Maputo Development Corridor

Maputo Development Corridor: Evaluation of First Phase

Submitted by a Joint Venture consisting of:

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Study context

The Maputo Development Corridor (MDC) is one of the most ambitious and exciting development initiatives undertaken within the southern African region since 1995, following the peace agreement in Mozambique and the first non-racial elections in South Africa in 1994. Coming at a time of substantial political change and growing co-operation within the region, the transport ministers of the two countries set in motion the MDC initiative as a joint undertaking of the Governments of South Africa and Mozambique, with the full support of the Southern African Development Community (SADC) and with the specific objective of (re-) establishing the development axis between Gauteng (South Africa's industrial heartland) and Maputo.

The early vision was to rehabilitate the core infrastructure in the corridor (notably road, rail, port and dredging, and border post, through public/private partnerships (cognisant of state fiscal limitations) thereby re-establishing key linkages and opening up inherent un- and under-utilised economic development opportunities. Common to both countries was the importance of the initiative to their respective reconstruction and development programmes, specifically to achieving GDP and employment growth targets, increasing local and foreign fixed investment and improving exports. Underlying this vision was the desire to see this initiative also contributing to other key policy areas, notably regional economic integration, international competitiveness and a broadening of the ownership base in the economy of the corridor.

The two countries have agreed on the following four key objectives for the MDC:

- To rehabilitate the core infrastructure along the corridor with minimum impact to the fiscus (road, rail, port, dredging of port and border post);
- To maximise investment in both the inherent potential of the corridor area and in the added opportunities which the infrastructure rehabilitation will create.
- To ensure that the development impact of this investment is maximised, particularly in disadvantaged communities. Changing the ownership base.
- To ensure sustainability by developing policy, strategies and frameworks that encompass a holistic, participatory and integrated approach to development.

MDC has been initiated successfully. The key projects were started punctually: some have been completed and others are in an advanced stage of implementation. Other anchor projects have also been completed or are progressing well. The corridor has provided a focused orientation for the promotion of investment as well as building a framework for government effort on structural reforms.

In order to support the initiative and to manage key policy shifts suggested by the vision, the political leadership put in place strong, well mandated, and well resourced trans-national structures at the inter-departmental co-ordination and technical levels, in addition to themselves assuming the roles of political champions and thereby proactively taking on the attendant risks.

Subsequently, the governments of Mozambique and South Africa have agreed to the formation of the Maputo Corridor Company (MCC) – a facilitating entity representing both public and private sector interests.

On the South African side, the MCC was quickly established. The Mpumalanga Province assumed increasing responsibility and developed numerous initiatives to drive the planning process forward. The "Maputo Development Corridor Provincial Technical Committee" meets periodically to ensure proper planning, organisation and coordination of the Corridor development with the provincial planning process. It is supported by the South African MCC, which has started implementing a number of special initiatives including policy research, training of public officials in project preparation and evaluation, demonstration projects, the promotion of cluster processes, policy support to national and provincial decision makers and a study on "borderlands" development.

On the Mozambican side, key transport components and some highly visible investment projects (notably a major aluminium plant - Mozal) were initiated and implemented quickly, but other aspects of the envisioned process have lagged behind. Systematic follow-up, in terms of policy analysis, enterprise promotion, sectoral studies and capacity-building, has not taken place. The promotional/facilitating role of the public sector has not been well defined or effective. Moreover, in Mozambique the corridor coordinating bodies at the ministerial and technical levels have not been very active and the provincial and municipal governments have had little or no involvement. While the MCC in SA had been put in place as part of the Mpumalanga provincial administration, all efforts to create the bi-national company with Mozambique and appoint a chairman and staff have thus far failed.

With private sector corridor development gaining speed on the ground, the Mozambican authorities, foremost the Ministry of Transport and communications (MTC), which is nominated in the bilateral agreements as the corridor coordinator, have realised that it is essential to reassess their arrangements for Corridor planning and coordination. If this is not done, the government may risk missing major opportunities to promote benefits in terms of growth, employment, local participation, regional integration and environmental sustainability. Late in the 1990s, the World Bank therefore agreed to assist Mozambique in carrying out an assessment of the public sector planning requirements and options for effective coordination of the corridor development in Mozambique. This assessment was undertaken by Lindfield[1].

Research need

For any initiative or project, an *ex post* assessment of impacts constitutes an important element of project management at the strategic level. Having recognised this need in the case of the MDC, the Development Bank of Southern Africa (DBSA) has invited tenders from interested parties for a project that involves the evaluation of actual progress made since the launch of the MDC initiative, the identification of actions needed where actual performance has fallen short of expectations and the establishment of a tracking system to monitor, evaluate and disseminate information on an ongoing basis. The latter of these requirements (tracking system) has since been dismissed. The original Terms of Reference for this project is attached hereto as Appendix A.

