

Chapter 18 Social Capacity Development Strategies

18.1 Development Strategies for the Education Sector

18.1.1 Issues on the Education Sector

Education issues in the Nacala Corridor Region are classified into four categories; 1) access to primary/ secondary education, 2) quality of primary/ secondary education, 3) limitation of government's budget and community participation and 4) disparities in remote areas.

(1) Access to Primary/ Secondary Education

The number of primary schools in the Nacala Corridor Region steadily increased from 2004 to 2006 in response to need. However, around 50 students are in each class on average and the number of schools is not yet sufficient. In addition, necessary equipment such as desks and chairs is also in short. Moreover, in the Nacala Corridor Region, a large portion of schools are not located in or near the community and students have to walk a long distance. This could be one of the reasons they drop out of school. Furthermore, low motivation of parents, teachers and communities for education prevents children from going to school.

In addition, the shortage of secondary schools is a more serious problem. Construction of schools and allocation of teachers has not caught up to the increasing demand for secondary education.

(2) Quality of Primary/ Secondary Education

The result of the 2007 SACMEQ study shows that students' academic performance is lower than that of the regional average. Moreover, most students in grade 6 have not acquired the necessary basic skills. This fact indicates that the quality of education is inadequate. There are three reasons for low quality of education, namely lack of teachers, lack of motivation for teachers due to the remoteness of the school location and the ineffective monitoring system, and the deteriorating educational environment with crowded classes and damaged infrastructure.

(3) Limitation of Government's Budget and Community Participation

The government of Mozambique has substantially expanded its budgets and effort at educational development in terms of school building construction, hiring of teachers, teacher training and curriculum improvement. However, the government efforts have not solved all the problems in the education sector. More efforts have been devoted to the improvement of quantity in the education sector than to that of quality of education. In response to this situation, community participation could complement the government's efforts and budget. It is desirable to further encourage community participation and contribution in school management.

(4) Disparities in Remote Areas

There might be some negative impacts due to economic development. Economic development brought by investors might create or widen the gap of educational opportunity in the province. Investors tend to start businesses near provincial capital cities where infrastructure has been built. In the past, when investors have come and started their business, they have relocated villagers to other places in order to acquire the site for their business. In return, investors have constructed public facilities such as schools and hospitals as compensation. People who live in rural areas cannot benefit from economic development in most cases. Although these kinds of businesses create job opportunities and transfer technology and knowledge to local community members as positive impacts, people who live in rural areas cannot benefit from these.

18.1.2 Goals for the Education Sector

On the basis of the current situation and issues, the goal of the education sector is as follows:

“To enhance the education for the people to achieve an enlightened life and better economic situation, as well as to expand the basis of human resources, which will lead to an increase in the number of educated people and trained specialists who could contribute to industrial development.

18.1.3 Objectives for the Education Sector

Objectives for the education sector can be classified into four categories as follows.

(1) Quality Improvement of Primary Education

- To functionalize education activities at the school level in the Nacala Corridor Region, especially in the remote areas
- To improve the current quality of education activities in other areas around the transportation corridor
- To improve the education environment through providing necessary education related infrastructure in the Nacala Corridor Region, such as class rooms, facilities and equipment

(2) Improvement of School Access for Primary Education

- To expand the access to educational opportunities in the Nacala Corridor Region with special focus on the remoter areas in order to reduce the regional disparity

(3) Enhancement of Access to Secondary School

- To increase the number of students going on to secondary school and foster skilled people for industries

(4) Enhancement of the Quality of Secondary School

- To strengthen the education system of secondary education through prioritizing given subjects as well as improving the teacher training system, to contribute to the human resource development for the domestic economy

18.1.4 Strategies for the Education Sector

The strategies to achieve the above objectives are listed as follows. The below proposed strategies have two major policies; firstly, special consideration for the remote areas; and secondly, role

allocation between the government and the communities where government plays a role in implementation of larger projects such as new construction and rehabilitation of quality school buildings, while the communities implement small-scale building construction or rehabilitation, purchase of necessary small equipment etc. However, the role of the community is important, especially in remote areas where the government intervention is limited, in terms of resource providers and monitoring school management.

(1) Quality Improvement of Primary Education

- To improve the monitoring system and capacity for school performance by the public sector at the local level. This can be partially achieved by community-based school management projects through building regional coordination committees to monitor school activities
- To raise the awareness of parents and teachers for the importance of education as well as motivate teachers by conducting school management through community participation (dormitory construction for teachers, school monitoring by parents and the community)
- To reform and rebuild the old and/or insufficient classes through a scheme of public sector and community collaboration
- To improve the school environment through community-based school management by upgrading and improving school facilities such as water points and toilets, and by providing desks, chairs, textbooks and materials

(2) Improvement of School Access for Primary Education

- To construct schools and classes in the area, through a collaboration scheme between the public sector and the community where there is a shortage of primary schools, especially the remote areas
- To implement community-based school management to increase schools and classes, and to raise the awareness of parents and teachers regarding the importance of education
- To introduce school mapping in order to assess school allocation and plan to effectively construct more schools

(3) Enhancement of Access to Secondary School

- To increase the number of secondary schools using government budget
- To introduce school mapping in order to assess school allocation and plan for effective school construction

(4) Enhancement of the Quality of Secondary School

- To strengthen the secondary education by focusing on science and mathematics education, through strengthening of the teacher training system and teaching manuals

18.1.5 Programmes and Projects for the Education Sector

The following programmes and projects, as well as measures are proposed for the education sector, which correspond to the strategies mentioned above.

(1) Measures to be taken by Government

- Strengthening of government's system and capacity to monitor school activities (partially achieved by community-based school management projects through building regional coordination committees to monitor school activities)

- Secondary school construction and rehabilitation projects using the government's budget
- Strengthening of Secondary Education with Focus on Science and Mathematics Education Programme
- Programme for education planning by utilizing school mapping (both for primary schools and secondary schools)

(2) Measures with Collaboration between the Government and the Communities

- The project for construction and rehabilitation of schools and classes through collaboration between the public sector and the communities

(3) Measures to be taken by promoting Community Participation

- Community-based school management projects in order to mobilize community resources for improving communities' primary schools, to transform parents' minds toward children's education and to encourage primary school teachers in their educational activities

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18.2 Development Strategies for Health Sector

18.2.1 Issues on the Health Sector

The issues for the health sector are identified as follows:

(1) Human Resources for the Health Sector

The lack of human resource capacity has been recognised as a major constraint to overall health service delivery. This is due to low pre-service training and recruitment, personnel cuts and changing health needs. Health workers, especially in rural areas, cannot maintain their motivation due to inadequate salary, limited care prospects, heavy workload and the difficult working environment. Mozambique does not have enough medical faculties to train medical doctors and only 20 graduates become doctors annually. Mozambique depends heavily on medical services by foreign doctors from foreign countries such as Cuba, North Korea and Nigeria.

(2) Capacity of Hospitals

The population per primary health unit is 15,800, still far below the (WHO recommended) international standard of 10,000. Many health facilities are in need of renovation and maintenance. In rural areas, people have to walk very long distances to hospitals. This is the case for not only general patients, but also for pregnant women.

Because of the unavailability of hospitals in rural areas, people tend to primarily depend on traditional doctors and medicine to treat diseases and other health related problems. Most of the hospitals, especially in the provinces, do not have adequate, well-maintained facilities such as running water, electricity, transport or communication means. Hospitals cannot treat everyone due to the excessive number of patients and lack of health workers. The shortage of beds is also a critical problem.

(3) Urban Growth

In the meantime, in urban areas, the number of health facilities does not catch up with urban growth and population increase.

(4) Communication Deficiency

Communication between rural hospitals, the department of health and central hospitals in urban areas is also a critical issue. Rural hospitals do not have the means for communication with urban areas. Communication by mobile phone is often disrupted due to weak or absent radio waves.

(5) Limited Knowledge regarding Health

Some people in rural areas have limited knowledge regarding diseases and sanitation.

(6) Negative Aspect of Economic Development

Some of the areas, like Tete and Nampula, have the problem of a rising HIV infection rate. These areas are transit points to other cities. Roads in these areas were constructed recently. These good roads and developed towns have led to an increase in traffic volume. People from other cities, such as long distance drivers, bring HIV to local communities.

(7) Lack of Accurate Information of Health Conditions and Needs in Rural Areas

Directorates of Health of provincial governments are not able to monitor the conditions in their provinces since they do not have the means of transportation to visit rural areas. Thus, it is difficult for MISAU to collect accurate information on the health conditions in the provinces creating difficulty in preparing development plans reflecting the situations in rural areas.

18.2.2 Goals for the Health Sector

The goal of the health sector is defined as follows:

“To raise the health level of the people in the Nacala Corridor Region at least to the national level as well as provide reliable high-end medical service”

18.2.3 Objectives for the Health Sector

The objectives of the health sector are defined as follows:

- To enhance the implementation of primary health care (PHC) in the Nacala Corridor Region with a focus on prevention rather than treatment
- To improve the service level of, as well as access to, PHC in the remote areas where there is a shortage of health facilities
- To formulate an effective development plan in order to eliminate the regional disparity of health services in the remote areas
- To formulate an effective development plan in order to construct health facilities in the urban areas in response to the expected population growth due to the Nacala Corridor development

18.2.4 Strategies for the Health Sector

The strategies to achieve the above objectives are listed as follows.

- (1) To enhance the implementation of primary health care (PHC) in the Nacala Corridor Region with a focus on prevention rather than treatment**
 - To promote health education, especially in rural areas, through collaboration with school education
 - To provide health training to community health workers (health volunteers)
 - To establish committees in the communities for gathering mortality data (cause of death)
- (2) To improve the service level of, as well as access to, PHC in the remote areas where there is a shortage of health facilities**
 - To allocate health posts and health workers at the post administration level to places where there are currently no health posts/ facilities allocated
 - To train health workers in the Nacala Corridor Region where there is a shortage of health workers
 - To train and allocate community health workers (volunteers) where there is a shortage of health workers. At the same time, a revolving drug fund system will be introduced for health volunteers to obtain medicines

- (3) **To formulate an effective development plan in order to eliminate the regional disparity of health services in the remote areas**
 - To formulate effective construction plans for hospitals and health facilities by utilizing hospital and health facilities mapping
- (4) **To formulate an effective development plan in order to construct health facilities in the urban areas in response to the expected population growth due to the Nacala Corridor development**
 - To formulate effective construction plans for hospitals and health facilities by utilizing hospital and health facilities mapping

18.2.5 Programmes and Projects for the Health Sector

The following projects and measures are proposed for the health sector. The proposed projects are summarized by each of objectives

- (1) **To enhance the implementation of primary health care (PHC) in the Nacala Corridor Region with a focus on prevention rather than treatment**
 - The project for strengthening of health workers (volunteers) and health committees in the level of community
 - The project for promotion of health education in collaboration with schools and communities
- (2) **To improve the service level of, as well as access to, PHC in the remote areas where there is a shortage of health facilities**
 - Expansion and improvement of health posts and health workers at the post administration level
 - The project for capacity development of health workers in the health posts
 - The project for capacity development of community health workers (volunteers)
- (3) **To formulate an effective development plan in order to eliminate the regional disparity of health services in the remote area**
 - The project for the health infrastructure development planning by utilizing hospital and health facility mapping
- (4) **To formulate an effective development plan in order to construct health facilities in the urban areas in response to the expected population growth due to the Nacala Corridor development**
 - The project for the health infrastructure development planning by utilizing hospital and health facility mapping

18.3 Human Resources Development for Economic Sectors

18.3.1 Future Prospects of Human Resource Development for Economic Sectors

Supply of human resources to mega-projects, including mining projects in Tete and natural gas projects in Palma, and Nacala's industry to be located in/around the SEZ, the Port and the Airport, is one of the important national agendas. The government will continue to put the highest priority on it. The effort at human resources development for the economic sectors is required not only at the local level but also at the national level.

Large-scale projects require skilled staff, so that the strengthening of specific sectors' higher education and intermediate level TVET should be focused on. Development of higher technical level human resources is targeted. In the short term, as the government has already been doing, TVET should develop partnerships with private companies to quickly develop the human resources required. At the same time, in view of the medium term vision, school development, curriculum development and training of trainers should be conducted. Especially superior and intermediate level education should be strengthened in each province according to the strategy of economic development of the province.

Large-scale projects and foreign invested industries should be utilized as opportunities for Mozambicans to gain new and good experience. It is recommended that such industries should not be operated in an isolated manner, but rather by forging linkage with domestic companies to improve their capacity and skills.

Large-scale projects will not employ the majority of the labour force in the Nacala Corridor Region. It is expected that domestic small and medium enterprises (SMEs) will be developed and provide the local labour force with more employment opportunities in the formal sector. This will encourage the development of human resources in the study area. Foreign invested projects and companies will increase the need for services such as retailing, food and beverage, automobile maintenance, electricity, mechanics, hotels and restaurants. Training of entrepreneurship and business related subjects as well as industrial subjects targeting enterprises such as local service industry development, should be strengthened.

Upgrading the technical level of farmers and agriculture related human resources are important. Not only production techniques but also commercialization and agro-processing skills and knowledge are to be improved. It is expected that food demand will increase due to the emerging and growing foreign-invested industries. More and more efforts should be made to provide local products including vegetables and livestock products instead of importing foods from foreign countries. There is no good basic level agricultural school or intermediate level agricultural school in Tete Province. Conditions to provide formal TVE opportunities in the agricultural sector should be developed to at least the minimum level in each Province: at least one intermediate level school in each province. At the same time, more training should be provided to farmers and farmers' associations by promoting partnerships with NGOs and donors, as well as by strengthening the capacity of SDAE (District Service of Economic Activities) and extension workers.

18.3.2 Issues on Human Resources Development for Economic Sectors

The issues on human resources development considering economic sectors are defined as follows:

(1) High and Increasing Demand for Human Resources in Economic Sectors

Because of the emerging and growing large-scale mining projects of recent years, the need for human resources development are significantly and rapidly increasing. Although the government initiated a comprehensive TVET reform programme for the period of 2006–2020, and started implementation of the pilot phase (PIREP), the increase in demand for human resources was far higher than expected.

(2) Large Gap in Demand and Supply especially in terms of Quality of Human Resources

There is a large gap between the quality of human resources demanded by investors and those locally supplied. The gap is filled by technicians and personnel from areas outside the Nacala Corridor Region including other parts of Mozambique, India, South Africa and Brazil.

(3) Insufficient Supply of Skilled Workers through TVET Systems

General education and the TVET systems have not created a sufficient number of skilled and qualified workers in the past, not only for the large-scale projects, but also for general industries and services in the central and northern provinces of Mozambique.

(4) Less Involvement of Local People in Training Provided by Large-Scale Projects

Large-scale foreign companies provide training for Mozambican employees by mobilising their own resources, and by applying their own curriculum. These companies require highly skilled staff; therefore, they select better-educated Mozambicans from across the country, and pay them salaries during the training. It seems that very few locals are involved in these projects.

(5) Lack of Development of Human Resources due to Poor Development of Domestic Companies

One of the reasons that the local human resources are not developed well is the poor development of domestic enterprises. A total of 78% of the workforce is involved in the informal sector in Mozambique. These conditions could hinder the skills development of the local labour force.

(6) Insufficient Skills in Agriculture and Marketing of Agricultural Products

Farmers' knowledge and skills in agriculture and marketing are also very poor in general in the Study Area. They mostly do not have opportunities to develop their skills to improve the quality of the products and productivity in view of market requirements.

(7) Training Needed for Local Industries and Farmers

The government recognises the importance of providing training to the local labour force to support local industries as well as investment projects. Training for farmers at the district level is also recognised as an important task.

(8) Shortage in Funding

Under the PIREP framework, the two key organisations in the TVET system, DINET and INEFP, have been working on TVET reform through building partnerships with the private sector. However, the requirements for human resources development in the current conditions are huge. The available funding is not sufficient to fulfil the requirements.

18.3.3 Objectives for Human Resources Development for Economic Sectors

Considering the existing conditions and future prospects of human resources for the economic sectors, the following objectives are identified:

- To strengthen the mechanism to improve TVET to meet the increasing demands for qualified or skilled labour by large-scale projects as well as domestic industries
- To expand the coverage of intermediate and superior-level technical education
- To develop domestic industries which will be the major base of people's employment

18.3.4 Strategies for Human Resources Development for Economic Sectors

In consideration of the issues and objectives mentioned above, the following strategies are formulated for human resources development for the economic sectors:

- To develop or upgrade intermediate TVE schools and superior level technical education in consideration of the existing and future large-scale projects and industries in Tete, northern Cabo Delgado and Nacala, as well as future SEZ and industrial parks
- To collaborate with large-scale projects/industries for improving the contents of TVE in curriculum development, training of trainers and internship
- To generate employment opportunities by creating linkage between TVE schools/superior polytechnics and large-scale projects/industries (Tete, northern Cabo Delgado and Nacala)
- To generate employment opportunities by creating linkage between local SMEs and large-scale projects/industries (Tete, northern Cabo Delgado and Nacala)
- To strengthen training on entrepreneurship and other business related training to be provided by INEFP and the Entrepreneur Orientation Centre (CORE) of IPEME
- To strengthen TVE in the agricultural sector on agricultural techniques, agricultural marketing and agro-processing
- To improve the quality of general education at primary and secondary levels

18.3.5 Programmes and Projects for Human Resource Development for Economic Sectors

The following projects and measures are proposed for human resources development for economic sectors:

- Escola Industrial Médio de Geologia de Matundo Upgrading Project (Tete Province)
- Instituto Medio de Geologia e Minas Upgrading Project (Tete Province)
- Nacala Intermediate TVE School Project (Nampula Province)
- Palma Intermediate TVE School Project (Cabo Delgado Province)
- INFEP Vocational Training Centre Project (Cabo Delgado Province)
- Cabo Delgado Polytechnics Project
- Niassa Polytechnics Project
- Nampula Polytechnics Project
- Tete Polytechnics Upgrading Project
- Zambezia Polytechnics Upgrading Project
- Environmental Monitoring Capacity Development Project
- MPD-GAZEDA Programme Management Capacity Development Project

The following projects are proposed for capacity development in relation to ProSAVANA-PD:

- Agricultural Academy (Agricultural Development Centre) Project
- Project for Improvement of Irrigation Technology and Construction Quality
- Project for Formulation and Development of Modern Agricultural Cooperatives
- Project for Establishment of a Support Organization for Agricultural Investment and Value Chain Development
- Project for Capacity Development of Business Development Services

18.4 Institutional and Organisational Development Strategies

18.4.1 Issues on Institutional and Organisational Development

Nacala Corridor Region's development will become a large scale and multi-sector initiative involving all kinds of stakeholders such as the private sector, central government ministries and organisations, provincial and district governments, communities and neighbouring countries such as Malawi and Zambia. Therefore, effective and efficient coordination is essential to promote integrated development across wide areas. The issues on institutional and organisational mechanisms are defined as follows:

- The existing coordination mechanisms are limited to the following types:
 - Coordination mechanisms are among central organisations only
 - Coordination mechanisms are within and among provinces only
 - Coordination mechanisms are country-to-country initiatives, such as the Zambia-Malawi-Mozambique Growth Triangle (ZMM-GT)
- There are some opportunities where the private sector is involved, but they are not permanent arrangements.
- There is no mechanism in place at present to monitor and coordinate activities by all these stakeholders.

18.4.2 Objectives for Institutional and Organisational Development

The objective for institutional and organisational development is defined as:

- To create and operationalise an effective institutional and organisational mechanism that would promote and coordinate the integrated development for the Nacala Corridor Region

18.4.3 Strategies for Institutional and Organisational Development

The strategies for institutional and organisational development are as follows:

- For the Government of Mozambique, to position the integrated effort aimed at Nacala Corridor Region's development as a National Programme (PEDEC-Nacala as a National Programme)
- For the National Development Strategies (NDS), to take into account the strategies and projects that are proposed by PEDEC-Nacala as an operational tool for promoting and coordinating the integrated development in the Nacala Corridor Region
- To establish and activate an institutional mechanism for promoting and coordinating integrated development in the Nacala Corridor Region
- To establish and strengthen a special organisation to support and manage the institutional mechanism for promoting and coordinating the integrated development in the Nacala Corridor Region
- To strengthen the ZMM-GT initiative to make it function as the effective coordinating body at the decision-making level and technical level

The Nacala Corridor development would have a significant impact on Mozambique once it is successfully implemented. In this sense, it could be regarded as a national project. Positioning a project like the Nacala Corridor development as a national project, however, should be undertaken carefully based on a set of standards so that similar decisions in the future could be made in a

transparent and logical manner. The proposals by PEDEC-Nacala could provide a realistic guideline for the government to transfer the national goals and strategies developed in the National Development Strategies into programmes and projects in a regional context. In this sense, similar endeavours like PEDEC-Nacala can be replicated in other regions.

