knowledge in fish processing and marketing</p> <p>Lack of a marine resources management plan and considerable amount of illegal and unregulated fishing</p>	<ul style="list-style-type: none"> • Vision and strategy for sustained development of industrial and artisanal fisheries developed (US\$0.4m) • Survey done to assess fish stocks and the state of the marine environment (US\$0.6m) • Buildings and equipment of Berbera College of Fisheries and Maritime Studies rehabilitated, teaching capacity built up (US\$0.9m) • Fishing Associations formed, lobster moratorium considered, training in business, marketing, navigation and boat maintenance offered (US\$0.2m) <p>Cost: US\$2.1 million</p>	<ul style="list-style-type: none"> • Rehabilitation of Berbera College of Fisheries and Maritime Studies completed, teaching capacity built up (US\$0.3m) • Training in business management and marketing continued, lobster moratorium policy implementation reviewed (US\$0.5m) <p>Cost: US\$0.8 million</p>	<ul style="list-style-type: none"> • Training in business management and marketing completed, results of lobster moratorium policy reviewed (US\$0.7m) <p>Cost: US\$0.7 million</p>

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
<p>B4. Other Private Sector Development:</p> <ul style="list-style-type: none"> ▶ Business information increased and improved ▶ Scheme for small and medium enterprises created ▶ Annual 10 percent increase in the registration of companies over the five years to 2011 <p>Cost: US\$4.4 million</p>	<p>Productive sector activities are entirely in private sector hands since the early 1990s</p> <p>Low investment and stagnant production</p> <p>Focus on trade and services rather than local manufacturing</p> <p>Mineral resources such as coal, gypsum, and limestone, plus various gemstones exist</p>	<p>High cost of doing business due to persistent insecurity and deterioration of infrastructure</p> <p>Low skills of workforce</p> <p>Absence of financial services</p> <p>Absence of insurance services</p> <p>Absence of clear regulations pertaining to foreign investment and mineral rights</p>	<ul style="list-style-type: none"> • Development of information systems that will generate publications for potential investors supported • Advisory services and technology resource centers established for local ICT providers for upgrading services that can be used for exchange of business information • BDS Centers established to assist potential investors • Additional chambers of commerce established <p>Cost: US\$0.9 million</p>	<ul style="list-style-type: none"> • User-friendly regulatory authority established • Market-friendly foreign investment guidelines and regulations put in place • Information systems that will generate publications for potential investors continue receiving support • Systematic, transparent tendering system set up for potential investors in the mining of various minerals • Advisory services and technology resource centers established for local ICT providers for upgrading services that can be used for exchange of business information <p>Cost: US\$0.9 million</p>	<ul style="list-style-type: none"> • Information systems that will generate publications for potential investors continue receiving support • Supporting information and business services expanded (whether they be mining, manufacturing or service activities) to small scale producers, with special programs for women • Advisory services for ITC service providers continued • Reports on successful business start-ups prepared including lessons learned <p>Cost: US\$2.2 million</p>
Total: US\$61.1 million			Total: US\$14.7 million	Total: US\$24 million	Total: US\$22.4 million