Study objective

The MDC project was initiated for a number of specific objectives, as listed in Section 1. These objectives constitute a mixture of "enabling factors" (e.g. investment in transport infrastructure and institutional arrangements with the aim of creating an enabling environment for economic growth and development) and "desired outcomes" (e.g. positive macro- ad socio-economic impacts that are sustainable in terms of their impact on the environment). It is important to take stock of the situation which, in theory, should include both "enabling factors" and "desired outcomes" in order to determine whether these objectives have been met and, where this is not the case, to suggest corrective measures. The study deliverables will therefore serve to inform decision makers and key players about progress made and the need for interventions in the case of bottlenecks hampering progress.

Scope of study

The scope of the study can be described from both a spatial and information perspective. From a spatial point of view, the study area will involve the MDC area as well as the reference area. The MDC area could be defined in terms of the following:

- The primary corridor region – comprising the transport and communication infrastructure itself (roads, railways, ports and communications) which link Witbank and Maputo, including the main urban centres in the area between Witbank and Maputo Port
- The secondary corridor region – comprising regions which, in administrative terms, are immediately adjacent to the primary region in the provinces of Maputo (Mozambique), Mpumalanga and Gauteng (South Africa) and Swaziland
- Resource nodes and tertiary roads linked to the principal corridor such as the Matutune District (included in the Lubombo Spatial Development Initiative).

From an information point of view, the study will involve a number of impacts that can be grouped under the headings "movement along the corridor", "macro-economic", "socio-economic" and "environmental".

Study method

A logical "immediate" consequence to be expected from the MDC initiative is increased levels of passenger and freight movement along the corridor. The study therefore firstly involves an analysis of transport patterns along the corridor during the analysis period. It then focuses on changes in the values of selected indicators during this period. Indicators considered for this purpose can be grouped under the headings "macro-economic", "socio-economic" and "environmental". The objective of this analysis was to determine whether positive changes (in terms of these indicators) were more pronounced in areas close to the corridor than in areas further removed from the corridor, from which the "success" or "failure" of the initiative could be inferred. The logic of this approach is explained in Section 3 of this report. This analysis of macro-economic impacts is supplemented by a comparison of actual performance with projections made by Capricon in 1995. Finally, attention is focused on constraints and opportunities regarding a number of success factors in respect of the MDC initiative, as established during interactions with key players from the private and public sectors.

Results from the analysis

In general, the analysis revealed a stronger correlation between positive changes in the values of selected indicators during the analysis period (on the one hand), and proximity to the corridor (on the other hand) in the case of macro-economic impacts than in the case of socio-economic impacts. Results obtained are discussed below on a more detailed level.

Movement along the corridor

Movement along the corridor was analysed in terms of the rate of change (growth) during the analysis period for a number of indicators. Regarding *activity at the border post*, the analysis shows that the total number of persons crossing the border increased substantially during the period 1995 to 2003. This increase represents a growth rate of about 17 percent per annum (depending on the actual start and end date of the period). For *road transport*, the growth rate was in the order of 6 percent per annum, substantially higher than "typical" growth rates on other routes. For trucks alone, growth rates of more than 10 percent per annum were found in some cases. *Air transport* grew by 9 percent per annum between 1999 and 2000. In the case of *rail transport*, there was an initial increase in the volume of goods to South Africa, followed by a substantial decrease and then a slow recovery. The poor performance in the case of rail can be ascribed to a number of reasons, such as delays at the port, return of empty rolling stock and the lack of rolling stock. In summary, therefore, the analysis shows that, with the exception of rail, transport activity on the corridor has increased at "above normal" rates during the analysis period.

Macro-economic impacts

Economic output

Mpumalanga's growth in terms of *economic output* (as measured by Gross Value Added (GVA)) during the analysis period was on a par with that of South Africa (about 2,5 percent per annum). The analysis however showed that areas close to the corridor reveal a higher growth rate than areas further removed from the corridor. This applies to total economic output as well as to most of the individual sectors of the economy, in particular the sectors manufacturing, electricity, construction, trade, transport and finance. Regarding *GVA per capita*, the analysis revealed that Mpumalanga, as a region, is slightly above the national average. At a spatial level, the analysis showed that areas close to the corridor revealed a higher growth rate in terms of GVA per capita than areas further removed from the corridor.

On the Mozambican side, Maputo city constitutes the biggest player in the Mozambican economy in general and in the southern regional economy in particular. Maputo city contributes 73 percent and the MDC more than 80 percent to the economy of the southern region. Regarding economic growth, it is maintained that the MDC contributed to the already high economic growth rate in the Maputo province and city during the analysis period through investments and other actions associated with the MDC.