Experiences of other countries could provide valuable lessons to the Mozambican government in establishing an effective coordination mechanism. The experiences of the Eastern Seaboard Development in Thailand and the Rural Development Agency in Malaysia are good examples. There are numerous similar efforts in other countries. The Mozambican government should learn from these experiences of other countries. It also should carefully consider the unique conditions in which Mozambique is currently placed. The best arrangement for the Nacala Corridor development should be found based on an analysis of various factors such as decision making patterns, institutional arrangement of a new mechanism, extent and area of responsibilities, employment pattern of experts and organisational status.

Not only the overall coordination mechanism, but also better performance of individual key organisations should be ensured through capacity development. In this regard, strengthening of the organisational capacity of the Ministry of Planning and Development, GAZEDA and provincial governments are important.

18.4.4 Programmes and Projects for Institutional and Organisational Development

The following programmes, projects and measures are proposed:

- Establishment of Nacala Corridor Regional Development Agency (tentative name, NCRDA)
- Nacala Corridor Regional Development Management Reinforcement Project (Capacity Development for NCRDA)
- MPD-GAZEDA Organisational Reinforcement Project
- Provincial Governments Capacity Development Programme

Establishment of an organisation called “Nacala Corridor Regional Development Agency (NCRDA)” is proposed as a specific measure to realize the “Regional Cooperation Acceleration Initiative”. The function of NCRDA will be to provide technical information to the existing decision making mechanism at the political level on the progress, status and actions required to be taken to realize Nacala Corridor Region’s development. NCRDA will closely monitor the progress of all kinds of development activities in the Nacala Corridor Region in cooperation with relevant ministries, provincial and district governments, businesses and communities, coordinate plans at the technical level and propose plans for new actions to the existing decision making bodies. It will be established under the Ministry of Planning and Development. The management and technical staff of the NCRDA will be gathered by transferring personnel from relevant ministries and organisations and their representatives to the NCRDA.

18.5 Social Development Strategies

18.5.1 Issues on Social Development

In Chapter 8.5, the impacts of private investment as well as development projects are examined. The following issues are identified that could emerge from the impacts of Nacala Corridor development.

(1) Conflicts over Land Transfer and Resettlement

Dispute on land transfer may occur between the original residents and the newly arriving investors when investors try to identify the land plot for their activities. Its causes are, firstly, local farmers lands are usually not registered and investors could come in to find these occupied but un-registered lands as available, and secondly, participatory consultation is not sufficient and fails to reach full agreement with residents in the target area. In addition, conflicts will occur when the conditions for resettlement turn out to be not reasonable after agreement, or when investors do not follow the terms of compensation which were agreed between the community (or residents) and the investors.

(2) Food Security of Small-scale Farmers

Because of new employment opportunities in urban industries as well as in large scale agricultural companies producing commercial crops, land and labour force allocation within a household for food crop production for self-consumption may decrease, which can cause food insecurity of these small-scale farmers.

(3) Support for Small-scale Farmers' Agriculture

While the number of small-scale farmers trying to move to settled intensive agriculture will increase, the majority of farmers will remain with extensive agriculture, producing food crops for self-consumption. Measures have to be taken so that these small-scale farmers will not be left behind.

(4) Employment Creation and Industrial Promotion in Urban Areas

As a result of industrial growth in urban areas, job opportunities will increase. However, it is reported that job creation in industrial areas does not sufficiently benefit local residents due to the lack of human resources which can meet the company's demand. In addition, since the number of employees to be hired in large-scale projects is limited, local industries will be the broad base of employment. Measures to link these employment opportunities with the local community, as well as to promote local industry are required.

(5) Regional Disparity of the Remote Areas

Though development along the Nacala Corridor will be promoted through the variety of measures, remote areas far from the Corridor, especially in the provinces of Niassa and Cabo Delgado, would be left behind without receiving much benefit from the development. Transport or logistics do not reach these people and assistance for agriculture will not be provided and people will continue subsistence agriculture, and education and health services have to be limited or unavailable due to budget limitation. In addition, investment projects may come into these areas to find vast available

land, where governmental intervention for protecting people's land rights and to regulate the economic activities may be limited. Measures to secure the level of people's livelihood as well as to avoid enlargement of disparity must be taken.

18.5.2 Objectives for Social Development

Based on the issues identified above, the following objectives are set:

- To empower communities not only in the areas along the transport corridors but also in remote areas away from the transport corridors
 - To ensure local people's land rights in an environment with a prospective inflow of increasing private investments
 - To strengthen the government's implementation system and capacity for protecting local people's land rights and capacity to keep their food security, as well as for ensuring smooth process in land transfer and resettlement for private investments and government projects, in an environment with a prospective inflow of increasing investments
- To secure local people's capacity for growing food crops in the face of increase of commercial crop production and non-agricultural employment due to incoming agricultural and other investments
 - To support to small-scale farmers in technically improving their family agricultural production
- To improve basic education at the local level
 - By promoting community participation for basic education
 - By improving primary school buildings and monitoring activities of primary school education
- To promote primary health care at the local level
 - By promoting community participation for primary health care
 - By improving health centres in terms of buildings, equipment and medicine and monitoring activities at health centres and in the communities
- To create employment opportunities as well as to promote local industries un urban areas, so that economic growth and industrial development in the county will benefit the regional economy as well as regional people.
- To provide special attention to remote areas away from the transport corridors (major corridor, sub-corridors and feeder lines) and major urban centres, in the strengthening of community initiatives and government's selected intervention for securing farmers land rights and improving quality and access of primary education and primary health care

18.5.3 Strategies for Social Development

In order to attain the above objectives, the following strategies for social development are formulated:

(1) Strategies in Rural Areas

- To raise the awareness and understanding of the communities and local people regarding their land rights, land values and compensation conditions and participatory consultation processes.
- To promote and support local people's acquisition of DUAT (land use rights) in preparing applications for land registration

- To strengthen the governments' implementation system at the local level for encouraging and accepting local people's application for getting DUAT in their villages
 - To strengthen the government's implementation system and capacity to support and monitor participatory consultation processes concerning land transfer and resettlement between private investors and communities and between government projects and communities
 - To provide financial support or supporting packages to small-scale farmers practicing family farming (in an arrangement for out growers) for utilizing purchased chemical inputs for implementing modern intensive agriculture by implementing ProSAVANA strategies and measures
 - To provide technical support to small-scale farmers who are not changing to intensive settled farming, but who are practicing traditional family agriculture by implementing ProSAVANA strategies and measures
- (2) **Strategies in Urban Communities**
- To promote the creation of linkage with private companies for job creation for local people, especially for the youth
 - To empower urban communities by supporting local people, especially the youth, in starting businesses, as well as getting jobs
- (3) **Remote Areas**
- To provide government support in remote areas when large investment projects come to particular areas or communities for assisting local people's acquisition of DUAT
 - To improve the primary education services and primary health care services in remote areas by mobilizing both government and community resources and initiatives

18.5.4 Programmes and Projects for Social Development

The following programmes and projects are proposed:

- Project for Incorporation of PRAI in Legal Structure and Administrative System of Government Institutions
- Project for Strengthening of Supervision Mechanism on Land and Environment Law Enforcement
- Project for Capacity Development on Resettlement Process (MICOA)
- Project for Strengthening on DUAT Acquisition Process (MINAG)
- Programme for Promotion of Land Registration for Communities and Small-Scale Farmers
- Support Programme for DUAT Acquisition for Small-Scale Farmers in Remote Areas (Niassa and Cabo Delgado) (MINAG)
- Programmes and projects proposed in Education and Health sector of PEDEC-Nacala (MINED, MISAU)
- Measures and strategies for financial support for improved access to the agricultural inputs, proposed in ProSAVANA
 - Project for Establishment of Financial Support System for Small and Medium Sized Agribusiness Enterprises, Farmers Organizations and Individual Farmers
 - Project for Establishment of Proper Operational Management Framework for the Out-grower Scheme
- Measures and strategies to provide agricultural technical support, proposed in ProSAVANA

- Project for Strengthening of Agricultural Extension Service
- Project for Model Development of Leading Farmers in the Community
- Project to Support Female Farmers
- Project to Support Community Development Activities
- Project for Improvement of Access Roads for Agricultural Activities

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PART VI

IMPLEMENTATION PLAN

Chapter 19 Priority Programmes, Projects and Measures to be Implemented until 2035

19.1 General

“Part VI IMPLEMENTATION PLAN” presents specific projects and measures as the means to realize the strategies prepared in PART V. Chapter 19 presents the projects and measures proposed for the entire planning period until 2035. The projects with higher priority were selected according to a set of criteria.

Chapter 20 focuses on the projects and measures to be undertaken initially in the short term and medium term. Those with specially high priority were selected as “short-medium term high priority projects”.

19.2 Programmes, Projects and Measures for Nacala Corridor Region’s Development until 2035

A set of programmes, projects and measures required to implement the strategies in each sector until year 2035 were prepared based on analyses in each sector. A total of over 230 programmes, projects and measures were prepared. Please see the proposed programmes, projects and measures in Chapters 14 through 18. These are ideas on programmes, projects and measures to be implemented until 2035 for achieving the objectives identified for each sector.

19.3 Priority Programmes, Projects and Measures for the Nacala Corridor Region's Development until 2035

19.3.1 Criteria for Selecting Priority Programmes, Projects and Measures

A set of priority programmes, projects and measures to be implemented until 2035 are proposed for promoting the integrated development for the Nacala Corridor Region. They are keys to the realization of the development goals and future vision for the Nacala Corridor Region.

The following steps were taken in preparing these priority programmes, projects and measures.

- Formulation of programmes, projects and measures in each sector from a regional development perspective
- Listing of all programmes, projects and measures proposed by sector
- Establishment of a set of criteria for priority assessment
- Selection of programmes, projects and measures of priority
- Grouping of programmes, projects and measures into sector programmes or area programmes

The most important criteria for selecting priority programmes, projects and measures were established from the following two perspectives:

- 1) To initiate development in the Nacala Corridor Region' development successfully. The programmes, projects and measures which satisfy this perspective include the following types of programmes, projects and measures:
 - a. Those programmes, projects and measures that are crucial in making the on-going railway and major road projects start operating as the regional and international corridor for general cargoes, containers and passengers in a sustainable and efficient manner instead of the corridor used only for coal transport
 - b. Those programmes, projects and measures that could prevent or minimize adverse impacts on the social and natural environments and safety that might be caused by the on-going or planned transport infrastructure projects
- 2) The other perspective is as follows:
 - c. To identify those projects and measures that would link the transport infrastructure development with regional economic growth and social development. Actually, these measures hold the key to realizing the future vision and development goals for integrated development for the Nacala Corridor Region. These programmes, projects and measures consist of three types: 1) those programmes, projects and measures to support activities of economic sector, such as agriculture, processing industries, mining, tourism and logistics industries, 2) those to support social development and 3) those in various infrastructure sectors to support both economic and social activities. All these programmes, projects and measures were formulated and proposed based on the five pillars objectives presented in Chapter 9, which are capacity development, environmental management, social development, economic development and spatial development.

The specific factors were applied in selecting priority programmes, projects and measures to be implemented until 2035, in addition to the basic factors mentioned in the preceding paragraphs.

Priorities are given to programmes and projects with the criteria below.

- Related to the Nacala-Nampula-Cuamba-Malawi main corridor
- Synergy effects of combining different sectors and resources, such as water resources for agriculture and urban development, road development in combination with agriculture development, combination of waste disposal for energy production
- Urban centre which has a higher urban hierarchical position in the event of similar projects proposed
- Possibility of supporting and taking advantage of large-scale mining projects
- Possibility of increased interaction with the neighbouring countries, such as Malawi and Zambia
- Maturity in terms of recognition in the government and level of information collected on the programmes, projects and measures
- Higher level of potential to be developed by the programme, project or measure
- Urgent needs
- Capacity development to support the programmes, projects and measures selected based on the criteria above

19.3.2 Priority Programmes, Projects and Measures for Development of the Nacala Corridor Region until 2035

A set of candidate priority programmes were formulated by grouping the selected long-term priority projects into groups as shown in this section. The priority projects until 2035 were grouped into Area Programmes and Sector Programmes. The Area Programmes are formulated for the three cities of Nampula, Nacala and Cuamba. Sector programmes are proposed for the sectors of “agriculture”, “logistics modernization”, “tourism”, “road development, maintenance and safety control”, “railway operation improvement”, “port development and operation improvement”, “water resources development”, “electricity and energy”, “social and environmental management”, “urban development” and “capacity development”.

The area programmes were prepared for the three most important urban areas in terms of the development of the Nacala Corridor Region: Nacala, Nampula and Cuamba. The projects included in these three area programmes are those to be planned mainly by GAZEDA, the Ministry of Planning and Development (MPD), provincial governments, and district authorities. Those projects that are better to be planned by line ministries and organizations are grouped into sector programmes, even though their physical locations may be Nacala, Nampula or Cuamba in some cases.

The following are the proposed programmes and constituent projects and measures proposed to be implemented until 2035. In the event of one project proposed by different sectors either with the same title or different titles, it is regarded as one project with one title.

- In the three east-west corridors (Maputo, Beira and Nacala) and the main north-south corridor that runs from south to north

Nacala International Gateway Creation Programme

- Nacala Industrial Park Establishment
- Nacala Business Centre Establishment
- Support Roads for Urban Development and Tourism Development in Nacala Bay Area

- Nacala Port Access Road
- Nacala Multi-Modal Terminal and Railway Shunting Yard
- Nacala Industrial Park
- Urban Water Supply Expansion
- Nacala Thermal Power Plant
- Industrial Waste Management

Nampula Regional Growth Center Programmeme

- Railway Bypass (for securing safety and efficiency of urban area)
- Railway Crossings Improvement
- Nampula Ring Road Development (Southern Bypass Road)
- Urban Water Supply Expansion
- Urban Infrastructure Development (Sanitation, Roads)
- Business Start-Up Support Strengthening (Finance, Incubation, Legal Issues etc.)

Cuamba Logistic and Industrial Center Programmeme

- Cuamba Road Bypass Development
- Industrial Park Establishment (Pulp, Agro-Products etc.)

Integrated Agriculture Development Programmeme

- Some ideas on agricultural projects and measures have been prepared; however, it is necessary to conduct public consultation, especially with local farmers for preparing concrete projects.

Integrated Tourism Development Programmeme

- Matibane-Crusse-Jamail Island Tourism Interest Zone development
- Lumbo-Mozambique Island Tourist Interest Zone development
- Metangula Tourist Zone development
- Pemba/Pemba Bay Tourist Interest Zone development

Logistics Modernization Programmeme

- Containerization Promotion Project (Tax Incentive, Improvement of Procedures at Nacala Port)
- Inland container depot development for Malawi, Zambia and Nacala Port
- Joint Railway Operation Negotiation between Malawi and Mozambique
- Mutuali and Nampula Multi-Modal Terminal Development
- N-13 highway service stations (Cuamba, Malema, Ribaue, Namialo)
- Customs Improvement (Single Window, Computerized Application System etc.)
- One stop Border Posts Development (Zobue, Mandimba, Mchinji/Chipata)
- Multi-Modal Customs Guarantee System Introduction
- Ict Applied Tracking System Introduction

INATTEL Capacity Development

Road Development, Maintenance and Safety Control Programmeme

- Strengthening of Sub-Corridor Roads (Bridge Replacement for Northern Section of Pemba-Palma Road)
- Regional Road Improvement for Agricultural, Forestry and Fishery Development
- Regional Road Improvement for Tourism Development
- Ladder Roads Development (Marrupa-Cuamba, Ribaue-Montepuez)
- Railway Crossings Improvement
- Overloading Control Enforcement
- Capacity Development for Traffic Counting and Axle Load Control for Proper Road

Maintenance Planning

- Nacala International Corridor Road Maintenance Office Establishment
- Capacity Development for Road Maintenance Planning and Budget Execution Programming

Port Facility and Operation Improvement Programmeme

- Customs, Immigration and Quarantine (CIQ) Systems Improvement
- Port Operation and Management Improvement
- Port Sales Capacity Development
- Nacala Shipyard Construction (Dry Dock)

Railway Operation Improvement Programmeme

- International Railway Network Integrated Operation Promotion
- Joint Railway Operation of Coal Transport and General Cargo Transport
- Railway Traffic Control System and Railway Signalling Facility Improvement

Power and Energy Programmeme

- Nampula-Nacala Power Substation Reinforcement (Construction of New Namialo Substation and Rehabilitation of Substations - Nampula 220, Nampula Central, Monapo, Nacala Substations)
- Chimuarua-Namialo-Nacala Transmission Line Project
- Project for Thermal Power Plant in Nacala
- Project for Thermal Power Plant in Palma
- Palma-Pemba-Nacala Transmission Line Project
- Coal Briquette Production in Tete Province (utilizing coal dust, pulp wastewater and other materials)

Water Resources Development Programmeme

- Procurement of Meteorological and Hydrometric Observation Equipment and Capacity Development
- Training of ARA-N and ARA-CN Staff
- Integrated Water Resources Management (IWRM) Study on Water Basins of Megaruma River, Lurio River, Mecuburi River, Monapo River, Sanhute River and Meluli River
- Sanhute Dam Construction For Nacala Area
- Lurio River Resource Development Project for Water Supply to Nacala Bay Area
- Project for Desalination Plant in Nacala Bay Area
- Monte Tiza Dam Construction for Nampula Area
- Mepopole Dam Height Raising for Cuamba Area

Urban Development Programmeme

- Pemba Road Network Expansion for Supporting Urban Expansion and Improving Access to Tourist/Resort Areas
- Lichinga Railway Station Relocation

Social and Environmental Management Programmeme

- Environmental Management Capacity Development
- Investor-Community Partnership Initiative
- Rural Water Supply Spare Parts Supply Network Expansion
- Community Forestry Expansion
- Eco-Tourism Promotion

Human Resources Development Programmeme

- Community-Based School Management Programmeme

- Programmeme for Strengthening of Secondary Education with Focus on Science and Mathematics
- Nacala Medium-Level Technical and Vocational School Project
- Cabo Delgado Medium-Level Technical and Vocational School Project
- Nacala Superior Polytechnic Project
- Cabo Delgado Superior Polytechnic Project

Capacity Development Programmeme

- Nacala Corridor Development Programme Management Capacity Development
- GAZEDA/CPI Investment Promotion Capacity Development
- Nacala Corridor Regional Cooperation Acceleration
- Introduction of a TV Conference System Among the Local and Central Government Agencies Related to the Nacala Corridor Regional Development

“Nacala International Gateway Creation Programmeme” aims at reinforcing the international gateway function of the Nacala Bay area. It will function as the export and import point for cargoes through Nacala Port. For the port to be able to fully utilize its enhanced capacity, facilities such as a port access road and railway shunting yard will become the minimum requirements. The current capacities of the roads and railway connecting to Nacala Port will be insufficient, therefore requiring improvement. An increased amount of cargoes going through Nacala Port will provide an opportunity for processing in the hinterland. This is why Nacala industrial free zone (IFZ) is proposed. . A set of infrastructures are proposed to support various urban activities and tourism development planned in Nacala Bay Area such as “Matibane-Crusse-Jamail Island Tourism Interest Zone development” proposed under the “Integrated Tourism Development Programmeme”.

“Nampula Regional Growth Center Programmeme” aims to create a sound urban environment and accelerate processing industries and services for Nampula to grow as a major industrial and logistics centre in the northern area. The railway rehabilitation project undertaken by the private concessionaire and the road rehabilitation projects between Nampula and Cuamba will provide an excellent opportunity for improving the access for the local agriculture products and agro-processed products to overseas market. As an endeavour to realize this potential, an industrial park is proposed in Nampula. Development of small and medium scale businesses will be promoted by the Business Start-up Support Strengthening Project. A set of projects will be required as the minimum requirement such as the railway bypass and railway crossings improvement in order to maintain the favourable urban environment of Nampula. A ring road will also prevent degradation of the urban environment that may be caused by increased road traffic on Cuamba-Nampula-Nacala road.