Puntland Results-Based Matrix

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
<p>A1. Natural Resources:</p> <ul style="list-style-type: none"> ▶ Regeneration and improvement of Somali natural resources such as wildlife, water, wetlands, soils, rangelands and forests, marine life, and reefs to their prewar state ▶ Land degradation accurately assessed ▶ Capacity of government environmental agencies strengthened ▶ Environmental coordinating committee established ▶ Community-based range, watershed, and wildlife management established <p>Cost: US\$8.1 million</p>	<p>Substantial environmental degradation since 1990</p> <p>May core natural resources destroyed or seriously depleted</p> <p>FAO/Africover and SWALIM aerial photography on land cover available, but not interpreted</p> <p>Information on water resources available but in need of consolidation</p> <p>No data on extent of enclosures but known to be substantial and expanding</p>	<p>Most degradation likely reversible. To achieve initial results by 2011, good policies need to be in place and aggressive implementation under way</p> <p>Data on the marine environment and wildlife weak and in need of consolidation</p> <p>Weak implementation capacity</p>	<ul style="list-style-type: none"> • Collection and interpretation of photos on land cover commenced (US\$0.5m) • Somaliland Environment Coordinating Committee established, review of environmental policies, legislation, regulations, and their implementation completed (US\$0.3m) • Capacity of government bodies responsible for natural resources management assessed, training started (US\$0.4m) • Removal of illegal enclosures under way, grazing rights reinstated, rotational enclosures of cultivated land established, underground water management created, wadi development expanded, sand-dune fixation under way (US\$0.1m) <p>Cost: US\$ 1.3 million</p>	<ul style="list-style-type: none"> • Complete interpretation of land cover photos undertaken, map/report prepared (US\$0.4 m) • Training of government environmental staff completed (US\$0.7m) • Cross-government dialogue completed, agreements to harmonize environmental policies achieved (US\$0.3m) • Removal of illegal enclosures under way, grazing rights reinstated, rotational enclosures of cultivated land established, subwater management created, wadi development expanded, sand dune fixation under way (US\$1.7m) <p>Cost: US\$ 3.1 million</p>	<ul style="list-style-type: none"> • Removal of illegal enclosures under way, grazing rights reinstated, rotational enclosures of cultivated land established, subwater management created, wadi development expanded, sand dune fixation under way (US\$3.7m) <p>Cost: US\$ 3.7 million</p>
<p>A2. Charcoal and Alternative Energy:</p> <ul style="list-style-type: none"> ▶ Complete elimination of charcoal exports 	<p>Declining forest cover</p> <p>No reliable baseline data available</p>	<p>Controlling exports of charcoal is extremely difficult</p>	<ul style="list-style-type: none"> • Baseline estimate of charcoal exports established • Public relations campaign on improved charcoal stoves 	<ul style="list-style-type: none"> • Surveillance of charcoal exports and enforcement of export ban improved • Outreach program and 	<ul style="list-style-type: none"> • Charcoal export reduced to minimum. • Outreach program and programs to promote

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
<p>achieved</p> <ul style="list-style-type: none"> ▶ Alternative energy sources explored and promoted ▶ Public understanding of need for energy conservation improved <p>Cost: US\$3.8 million</p>	<p>Evidence of charcoal imports from recipient counties indicates US\$8.3 million worth of charcoal and wood exported from Somalia in 2003</p>	<p>Charcoal is shipped from small ports without records</p> <p>High export prices and lack of alternative income sources drive charcoal producers and agents to illegal trade</p>	<p>developed</p> <ul style="list-style-type: none"> • Options for alternative livelihoods and energy for household explored (all above: US\$0.6m) • Education and promotion program on energy conservation started (US\$0.3m) <p>Cost: US\$0.9 million</p>	<p>promotion of alternative livelihoods and energy sources continue</p> <ul style="list-style-type: none"> • Charcoal exports reduced by an estimated 50 percent from 2007 (all above: US\$0.8m) • Education and promotion program on energy conservation continued (US\$0.5m) <p>Cost: US\$1.3 million</p>	<p>alternative livelihoods and sources of energy completed (all above: US\$0.7m)</p> <ul style="list-style-type: none"> • Education and promotion program on energy conservation completed (US\$0.9m) <p>Cost: US\$1.6 million</p>
<p>A3. Fisheries:</p> <ul style="list-style-type: none"> ▶ Complete licensing of all off-shore fishing vessels and their compliance with all fishing regulations ▶ Registration of all artisanal fishermen selling commercially and their compliance with regulations <p>Cost: US\$2.5 million</p>	<p>Unsustainable exploitation of fishery resources</p>	<p>Inadequate licensing and regulatory capacity</p> <p>Inadequate information in fish and marine resources</p>	<ul style="list-style-type: none"> • Ministry of Fisheries strengthened in all areas • Capacity of key public and private sector institutions being built to effectively regulate fish production by issuing licenses and enforcing license conditions • Standards for fishing, transportation, processing, packaging, and so forth of fish products developed • Lost reference material and scientific material recouped (US\$0.7m) <p>Cost: US\$0.7 million</p>	<ul style="list-style-type: none"> • Long-term policy framework for fisheries subsector developed • Standards for certification procedures that guarantee product safety in export markets established • International and regional fishing laws implemented and strengthened • Lost reference material and scientific material continues to be recouped (US\$1.2m) <p>Cost: US\$1.2 million</p>	<ul style="list-style-type: none"> • Effective licensing and regulation of all Somali fisheries resources within the EEZ in place • Artisanal fishermen who sell a surplus registered • Progress made towards the signature, ratification, and implementation of the Basel Convention (US\$0.6m) <p>Cost: US\$0.6 million</p>
<p>A4. Biodiversity:</p> <ul style="list-style-type: none"> ▶ Halt further deterioration of biodiversity. 	<p>No comprehensive data available on wildlife or biodiversity</p>	<p>No licensing or surveillance system in place on hunting or the export of wildlife.</p>	<ul style="list-style-type: none"> • Policy on wildlife management and biodiversity protection developed, including a 	<ul style="list-style-type: none"> • Legislation and regulatory framework in place for the control of public use of wildlife 	<ul style="list-style-type: none"> • Support to community-based projects promoting the sustainable management of wildlife resources continued