Employment

For Mpumalanga and in the case of manufacturing, construction, trade, transport and to a lesser extent the finance sector, there seems to be relatively strong correlation between growth in employment during the analysis period and proximity to the corridor.

Regarding the Mozambican part of the MDC, the 1996/97 official unemployment rate (formal wage-earning employment) was estimated at around 69 percent. This figure is almost the same as the total number added to the Mozambican population every year, most of which are, by definition, not regarded as unemployed simply because they do not actively seek for jobs or employment. While, on the one hand, Mozambique has about 350 000 people assumed to be unemployed in the formal economy, on the other hand, every year the subsistence and the informal economy contribute almost the same number of people to its existing economically active effective. Moreover, more than 65 percent (20 400) of the almost 31 000 companies in Mozambique are concentrated in the Maputo, Gaza and Sofala provinces. Wholesale and retail trade (17 776 or 56 percent of all registered companies), hotels and restaurants (5 984 or 18,9 percent of all registered companies) and real estate, renting (including security services) and business activities (680 or 2,1 percent of registered companies) are the main activities of registered companies in Mozambique. They amount to almost 78 percent of all companies and offer more than 52 percent of all dependent employment opportunities in the private sector of Mozambique.

Income per capita

Income per capita for Mpumalanga is about 80 percent of the national average. The analyses however shows that income per capita has grown at a faster rate in the areas closer to the corridor than the areas further removed from the corridor.

Regarding Mozambique, the average GGP per capita in Maputo city and province amounted to USD652 in 2000, though the gap between the two provinces comprising the MDC remains rather wide: Maputo city USD1070 and Maputo province USD171.

Capricon projections

For Mpumalanga, actual impacts (in respect of GVA and employment) were compared to predicted impacts (as measured by production). For this purpose, the actual annual growth rate of these variables was compared to the predicted growth rate during the analysis period. No data are available in respect of capital investment and imports, which meant that no comparison could be made in these cases. Regarding GVA, the comparison showed that the projections were over-optimistic in all cases except for the transport and finance sectors. It also showed that the total economy (all sectors combined) grew by less than 2,5 percent per annum during the analysis period (1996 to 2001) as opposed to the projected figure of 7 percent per annum. Regarding employment, a substantial “mismatch” between predicted and actual employment was demonstrated. The biggest discrepancies appear in the case of the mining and trade sectors. For the total economy, however, the picture is less alarming: actual employment grew by 4,6 percent per annum during the analysis period, as opposed to a projected figure of 7 percent per annum.

On the Mozambican side, the bulk of the macro and regional economic impact associated with several MDC initiatives, namely mega-projects such as MOZAL and others in the process of being implemented soon (both in the narrower MDC and in the wider MDC, the southern region of Mozambique) is not captured by the data for the period 1996-2000. Hence, in projecting economic growth for the MDC region until 2010, it needs to be expected that the already relatively high economic growth experienced in past five or six years will most probably accelerate further. This is what is depicted by Scenario 2, in which the average annual economic growth rate in the MDC increases from 11 percent in 1996-2000 to at least 16 percent and 22 percent per year for the periods 2000-2005 and

2006-2010 respectively. If this does not happen, the GGP per capita in the MDC is likely to improve more rapidly than in the case of Scenario 1 (i.e. without the MDC); namely from USD652 in 2000 to USD1 222 and USD2 927 in 2005 and 2010 respectively.

Socio-economic impacts

Demography

At about 1,8 percent per annum, the growth rate of Mpumalanga's population is slightly higher than that of South Africa (at 1,5 percent per annum). However, the analysis did not reveal any correlation between proximity to the corridor and population growth rates.

On the Mozambican side, the population directly benefiting from the main road includes the people in the urban districts 1 and 2 of Maputo city, and the districts of Boane, Moamba, and Matola city of Maputo Province. A higher population growth rate can also be noticed in the districts directly affected by the N4 road. In the period 2000 to 2002, the annual growth rate in Maputo province and city were 2,4 and 1,2 per cent respectively.

Poverty

Poverty for the whole of Mpumalanga (as measured by the indicator "Poverty gap") has increased during the period 1996 to 2002. However, the analysis reveals that the rate of increase generally was slower in the districts close to the corridor, particularly in the eastern areas of the study area.

In the Mozambican MDC area, contrary to the national trend, poverty incidence appears to be on the rise between 1996 and 2003 in Maputo Province and Maputo city. Estimated poverty headcount ratios in Maputo Province and Maputo City increased by 3,7 and 5,8 percent respectively.