“Cuamba Logistics and Industrial Center Programmeme” aims to fully develop the potential of Cuamba in Niassa Province, which is situated at a strategic location. A road bypass is proposed as a minimum requirement to maintain the urban environment of Cuamba by diverting the through traffic envisaged to increase significantly in the near future. The “N-13 Highway Service Station” in Cuamba proposed under “Logistic Modernization “Programmeme” will help ensure safe and efficient traffic flow. An agro-processing industrial park is proposed to take advantage of the opportunity to process the increasing amount of various agro-products passing through Cuamba.

A set of ideas on agriculture projects and measures are proposed in the “Integrated Agriculture Development Programmeme” by using ProSAVANA principles and strategies. However, it is necessary to conduct public consultation, especially with local farmers for preparing concrete

projects at the stage of implementing project after this stage of strategies formulation

The “Logistics Modernization Programmeme” aims at ensuring smooth flow of commodities on roads and railways and through international border points. It consists of a set of projects and measures that would promote container transportation whose advantages include lower price, efficiency and safety. The proposed projects and measures to support containerization include institutional measures such as tax incentives and procedural advantages and ICT-applied tracking system development and physical projects such as inland container depots, multi-modal terminal and one-stop border post development. These are the minimum requirements to realize an efficient Nacala corridor. The capacity development of INATTER, which is in charge of ensuring road safety and supervising railway operation, is also a must.

The “Integrated Tourism Development Programmeme” is an endeavour to tap rich touristic resources in the Nacala corridor region from the areas with higher maturity. “Matibane-Crusse-Jamail Island Tourism Interest Zone development” is the first priority ready for tourism investment. Its advantage is its proximity to Nacala and the availability of land for development. Its attractiveness would be enhanced by connecting it with the Mozambique Island by a new road under the “Road Development, Maintenance and Safety Control Programme”. Mozambique Island itself and the Lumbo area on the other side of the bay could turn into an even more attractive tourist destination by upgrading its cultural, architectural and natural assets. Tourism development in Metangula in Niassa Province could be promoted in combination with an agriculture development project in the area north of Lichinga. Tourism potential of Pemba could be developed to cope with an increasing number of foreign tourists, especially those related with Rovuma natural gas development.

The “Road Development, Maintenance and Safety Control Programme” aims mainly at ensuring efficient and safe road traffic on the improved trunk roads in a sustainable manner. An important focus of this programmeme is the need for road safety and proper maintenance of the roads whose rehabilitation is planned to be completed in the near future. To maintain the rehabilitated roads in a proper condition would be the minimum requirement for the Nacala Corridor to continue functioning as the corridor for transportation and regional economic growth. Improving the railway crossings would be another type of minimum requirement proposed to mitigate adverse impacts that might be caused by the railway project.

The “Railway Operation Improvement Programmeme” proposes projects and measures that would help successful operation of the Moatize-Nacala rehabilitated railway for transporting general cargoes, containers and passengers across the boundaries with Malawi and in coordination with coal transport.

The “Port Facility and Operation Improvement Programmeme” contains measures and projects that would enhance the efficiency of cargo handling at Nacala Port and capacity development in port sales. An active approach by the Mozambican authorities and private companies to attract foreign shipping companies would be needed to make full use of the expanded capacity of Nacala Port.

The “Water Resources Development Programmeme” aims to expand the water supply capacity to meet the increasing demand in major urban areas. It proposes both construction of water source facilities for Nacala, Nampula and Cuamba and preparatory measures to be promoted prior to water resources development. Capacity development of ARA-N and ARA-CN staff, procurement

of meteorological and hydrological observation equipment and a comprehensive study on water resources development should be conducted.

An objective of “Power and Energy Programmeme” is to reinforce the capacity to supply electricity to Nampula, areas between Nampula and Nacala, Nacala Bay Area and the areas in Cabo Delgado Province along the existing transmission line including Pemba and Palma. The programmeme also proposes a coal briquette project in Tete Province, taking advantage of coal dust from coal production in Moatize and pulp wastewater from pulp industries and other materials.

The “Urban Development Programmeme” proposes key projects that would improve the urban structure of Pemba, Lichinga and Tete, including a new north-south road for Pemba, railway station relocation project for Lichinga and sewerage system establishment in Tete.

The “Social and Environmental Management Programmeme” aims to improve the quality of life of people by social and economic measures. It proposes projects and measures for rural water supply, community forests, eco-tourism and the social system. Establishment of a system to coordinate the interests of investors and communities is the minimum requirement for promoting investments for the benefit of the local population. A set of capacity development projects for environmental management are proposed under the “Capacity Development Programmeme”.

The “Human Resources Development Programmeme” aims to strengthen the capability of the private sector and the government. It includes projects and measures at three levels of capacity development: individual, organizational and institutional. Individual level capacity development projects include those aiming at developing human resources in the private sector for economic development. Individual and organizational capacity development projects for the government organizations and staff are proposed for environmental monitoring, overall management of Nacala Corridor development and GAZEDA-CPI. At institutional level, a coordination mechanism among all the stakeholder organizations in Mozambique, Malawi and Zambia and among organizations of different tiers and sectors in Mozambique could be established by the Nacala Corridor Regional Cooperation Acceleration Initiative.

Chapter 20 Action Plan for Short and Medium-Term High Priority Projects

20.1 Selection of Short and Medium-Term “High Priority Projects”

The 74 projects selected as the priority projects to be implemented until 2035 in Chapter 19 of the Draft PEDEC Strategies Report were further reviewed in order to select “high priority projects” to be initiated by 2017 and completed by 2025 in the short and medium terms. The following criteria were applied to identify “High Priority Projects”:

- Especially important projects in making the transport corridors effectively function as an initial driving force for development in the Nacala Corridor Region
- Especially effective projects in mitigating negative impacts of transport corridors upgrading and economic sectors development on the natural and social environments
- Especially effective projects in promotion of economic sectors by taking advantage of development opportunities to arise due to the effectively upgraded transport corridors
- Especially important projects in starting up regional development so that other important development efforts could be implemented smoothly
- Higher level of maturity of projects whose necessity and methodology have been well understood by concerned agencies and stakeholders
- Projects whose negative environmental and social impacts could be mitigated certainly by technologically established measures

As a result, a total of 46 projects were selected as the “short- and medium-term High Priority Projects” as listed below. Preparation of all these short- and medium-term high priority projects should be started immediately. Some projects will be implemented and completed in the short term until 2017, while others will be implemented and completed in the medium term of 2018-2025 because a longer time is required for survey, design and construction, as well as decision-making.

Nacala International Gateway Programme

- Nacala Industrial Park Project
- Nacala Industrial Belt Area Development Project
- Nacala Port Access Road Project
- Nacala Multi-Modal Terminal and Railway Shunting Yard Project
- Nacala Thermal Power Plant Project
- Nacala Urban Water Supply Expansion Project
- SEZ/IFZ Management Improvement Project

Nampula Regional Growth Centre Programme

- Nampula Southern Road Bypass Project
- Nampula Railway Bypass Project

- Nampula Multi-Modal Terminal and Railway Shunting Yard Relocation Project
- Railway Crossings Improvement Project

Cuamba Logistics and Industrial Centre Programme

- Cuamba Bypass Road Project
- Cuamba Industrial Park Project
- Cuamba-Marrupa Road Upgrade projects

Palma Natural Gas Exploitation and Chemical Industrial Centre Programme

- Palma Port Project
- Palma Thermal Power Plant Project
- Palma Urban Water Supply Project
- Palma Urban Expansion Project

Logistics Modernization Sector Programme

- Malawi Central Inland Container Depot Project (Malawi)
- Chipata Inland Container Depot Project (Zambia)
- N-13 Highway Service Stations and Truck Terminals Establishment
- Mandimba One Stop Border Post Project
- Mocuba SEZ Project
- Railway Regulator Capacity Development Project

Water Resources Development Sector Programme

- Meteorological and Hydrological Observation Network System and Capacity Development Project
- Sanhute Dam Project (for Urban Water Supply to Nacala)
- Project for Lurio River Water Resources Development for Water Supply to Nacala Bay Area
- Monte Tiza Dam Project (for Urban Water Supply to Nampula)

Power and Energy Sector Programme

- Nampula-Nacala Power Substation Reinforcement Project
- Chimuara-Namialo-Nacala Transmission Line Project
- Palma-Pemba-Nacala Transmission Line Project
- Tete Coal Briquette Project

Social and Environmental Management Sector Programme

- Environmental Management Capacity Development Project
- Project for Strengthening on DUAT Acquisition Process
- Project for Capacity Development on Resettlement Process

Human Resources Development Programme

- Community-Based School Management Programme
- Programme for Strengthening of Secondary Education with Focus on Science and Mathematics Education
- Nacala Medium-Level Technical and Vocational School Project
- Cabo Delgado Medium-Level Technical and Vocational School Project

20.2 Outline of Short and Medium-Term High Priority Projects

The ideas on Short and Medium-Term High Priority Projects are summarised under each programme in Tables 20.2.1 through 20.2.12.

Table 20.2.1 Nacala International Gateway Programme

Project	Outline	Province	Executing Agency
Nacala Industrial Park Project	An international-class industrial park with a full set of on-site and off-site infrastructures will be established in order to create a new manufacturing base capitalising on the Nacala's nodal function of being an international gateway. The IFZ status will be granted. It is located at about 5 km south of Nacala Port by the proposed port access road, utilising the land already acquired by GAZEDA. The total development area will be 500 hectares, of which the initial development of 50 hectares will be promoted as a public investment project, while the remaining 450 hectares will be developed by private developers.	Nampula	GAZEDA
Industrial Belt Area Development Project	A total of 100 hectares of land plots will be prepared in the industrial belt area where industries intending to locate in Nacala SEZ are guided. GAZEDA will get land use rights (DUAT) and arrange utilities for providing private investors with land plots equipped with infrastructures (access roads, electricity and water supply). This project is an immediate measure to cater to the rapidly growing demand for industrial land in Nacala SEZ until the Nacala Industrial Park comes into operation.	Nampula	GAZEDA
Nacala Port Access Road Project	The project will accommodate the road traffic expected to increase as a result of the expanded port capacity and urban development of Nacala Bay Area. It extends from National Road No.12 northward up to Nacala Port 13.5 km, including 0.7 km bridge section. The road will be a two-lane road initially, and expanded later to a four-lane road.	Nampula	ANE
Nacala Multi-Modal Terminal and Railway Shunting Yard Project	The project will have three components, namely 1) multi-modal terminal (railway and truck), 2) shunting yard and 3) locomotive depot. The project will ensure smooth transshipment of cargoes from railway to trucks and vice versa at multi-modal terminal (railway cargo station with truck terminal). The railway shunting yard in the project will enable efficient shunting of trains whose number is expected to rise as a result of larger cargo handling volume generated at Nacala Port, planned IFZ and industrial areas in the hinterland. The cargo handling capacity will be 50 to 60 thousand TEU per year. The proposed project site is about 10 km south of Nacala Port along the proposed Port Access Road route.	Nampula	MTC
Nacala Thermal Power Plant Project	A thermal power plant will be established in Nacala SEZ. The capacity will be 200 to 300 MW in the first phase and 600 MW in the second phase. The proposed project site is on the western side of the entrance of Nacala Bay, which is on the opposite bank of Nacala Bay. Either coal or natural gas will be used as fuel.	Nampula	EDM
Nacala Urban Water Supply Expansion Project	The project will enhance the water supply capacity by 50,000 m ³ per day (14.6 million m ³ per year) to meet increasing water demand in Nacala Bay Area by year 2017. The components include enhancement of the capacity of the existing treatment plant at Muecula Dam, expansion of water distribution system in Nacala	Nampula	FIPAG

	Porto Municipality and development of a water distribution system in Nacala-a-Velha District.		
SEZ/IFZ Management Improvement Project	Mozambique, especially the Nacala Corridor Region and Maputo, requires the physical and soft capacity of accommodating incoming investments/enterprises by providing industrial parks or designated industrial areas with necessary infrastructure, as well as by providing management services for incoming and operating enterprises. The project aims at capacity development of GAZEDA for improvement of Nacala SEZ management and planning new SEZs and IFZs in Mozambique, especially for the purpose of increasing GAZEDA's physical and soft capacity for accommodating incoming enterprises and supporting operating enterprises.	Nampula	GAZEDA

Source: JICA Study Team

Table 20.2.2 Nampula Regional Growth Centre Programme

Project	Outline	Province	Executing Agency
Nampula Southern Road Bypass Project	Nampula City will continue to grow as the business, commercial and industrial centre of northern Mozambique and transportation node of national highways and inter-regional roads. The project will divert the through traffic from National Road No.13 to/from the west and National Road No.1 to/from the east avoiding concentration of traffic in the city centre. It is 32.5 km long running south of Nampula City as part of a ring road proposed for the future and will be 16-metre wide for the initial development.	Nampula	ANE
Nampula Multi-Modal Terminal and Railway Shunting Yard Relocation Project	The project will provide a multi-modal cargo terminal (railway and truck) so as to efficiently handle cargoes to/from Nacala and inland areas toward Malawi. The project will also relocate the existing shunting yard at the Nampula station eastward by about 30 km at the same place for the multi-modal cargo terminal. It will provide a locomotive workshop as well. The total area will be about 22 hectares. The container handling capacity will be 50 to 60 thousand TEUs per year.	Nampula	MTC
Nampula Railway Bypass Project	The double track railway bypass will divert the trains transporting coal produced in Moatize, general cargoes and containers to avoid congestion and degradation of the urban environment in the central part of Nampula City. The bypass route runs in the north of Nampula City with a length of 43 km.	Nampula	MTC
Railway Crossings Improvement Project	The project will minimize traffic accident risks and division of local community areas that might be created by the railway with increased railway traffic. The project proposes 3 two-lane flyovers on National Road No.13 and one four-lane flyover at an urbanized area within Nampula City.	Nampula	ANE

Source: JICA Study Team

Table 20.2.3 Cuamba Logistics and Industrial Centre Programme

Project	Outline	Province	Executing Agency
Cuamba Bypass Road Project	The project will divert the through traffic on National Road No.13 to prevent degradation of urban environment and minimize traffic accidents risk and to guide expansion of the urban area to the north of Cuamba across the river, a tributary of the Lurio River. The bypass road will be a two-lane road of about 11 km long including a 50-metre	Niassa	ANE

	bridge over the river. The new road section of the bypass branches off from National Road No.13 at about 5 km east of Cuamba, runs west-northwest and converges with National Road No.360.		
Cuamba Industrial Park Project	The project will provide an industrial park where various agricultural produce and wood from the surrounding areas will be processed, taking advantage of Cuamba's geographical location. Agro-produce to be processed will include maize, cassava, haricot beans, pigeon pea, soybean, sesame, cotton and tobacco. The 25 hectare industrial park will be located in a triangular area surrounded by National Road 360 (N-360), National Road 13 (N-13) and the railway track to Lichinga at the N-360-N-13 junction.	Niassa	GAZEDA
Cuamba-Marrupa Road Project	The project will provide an all-weather road from Cuamba to Marrupa to secure access to an all-season all-weather passable road for the population along the route and improved access to market for the farmers in the surrounding areas with high agriculture potential. The road will be a two-lane road, 236 km long.	Niassa	ANE

Source: JICA Study Team

Table 20.2.4 Palma Natural Gas Exploitation and Chemical Industrial Centre Programme

Project	Outline	Province	Executing Agency
Palma Port Project	In Palma, LNG plants are expected to be established using natural gas from off-shore gas fields by 2018. At the same time, chemical industries for producing methanol and ammonia using natural gas are expected to be developed in Palma around 2020. To accommodate these natural gas-related industries in Palma and to smoothly develop supporting sectors for these natural gas-related industries, it is essential for Palma to have a public port. Currently the construction of LNG plants is planned without proper consideration of land use and infrastructure for the chemical industries and further development in Palma. It is urgent to prepare an integrated plan for land use and infrastructure supporting not only LNG production, but also chemical industries and further development in Palma.	Cabo Delgado	CFM
Palma Thermal Power Plant Project	Taking advantage of the presence of natural gas to be exploited at offshore gas fields, a thermal power plant will be constructed with an initial generation capacity of 75MW or so for supplying not only to Palma's urban areas and supporting sectors for LNG production and other chemical industries using natural gas, but also to other areas including Pemba and Nacala Bay Area.	Cabo Delgado	EDM
Palma Urban Water Supply Project	Urban water supply will be expanded in order to cope with the increasing water demand due to increasing urban populations and development of supporting sectors for natural gas exploitation and prospective chemical industries.	Cabo Delgado	FIPAG
Palma Urban Expansion Project	Palma needs to accommodate an increasing number of influx of migrants and a large expansion of urban areas. Urban roads, drains, electricity lines and water lines will be provided for expanded urban areas. This urban expansion project will also provide sites for a variety of social services, hospitals, health centres and schools.	Cabo Delgado	To be Determined

Source: JICA Study Team

Table 20.2.5 Logistic Modernization Sector Programme

Project	Outline	Province	Executing Agency
- Liwonde and Chipoka Inland Container Depots Project (Malawi) - Chipata Inland Container Depot Project (Zambia)	Inland container depots (ICDs) will be established at two locations in Malawi (Liwonde and Chipoka) and at one location in Zambia (Chipata) in order to ensure efficient export and import of railway cargoes through Nacala Port (time and cost saving), thus enhancing the attractiveness of the railway transport among Mozambique, Malawi and Zambia. Each ICD will be 1.2 hectares with railway yard, bonded warehouses, container freight station and container yard.	Malawi and Zambia	To be Determined
N-13 Highway Service Stations and Truck Terminals Development Programme	Highway service stations with truck terminals will be established at four locations along National Road No.1 (N-1) and National Road No.12 (N-12): Namialo, Ribaua and Malema in Nampula Province and Cuamba in Niassa Province. They will offer rest areas for truck drivers, parking spaces, vehicle maintenance service, emergency response service, markets for local products and logistic services (storage, breaking bulk and distribution to smaller distribution trucks). Each area will be 250 to 400 metres long and 100 to 200 metres wide.	Nampula, Niassa	ANE
Mandimba One Stop Border Post Project	The project will ensure smoother movements of goods, services and people across the Mozambique-Malawi border at Mandimba. The project will include construction of facilities (building, parking lot and approach road), procurement of equipment (weigh bridge and X-ray scanner), development of a legal framework and streamlined procedure and training of immigration and customs officers. Coordination among relevant government organisations will be crucial. The project period will be 6 years including, design, formulation of legal framework, construction and training.	Niassa and Malawi	Revenue Authority
Mocuba SEZ Project	GAZEDA plans to develop a special economic zone (SEZ) of 10,727 km ² in the area covering Mocuba District and Munhande Administrative Post in Zambezia Province, taking advantage of its strategic location. Two private initiatives for developing railway systems, one from Tete province to Nacala and the other to Macuse Port, will significantly enhance the viability of Mocuba SEZ. The project components include development of infrastructure, multi-modal transportation terminal, industrial park (19ha), new hotels and upgrading of the existing airport.	Zambezia	GAZEDA
Railway Regulator Capacity Development Project	The roles of INATTER (Instituto Nacional dos Transportes de Terrestre), responsible for regulation and supervision of the railway and road sectors, will become important when the private concessionaire for the Nacala Corridor Railway (Northern Railway and new sections) comes into operation soon. The capacity of INATTER will be strengthened in the areas of monitoring and guidance of private operators and enforcement of regulations, as well as transport statistics data collection, transport policy and programme formulation, international standardization and transport safety development. The project period will be three years.	Maputo	INATTER

Source: JICA Study Team

Table 20.2.6 Water Resources Development Sector Programme

Project	Outline	Province	Executing Agency
Meteorological and Hydrological Observation	The deteriorated meteorological and hydrological observation network system in the three regional management authorities (ARA-Central North, ARA-North and ARA-Zambezi), will be rehabilitated and	Nampula, Niassa, Cabo	ARA North, ARA Central North and