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
A. Ensure Sustainable Use of Natural Resources and Protection of the Environment					
<p>► Licensing of all hunting and export of wildlife.</p> <p>Cost: US\$ 0.5 million</p>		Ineffective management of national parks.	<p>review of national parks</p> <p>Cost: US\$ 0.1 million</p>	<p>resources and the preservation of biodiversity</p> <ul style="list-style-type: none"> • Community-based projects promoting the sustainable management of wildlife resources initiated and supported <p>Cost: US\$ 0.1 million</p>	<ul style="list-style-type: none"> • Existing national parks rehabilitated • Sites rich in biodiversity identified for new protected areas • Community-based programs in biodiversity conservation developed <p>Cost: US\$ 0.3 million</p>

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
B. Sustainable, Poverty-Reducing Private Sector Growth					
<p>B1. Livestock:</p> <p>► International export inspection and certification standard achieved</p> <p>► Progress made towards control of all epizootic diseases</p> <p>► Strong and effective animal health service providers in place</p>	<p>Baseline is the vision for the Somalia livestock sector, which is probably not realistic.</p> <p>Producers and investors have little information about future market prospects and hence have an inadequate basis for diversification strategies</p> <p>Current export system is a rolling quarantine. It complies with neither the subregional standard (EXCELEX) nor the international standard (OIE)</p>	<p>Controversies over future livestock management strategies and transition to an improved inspection system</p> <p>Considerable misconceptions about Somali livestock in international market</p> <p>Lack of adequate number of qualified veterinarians, Para veterinarians (CAHWs), or adequate holding yards</p> <p>Need of retention of current export system</p>	<ul style="list-style-type: none"> • Analysis of options for future livestock management carried out, consensus reached (US\$0.3m) • Market studies for different products completed, assessment of prospects for domestic livestock processing carried out (US\$0.6m) • Private and government veterinarians trained, laboratories rehabilitated, CAHWs trained and upgraded (US\$0.9m) • Major transboundary diseases identified, status of epizootics assessed, CAHWs trained in disease reporting, 	<ul style="list-style-type: none"> • Private and government veterinarians and others in the MoAE trained, laboratories rehabilitated (US\$1.3m) • Assessment of status of epizootics continued, CAHWs trained in disease reporting, emergency response program developed, support built for control of epizootic diseases (US\$0.9m) • Interim export inspection and certification system continually improved. Rehabilitation of current marshalling and holding yards completed, Livestock 	<ul style="list-style-type: none"> • Training of private and government veterinarians and rehabilitations of laboratories completed (US\$0.7m) • Assessment of status of epizootics completed, CAHWs trained in disease reporting, emergency response program completed, support built for control of epizootic diseases (US\$2.1m) • Livestock support services strengthened and high-quality fodder production ensured (US\$0.3m)