Human development

The analysis revealed that, for Mpumalanga, there is a positive correlation between the rate of increase in human development (as measured by the indicators "Human Development Index" and "Functional literacy") and proximity to the corridor. This relationship however is less pronounced than in the case of macro-economic impacts (see above).

On the Mozambican side, available data reveal a relatively high value for HDI for Maputo city and province relative to the other selected areas. Maputo city is the only area of Mozambique with an HDI above 0,5. This affects the overall average level of the southern region of the country. Regarding the rate of change of this index during the analysis period, although the data available covers the period 1996 – 2000 only, there are several indications that the improvement in the components of the HDI is likely to continue, including in the MDC region. Yet more in-depth and localized studies are needed to find out the specific differences at the district and local level in relation to the three variables comprising the HDI, namely income generation, life expectancy and educational level.

Education

For Mpumalanga as a whole, education levels (as measured by the index "functional literacy") increased during the analysis period. The analysis however did not reveal a higher rate of increase in areas closer to the corridor than in areas further removed from the corridor. These observations are also valid for the Mozambican part of the MDC.

Environmental impacts

Regarding air quality, an analysis of appropriate indicators reveals that SO_2 levels have remained constant during the analysis period. The average mean particulate matter has however steadily increased during the analysis period and the 2001 figure is almost 60 percent higher than the 1996 figure.

Conclusions

High logistics cost on the Maputo corridor

Although shipping charges through Maputo port compare favourably to South African ports, the combination of rail and road transport cost and toll fees makes this corridor substantially more expensive than other South African corridors. This situation is made worse by the limited backhaul and long clearing times at the border post.

Rail transport

The rail link between Gauteng and Maputo is another critical building block and enabling factor. At present a number of problems are being experienced, mainly due to ongoing non-completion of the Ressano Garcia rail concession and ongoing efforts by Spoornet to constrain the transfer of business to the Maputo Lines. Spoornet's policy of directing and selecting specific cargo towards specific corridors and not providing sufficient capacity on the Maputo Corridor line for Maputo Corridor specific cargo aggravates this situation.

Road transport

There are a number of problems experienced in this regard especially bureaucracy constraints associated with the road corridor and border post.

Shipping lines

Shipping lines do not service Maputo port as they do other main ports due to a lack of sufficient cargo.

Border post

Problems at the border post are the main constrains for trade in the corridor. These seem to be mainly of an operational nature, such as limited operating hours, inappropriate operating procedures that lead to congestion, and a lack of focus on the core traffic being transit cargo.

Formal system and reliable data for monitoring impacts

At present there is a lack of a dedicated system (including selected performance indicators and reliable data) for monitoring project impacts. This makes it difficult if not impossible to monitor impacts in a consistent and ongoing manner.

Capacity and infrastructure/operations constraints at Maputo port
The port is one of the main building blocks of the corridor and as such constitutes an important enabling factor. It has been a priority of the MDC that the port be substantially rehabilitated and that operational improvements occur. To achieve this objective the CFM initiated a process of privatisation (which now is complete – the port was concessioned to a public-private partnership on 14th April 2003 as a result of which a USD70 million investment programme has been initiated). Subsequent to this the following has been achieved:

- USD10 million handling equipment in now installed a the port
- New tug capacity has been introduced in the form of two 37-ton tugs
- A dredging to fully restore the channels to their design depths and widths by the end of January 2004
- The container terminal has seen an investment of USD12 million in rehabilitation of infrastructure and equipment.

A number of constraints are however still being experienced. They relate to insufficient internal and access road network, and a limited facility for handling fruit exports.

Infrastructure and institutional constraints at terminals
Terminals at the port constitute another important enabling factor. A number of problems are however restricting their optimal utilisation. Examples are lack of covered storage areas for steel products, limited and expensive cold storage facilities, and limited storage space for bulk cargo handling.

Negative perceptions
Negatively perceptions exist and are largely based on a long history of non-completion of the founding concessions relating to the corridor, as well as a lack of efficient marketing and communication of developments in the corridor. It is also perceived that the current stricter visa requirements by South Africa have resulted in lower levels of cross-border trade and business.

Recommendations

Missing building blocks
It is critical that the missing building blocks should be put into place as a matter of urgency. These building blocks (interventions at an infrastructure and institutional level) are a prerequisite for a better transport system in the corridor resulting in lower transport cost, shorter transit times and increased reliability of the transport system and ultimately economic growth and development in the region.

Implementation agency
There is a need for an independent implementation agency, tasked with the responsibility of ensuring the timely (speedy) implementation of the missing elements of the corridor. This agency should also be tasked with facilitating communication between current and potential users of the corridor and the relevant government institutions.