Network System and Capacity Development Project	upgraded by procurement of equipment and training of ARA officers. Hydrometric equipment and meteorological equipment to be procured will be 68 and 138 respectively. A total of 15 ARA officers will be trained on site for 6 months. DNA officers will be trained for data analysis.	Delgado, Tete, Zambezia	ARA Zambeze
Sanhute Dam Project	The Sanhute Dam will be constructed about 39 km southwest of Nacala City along N-12. The water of about 40,000 m ³ per day will be conveyed to the existing Maecula Dam, about 9 km from the Sanhute Dam, and further transferred to Nacala area through the existing water pipeline. An FS has been completed already.	Nampula	ARA Central North
Lurio River Resource Development Project for Water Supply to Nacala Bay Area	For growing urban areas and economic activities in Nacala Bay Area, it is essential to develop water resources of the Lurio River. Water transmission like the following is a way of water resources development of the Lurio River for Nacala Bay Area. A water transmission system will be established, by which the water of the Lurio River is taken at a new weir located about 170km west-northwest of Nacala Bay Area, transferred to the Mecuburi River by a tunnel channel 56 km long, flows down the Mecuburi River by gravity to another new weir about 110 km downstream, and transferred from there to Nacala Bay Area by an open channel 60 km long. The water supply volume will be about 518,000 m ³ per day or 189,000,000 m ³ per year, sufficient to cater to the water demand estimated for 2035. Considering possible negative impact on the downstream area of a water intake from the Lurio River, the water volume usable from the Lurio River might not be sufficient enough to fully satisfy the increasing water demand in Nacala Bay Area. It is necessary to pay careful attention to the water-related environment of the downstream of the water intake for water resources development of the Lurio River.	Nampula	ARA Central North
Monte Tiza Dam Project	The Monte Tiza Dam will be constructed about 50 km south of Nampula City to supply water of about 259,000 m ³ per day or 95,000,000 m ³ per year. A raw water transmission pipeline system of about 60 km will also be installed.	Nampula	ARA Central North

Source: JICA Study Team

Table 20.2.7 Power and Energy Sector Programme

Project	Outline	Province	Executing Agency
Nampula-Nacala Power Substation Reinforcement Project	Phase 1 of the project aims to stabilize the power supply to Nampula City, Nacala City and the areas in between by establishing a new power substation in Namialo in Nampula Province and introducing substation control systems and other equipment at the existing Nampula 220 Substation and Nampula Central Substation. In Phase 2, the transformers of the four power substations will be repaired.	Nampula	EDM
Chimuará-Namialo-Nacala Transmission Line Project	New transmission lines (635km for 400kV, 190km for 220kV and 21km for 110kV) will be installed between Chimuará in Zambeze province with Nacala through Nicuadala, Mocuba and Alto Morocue in Zambeze Province and Nampula, Namialo and Monapo in Nampula Province to ensure stable power supply to these areas. The project also includes construction of two new power substations and instalment of transmission-related equipment at the six existing substations.	Nampula	EDM
Palma-Pemba-Nacala Transmission	A new transmission line (over 450 km long) and 3 substations will be installed between Palma, a prospective natural gas exploitation and chemical industrial centre, and Nacala Bay Area through Pemba. This	Cabo Delgado and	EDM

Line Project	transmission line will be necessary when a new Thermal Power Plant using natural gas is constructed in Palma for supplying power to the power grid. The 3 substations will be installed in Palma, Pemba and Nacala.	Nampula	
Tete Coal Briquette Project	Dissemination of the use of bio-briquette as a new domestic energy source replacing firewood will be promoted by the project, taking advantage of massive middling from coal production in Moatize and bio-mass available in the province. The project will contribute to decelerating deforestation and creating jobs. Corporate Social Responsibility (CSR) activities are expected to support the project. The project period will be 3 years minimum including research and survey and mobilization of SMEs.	Tete	FUNAE and Private Sector

Source: JICA Study Team

Table 20.2.8 Social and Environmental Management Sector Programme

Project	Outline	Province	Executing Agency
Environmental Management Capacity Development Project	<p>In the existing EIA system, project proponents should prepare and submit environmental management plans. However, MICOA has not developed enough capacity to monitor and guide their implementation of environment management plans. Firstly, an implementation system for monitoring and guiding of project proponents will be established. Secondly, accordance to the implementation system to be established, the capacity development will be conducted for implementing monitoring and guidance of project proponents' activities for environmental management plans.</p> <p>Furthermore, environmental laboratories will be established in Maputo, Tete, Nampula and Pemba, which will be provided with a set of environmental monitoring equipment required for collecting fundamental environmental information. Capacity development will be also undertaken for MICOA officers on the usage of equipment, preparation of monitoring programme, periodical inspection, maintenance of equipment and preparation of environmental audit programme. The environmental legal framework will be improved as well.</p>	Maputo, Tete, Nampula, Cabo Delgado	National Agency for Environmental Quality and Control, MICOA
Project for Strengthening on DUAT Acquisition Process	<ul style="list-style-type: none"> • The following operation of provincial and district level cadastre offices is strengthened to avoid land conflicts between investors and communities. <ul style="list-style-type: none"> ➢ Management of land use information database and the administrative/ technical procedure of land registration (land identification and GIS mapping) ➢ Monitoring of the participatory consultation process ➢ Awareness raising of the communities on their land rights or land value • An approach combining “community DUATs” and “small-scale farmers’ individual DUATs” is to be pursued for securing local farmers’ land. • MINAG, DNTF and SPCG are the relevant administration units. 	Nampula, Niassa, Cabo Delgado, Tete, Zambezia	MINAG
Project for Capacity Development on Resettlement Process	<ul style="list-style-type: none"> • The following operation of provincial and district level territorial planning department (under MICOA) is strengthened to avoid conflicts between investors and communities regarding resettlement <ul style="list-style-type: none"> ➢ Monitoring of the participatory consultation process, as well as monitoring of implementation process of resettlement and compensation ➢ Awareness raising of the communities on their land rights, land value and compensation value • MICOA, DINAPOT and DPOT* are the relevant administration 	Nampula, Niassa, Cabo Delgado, Tete, Zambezia	MICOA

	units. The project will be for two years.		
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Source: JICA Study Team

Table 20.2.9 Human Resources Development Programme

Project	Outline	Province	Executing Agency
Community-Based School Management Project	The project aims to improve the quality of education by promoting community participation in primary school management. Utilising existing organisation called “school council”, school management activities, such as rehabilitation of school buildings will be implemented by mobilizing community resources under the supervision of district and provincial administrations. The project period will be two years.	Nampula, Niassa, Cabo Delgado, Tete, Zambezia	MINED
Strengthening of Secondary Education with Focus on Science and Mathematics Education Programme	The project aims to improve the quality of secondary education by focusing on science and mathematics education, so that human capitals which will contribute to country’s economic growth will be developed. Cascade training system will be developed from the central level, provincial level toward school district. Teaching manuals will be prepared as well. The project will be for three years.	Nampula, Niassa, Cabo Delgado, Tete, Zambezia	MINED
Nacala Medium-Level Technical and Vocational School Project	A medium-level technical and vocational school will be established in Nacala Bay Area, which will provide technical and vocational education for transport, logistics, manufacturing and service industries. Demand for skilled labours by foreign investors locating in Nacala will be fulfilled locally. The project period will include concept planning, FS, DD, construction, procurement of equipment, development of educational programmes and curriculum, training of teachers and institutional development.	Nampula	MINED
Cabo Delgado Medium-Level Technical and Vocational School Project	A medium-level technical and vocational school will be established in Palma, which will provide technical and vocational education on the technologies for natural gas and related industries. The project will be a development of the existing Macomia Professional School. Demand for skilled labours by foreign investors locating in Palma will be fulfilled locally. The project period will include concept planning, FS, DD, construction, procurement of equipment, development of educational programme and curriculum, training of teachers and institutional development.	Cabo Delgado	MINED
Nacala Superior Polytechnic Project	Nacala Superior Polytechnic will be established in Nacala Bay Area, which will provide higher-level and practical technical education on transport, logistics, manufacturing, and service industries including tourism. Demand for engineers and technicians by foreign investors locating in Nacala SEZ will be fulfilled locally. The project period will include concept planning, FS, DD, construction, procurement of equipment, development of educational programme and curriculum, training of teachers and institutional development.	Nampula	MINED
Cabo Delgado Superior Polytechnic Project	Cabo Delgado Superior Polytechnic will be established in Pemba or Palma, which will provide higher-level and practical technical education for natural gas and related industries. Demand for engineers and technicians by foreign investors locating in Palma will be fulfilled locally. The project will include concept planning, FS, DD, construction, procurement of equipment, development of educational programme and curriculum, training of teachers and institutional development.	Cabo Delgado	MINED

Source: JICA Study Team

Table 20.2.10 Coordination and Promotion of Integrated Development Programme

Project	Outline	Province	Executing Agency
Nacala Corridor Regional Development Management Reinforcement Project	A new organisation “Nacala Regional Development Agency (NRDA)” will be created under Ministry of Planning and Development. Its main responsibility will be to make coordination of planning and development across all the sectors and different government levels in the Nacala Corridor Region. Its function is mainly technical. It submits reports to the existing decision-making bodies at the political level. Capacity development for this agency (to be established newly) will be conducted to cover monitoring, evaluation, coordination and promoting for integrated development.	Nampula, Niassa, Cabo Delgado, Tete, Zambezia	MPD and NRDA (a new agency)

Source: JICA Study Team

Table 20.2.11 Investment Promotion Sector Programme

Project	Outline	Province	Executing Agency
Large-Scale Projects and Local Industry Linkage Project	The objective of this project is to promote linkages between large-scale incoming investment projects and local industries. For this purpose, company directory of both large scale companies and local SMEs is introduced, and matching of both parties will be done. CPI is currently working with UNIDO for creating company database, whose output will be utilised for this proposed project. This project period will be for two years.	Tete, Cabo Delgado and Nampula	CPI

Source: JICA Study Team

Table 20.2.12 Support Programme for Remote Areas

Project	Outline	Province	Executing Agency
Support Programme for DUAT Acquisition for Small-Scale Farmers in Remote Areas	In the target areas for ProSAVANA and the areas near Tete’s coal mining and Palma’s natural gas exploitation, “Project for Strengthening on DUAT Acquisition Process” will be implemented in line with ProSAVANA strategies. On the other hand, remote areas away from the transport corridor and major mining sites also require special actions for supporting small-scale farmers especially when private investments and infrastructure projects are determined to come to such remote areas.	Niassa and Cabo Delgado	MINAG
Programme for Primary School Development in Remote Areas	In remote areas away from the transport corridors, the situation of primary schools will be improved in school buildings, furniture and teachers’ houses, as well as in school management. In this programme, firstly, government effort and resources including budget will be mobilized for improving the situation of primary schools in remote areas. Secondly, community initiatives will be promoted in participation in school management at the community level.	Niassa and Cabo Delgado	MINED
Programme for Health Centre Development in Remote Areas	In remote areas away from the transport corridors, the situation of health centres will be improved in buildings, equipment, health staff’s houses, as well as in health centre management. In this programme, firstly, government effort and resources including budget will be mobilized for improving the situation of health centres in remote areas. Secondly, community initiatives will be promoted in participation in Primary Health Care activities at the community level.	Niassa and Cabo Delgado	MISAU

Source: JICA Study Team

PART VII

**STRATEGIC
ENVIRONMENTAL
ASSESSMENT**

Chapter 21 Strategic Environmental Assessment

21.1 Objectives and Targets of SEA Study

21.1.1 Objectives

A Strategic Environmental Assessment (SEA) is designed at the conceptualization stage in the preparation of policies, plans and programmes for the PEDEC Nacala corridor as an attempt to influence the way the priorities are established, and key decisions are made and also to influence the range of issues that are factored into the decision-making. The objectives of this SEA are the following:

- To contribute to the early integration of environmental issues into the formulation of development strategy for Nacala Corridor Region
- To assess the development scenarios and essential strategies for its environmental impact
- To indicate, where necessary, how improvements can be incorporated into the development strategies to improve its environmental performance
- To provide a level of environmental protection and facilitate sustainable development outcomes for PEDEC-Nacala

21.1.2 Targets of SEA Study

The targets of an SEA study consist of development scenarios and essential strategies, of which a summary is presented below and detailed discussion is contained in the Main Report.

(1) Development Scenarios

There are the following two factors by which to prepare different development scenarios under PEDEC Nacala namely:

- Major Industry
- Spatial Use

The major industry pattern consists of two types while the spatial use pattern consists of three types. Table 21.1.1 shows the description of each pattern.

Table 21.1.1 Two Factors and Patterns for Development Scenarios in PEDEC-Nacala

Major Industry Pattern	Spatial Use Pattern
A: Mining sectors as a major sector B: Diversified economic sectors including urban based manufacturing sectors	1: Three enclaves of Tete, Palma and Nacala 2. Tete-Nacala single corridor and Nacala Port based commercial and production centre 3. A region-wide corridor network and hierarchical urban centres

The characteristics of each major industry pattern and spatial use pattern are described in Table 21.1.2.

Table 21.1.2 Characteristics of Major Industry Patterns and Spatial Use Patterns

Scenario Code	Scenario Name	Factors to Differentiate Scenarios	
		Major Industries	Spatial Use
A-1	Strong Mining Sector Orientation and Three Enclaves of Tete, Palma and Nacala	A: Mining Sector-Oriented Regional Development	1: Three Enclaves of Tete, Palma and Nacala
B-2	Diversified Economic Sector Development based on Tete-Nacala Single Corridor	B: Regional Development based on Diversified Economic Sectors	2: Tete-Nacala Single Corridor Development
B-3	Diversified Economic Sector Development based on a Region-Wide Corridor Network	B: Regional Development based on Diversified Economic Sectors	3: Development based on a Region-Wide Corridor Network

By combining 2 major industry patterns and 3 spatial use patterns, 6 combinations can be made. However, there are only three possible scenarios out of the six combinations as follows and as shown in Table 21.1.3:

- Scenario A-1
- Scenario B-2
- Scenario B-3

Table 21.1.3 Development Scenarios by Combination of Major Industry Patterns and Spatial Use Patterns

Spatial Use Pattern	Major Industry Pattern	
	A	B
1	A-1	-
2	-	B-2
3	-	B-3

Conceptual maps of these three scenarios are shown in Figure 21.1.1.

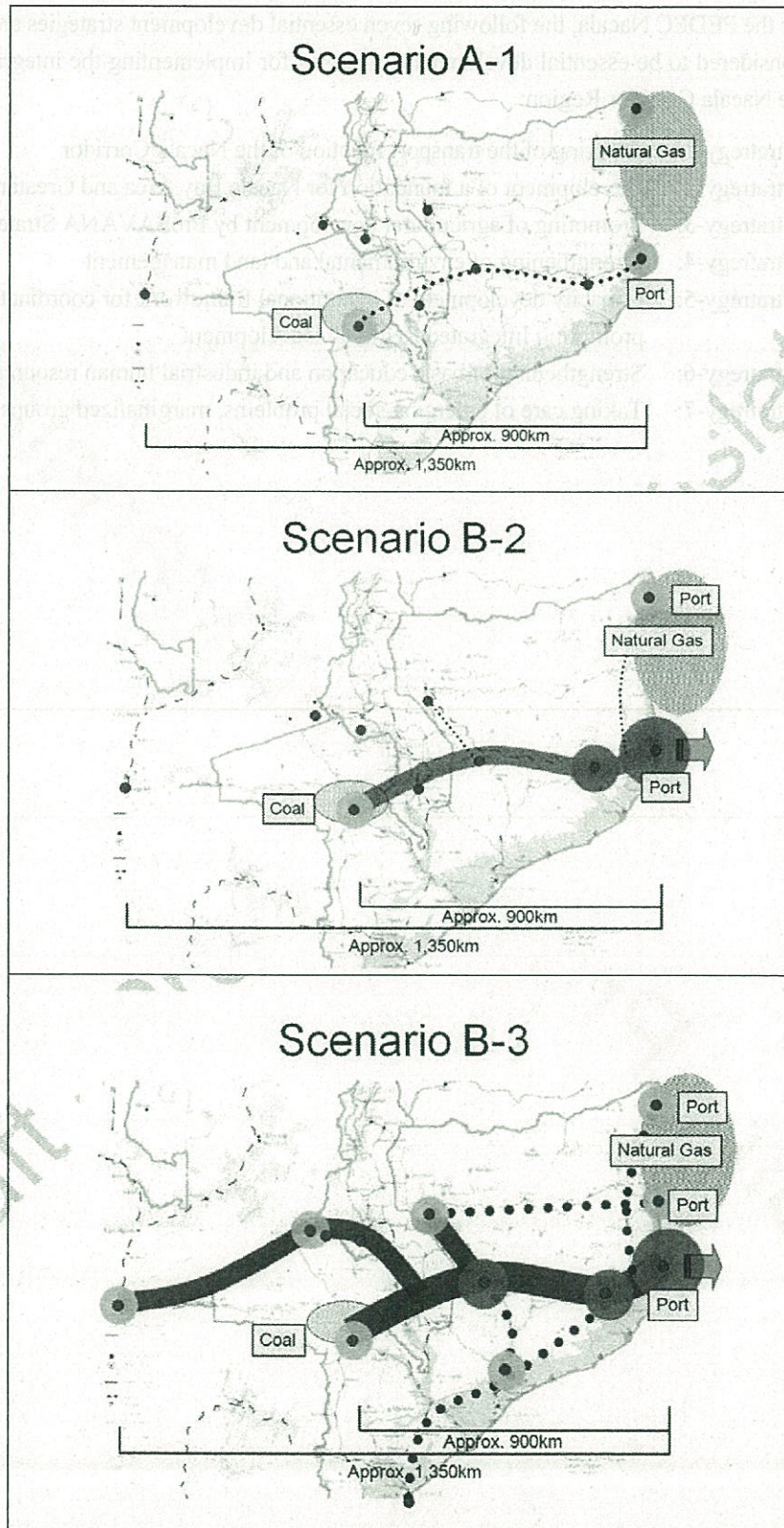


Figure 21.1.1 Targets of SEA: Three Development Scenarios

(2) Essential Development Strategies

Under the PEDEC Nacala, the following seven essential development strategies are proposed which are considered to be essential development strategies for implementing the integrated development for the Nacala Corridor Region:

- Strategy-1: Securing of the transport function of the Nacala Corridor
- Strategy-2: Development of a foundation for Nacala Bay Area and Greater Nampula
- Strategy-3: Promoting of agricultural development by ProSAVANA Strategies
- Strategy-4: Strengthening of environmental and land management
- Strategy-5: Capacity development of institutional framework for coordinating and promoting Integrated Regional Development
- Strategy-6: Strengthening of basic education and industrial human resources
- Strategy-7: Taking care of emerging social problems, marginalized groups and remote areas

21.2 Methodology

21.2.1 SEA Process

(1) Stages of SEA Study

The SEA study comprise of four stages as illustrated. A description of each stage is discussed below:

1) First Stage: Scoping

This stage of the SEA defines the scope of the object/target of the assessment. The activities in the scoping stage include:

- Field reconnaissance survey in order to understand the geographical and temporal scope of the potential impact in the proposed locations
- Collect and review baseline and secondary data in relation to the environmental and social issues and the economic activities in the affected Nacala corridor as well as to check conformity with mandatory policies and regulations
- Preparation of the SEA framework

2) Second Stage: Identification of Impacts

The objectives of the impact identification include:

- To identify the positive and negative impacts, in relation to the different development scenarios (strategic options)
- To define SEA criteria
- To define strategic indicators for assessment and monitoring

The key activities during this stage are the following:

- To analyse baseline information
- To describe the current situation in a way that is relevant for impact identification
- To support the planning team in scenario interpretation
- To support the planning team in defining planning options considering the adopted scenarios
- To define criteria for SEA considering the several view points from the public and stakeholders

3) Third Stage: Assessment of Impacts

The objective of this stage is to analyse and assess the impacts of the planning options and to contribute to choosing the best planning options that will ensure consideration, and integration of environmental sustainability issues and perspective in a coherent form. The key activities during this stage are:

- To re-analyse the perspective and viewpoints using public participation and consultations with relevant agencies
- To establish the framework for assessment based on development scenarios and proposed strategies
- To identify mitigation measures

4) Fourth Stage: Feedback and Follow up

The fourth stage is essentially to follow up the efficiency and efficacy of the implementation of planning solutions, in terms of environmental and sustainability criteria, ensuring monitoring and systematic evaluation of key changes that may occur in the environment. Key activities include the following:

- Monitor the plan impacts through selected indicators
- Develop and prepare reports

21.2.2 Tools for Assessment

The following tools are adopted for assessment in the SEA for PEDEC-Nacala.

(1) Assessment of Development Scenarios

The development scenarios are evaluated using risk identification (analysis) and sustainability tests. The risk identification is to analyse the potentiality of risks associated with the economic, spatial, social, and environmental aspects. While the sustainability tests are to subject each activity to a simple test of the overall sustainability of the scenarios, the overall sustainability is analysed by three aspects such as natural resources, social and cultural conditions, and the economy.

(2) Assessment of Essential Development Strategies

The essential strategies are assessed using a compatibility analysis. A compatibility analysis is undertaken to compare deferent strategies in order to identify mutually supportive or conflicting strategies.