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
<p>Cost: US\$11.4 million</p>	<p>Weak animal health service institutions</p> <p>Somali livestock said to be heavily infected with a number of major epizootic diseases</p>	<p>during an interim period of 5–10 years while epizootic diseases are progressively eradicated</p> <p>Nomadism and movement of livestock make epizootic diseases difficult to control</p>	<p>emergency response program developed (US\$0.6million)</p> <ul style="list-style-type: none"> • Current rolling quarantine system improved as an interim measure. Current marshalling and holding yards rehabilitated, Livestock Board staff trained, livestock support services strengthened (US\$0.9m) <p>Cost: US\$ 3.3 million</p>	<p>Board staff trained, animal products market information designed, livestock support and fodder services strengthened (US\$2.8m)</p> <p>Cost: US\$ 5 million</p>	<p>Cost: US\$ 3.1 million</p>
<p>B2. Crops:</p> <ul style="list-style-type: none"> ▶ Agricultural crop yields raised by 50 percent through rehabilitation of irrigation in the south and effective support services ▶ Soil and water conservation improved ▶ 2,500 households benefited from land registration and titling ▶ Agricultural support services strengthened 	<p>High potential for crop production, low productivity</p> <p>Significant decrease in the amount of irrigable land available to farmers due to deteriorating flood control and irrigation infrastructure</p> <p>Critical water shortages in many parts of Puntland. Underground water plentiful, but needs exploration</p>	<p>Agricultural support services lacking and while basic technologies are available, irrigation systems are destroyed, seeds are not available, and fertilizer is expensive compared with product prices, which are depressed because of marketing uncertainties</p> <p>Loss of productive topsoil due to land degradation and soil</p> <p>Some highly productive land occupied by strangers with livestock</p>	<ul style="list-style-type: none"> • In-depth hydrological study of Jaccel, Dhuudo, and Dopxo wadis and tributaries: planning, surveys, and drilling carried out (US\$0.3m) • Sanaag Watershed Management Project: water conservation works started, high-value forest species domesticated, wadi development and irrigation training offered to farmers, land titles given to households (US\$1.1m) • Bari Region Project: Proven wadi and oasis developed, date palms cultivated, high-value crops, fodder and agroforestry introduced, farmers trained in irrigated agriculture (US\$0.8m) • In Sanaag and Bari, 	<ul style="list-style-type: none"> • In-depth hydrological study of Jaccel, Dhuudo, and Dopxo wadis and tributaries: drilling completed, water quality evaluated (US\$0.6m) • Sanaag Watershed Management Project continued: water conservation, high-value forest species domesticated, wadi development and irrigation training offered to farmers, land titles given to households (US\$2.2m) • Bari Region Project continued: Proven wadi and oasis developed, date palms cultivated, high-value crops, fodder and agroforestry introduced, farmers trained in irrigated agriculture (US\$0.6m) • In Sanaag and Bari, 	<ul style="list-style-type: none"> • Sanaag Watershed Management Project completed: water conservation works, high-value forest species domesticated, wadi development and irrigation training offered to farmers, land titles given to households (US\$5.7m) • Bari Region Project completed: Proven wadi and oasis developed, date palms cultivated, high-value crops, fodder, and agroforestry introduced, farmers trained in irrigated agriculture (US\$1.4m) • In Sanaag and Bari, private support services strengthening completed, village development committees formed, farmers training completed, on-farm