Marketing

The MDC initiative should be marketed in a well-planned and ongoing manner and success stories be publicised in order to communicate its benefits to potential users. Marketing to government organisations needs to be integrated with marketing by the core investors and service providers along the corridor particularly the port, with full account being taken of private sector recommendation and priorities.

Institutional arrangement

The objectives set out in the Agreement for the Co-ordination of the Maputo Investment Corridor between the Government of the Republic of Mozambique and the Government of the Republic of South Africa, enumerated and highlighted above, are still valid today. But as Lindfield already maintained in 1998, the institutions currently charged with implementation of the agreement cannot adequately address the scope of the key objectives. It is worthwhile to recall Lindfield's conclusions regarding the review of the institutional structure for corridor implementation, including the Agreement:

- some industrial, social and environmental development objectives are difficult to achieve under the current institutional structure;
- there continues to be a need for a co-ordinating mechanism with the corridor to achieve these objectives;
- the structure proposed in the early stages of implementation for that mechanism - a joint company encompassing both the South African and Mozambique Governments and South African and Mozambique private sectors with technical co-ordination by the Ministry of Transport and Communications - appears to be no longer appropriate for the changed institutional, political and economic contexts on both sides of the border; and
- a new structure is needed for this co-ordination mechanism, enabling it to meet the objectives set out above and to promote economic development, employment creation and poverty alleviation while reducing the environmental costs of this development - this structure should encompass both the Province and City of Maputo on the government side and a more focused approach to private sector participation.

This structure will match and complement developments taking place within South Africa in order to allow for more effective implementation of all of the above objectives.

1. INTRODUCTION

1.1. Study context

1.1.1 Historic context

The Maputo Development Corridor (MDC) links Gauteng, the industrial heartland of South Africa, with the port of Maputo in Mozambique. This is the shortest import and export route to and from Gauteng, Mpumalanga and the Limpopo Province of South Africa. In the early 1970s this was a major export corridor for South Africa and an important generator of foreign exchange for Mozambique (about USD200 million per annum in 1996 prices). On the South African side there are further sub-corridors to the Limpopo Province and to Mpumalanga's petrochemical cluster, while in Mozambique the corridor also has sub-corridors linking its central areas and Swaziland to the port. After Mozambique's independence in 1975, alternative export routes within South Africa (primarily through Natal) were established. This, combined with inefficiency in Mozambique's state-run ports and railways system and the disruption because of civil war, led to a decline in freight transported through the Maputo Corridor. Port volumes fell from about 11 million tonne per annum at Mozambique's independence to a low of about 2.6 million tonne per annum in the mid-1990s. At the same time, Maputo's share of Gauteng's exports and imports fell from 40 percent to 5 percent. Traffic has since recovered to levels above 3 million tonne per year.

1.1.2 Vision and objectives of the MDC

The MDC is one of the most ambitious and exciting development initiatives undertaken within the southern African region since 1995, following the peace agreement in Mozambique and the first non-racial elections in South Africa in 1994. Coming at a time of substantial political change and growing co-operation in the region, the transport ministers of the two countries set in motion the MDC initiative as a joint undertaking of the Governments of South Africa and Mozambique, with the full support of the Southern African Development Community (SADC) and with the specific objective of (re-) establishing the development axis between Gauteng (South Africa's industrial heartland) and Maputo.

The early vision was to rehabilitate the core infrastructure in the corridor (notably road, rail, port and dredging, and border post, through public/private partnerships (cognisant of state fiscal limitations) thereby re-establishing key linkages and opening up inherent un- and under-utilised economic development opportunities. Common to both countries was the importance of the initiative to their respective reconstruction and development programmes, specifically to achieving GDP and employment growth targets, increasing local and foreign fixed investment and improving exports. Underlying this vision was the desire to see this initiative also contributing to other key policy areas, notably regional economic integration, international competitiveness and a broadening of the ownership base in the economy of the corridor.

In total, the two countries have jointly produced the following four key objectives for the MDC:

- To rehabilitate the core infrastructure along the corridor with minimum impact to the fiscus (road, rail, port, dredging of port and border post);
- To maximise investment in both the inherent potential of the corridor area and in the added opportunities which the infrastructure rehabilitation will create.
- To ensure that the development impact of this investment is maximised, particularly to disadvantaged communities. Changing the ownership base.
- To ensure sustainability by developing policy, strategies and frameworks that encompass a holistic, participatory and integrated approach to development.