21.3 Engagement of Stakeholders

A Working Group (W/G) has been established for the purpose of guiding and assisting the JICA Study Team as shown in Table 21.3.1. In addition, Discussion Group Meetings, Road Shows and International Seminars were held to share the information with the people in different organisations and countries.

Table 21.3.1 Members and Roles of Working Group

Project Management Structure	Proposed Members	Roles, Timing and Place of Meetings
Working Group (W/G)	MPD (Secretary) Five provinces of the target area GAZEDA MTC CENACARTA Ministry of Energy Ministry of Agriculture Ministry of Mineral Resources Ministry of Trade and Industry Ministry of Tourism Public Company of Ports and Railway (CFM) Public Road Company (ANE) National Directorate of Water (DNA)	<ul style="list-style-type: none"> To discuss technical aspects of the Project properly and provide the necessary data and information for the Project. To hold a meeting as every main report of the Project becomes ready to discuss the report although the topic and the timings will be set based on necessity.

The following table summarizes working group meetings to be held within this MP study. For sharing information regarding PEDEC-Nacala, these meetings are to present and discuss study results with line ministries and/or governmental organisations periodically, and to get feedback to the JICA Study. The process of presentation and discussion is the centre of the SEA process.

Table 21.3.2 List of Working Group Meetings

No.	Date	Main Objectives	Venue	No. Participants *
Steering Committee (SC)				
SC1	04, May, 2012	Explanation of ICR and Launching of the Project	Maputo	32
SC2	27, Nov, 2012	Explanation of PR	Maputo	19
SC3	30, Aug, 2013	Explanation of ITR	Maputo	15
Working Group (WG)				
WG1	24, Aug, 2012	To share the study progress of each sector	Maputo	6
WG2	06, Sep, 2012	To share the study progress of each sector	Maputo	7
WG3	21, Sep, 2012	To share the study progress of each sector and to implement a Project Vision Workshop	Maputo	8
WG4	28, Sep, 2012	To share the study progress of each sector and to implement a Project Vision Workshop	Nampula	16

WG5	02, Oct, 2012	To share the study progress of each sector	Maputo	5
WG6	28, Mar, 2013	To share the study progress of each sector	Maputo	5
WG7	16, May, 2013	To share the study progress of each sector	Maputo	12
WG8	10, Jun, 2013	To share the study progress of each sector	Nampula	11
WG9	12, Jun, 2013	To share the study progress of each sector, ITR and priority projects	Maputo	19
WG10	09-10, Dec 2013	To share the study progress of each sector and implement an SEA workshop	Nampula	21
WG11 **	13, Dec, 2013	To discuss the priority projects and share the result of the SEA workshop held in Nampula	Maputo	19
Integrated Working Group				
IWG1	26, Nov, 2012	Explanation of PR	Maputo	23
IWG2	29, Aug, 2013	Explanation of ITR	Maputo	28
Discussion Group Meeting (DGM) **				
DGM	30, Sep, 2013	Discussion on Nacala Bay Area and Greater Nampula development programmes, and railway cargo operation programme	Maputo	30
Road-Show(RS)				
RS1	07, Dec, 2012	Explanation of PR	Lichinga	20
RS2	10, Dec, 2012	Explanation of PR	Nampula	23
RS3	11, Dec, 2012	Explanation of PR	Pemba	29
RS4	14, Dec, 2012	Explanation of PR	Quilimane	-
RS5	17, Dec, 2012	Explanation of PR	Tete	-
International Seminar (IS)				
IS1	15, Mar, 2013	To share information and strengthen cooperation between Neighbouring countries	Maputo	93
IS2 **	20-21, Mar, 2014	To share information and strengthen cooperation between Neighbouring countries as well as the private sector	Nampula	129

Participants from Japanese side are not included (*). Representatives from municipalities and districts (mayors and district administrators) attended the Discussion Group Meeting, the 11th Working Group meeting in Maputo, and the 2nd International Seminar to discuss the Project (**).

21.4 Assessment of Development Scenarios

21.4.1 General

As mentioned in the preceding section, the assessments of the proposed development scenarios are undertaken using risk identification analysis and sustainability tests. These tools will provide an assessment of the risks involved and overall sustainability levels associated with the adoption of the proposed development scenarios and their impacts to the economic, environmental and social contexts. The following proposed development scenarios are discussed in this section:

A-1	Strong Mining Sector Orientation and the Three Enclaves of Tete, Palma and Nacala
B-2	Diversified Economic Sector Development based on Tete-Nacala Single Corridor
B-3	Diversified Economic Sector Development based on a Region- Wide Corridor Network

21.4.2 Risk Identification Analysis

Three development scenarios are assessed from the viewpoints of the economic, spatial, social and environmental aspects. Table A.4.1 shows the results of the analysis. Based on the results, the following impacts can be highlighted:

1) Scenario A-1: Strong Mining Sector Orientation and the Three Enclaves of Tete, Palma and Nacala

The implications of this scenario suggest that the mining sector will continue to lead the economic development in the region with coal mining as a major industry. As discussed in the Main Report, Mozambique has relatively large known coal deposits situated in the Tete Province. Mozambique plays a very important role in coal supply not only in the country but in the Neighbouring countries in South Africa. In terms of economic benefits, this scenario will provide a strong backing for investors in intensive coal exploration and maximize to the fullest the coal resources in the country not only for domestic use but most importantly enhancing its coal exports to neighbouring countries, hence it will provide a big boost to the regional and national economies.

From the social perspective, this scenario supports local communities and provides employment. However, from the environmental point of view, this development scenario, being a resource based industry, may not be sustainable in the long run. There are also several potential risks associated with this scenario that may be caused by natural disasters and extreme national conditions. From the safety and hazards point of view, this scenario will need to be supported by strong environmental policies and institutional mechanisms must be in place to monitor compliance. Several pollution control issues are also associated with this scenario in terms of the life cycle of coal, including the impact on air and water quality.

2) Scenario B-2: Diversified Economic Sector Development based on Tete-Nacala Single Corridor

Under this development scenario, the diversification of the economic sectors will minimize the risks of the geographic and sectoral concentrations of coal. With the proposed Tete and Nacala Port, interconnection and linkages will be strongly integrated by the railway and transportation network, which can transport non-coal products long distances. In the upgraded corridor, the development

potentials will emerge and the possibility of promoting other sectors not only commercial and logistics sectors, but also manufacturing, especially in major urban centres, such as Nacala and Nampula. This scenario will also enhance major economic development and will concentrate development in the major urban centres and the areas along the main corridor. As a result, the intensity of such economic development will be increased significantly compared to Scenario 1. Under this scenario, social and environmental implications will be centred on increased migration and movement of people around Tete and Nacala, which will result in an increase in demand for social services and related urban problems such as solid waste, and demand for housing and electricity.

3) Scenario B-3: Diversified Economic Sector Development based on a Region-wide Corridor Network

Scenario B-3 promotes various industries over a wide area. This scenario will provide business opportunities to a wide range of sectors and peoples. As a result, economic growth is shared more and dispersed across wider areas. From the viewpoint of economic stability, Scenario B-3 is higher than Scenario A-1. However, there will be risks and proliferation of various types of urban environmental problems associated with this development scenario if infrastructures are not developed properly such as water supply, sewerage treatment facilities and solid waste management facilities. There will be more complex environmental problems that will occur under Scenario B-3.

Table 21.4.1 Result of Risk Identification Analysis

Scenario Code	Scenario Name	Factors to Differentiate Scenarios		Factors to Differentiate Scenarios		
		Major Industries	Major Industries	Economic and Spatial Benefits/Impacts	Social Impacts	Environmental Impacts
A-1	Strong Mining Sector Orientation and Three Enclaves of Tete, Palma and Nacala	A. Mining Sector-Oriented Regional Development	1 : Three Enclaves of Tete, Palma and Nacala	<ul style="list-style-type: none"> Concentrated investments in mining sectors including supporting sectors, infrastructures and urban facilities will take place in Tete and Palma. The efficiency of invested capital for such mining related development will be relatively high. However, since those supporting sectors, infrastructures and urban functions will be developed closely related to mining sectors, it will be difficult for other economic sectors to utilize them for their further development. As a result, not as wide a range of economic sectors will be able to develop based on the infrastructures and urban functions to be developed in relation to mining sectors in Tete and Palma. Since mineral resource development is influenced by world price fluctuation and other external shocks, Nacala Corridor Region's economy will not be as sustainable in the long run. 	<ul style="list-style-type: none"> A large influx of migrant managers, engineers and other workers from outside the enclaves may occur causing various social problems. On the other hand, the employment of local human resources for mineral resources development will be limited. The supporting sectors for mining development include machine spare parts supply and maintenance services for excavation and transport will also be operated by foreign-related enterprises. Therefore, benefits from this development scenario will not reach a wide area, but concentrate in the three enclave areas. The social impacts caused by the development will also be limited to the three enclaves. 	<ul style="list-style-type: none"> Coal mining will change the land features, which is likely to affect the landscape, vegetation, habitat of wild animals, air quality and water quality. Since the development will be limited mainly to three enclave areas, the environmental impact will also be limited geographically. This situation will make it relatively easier to implement environmental mitigation measures, environmental control and monitoring. Large mining companies conduct environmental management relatively well. However, if an accident occurs, a large negative environmental impact could be caused in Tete and off-shore of Palma in Cabo Delgado. There may be an increase in negative impacts on the living environment and inhabitants' health due to dust pollution caused by coal transport, as well as by coal loading & unloading. If the above negative impacts are extremely large there is a possibility of decline or suspension in mining operations, as well as closure of mines. In such a case, the impact on the regional economy will be serious.
		B. Regional Development based on Diversified Economic Sectors	2 : Tete-Nacal a Single Corridor Development	<ul style="list-style-type: none"> The risks caused by geographical concentration of economic development will be eased compared to Scenario 1 due to diverse economic sectors over wide areas. Tete and Nacala Port will be connected strongly by railway and a trunk road, which can transport non-coal cargoes a long distance. With this upgraded corridor, development potentials will 	<ul style="list-style-type: none"> Since the transport corridor will be upgraded mainly from Tete to Nacala Port, the scale and extent of development benefits will be limited to the areas along the main corridor (Tete-Nacala Port). As a result, the price decline in consumer goods and construction material due to the decrease in transport costs will not be enjoyed so 	<ul style="list-style-type: none"> The environmental impact will be limited to the areas along Tete-Nacala Corridor. In major urban centres at important nodal points, such as Nacala and Nampula, the environmental impact will increase due to the concentration in population increase and economic development.
B-2	Diversified Economic Sectors Development based on Tete-Nacal a Single Corridor					

		<p>emerge. It will become possible to promote development of not only the commercial and logistics sectors, but also manufacturing sectors, especially in major urban centres, such as Nacala and Nampula. Since the upgraded transport corridor is the only one from Tete to Nacala Port, major economic development will tend to concentrate in the major urban centres and the areas along the main corridor. As a result, the intensity of such economic development will be increased significantly compared to Scenarios 1 and 2.</p> <ul style="list-style-type: none"> • With this upgraded transport corridor, transport costs will be greatly reduced along the corridor. Moreover, with the upgraded urban centres on the corridor, private sectors will be able to create value chains for agricultural sectors. • However, Palma and Pemba will not be strongly connected with the main corridor of Tete-Nacala Port. As a result, manufacturing sectors around Nacala Port will not have synergetic effects with natural gas exploitation and chemical industries in Palma. 	<p>widely in the Region. The improvement of market access will also be limited to the corridor areas, but not in areas far from the main corridor.</p> <ul style="list-style-type: none"> • With a less extensive transport corridor network, a huge amount of remote areas will remain in the Region. 	
<p>Diversified Economic Sector Development based on a Region-Wide Corridor Network</p>	<p>B. Regional Development based on Diversified Economic Sectors</p>	<p>3 : Development based on a Region-Wide Corridor Network</p>	<p>With the upgraded extensive corridor network, the accessibility to infrastructure and services will be largely improved and time costs borne by the people and businesses will be reduced over wide areas in the Region.</p> <ul style="list-style-type: none"> • This type of extensive corridor network has positive effects on reducing the prices of daily commodities and construction material. • Due to the decline in transport costs, purchasing prices of agricultural produce by small-scale farmers may 	<p>if the provision of infrastructures is delayed, the negative impact on the living environment may become larger in Nacala Bay Area, because of its rapid population increase, causing rapid expansion of urban sprawl, heavy traffic congestion, increase of solid waste and sewage.</p> <ul style="list-style-type: none"> • In the case of Nacala Bay Area, development of manufacturing sectors and increase of commercial and logistics activities will take place along the Nacala Bay. It is likely to bring

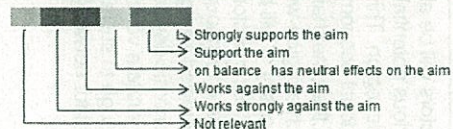
				<p>sectors will be able to grow by utilizing various potentials scattering over a wide region. This will also benefit the national economy as a whole.</p> <ul style="list-style-type: none"> On the other hand, the improvement of such a region-wide corridor network will be costly. It will be necessary for the economic sectors of the Region to make continuous effort at promoting diversified and geographically-wide economic development in order to generate a volume of cargo large enough to sustain the extensive corridor network. 	<p>also be improved.</p> <ul style="list-style-type: none"> Small-scale farmers will have the opportunities to expand their markets due to better access. Business opportunities will expand due to the geographical expansion of development areas. On the other hand, there is a risk of widening the gap between the rich and the poor. The risks of occurrence of crimes and prevailing of infectious diseases may increase in wide areas due to a large volume of migration. 	<p>about environmental impacts in a compounding manner.</p> <ul style="list-style-type: none"> Nampula will also continue to increase its population, and expand economic development. As a result, the environmental impacts will become larger. The rail transport for massive amounts of coal through the central part of Nampula City might cause serious negative impacts. Moreover, the road traffic on National Road No. 13 on the main corridor will also go through the central area of Nampula City. These compounding impacts might cause serious negative impacts. Furthermore, such serious impacts might hinder economic development for Greater Nampula.
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21.4.3 Sustainable Tests

The sustainability of each scenario is assessed from the view point of natural resources, social and cultural conditions and economic aspects, of which the results are shown in Table 21.4.2.

Table 21.4.2 Result of Sustainable Test for Development Scenarios

Criteria-Basic Aims and Objectives	Indicators	Performance Assure																	
		Scenario A-1					Scenario B-2					Scenario B-3							
Effect on Natural Resources																			
Protected Areas and Wildlife: should be conserved, and these resources should be enhanced where practical	Sensitive areas shown on maps	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Degraded Land: Areas vulnerable to degradation should be avoided, and already degraded land should be enhanced.	Vulnerable areas shown on maps	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Energy: The Activity should encourage efficient energy use, and maximize use of renewable rather than fossil fuels.	Quantity and type of fuel/energy to be identified	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Pollution: Discharges of pollutants and waste products to the atmosphere, water and land should be avoided or minimized	Quantity/type of pollutants and waste to be identified	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Use of Raw Materials: All raw materials should be used with maximum efficiency, and recycled where practical.	Quantity and type of materials	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Rivers and Water bodies: should retain their natural character.	Minimum flows/ water levels to be set	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Effect on Social and Cultural Conditions																			
Local Character: and cohesion of local communities should be and enhanced where practical	Opinions of local communities to be assessed	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Health and Well-being: The Activity should benefit the work force, and local communities in terms of health and well-being, nutrition, shelter, education and cultural expression.	Number of People exposed to water borne disease, or lacking adequate food and shelter to be assessed	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Gender: The Activity should empower women.	Number of women to be empowered	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Job Creation: The activity should create jobs for local people particularly women and young people.	Number of people to be employed	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Participation: Active participation and involvement of local communities should be encouraged (especially vulnerable and excluded sections)	Level of participation proposed	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Access to Land: Activity should improve access to land	Number of the poor to be assisted	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Access to Water: Activity should improve access to water.	Number of the poor to be assisted	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Access to Transport: Activity should improve access to transport.	Number of the poor to be assisted	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Sanitation: Activity should improve sanitation.	Number of the poor to be assisted	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Equity: Adverse and beneficial impacts from development should be distributed equitably and should not discriminate against any groups, especially vulnerable and excluded people.	Number of the poor to be benefit on equitable terms	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Vulnerability and Risk: of drought, bushfire, floods crises and conflicts and epidemics should be reduced.	Occurrence to be noted and monitored	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Effect on Economy																			
Growth: Economic development should be strong and stable.	Economic Output to be evaluated	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Use of local materials and services: The use of raw materials and services from local industries where possible	Description of sources	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5
Local Investment of Capital: Development should encourage the local retention of capital and the development of downstream industries, utilizing local raw materials, products and labour.	Description of investment strategy	(0)	1	2	3	4	5	(0)	1	2	3	4	5	(0)	1	2	3	4	5



1) Effects of the Project on Natural Resources

Although economic activities of Scenario A-1 and B-2 are limited to areas like Tete, Palma and Nacala, the economic activities of Scenario B-3 are planned to extend to wider areas. As a result, the locations or zones where forest and bushes exist could be altered by the introduction of these economic activities.

The railway transportation of Scenario A-1 is used for coal transportation and from the viewpoint of energy consumption by the railway, the Scenario B-2 and B-3 are more effective compared to Scenario A-1 due to transportation of more various cargos such as other materials and products.

The diversified economic activities are expected to utilize various resources in the area. The major industry under Scenario A-1 and B-2 is coal mining, hence the mining of coal resource is expected to be concentrated continuously and the regional activities in the economy will depend on coal

industry. From the viewpoint of sustainable resources use, this Scenario B-3 is more sustainable compared to A-1 and B-2.

2) Effects of the Project on Social and Culture

From viewpoint of job creation, including job opportunity for women, most people can easily participate in economic mainstream and job opportunities for women is expected to increase under Scenario B-3, with a more diversified economy.

Scenario A-1 in terms of accessibility to land, water and transportation is expected to improve with the railway connections between Tete, Palm and Nacala, whereas the accessibility under Scenario B-3 is expected to extend to the whole region. The sanitary conditions, including solid waste and sewage is expected to deteriorate due to foreseen increase of load from the projected population growth.

In case of Scenario A-1, the coal industry will be beneficial to gain from the economic development and more people can reap most of the benefit under Scenario B-3. Equity in terms of distribution from the economic development, Scenario B-2 and B-3 are expected to be higher.

3) Effects of the Project on Economy

The diversified and extended economic development are expected to be stronger and stable as compared to the mono industry and the utilization of resources and investment are also expected to be more diversified in Scenario B-3. Therefore, from the viewpoint of economic sustainability, Scenario B-3 is expected to be higher than other scenarios.

21.5 Assessment of Essential Development Strategies

21.5.1 General

The essential development strategies proposed under the PEDEC Nacala are evaluated on the basis of their compatibility and how they support and complement other strategies within the PEDEC-Nacala. The following are the proposed essential development strategies, of which detailed discussions are contained in Chapter 13:

- Strategy-1: Securing of the transport function of Nacala Corridor
- Strategy-2: Development of a foundation for Nacala Bay Area and Greater Nampula
- Strategy-3: Promoting of agricultural development by ProSAVANA Strategies
- Strategy-4: Strengthening of environmental and land management
- Strategy-5: Capacity development of the institutional framework for coordinating and promoting Integrated Regional Development
- Strategy-6: Strengthening of basic education and industrial human resources
- Strategy-7: Taking care of emerging social problems, marginalized groups and remote areas

21.5.2 Results of Compatibility Analysis

Table 21.5.1 illustrates the results of the compatibility analysis. As shown in the table, it is noted that Strategy 7-"Taking Care of Emerging Social Problems, Marginalized Groups and Remote Areas" has no relation to other strategies but it also suggests no significant conflicts with the other six strategies. The Strategies 1 to 6 revealed that they are complementing each other, this promotes a more comprehensive approach in achieving the desired vision and goal of PEDEC Nacala.