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
Cost: US\$29.5 million			private support services strengthened, village development committees formed, farmers trained, on-farm technology trials executed, market surveys carried out, capacity of MoLAE built (US\$3.2m) Cost: US\$ 5.4 million	private support services strengthened, village development committees formed, farmers trained, on-farm technology trials executed, market surveys carried out, capacity of MoLAE built (US\$4.8m) Cost: US\$ 8.2 million	technology trials executed, market surveys carried out, capacity of MoLAE built (US\$8.8m) Cost: US\$ 15.9 million
<p>B3. Fisheries:</p> <ul style="list-style-type: none"> ▶ Increased and sustainable production of fish and fish products to 50 percent of estimated sustainable catch ▶ Reduction of 75 percent in wastage of fish caught ▶ Income generation capacity in Las Qoray, Bossaso, Qandala, Caluula, Hafuun, Eyl, Garacad, and Hobyo improved <p>Cost: US\$5.6 million</p>	<p>High potential for fish production but low yields, high wastage and postharvest losses, lack of markets, and exploitation by foreign intermediaries</p> <p>Low, albeit increasing, internal consumption of fish products</p>	<p>Lack of basic infrastructure (roads, airports and port facilities, potable water, and refrigeration facilities)</p> <p>Lack of data and knowledge in fish processing and marketing</p> <p>Lack of a marine resources management plan and considerable amount of illegal and unregulated fishing</p>	<ul style="list-style-type: none"> • Vision and strategy for sustained development of industrial and artisanal fisheries developed (US\$0.5m) • Survey done to assess fish stocks and the state of the marine environment (US\$0.4m) • Capacity of the Marine Institute of Puntland strengthened, existing building rehabilitated, new one built, equipment provided, human resources built, curriculum developed (US\$1m) • 20 new/existing fishing associations formed/empowered, 500 fishermen trained (US\$0.4m) <p>Cost: US\$ 2.3 million</p>	<ul style="list-style-type: none"> • Assessment of fish stock and marine environment completed (US\$0.4m) • Capacity of the Marine Institute of Puntland strengthened, through rehabilitation, equipment, human resources and curriculum development - completed (US\$0.5m) • 20 new/existing fishing associations strengthened, trained in marketing and business management, 500 fishermen continue to be trained (US\$1.2m) <p>Cost: US\$ 2.1 million</p>	<ul style="list-style-type: none"> • Strengthening of 20 new/existing fishing associations completed, training in marketing and business management finalized, training of 500 fishermen completed (US\$1.2m) <p>Cost: US\$ 1.2 million</p>
<p>B4. Other Private Sector Development:</p> <ul style="list-style-type: none"> ▶ Business information 	Productive sector activities are entirely in private sector hands since	High cost of doing business due to persistent insecurity and	<ul style="list-style-type: none"> • Development of information systems supported that will generate 	<ul style="list-style-type: none"> • User-friendly regulatory authority established • Market-friendly foreign 	<ul style="list-style-type: none"> • Information systems that will generate publications for potential investors

Target Outcomes for 2011	Baseline 2006	Constraints to Achieving Outcomes by 2011	Key Actions and Intermediate Outcomes		
			2007	2008	2009–11
<p>increased and improved</p> <ul style="list-style-type: none"> ▶ Scheme for small and medium enterprises created ▶ Annual 10 percent increase in the registrations of companies over the five years to 2011 	<p>the early 1990s</p> <p>Low investment and stagnant production</p> <p>Focus on trade and services rather than local manufacturing</p> <p>Mineral resources such as coal, gypsum, and limestone, plus various gemstones</p>	<p>deterioration of infrastructure</p> <p>Low skills of workforce</p> <p>Absence of financial services</p> <p>Absence of insurance services</p> <p>Absence of clear regulations pertaining to foreign investment and mineral rights</p>	<p>publications for potential investors</p> <ul style="list-style-type: none"> • Advisory services and technology resource centers established for local ICT providers for upgrading services that can be used for exchange of business information • BDS centers established to assist potential investors • Additional chambers of commerce established (all above: US\$0.9m) • BDS established in Garowe, Bossaso, and Galkayo, small/medium enterprise technical assistance and training established (US\$1.9m) • Training of public officials on efficient procedures for contract issuance, registration, and support of investors (US\$0.9m) 	<p>investment guidelines and regulations put in place</p> <ul style="list-style-type: none"> • Information systems that will generate publications for potential investors • Information systems that will generate publications for potential investors continue receiving support • Systematic, transparent tendering system set up for potential investors in the mining of various minerals • Advisory services and technology resource centers established for local ICT providers for upgrading services that can be used for exchange of business information (all above: US\$0.9m) • Establishment of BDS consolidated in Garowe, Bossaso, and Galkayo, small/medium enterprise technical assistance and training established (US\$1.8m) • Training of public officials on efficient procedures for contract issuance, registration, and support of investors carried out (US\$0.8m) 	<p>continue receiving support</p> <ul style="list-style-type: none"> • Supporting information and business services expanded (whether they be mining, manufacturing, or service activities) to small-scale producers, with special programs for women • Advisory services for ITC service providers continued • Reports on successful business start-ups prepared including lessons learned (all above: US\$2.2m) • Consolidation and evaluation of BDS services continued, small/medium enterprise technical assistance and training offered (US\$3.9m) • Training of public officials on efficient procedures for contract issuance, registration, and support of investors carried out (US\$1.9m)
Cost: US\$15.2 million			Cost: US\$ 3.7million	Cost: US\$3.5 million	Cost: US\$8 million
Total: US\$76.6 million			Total: US\$ 17.7 million	Total: US\$ 24.5 million	Total: US\$ 34.4 million