Strategically, the MDC was defined in its initial phase as follows:

- The primary corridor region – comprising the transport and communication infrastructure itself (roads, railways, port and communications) which link Witbank and Maputo, including the main urban centres in the area between Witbank and Maputo Port
- The secondary corridor region – comprising regions which, in administrative terms, are immediately adjacent to the primary region in the provinces of Maputo (Mozambique), Mpumalanga and Gauteng (South Africa) and Swaziland
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MDC has been initiated successfully. The key projects were started punctually: some have been completed and others are in an advanced stage of implementation. Other anchor projects have also been completed or are progressing well. The corridor has provided a focused orientation for the promotion of investment as well as building a framework for government effort on structural reforms.

1.1.3 Implementation process and institutional arrangement

In order to support the initiative and to manage key policy shifts suggested by the vision, the political leadership put in place strong, well mandated, and well resourced trans-national structures at the inter-departmental co-ordination and technical levels, in addition to themselves assuming the roles of political champions and thereby proactively taking on the attendant risks.

Subsequently, the governments of Mozambique and South Africa have agreed to the formation of the Maputo Corridor Company (MCC) – a facilitating entity representing both public and private sector interests.

On the *South African side*, the MCC was quickly established. The Mpumalanga Province assumed increasing responsibility and developed numerous initiatives to drive the planning process forward. The "Maputo Development Corridor Provincial Technical Committee" meets periodically to ensure proper planning, organisation and coordination of the Corridor development with the provincial planning process. It is supported by the South African MCC, which has started implementing a number of special initiatives including policy research, training of public officials in project preparation and evaluation, demonstration projects, the promotion of cluster processes, policy support to national and provincial decision makers and a study on "borderlands" development.

On the *Mozambican side*, key transport components and some highly visible investment projects (notably a major aluminium plant - Mozal) were initiated and implemented quickly, but other aspects of the envisioned process have lagged behind. Systematic follow-up, in terms of policy analysis, enterprise promotion, sectoral studies and capacity-building, has not taken place. The promotional/facilitating role of the public sector has not been well defined or effective. Moreover, in Mozambique the corridor coordinating bodies at the ministerial and technical levels have not been very active and the provincial and municipal governments have had little or no involvement. While the MCC in SA had been put in place as part of the Mpumalanga provincial administration, all efforts to create the bi-national company with Mozambique and appoint a chairman and staff have thus far failed.

With private sector corridor development gaining speed on the ground, the Mozambican authorities, foremost the Ministry of Transport and Communications (MTC), which is nominated in the bilateral agreements as the corridor coordinator, have realised that it is essential to reassess their arrangements for Corridor planning and coordination. If this is not done, the government may risk missing major opportunities to promote benefits in terms of growth, employment, local participation, regional integration and environmental sustainability. Late in the 1990s, the World Bank therefore agreed to assist Mozambique in carrying out an assessment of the public sector planning requirements and options for effective coordination of the corridor development in Mozambique. This assessment was undertaken by Lindfield.

1.2. Research need

For any initiative or project, an *ex ante* assessment of impacts constitutes an important element of project management at the strategic level. Having recognised this need in the case of the MDC, the Development Bank of Southern Africa (DBSA) has invited tenders from interested parties for a project that involves the evaluation of actual progress made since the launch of the MDC initiative, the identification of actions needed where actual performance has fallen short of expectations and the establishment of a tracking system to monitor, evaluate and disseminate information on an ongoing basis. The latter of these requirements (tracking system) has since been dismissed. The original Terms of Reference for this project is attached hereto as Appendix A.

1.3. Study objective

The MDC project was initiated for a number of specific objectives, as listed in Section 1. These objectives constitute a mixture of *"enabling factors"* (e.g. investment in transport infrastructure and institutional arrangements with the aim of creating an enabling environment for economic growth and development) and *"desired outcomes"* (e.g. positive macro- ad socio-economic impacts that are sustainable in terms of their impact on the environment). It is important to take stock of the situation which, in theory, should include both "enabling factors" and "desired outcomes" in order to determine whether these objectives have been met and, where this is not the case, to suggest corrective measures. The study deliverables will

therefore serve to *inform decision makers and key players* about progress made and the need for interventions in the case of bottlenecks hampering progress.

1.4. Study deliverables

Given the objectives of the study as listed above, the deliverables for this study are twofold, namely:

- An assessment of first phase of MDC to monitor progress and the degree to which expectations have been met
- Recommendations aimed at speeding up progress in cases where performance has been lacking or is unacceptably slow.