Table 21.5.1 Compatible Matrix of Essential Strategies

Essential Strategies for PEDEC		1. Securing of Transport Function of Nacala Corridor	2. Development of Foundation for Nacala Bay Area and Greater Nampula	3. Promoting of Agricultural Development by ProSAVANA Strategies	4. Strengthening of Environmental and Land Management	5. Strengthening of Basic Education and Industrial Human Resources	6. Capacity Development of Institutional Framework for Coordinating and Promoting Integrated Regional Development	7. Taking Care of Emerging Social Problems, Marginalized Groups and Remote Areas
1	Securing of Transport Function of Nacala Corridor		+	+	0	0	+	0
2	Development of Foundation for Nacala Bay Area and Greater Nampula			+	+	+	0	0
3	Promoting of Agricultural Development by ProSAVANA Strategies				+	0	0	0
4	Strengthening of Environmental and Land Management					0	+	0
5	Strengthening of Basic Education and Industrial Human Resources						+	0
6	Capacity Development of Institutional Framework for Coordinating and Promoting Integrated Regional Development							0
7	Taking Care of Emerging Social Problems, Marginalized Groups and Remote Areas							

+: Mutually supportive with each strategy
X: Potential to conflict with each strategy
0: no significant interaction

APPENDICIES

Appendix-A Supporting Works

A.1 Digital Topographic Mapping

A.1.1 Objectives of Digital Topographic Mapping

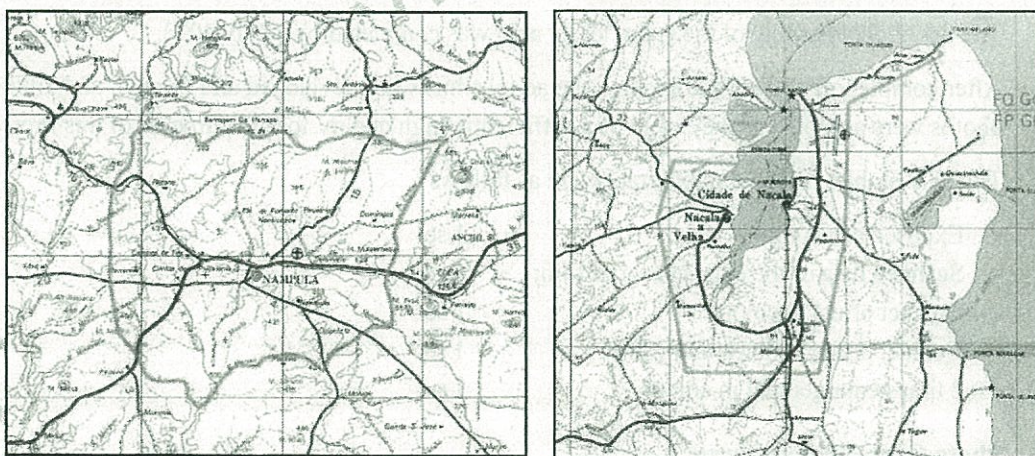
The objective of digital topographic mapping in this Study was to prepare the latest geographic information data at a scale of 1:10,000 that can be used by private investors and government agencies for their planning for two urban areas.

A.1.2 Target Areas for Digital Topographic Mapping

The target areas for the digital topographic mapping were chosen during the preparatory mission in November 2011 as the high priority areas in the Study Area, namely Nampula City and Nacala City and their suburbs.

After the discussions between CENACARTA and the JICA Study Team in August, 2012 regarding this Study, the following areas were agreed to be the target areas of the digital topographic mapping.

- The entire area of Nampula City: approximately 330km²
- Nacala City and its suburbs: approximately 270km²



Source: JICA Study Team

Photo A.1.1 Entire area of Nampula City (left) and Nacala City and its Suburbs (right)

A.1.3 Digital Topographic Mapping

(1) Survey Standards

The survey standards for the digital topographic maps were decided as follows based on the geographic information collected by the study team and the discussions with the National Remote Sensing & Cartography Centre (CENACARTA).

- Reference ellipsoid: WGS84 (a=6378137.00 f=1/298.257223563)
- Projection system: Universal Traverse Mercator
- Coordinates system: UTM Zone 37
 - Origin: East longitude 39 degrees E = 500,000.00m
 - South latitude 0 degrees N = 10,000,000.00m
- Map symbol regulation: Map symbol regulation for 1:10,000 scale and regulation of digital topographic maps are not regulated in Mozambique so that these regulations are defined by the discussion between CENACARTA and the JICA Study Team.

(2) Aerial Photography

The aerial photography was carried out by the subcontractor (AZUL AERIAL WORKS cc from South Africa) based on the following specifications.

- Photo scale: 1:20,000
- Photographic film: Colour film
- Photographing quantities:
 - Entire area Nampula City: 7 strips
 - Nacala City and its suburbs: 7 strips

The aerial photography of the entire target area was completed by 8 July 2012.

After completion of the photography, the aerial films were developed and printed, and all the aerial photos were accepted as they were of a sufficiently high quality for the purposes of this Project.

The deliverables of aerial photography are as follows

- Exposed aerial film: 1 set
- Scanned data of the exposed aerial film: 1 set
- Contact prints in colour: 1 set
- Contact prints in black and white: 1 set
- 2 times enlargement in colour: 1 set

(3) Photo Control Point Survey

The photo control point survey consisted of three kinds of works, as follows, which were carried out by the subcontractor under the supervision of the study team.

1) Signalization

The photo signals were installed to clearly identify the photo control points on the aerial photos. The number of installed photo signals was as follows.

- Entire area Nampula City: 25 points

Nacala City and its suburbs: 26 points

2) GPS Survey

The GPS survey was carried out to determine the coordinates of horizontal photo control points that are needed for the digital aerial triangulation.

The number of horizontal photo control points for which the coordinates were confirmed by GPS survey was as follows.

Entire area Nampula City: 21 points

Nacala City and its suburbs: 23 points

3) Ordinary Levelling

The ordinary levelling was carried out to determine the height of vertical photo control points that is needed for the digital aerial triangulation.

The distance of the ordinary levelling was as follows.

Entire area Nampula City: 80.70 km

Nacala City and its suburbs: 79.50 km

(4) Field Identification

The field identification was carried out using the aerial photos (or orthophotos) in order to collect various kinds of information on topographic features (e.g. Churches, Schools, Annotation, etc.) that is needed for digital plotting and editing under the supervision of the study team by the subcontractor.

Entire area of Nampula City: approximately 330km²

Nacala City and its suburbs: approximately 270km²

(5) Aerial Triangulation

The exterior orientation elements and the coordinates of tie points that are needed for digital plotting were calculated in the digital aerial triangulation. The digital aerial triangulation was carried out with the target area divided in two, Nampula area and Nacala area.

Entire area of Nampula City: 9 strips 132 models

Nacala City and its suburbs: 9 strips 121 models

The digital aerial triangulation was calculated with a "Bundle Method" using the results of the GPS survey and ordinary levelling.

The residuals of coordinates between the ground photo control points and the digital aerial triangulation results are within the limited value of Japanese standards, therefore, all calculated coordinates are deemed to satisfy a topographic map at a scale of 10,000.



Source: Photo by JICA Study Team

Photo A.1.1 Signalization



Source: Photo by JICA Study Team

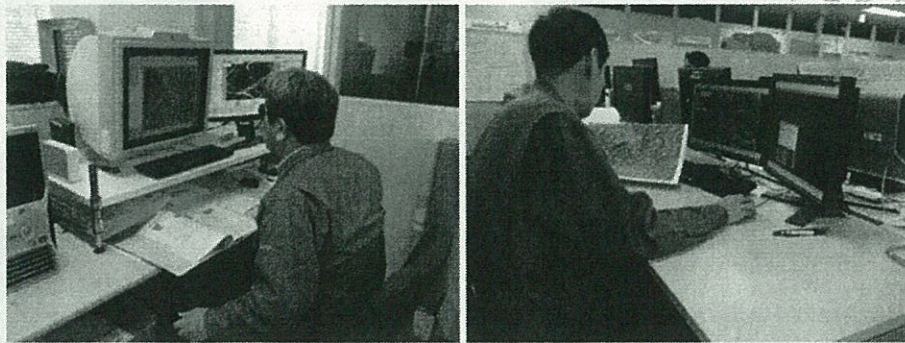
Photo A.1.2 GPS Survey and Ordinary Levelling

(6) Digital Plotting and Editing

The topographic features that were defined in the topographic map symbol regulations were digitized with a digital plotter based on the results of the digital triangulation and the field identification. The digital editing to adjust digitized topographic features were carried out using the plotted digital data and the results of field identification, including the collected administrative boundary and name data.

The quantities of digital editing as well as digital plotting are as follows.

Editing areas :	Entire area of Nampula City:	17 sheets	330km ²
	Nacala City and its suburbs:	17 sheets	270km ²



Source: Photo by JICA Study Team

Photo A.1.3 Digital Plotting and Editing

(7) Production of GIS Data

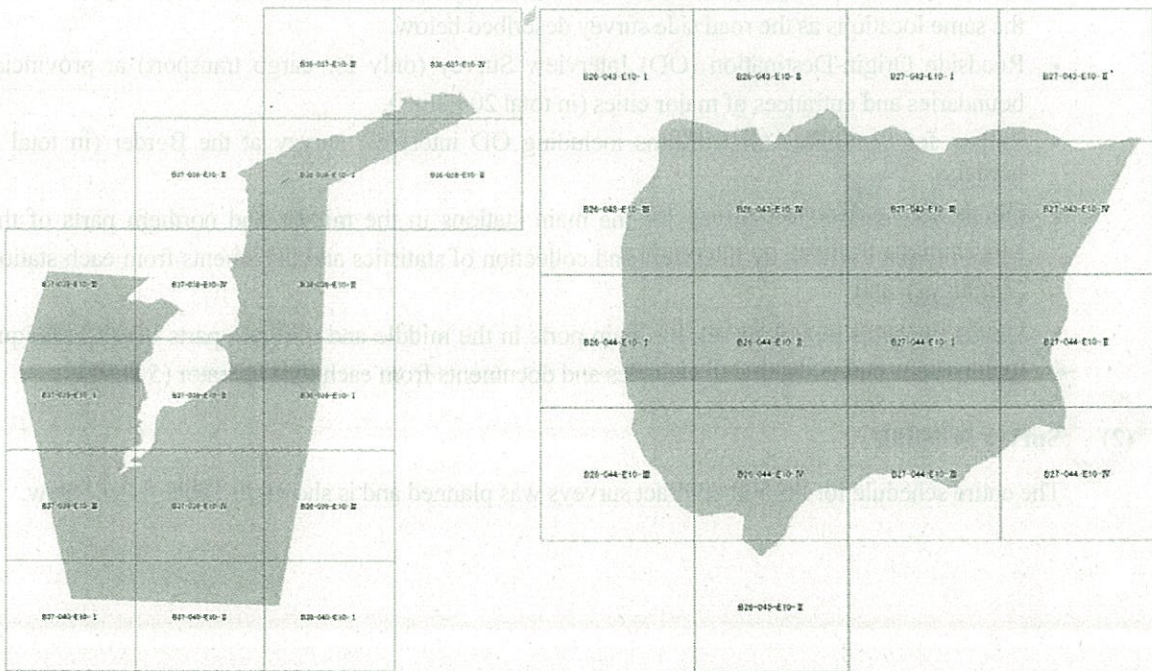
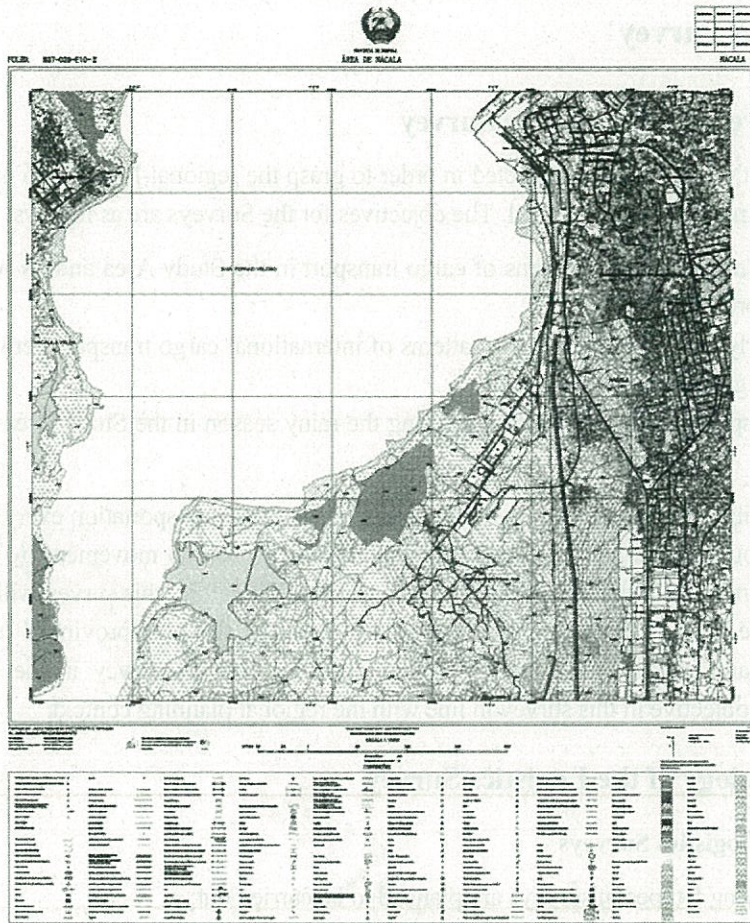
Structured editing was carried out for the edited digital data. The structured edited data was transformed to GIS data (Shapefile dataset with layers and Digital Terrain Model (DTM) data) that are compatible with GIS software.

(8) Map Symbolization

Map symbolization involved the correction of location of map symbols and the adjustment of data output order so as to output the edited digital data in analogue format, and these data were merged with the marginal information data.

(9) Proofreading by CENACARTA and Correction of Topographic Digital Data

CENACARTA carried out the proofreading for the geographical names on the topographic maps using the printed maps of the topographic digital data, for which map symbolization has been completed. The necessary corrections were made to the related topographic digital data based on the results of the proofreading and the final topographic digital data were prepared.



Source: JICA Study Team

Photo A.1.2 Topographic Maps (Sample) and Index Map (left: Nacala, Right: Nampula)

A.2 Logistics Survey

A.2.1 Objectives of the Logistics Survey

The Logistic Survey was conducted in order to grasp the regional-level cargo movement, including inter-provincial and international. The objectives for the Surveys are as follows:

- To understand major patterns of cargo transport in the Study Area and its surrounding areas by transport mode,
- Similarly, to understand major patterns of international cargo transport between the Study Area and neighbouring countries, and
- To grasp cargo transport patterns during the rainy season in the Study Area and its surrounding areas.

Each provincial government reports the statistics for cargo transportation every six months; limited to the amount of ton-km by road, rail and air. However, cargo movement by commodity from/to their provinces and other areas is difficult to acquire. Therefore, this survey will be able to help not only as the baseline data of current cargo movement at the inter-provincial level but also as the guideline and methodology for how to conduct this type of survey in the future. That is one additional objective in this survey in line with the regional planning context.

A.2.2 Methodology of the Logistics Survey

(1) Types of Logistics Surveys

The following 5 types of surveys are planned to be carried out;

- Traffic Volume Survey at provincial boundaries, entrances of major cities and country borders in the same locations as the road side survey described below,
- Roadside Origin-Destination (OD) Interview Survey (only for cargo transport) at provincial boundaries and entrances of major cities (in total 20 points),
- Survey for Conditions of Customs including OD interview survey at the Border (in total 6 borders),
- Goods transport record survey for the main stations in the middle and northern parts of the Mozambique Railway by interview and collection of statistics and documents from each station (7 stations), and
- Goods transport record survey for main ports in the middle and northern parts of Mozambique by interview and collection of statistics and documents from each port operator (5 ports).

(2) Survey Schedule

The entire schedule for the sub-contract surveys was planned and is shown in Table A.2.1 below.

Table A.2.1 Survey Work Schedule

		2012							
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Contract		■							
Dry season	Preparation		■	■					
	Field Work			■	■	■			
	Reporting				■	■	■	■	
	Supplimental survey						■		
	Reporting							■	
Rainy season	Preparation							■	
	Field Work							■	■
	Reporting								■

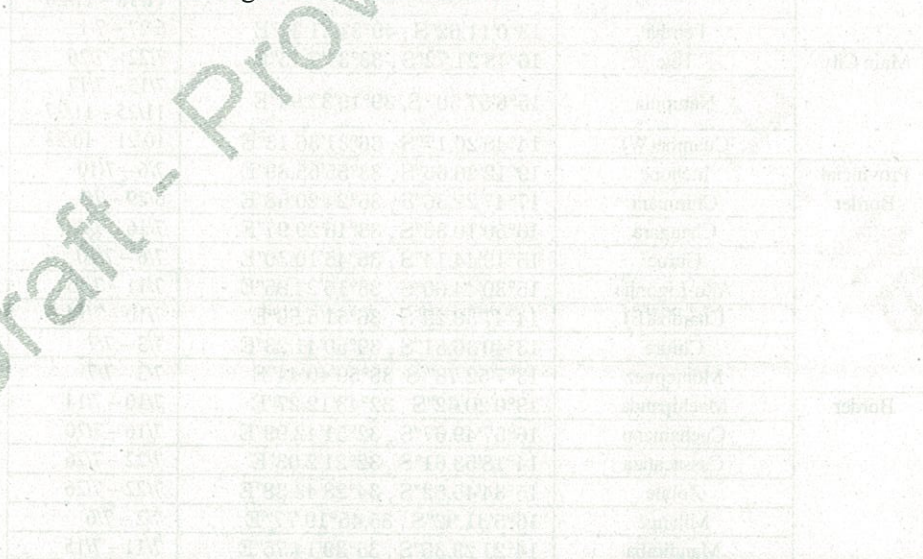
Source: JICA Study Team

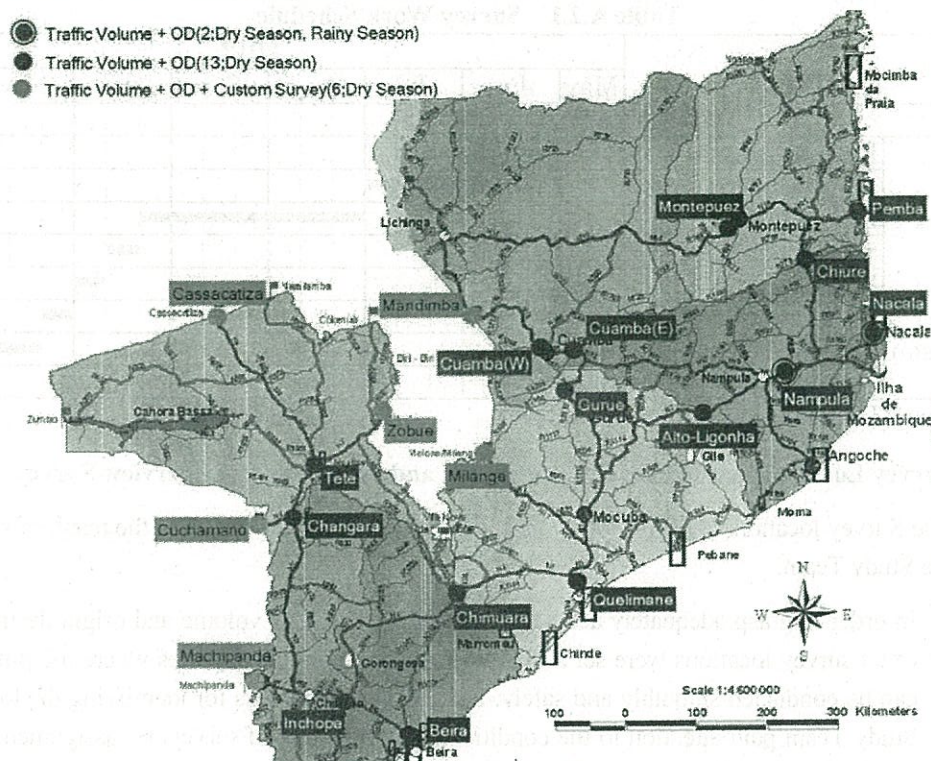
(3) Survey Locations for Traffic Volume Survey and Road Side OD Interview Survey

The Survey locations were identified from the view point below based on the result of site visits by the Study Team.

- In order to grasp adequately accurate inter provincial cargo volume and origin-destinations, the exact survey locations were set at the points of provincial boundaries where the traffic surveys can be conducted smoothly and safely. During the site surveys for identifying the locations, the Study Team paid attention to the conditions of availability of surveyors' assignment for survey hours, enough parking space and assistance from traffic police.
- In the case of traffic surveys near major cities, traffic police stations, such as control points, were also identified as the traffic volume and roadside OD interview survey points.
- Regarding the border survey, Mozambique's territories are identified as the survey points due to the possibility of traffic count and road side interview activities.

Considering together the above conditions and existing traffic conditions, the traffic survey locations shown in Figure A.2.1 were chosen.