1.5. Scope of study

The scope of the study can be described from both a spatial and information perspective. From a *spatial* point of view, the study area will involve the *MDC area* as well as the *reference area*. The MDC area could be defined in terms of the following:

- The primary corridor region – comprising the transport and communication infrastructure itself (roads, railways, ports and communications) which link Witbank and Maputo, including the main urban centres in the area between Witbank and Maputo Port
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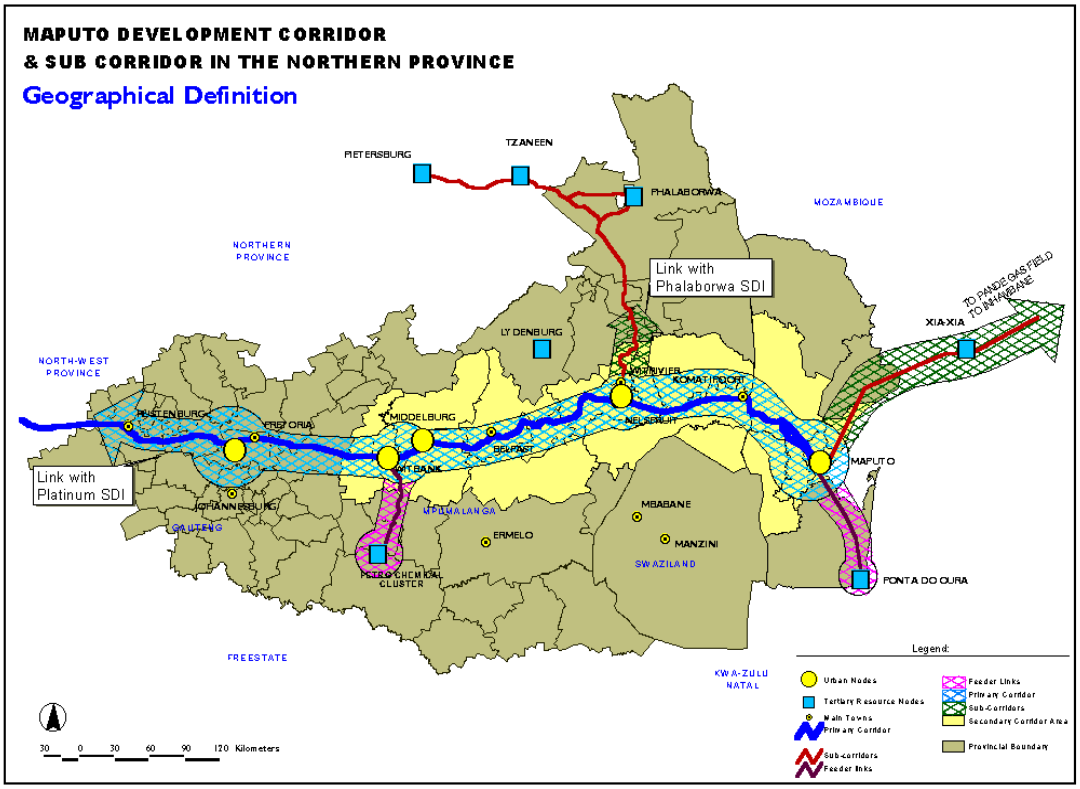
The geographic definition of the MDC, as conceived at its inception, is depicted in Map 1.1 below.



Map 1.1: Geographical definition of the MDC

From an *information* point of view, the study will involve those indicators listed in Section 1.6 below.

1.6. Study method

A logical "immediate" consequence to be expected from the MDC initiative is increased levels of passenger and freight movement along the corridor. The study therefore firstly involves an analysis of transport patterns along the corridor during the analysis period. It then focuses on changes in the values of selected indicators during this period. Indicators considered for this purpose can be grouped under the headings "macro-economic", "socio-economic" and "environmental". The objective of this analysis was to determine if positive changes (in terms of these indicators) were more pronounced in areas close to the corridor than in areas further removed from the corridor, from which the "success" or "failure" of the initiative could be inferred. The logic of this approach is explained in Section 3 of this report. This analysis of macro-economic impacts is supplemented by a comparison of actual performance with projections made by Capricon in 1995. Finally, attention is focused on constraints and opportunities regarding a number of success factors in respect of the MDC initiative, as established during interactions with key players from the private and public sector.

The process outlined above is summarised below.

1. Analysis of movement along the corridor

2. Analysis of macro-economic impacts

3. Analysis of socio-economic impacts

4. Analysis of environmental impacts

5. Analysis of constraints and opportunities

6. Conclusions and recommendations

1.7. Structure of report

Following this introductory section, an overview of the study area is presented in Section 2. Section 3 contains an exposition of the framework underlying the analyses in subsequent sections of the report. Section 4 contains an analysis of the movement of passengers and freight along the corridor. Section 5 focuses on macro-economic impacts in the study area. Likewise, Section 6 deals with socio-economic and environmental impacts. Study findings are summarised in Section 7. Section 8 focuses on constraints and opportunities, as established during interactions with key stakeholders from the public and private sector. Conclusions and recommendations are listed in Section 9. Appendix A contains the Terms of Reference.