Source: JICA Study Team

Figure A.2.1 Logistics Survey Locations

Table A.2.2 Survey Location List

Type	Location Name	Location	Survey Date
Port	Beira	19°34'43.73" S, 34°43'44.60"E	6/28 – 7/2
	Quelimane	17°36'17.47"S, 36°49'10.07"E	6/28 – 7/2
	Nacala	14°36'03.15"S, 40°40'53.68"E	7/20 – 7/24 11/18 – 11/20
	Pemba	13°0'11.62"S, 40°31'51.32"E	6/27 – 7/1
Main City	Tete	16°18'21.72"S, 33°31'7.15"E	7/22 – 7/26
	Nampula	15°6'57.50" S, 39°19'32.94"E	7/13 – 7/17 11/25 – 11/27
	Cuamba(W)	14°48'20.17"S, 36°31'36.13"E	10/21 – 10/23
Provincial Border	Inchope	19°12'26.66"S, 33°55'55.89"E	7/6 – 7/10
	Chimuara	17°47'21.36"S, 35°24'20.58"E	6/29 – 7/3
	Changara	16°50'10.36"S, 33°16'29.97"E	7/16 – 7/20
	Gurue	15°19'44.14"S, 36°45'10.30"E	7/6 – 7/10
	Alto-Ligonha	15°30'44.60"S, 38°15'24.85"E	7/11 – 7/15
	Cuamba(E)	14°47'36.29"S, 36°51'5.50"E	7/10 – 7/14
	Chiure	13°40'36.81"S, 39°50'41.23"E	7/3 – 7/7
	Montepuez	13°7'52.78" S, 38°59'40.44"E	7/3 – 7/7
Border	Machipanda	19°0'20.62"S, 32°43'12.27"E	7/10 – 7/14
	Cuchamano	16°57'49.67"S, 32°51'42.99"E	7/16 – 7/20
	Cassacatiza	14°18'53.61"S, 32°21'2.03"E	7/22 – 7/26
	Zobue	15°34'45.82"S, 34°28'43.38"E	7/22 – 7/26
	Milange	16°5'31.92"S, 35°45'19.77"E	7/2 – 7/6
	Mandimba	14°21'29.36"S, 35°39'14.75"E	7/11 – 7/15

Source: JICA Study Team.

(4) Detailed Methodologies for the Traffic Volume Survey

The Study Team developed the following conditions for this survey after reviewing previous survey

experiences in Mozambique and other countries. The vehicles are categorized into 9 types (A to I) described in Table A.2.3, which are in accordance with the official vehicle type classification regulated by ANE.

Table A.2.3 Categorization of Vehicle Types

Category ID	Description
A	Passenger Car / 4 Wheel Drive Vehicle
B	Small Size Cargo Vehicle
C	Mini Bus (Taxi) (2 axles)
D	Large Size Bus (over 3 axles)
E	Light Goods Vehicle (LGV) (2 axles)
F	Medium Goods Vehicle (MGV) (3 or 4 axles)
G	Heavy Goods Vehicle (HGV) (over 4 axles)
H	Agricultural Vehicle
I	Motorcycle

Source: JICA Study Team based on the ANE's Vehicle Classification

The survey hours are set as the 18 hours from 5:00AM to 11:00PM in consideration of remote areas and non-residential areas without any police support. The survey days are set for consecutive 5 days including Saturday and Sunday.

Regarding the traffic counting and recording, the Study Team decided that the enumerator will count each classified vehicle manually and record the number of vehicles by direction and by vehicle type every 30 minutes.

(5) Methodologies for the Roadside OD Interview Survey

In order to estimate the OD table properly, the survey points and survey duration need to be well designed, also traffic volume must be counted with adequate accuracy. The Study Team chose the interview items shown in Table A.2.4. The content of delivered goods shall be encoded in HS code which can be compared with other logistics statistics.

Table A.2.4 Interview Items

Interview Items	Format
Survey Time	Hour / Minutes
Vehicle Type	Select from 4 choices
Origin and Destination	Country/Province/District/City/Village, Port/Airport/Station
Travel Time (estimated)	Days / Hours / Minutes
Trip Frequency	Select from 8 choices
Contents and Volume of Freight	Commodity type / Volume (weight)

Source: JICA Study Team

(6) Methodologies for the Surveys at the Borders

The same as the above surveys, the traffic volume surveys and roadside OD interview surveys were conducted at six main borders with other countries. Those were located in Machipanda, Cuchamano, Cassacatiza, Zobue, Milange and Mandimba. In addition to this, information about the customs service system was collected in order to estimate the time difference between existing customs service and future customs service.

(7) Methodologies for the Goods Transport Record Survey for the Railway

In order to grasp the railway cargo movement, an interview survey with the railway transportation service was conducted. The targets of the railway services were between main stations operated by the Corridor de Desenvolvimento do Norte (CDN) and by the Beira railway operator.

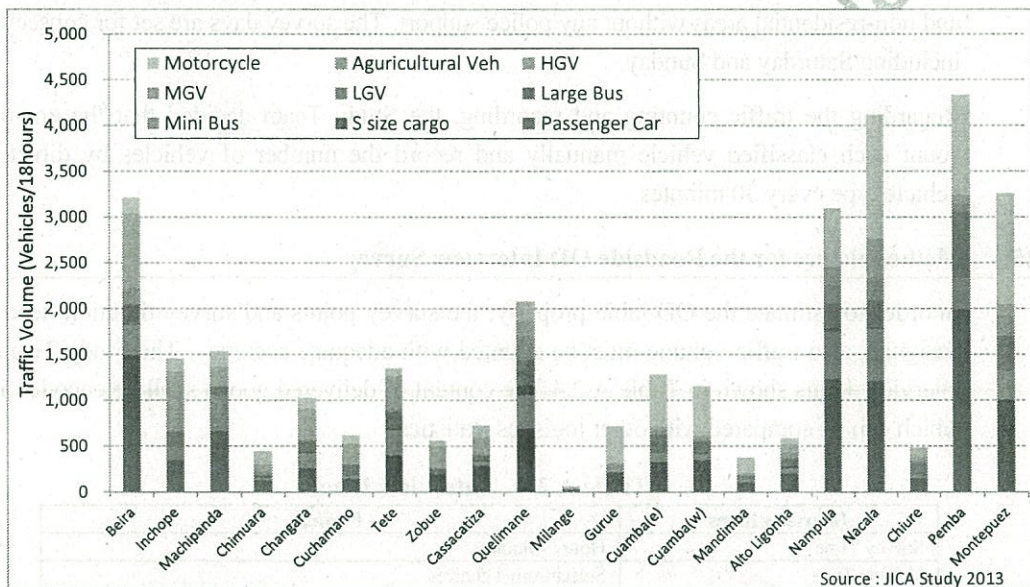
(8) Details of the Goods Transport Record Survey for Main Ports

In order to grasp the shipped goods movement related to the main ports in Northern Mozambique, interview surveys, the same as above, about the movement of goods via existing shipping services from/to the main ports in Mozambique were also conducted. These surveys were conducted at five ports, Pemba, Nacala, Quilimane, Beira and Metangula. Different from the survey of movement via railway service, the subject movement was not only movement between each other but also between target ports and other ports including foreign ports.

A.2.3 Result of the Logistics Survey

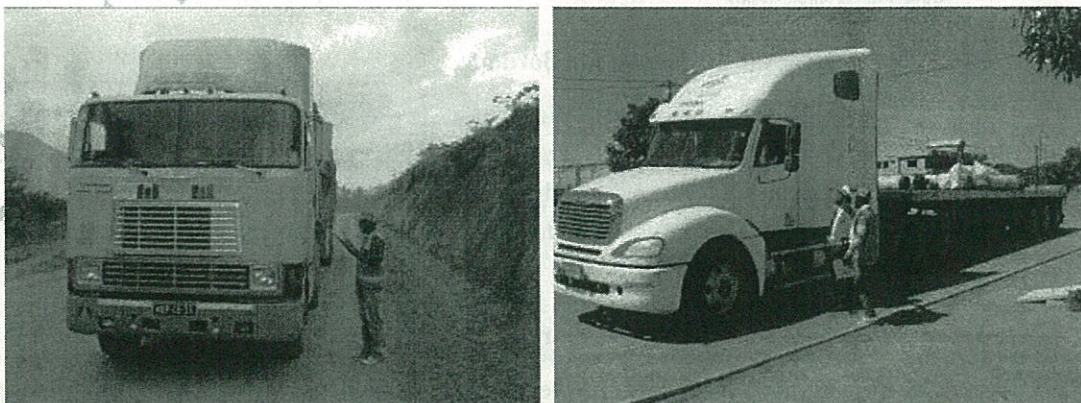
(1) Summary of Traffic Volume Survey and Road Side OD Interview Survey

The traffic volume counting survey and roadside OD interview survey was finished by the end of August for the dry season, and by end of November for the rainy seasons.



Source: JICA Study Team

Figure A.2.2 Counted Traffic Volume (Weekday / Dry Season)



Source: Photo by JICA Study Team

Photo A.2.1 Roadside Interview Survey



Source: Photo by JICA Study Team

Photo A.2.2 Traffic Volume Survey

(2) The Result of the Survey of the Movement of Goods via Railway and Shipping Services

In this railway survey, the target lines were the Nacala line and Beira line. Nacala line is operated by the northern railway company (CDN), and Beira line is operated by CFM and Cornelder in Beira. Those operator companies were contacted by the supervisor team in order to supply the information which describes the monthly goods movement between main stations. Unfortunately, the information provided by those companies describes only the total tonnage by contents which moved along those lines. The information of origin and destination is not recorded. Collected information could not include more than the monthly transportation tonnage by contents by railway line.

Concerning the shipping movements, the authorities of those main ports were also contacted by the supervisor team the same as in the station survey. Although those ports function as international logistics stations, the information provided by each of those authorities has different formats. The information from Pemba port has the export/import, shipping/landing annual tonnage by kinds of commodity. The information from Nacala port has the annual tonnage by kinds also, but those numbers represent the shipping and landing number in total. The information from Beira port has the international/transit transportation tonnage and number of containers, but those are the totals of all kinds of commodities. Quelimane is the only port which records monthly tonnage. Tonnage of major commodities are described, but this tonnage was not separated by shipping and landing total. The information from Metangula port is only one number which describes the total annual tonnage of all types of commodities. Collecting information about shipped goods movement is still ongoing.

A.2.4 Conclusion of the Logistics Survey

(1) OD Matrix of Existing Goods Transportation

According to the OD interview and traffic volume count, the OD matrix of goods transportation was estimated and utilized for the discussion of the logistics service sector.

(2) Existing Goods Transportation

According to this OD and the road network GIS data from ANE, the amount of goods transportation can be estimated by road section. The result is shown in the logistic part of this report. The district level OD matrix should be used for the network estimation of transportation.

(3) **Outline of the Border Control Conditions**

The result of this survey about border control is shown as below. Especially, the time loss to pass through the border in Cassacatiza and Cuchamano were longer than those in other ports.

Table A.2.5 Operating System

Name of the Border	Number of Workers	Operating Time		Traffic Volume*
		from	to	
Cassacatiza	5	6AM	7PM	728
Zobwe	13	6AM	9PM	565
Cuchamano	13	6AM	8PM	623
Machipanda	21	6AM	8PM	1539
Mandimba	13	6AM	6PM	375
Milange	14	6AM	6PM	66

Traffic Volume: Average Number of Counted Vehicles and Motorcycles on Weekday
(survey time: 5AM to 11PM)

Source: JICA Study Team

Table A.2.6 Lost Time to Pass through the Border

	LGV			MGV			HGV			Total		
	TLT	N	Ave	TLT	N	Ave	TLT	N	Ave	TLT	N	Ave
Cuchamano	0.0	0	-	0.0	0	-	24.0	1	24.0	24.0	1	24.0
Machipanda	5.0	2	2.5	0.0	0	-	181.3	94	1.9	186.3	96	1.9
Cassacatiza	0.0	0	-	0.0	0	-	2760.0	148	18.6	2760.0	148	18.6
Milange	25.8	6	4.3	34.0	18	1.9	80.9	47	1.7	140.7	71	2.0
Mandimba	3.0	3	1.0	1.0	1	1.0	22.0	18	1.2	26.0	22	1.2
Zobue	0.0	0	-	0.4	1	0.4	88.4	273	0.3	88.8	274	0.3

TLT: Total Loss Time, N: Number of Samples, Ave: Average Loss Time

Source: JICA Study Team

A.3 Nacala Corridor Integrated GIS Database

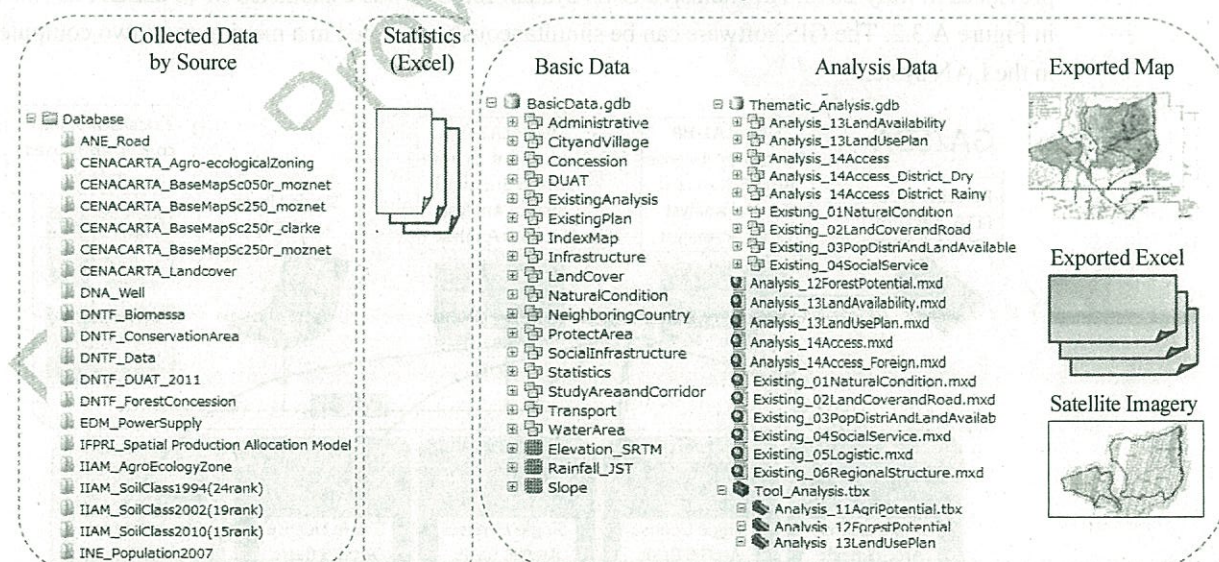
A.3.1 Objectives of “Nacala Corridor Integrated GIS Database”

The database creation was defined as one of the main outputs of the Project. A large amount and various types of information are compiled into the sustainable and operational GIS database, named “Nacala Corridor Integrated GIS Database” (the integrated database) in order to utilize the collected information for the formulation of the development strategies rationally and effectively in the Project, and also to be used as basic information for formulation of various sector’s future planning. The collected information includes, but is not limited to, statistics and geographical information. The objectives of the integrated database comprise the following five aspects.

- Make use of ArcGIS, to centrally store and manage information and local materials underlying the development strategies.
- Enable a representative organisation that is responsible for the Nacala Corridor regional development strategies to share information across different institutions smoothly in Mozambique.
- Allow the relevant agencies to utilize the geographic information for development plans or updating those plans in the future.
- Enable monitoring and managing of the development progress.
- Provide information to domestic and foreign investors who are willing to invest in the Study Area.

A.3.2 Structure of Nacala Corridor Integrated GIS Database

The integrated database comprises three groups of datasets: collected data, statistics, and GIS data for thematic maps as shown in Figure A.3.1. The GIS project data consists of basic data set, analysis data set, exported files of maps and tables, and satellite imageries.



Source: JICA Study Team

Figure A.3.1 Structure of Nacala Corridor Integrated GIS Database

A.3.3 GIS Training Session and Establishment of GIS Network

The integrated database will be maintained and updated by GAZEDA, CPI in the provinces, and provincial government after the completion of the Project. The JICA Study Team carried out the GIS training session for ten officials of three authorities and Ministry of Transport in GAZEDA headquarters in Maputo four times by the end of September 2013. The GIS training session aims to achieve the institutional set-up for maintenance of the integrated database. The target level of the GIS training session is set to achieve the training programme of ArcGIS Desktop II (Standard) that is practiced by Environmental Systems Research Institute, Inc. (ESRI). The training session covers the topics to make the participants acquire basic skills capable for layout, editing, and managing the integrated database that is created in the geodatabase format in GIS. Table A.3.1 shows the schedule of the GIS training sessions and delivery of the equipment with the integrated database. Since the most practical way to learn GIS software is to use GIS, the integrated database was provided with them in advance to the completion of the Project.

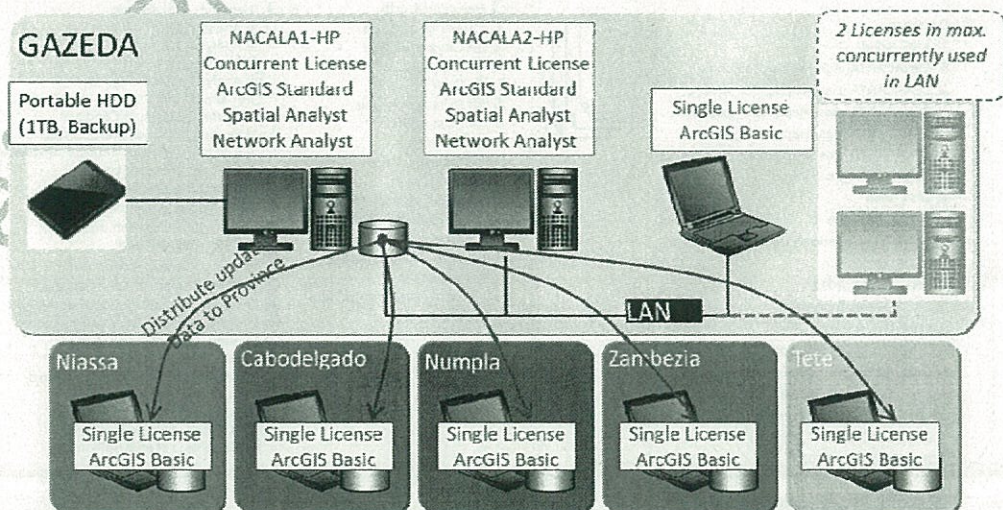
Table A.3.1 Schedule of GIS Training Sessions and Delivery of Integrated Database

Item	2012			2013									
	10	11	12	1	2	3	4	5	6	7	8	9	10
Delivery of GIS Database					(Basic Data)		(Analysis Data)				(Analysis Data)		
Delivery of PC with GIS Software					△				▽				
1 st GIS Training Session (5 days)		△											
2 nd GIS Training Session (3 days)					△								
3 rd GIS Training Session (2 days)								△					
4 th GIS Training Session (1 day)											△		

Source: JICA Study Team

Note: Tentative delivery of database ▽ Full delivery of database ▼

Three sets of personal computers were lent to GAZEDA, while five laptop computers lent to five provinces in May 2013. An exclusive LAN system for GIS was established in GAZEDA as shown in Figure A.3.2. The GIS software can be simultaneously activated in a maximum of two computers in the LAN system.



Source: JICA Study Team

Figure A.3.2 GIS Network Established in GAZEDA and Five Provinces

A.3.4 Future Perspective for GIS Data Management

An initial system is established to manage the integrated database in GAZEDA and five provinces. The integrated database will be updated and disseminated for the related organisations, and investors. GAZEDA will specifically be a centre to take this role and share the information with the provincial governments in the Study Area. The Centre of Investment Promotion (CPI) will be the authorities to manage the integrated database in the province. The Web-GIS is a useful tool for data sharing and dissemination. It serves an application system on which the geographical information can be displayed and operated by internal and external users in the internet environment. The application system can be tailored to the needs of the users who use the geographical information. The following subjects cover the necessary actions to establish GIS data management.

- GAZEDA is appointed as an official agency to formulate, manage, monitor, and evaluate a regional development plan.
- GAZEDA takes in charge of collecting, sharing, and disseminating the necessary information for the regional development.
- A new division is established in GAZEDA to be responsible for the regional development plan and its monitoring and evaluation. The new division is provisionally called the spatial planning and management division.

Figure A.3.3 shows future perspective for data management and dissemination. The Web-GIS is created and linked to the GAZEDA's website. The elaborated GIS data will be shown for officials, investors, and public. The Web-GIS can be used not only for data dissemination to the investors/public but also for data sharing among the government agencies. The integrated database is updated by sharing the latest information among the related agencies including ANE, DNA, CENACARTA, DNTF, IIAM, INE, EDM, MICOA, MTC, MIC, MIREM, MITUR, MPD, etc.

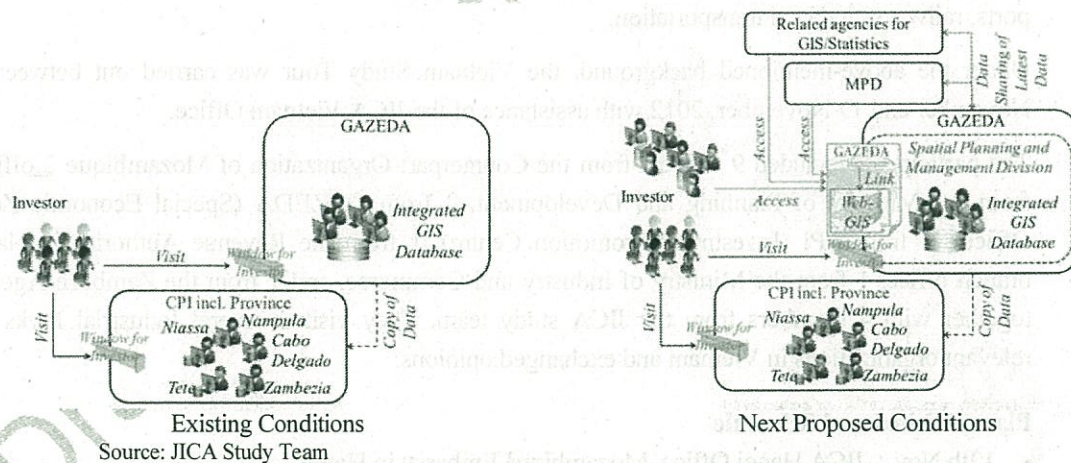


Figure A.3.3 Future Perspective for Data Management and Dissemination

A comparative study is made for establishing the Web-GIS; the first alternative is the on-premise type in which a WWW server system with ArcGIS server is constructed in GAZEDA or government agencies; the second alternative is the off-premise type by using the cloud computing system served by application service provider (ASP). The comparative study takes into account the cost, operation conditions, functionality, expandability, and maintenance. As the overall evaluation, the on-premise type is preferable in case an existing server system is available and used for GAZEDA. The off-premise type is more suitable in case there is no choice but to set up a new server system for Web-GIS.

Appendix-B Capacity Development Activities

B.1 Introduction

In PEDEC-Nacala, a study project for strategy formulation, not only a series of planning activities but also various capacity development activities were conducted. In this appendix, the following two activities are briefly described:

- Study Tour in Vietnam
- Counterpart Training (Study Visits) in Japan

B.2 Study Tour in Vietnam

(1) Background and Objectives

Both the JICA team and the Counterpart organization recognized the necessity of a “Third Country Training Programme; TCTP” in Vietnam, in order to learn from the experience of industrial park development in Vietnam. Vietnam was selected because the development situation in northern Mozambique and that of Vietnam are similar to each other in the needs for industrial parks (IP), ports, railways, and coal transportation.

Under the above-mentioned background, the Vietnam Study Tour was carried out between 11 November and 17 November, 2012 with assistance of the JICA Vietnam Office.

The participants included 9 officers from the Counterpart Organization of Mozambique 2 officers from the Ministry of Planning and Development, 3 from GAZEDA (Special Economic Zones Office), 1 from CPI (Investment Promotion Centre), 1 from the Revenue Authority in Nacala branch office, 1 from the Ministry of Industry and Commerce, and 1 from the Zambeze Agency) together with 4 members from the JICA study team. They visited several Industrial Parks and relevant organizations in Vietnam and exchanged opinions.

(2) Places Visited and Schedule

- 12th Nov : JICA Hanoi Office, Mozambique Embassy in Hanoi
- 13th Nov : Hanoi People’s Committee (Hanoi City), Ministry of Planning and Investment (MPI), Ministry of Industry and Trade, Hanoi Authority for Industrial Parks and Export Processing Zones (HIZA)
- 14th Nov : Thang Long Industrial Park (TLIP), Fujikin Vietnam Factory, Noi Bai Industrial Park (NBIP), Rhythm Precision Factory (Clock Maker)
- 15th Nov : Vietnam-Singapore Industrial Park (VSIP), Hai Phong Port, Dinh Vu Industrial Park, Hai Phong Port Authority
- 16th Nov : Ha Long Port

(3) **Outcomes (Lessons Learnt)**

- Importance of political commitment (for development of industrial park/SEZ/IFZ)
- The “Key” to Success is to establish a planning process (at different levels including the central, provincial and local levels) : Pre-F/S, F/S, Basic Infrastructure, Marketing Research
- An industrial park is a tool to attract foreign investment
- Necessity of clear vision of medium and long-term industrial development
- Necessity of development of a strategic industrial park, SEZ, and IFZ (assembled labour force, technical transfer, import substitution, commercial trade, secured national sovereignty)



Top-left: Fujikin – Vietnam Factory, Top-Right: Hai Phong Port, Bottom; Wrap-up meeting

Photo B.2.1 Study Tour in Vietnam and the Wrap-up Meeting

It was also found that close communication with Vietnamese officers and Mozambican officers is necessary for future development of the SEZ/IFZ in Mozambique. A proposal was made to conduct a seminar with invited Vietnamese officers in the future.

In the steering committee meeting on 27 November, these lessons learned were explained to the steering committee members by the Mozambique counterpart personnel.

B.3 Counterpart Training in Japan

(1) Background and Objectives

Japan has a rich and long history of national and regional spatial development planning, which has been led by the government, and this makes it ideally suited to assist in the planning of development strategies for the Nacala Corridor Region in conjunction with the PEDEC-Nacala.

In formulating regional development strategies for the Nacala Corridor Region, it will be of great benefit for the Mozambican counterparts to learn of the Japanese experiences in regional and industrial development based on port development and that of its surrounding industrial area, as well as industrial promotion in provincial areas. Moreover, the Japanese experts can provide a great opportunity for the Mozambican counterparts to listen to those who are actually engaged in these tasks. Therefore, preparing two separate occasions for governmental/ provincial high level officials and working level officials, these site visits aim to provide opportunities for the participants to visit and learn the actual situation of regional development and industrial promotion, and exchange opinions with relevant Japanese counterparts.

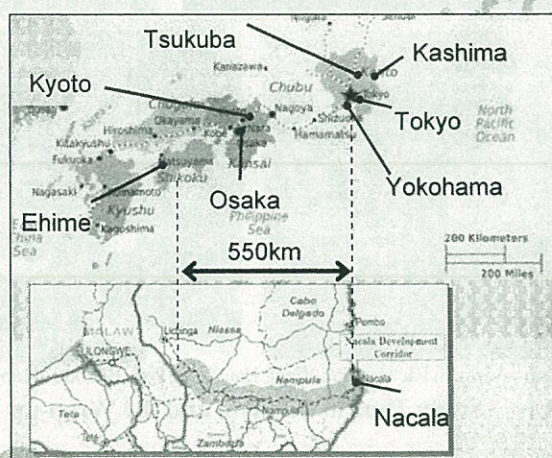


Figure B.3.1 Comparison of Visited Locations in Japan and the Nacala Corridor

Under the above-mentioned background, the first Counterpart Training in Japan was carried out from 13th to 25th Apr, 2013. The second one was implemented from 6th July, 2013 to 21st July, 2013.

The distance from Tokyo to Ehime, where the Mozambican officials visited, is almost the same as from Nacala to the Manndimba border at about 550km. This helps the participants to imagine the size of Japan compared to the Nacala Corridor.

The topics covered by this tour are shown below.

1) Experience in Port Development and Area Development of its Hinterland

Since the improvement of Nacala Port will be a key for the success of Nacala Corridor, case studies for port development will be included in the course. Additionally, topics covered should not be limited only to lineal development along the transportation corridor, but also “area development” including the surrounding and hinterland areas must be taken into consideration

For the purpose mentioned above, these visits, including lectures, were planned for the following

places:

- **Ministry of Land, Infrastructure, Transport and Tourism (MILT):** The participants are to learn the history of Japanese regional and national spatial planning on the axis of various industrial belts which organically consist of industries, transportation and cities.
- **Port of Yokohama:** This is the one of the biggest ports in Japan and Keihin industrial area is located near the port. The participants are to learn the history of development of the port as well as the belt shape development, which can be applied to Nacala Corridor area with similar geographical features.
- **Minato Mirai 21:** The participants are to learn about the project in the port area for commercial development to create job opportunities and urban recreation area development.
- **Osaka Bay Area:** The participants are to learn the method of special economic zone planning and enterprise attraction.
- **Kashima Port and Industrial Area:** In order to see an effective and efficient industrial port development led by the national and provincial government with a clear vision and strategy, a series of lectures and site visits to Kashima port and industrial area were planned.

2) Success of Regional Development in Provincial Areas

Not only the macro level development led by national or provincial governments, but also regional and community level developments that operate in a self-sustaining manner led by local governments are planned to be visited, since it is an essential point of view for regional development in Mozambique. With this view point, the participants are to visit Ehime Prefecture to see the commercial activities and agro-processing industry with the collaboration of local government, academic organizations and commercial associations.

3) Investment Seminar

In order to realize the economic development strategies of Mozambique, promotion of foreign investment is quite essential. The first seminar, the Investment Seminar, is planned to include the support of UNIDO for networking opportunities between Japanese companies/ investors and the government officers of Mozambique.

(2) Places Visited and Schedule

1st Counterpart Training

- 15th Apr : JICA Briefing/Orientation, Ministry of Infrastructure, Land, Transport and Tourism (MILT) (National Development Planning and Regional Planning)
- 16th Apr : Investment Seminar for Mozambique in Tokyo
- 17th Apr : Port of Yokohama and Minato Mirai 21 (Port Area Development)
- 18-19th Apr : Ehime Global Network (NPO) (Local level Development, Agro-processing Industry in Ehime Prefecture)
- 20th Apr : Kyoto Tourist Board (Tourism Development)
- 21st Apr : Aozora Foundation (NPO) (Pollution Experience), Osaka Bay (Port Development)
- 22th Apr : Kashima Port and Industrial Area
- 23rd Apr : Tsukuba (Academic Park), Wrap-up session at JICA

2nd Counterpart Training

- 8th Jul : JICA Briefing/Orientation, Ministry of Infrastructure, Land, Transport and Tourism (MILT) (National Development Planning and Regional Planning)
- 9th July : Port of Yokohama and Minato Mirai 21 (Port Area Development)
- 10th July : Tsukuba (Academic Park) and Fujikin Co., Ltd (bulb processing company)
- 11th July : Kashima Port and Industrial Area
- 12th July : Komai Haltech Inc. (manufacturing steel structures and windmills for wind power)
- 13th July : Kyoto Tourist Board (Tourism Development)
- 16th July : Osaka Bay (Port Development)
- 17-18th July : Ehime Global Network (NPO) , Ehime University (Local level Development, Agro-processing Industry in Ehime Prefecture)
- 19th July : Wrap-up session at JICA

(3) Outcomes (Lessons Learnt)

At the wrap-up session at JICA, the following comments from participants were raised as lessons learnt.

1) Japanese National & Regional Planning

- To realize the national and regional plan and reach the targets, it is important to define the projects and organize the implementation and conduct monitoring and evaluation activities even in the implementation stage. This flexible feedback method can modify the plans even during the implementation.
- The promotion of local level commercial and industrial activities is a key to realize comprehensive regional development.
- It is necessary for the government to provide good leadership as well as instituting a participatory process involving the people.
- The importance of plans with clear vision and strategies was learnt.

2) Port Development and Industrial Park Development

- We could see various types of ports with different functions, for example, the export oriented ports of Yokohama and Kobe, and import oriented ports of Tokyo and Osaka. We could recognize the efforts to fully utilize the ports with their characteristics.
- It was a good lesson to learn about spatial arrangement inside an industrial park such as “Kombinat” considering the process chain of petrochemical products.
- Kahima Port and its industrial park will be a good model for the development of Nacala Port and its surrounding area.

3) Investment Seminar

- An investment seminar for Mozambique was organized in Tokyo by UNIDO on the 24th of April 2013. The counterparts who participated in the JICA training in Japan attended the investment seminar and presented the investment situation in Mozambique. This was a good opportunity to attract many Japanese enterprises and investors.

4) Environmental Management

- The participants recognized the importance of mitigating the pollution from industrial

development as the real issue because they had opportunities to actually listen to the victims of public pollution.

5) Autonomous Development at Provincial Level

- The initiative of local level organizations and the collaboration of academics, enterprises, and local government are necessary.



Top-left: Investment Seminar, Right: Thermal Power Plant with waste recycling (Kashima),
Bottom-left: Wind Power Plant (Kashima)

Photo B.3.1 Counterpart Training in Japan

Appendix-C International Seminars for Nacala Corridor Regional Development

C.1 Outline

The first International Seminar was held on 15th March 2013 in Maputo of Mozambique. A total of 107 participants from Malawi, Zambia, and Mozambique along with the Minister of Planning and Development of Mozambique, the Ambassador of Japan, Permanent Secretaries from 5 provinces, JICA and other assistant organizations attended.

The second international seminar was organized on 20th-21st March, 2014 in Nampula, Mozambique. The seminar had 107 participants for the first day and 156 participants for the second day with representation from the Ministry of Planning and Development, Ministry of Transport and Communication, Ministry for the Coordination of Environmental Affairs, Ministry of Agriculture, Government representatives of the project intervention 5 provinces, Government Delegations of Malawi and Zambia, and also the representatives of international organizations, as follows: JICA, World Bank, African Development Bank (AfDB), UN-HABITAT and UNIDO. In addition, the second day was open for different private international and national companies, which about 50 companies in total attended.

C.2 Objectives for International Seminars

(1) Objectives for the First International Seminar

The first International Seminar aimed to achieve the following objectives:

- To share the information on the progress, on-going initiatives and future prospects of Nacala Corridor development among the neighboring countries (this time, Malawi and Zambia) and institutions (including development partners) concerned with Nacala Corridor
- To share and exchange information on government initiatives of Malawi and Zambia which are related to the Nacala Corridor
- To analyse, in a joint and coordinated manner, the opportunities brought by the implementation of on-going projects in the Nacala Corridor
- To create an opportunity to strengthen cooperative relations among countries and institutions concerned with Nacala Corridor

(2) Objectives for the Second International Seminar

The second International Seminar aims to achieve the following objectives:

- To promote understanding of Mozambique's development strategies and programs/projects for the Nacala Corridor Region among government officials in both Mozambique and

neighboring countries

- To share and exchange information on government initiatives of Malawi and Zambia which are related to the Nacala Corridor
- To share the future image of international corridor development with private investors in order to encourage their investments in the Nacala Corridor Region
- To consider implementation strategies for promoting development of the Nacala Corridor Region

C.3 Conclusion/ Outcomes of International Seminars

(1) Outcomes of the First International Seminar

The first seminar increased momentum among the countries toward working together on Nacala corridor development.

- The Nacala Corridor was confirmed to be a vehicle for promoting economic growth and regional integration.
- Sustainability of different types of development of the Corridor should be ensured.
- The following goals should be achieved:
 - ✓ the promotion of international cooperation between neighbouring countries that are pursuing different interests,
 - ✓ provide a good environment to attract and retain private investment in the region,
 - ✓ Government should ensure that the private sectors meet their social and economic responsibilities.

(2) Outcomes of the Second International Seminar

The following outcomes are observed in the second seminar

- During the seminar, a Joint Statement was prepared by the members of the delegation from the Governments of Mozambique, Malawi and Zambia.
- At the end of the meeting, a Joint Statement was agreed and released by the members of the delegation from the Governments of Mozambique, Malawi and Zambia that they will put further effort for the establishment of a durable partnership for the effective development of the Nacala Corridor. (Full text of Joint Statement can be seen in Figure C.3.2).
- The seminar consisted not only in publicizing the actions and activities within the implementation of PEDEC-Nacala, but also represented an opportunity to publicize the development potential of the Nacala Corridor Region, as well as allowing an opportunity to make contributions and expectations about the development of the Corridor by countries of the hinterland, users of the Corridor.
- Opportunities and potential investments were presented, both in terms of logistics, as well as agricultural and industrial levels for Mozambique, Malawi and Zambia, the fruit of the challenges for an effective integration of the Nacala Corridor.
- The Seminar also raised the need for joint effort to formulate better strategies to stimulate development and promote investment in the Nacala Corridor, and thus realize the common dream of seeing the Zambia - Malawi - Mozambique Growth Triangle (ZMM-GT) in the routes of world trade.
- Different actions (Presentations, Panel Discussion, Exhibition, and Optional Tour to Nacala

Port) were taken in order to facilitate communication among different organizations, such as government officials from Mozambique, Malawi and Zambia, development partners and private companies during this occasion.

- The Governments of Malawi and Zambia are engaged in the implementation of actions and infrastructure projects for the Nacala Corridor in their countries, and are willing to implement further actions and projects undergoing on the Mozambican side to facilitate the development of the industrial and commercial sector on the SADC region in general and on the Corridor in particular.



Top-left: Group photo at the first seminar, Top-right: Open Discussion at the second seminar
Bottom-left: Group photo at the second seminar, Bottom-right: Presentation from GAZEDA at the second seminar

Photo C.3.1 International Seminars held in Mozambique

Joint Statement by the Governments of Mozambique,
Malawi and Zambia on
Vision of Nacala International Corridor

We have had active discussions about the future of the Nacala Corridor:

We have come to understand that the Nacala Corridor should play a vital role for promoting sustainable development of the regions related to the Nacala Corridor in Mozambique, Malawi, and Zambia.

The Governments of Mozambique, Malawi and Zambia remain committed to efforts directed at development of the Nacala Corridor due to high socio-economic benefits that will be unlocked through the use of the Nacala Development Corridor. For the realization of full development outcomes arising from this spatial development initiative, it is essential to ensure that the corridor remains efficient, reliable and therefore attractive to investors for complementary investments.

To this end, we agreed to strengthen our cooperation for developing and sustaining not only the Nacala Corridor as an international development corridor, but also for promoting regional development in relation to the Nacala Corridor.

The Governments of Mozambique, Malawi and Zambia agreed that a permanent inter-governmental coordination and cooperation mechanism among the three countries be established in order to guide the development initiative and to jointly monitor the progress of activities in the three countries and take actions required for the realization of the Nacala Corridor regional development.

Nampula City, Nampula Province, Mozambique
21 March 2014

The representatives from the Republic of Mozambique, the Republic of Malawi and the Republic of Zambia, for “the Second International Seminar on Nacala Corridor Regional Development Strategies”

Figure C.3.1 Joint Statement at the 2nd International Seminar

Joint Statement by the Government of Mozambique

Mitsui and Kubota

Visão da Região Internacional Centro

We have had a long and fruitful relationship with the Government of Mozambique since the signing of the Economic Cooperation Agreement in 1973. We have been committed to the economic development of the region, and we have been actively engaged in various projects in the region. We are pleased to see the progress that has been made in the region, and we are confident that the region will continue to develop and prosper in the future. We are committed to working with the Government of Mozambique to promote economic growth and development in the region. We are also committed to providing technical assistance and training to the people of the region. We believe that the region has a great potential for economic development, and we are committed to helping the region realize this potential. We are confident that the region will continue to develop and prosper in the future.

In the past, we have worked together on a number of projects, and we are confident that we will continue to work together in the future. We are committed to providing technical assistance and training to the people of the region. We believe that the region has a great potential for economic development, and we are committed to helping the region realize this potential. We are confident that the region will continue to develop and prosper in the future.

The Government of Mozambique, Mitsui and Kubota agree that a permanent intergovernmental commission may be established to coordinate and monitor the implementation of the Economic Cooperation Agreement. The commission will be composed of representatives from both the Government of Mozambique and Mitsui and Kubota. The commission will be responsible for monitoring the progress of the implementation of the Economic Cooperation Agreement, and for providing technical assistance and training to the people of the region. We are confident that the commission will be an effective mechanism for coordinating and monitoring the implementation of the Economic Cooperation Agreement.

Mozambique City, Mozambique
21 March 2014

The undersigned, on behalf of the Republic of Mozambique, the Republic of
Mozambique, the Republic of Mozambique, the Republic of Mozambique,
on behalf of the Regional Development Strategy

Figure C.1.1 Joint statement at the 3rd International Seminar