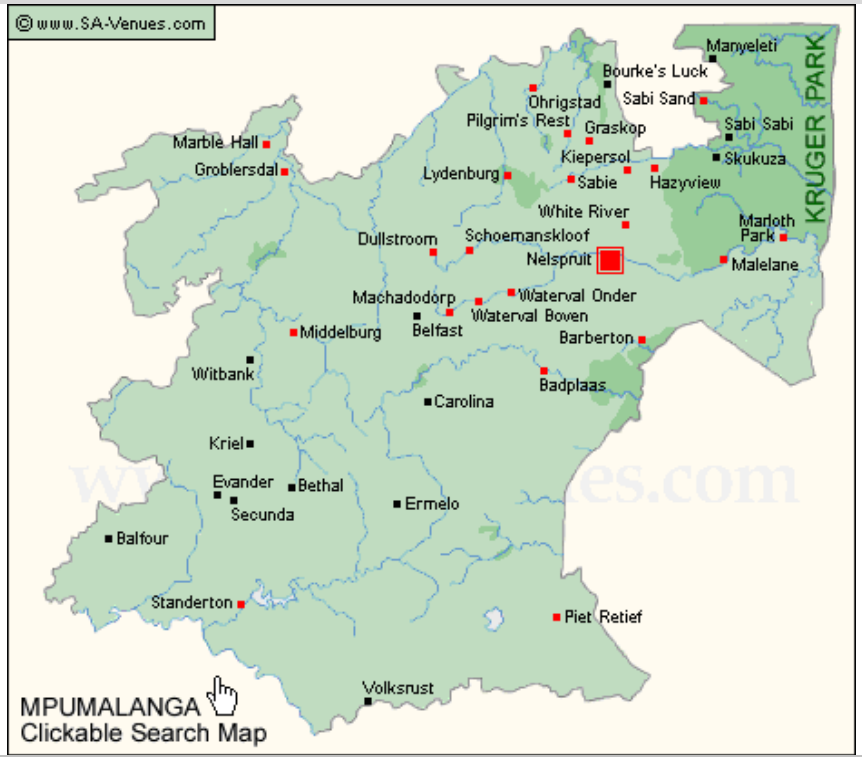
2. OVERVIEW OF STUDY AREA

2.1. Introduction

Key features of the study are given in Section 2.2 and Section 2.3 for Mpumalanga and the Maputo Province respectively. Section 2.4 provides further background in terms of aspects such as freight volumes on selected routes in the region, population distribution and growth, income per capita, distribution of economic activities and areas of current economic activity. This information serves to provide the necessary context for subsequent sections of the report.

2.2. Mpumalanga Province

MPUMALANGA PROVINCE AT A GLANCE



Area	• 83 000km^2 • 6 percent of South Africa's land mass
Capital	• Nelspruit
Population	• 3 million • 7 percent of South Africa's population
Mpumalanga's population can be broken down as follows	• Male: 48.6 percent • Female: 51.4 percent • African: 89.2 percent • White: 9 percent • Coloured: 0.7 percent

	• Indian: 0.5 percent
Principal languages	• SiSwati 30 percent • IsiZulu 25,4 percent • IsiNdebele 12,5 percent
Gross Geographical Product (GGP) GGP = GDP of a region	• R55 billion, approximately USD 7.2 billion • 8.4 percent of South Africa's GDP

Provincial Gross Geographic Product: each sector's contribution to the Province's GGP

Electricity & water	20 percent
General/Government	8 percent
Agric & Forestry	8 percent
Mining	20 percent
Manufacturing	26 percent
Tourism	8 percent
Other	11 percent

Mpumalanga's contribution to the total South Africa Production by sector:

Electricity	41 percent
Mining	19 percent
Agriculture & Forestry	14 percent
Manufacturing	9 percent
Wood & Wood Products	32 percent
Basic iron & steel	23 percent
Chemicals	22 percent
Paper & Pulp	12 percent

Human Development Index	• Mpumalanga 0.693 • South Africa 0.677
Personal Income Per Capita	• Mpumalanga R 8 789 • South Africa R10 560

(Source: Europa World Year Book 2002, NI World Guide 2001/2002; …..

2.3. Maputo Province

MAPUTO PROVINCE AND CITY AT A GLANCE

Area	• 22 989 km^2 • 3 percent of Mozambique's surface area • 13 percent of the Southern region
Capital	• Matola Capital city of Maputo Province • Maputo, Capital of Mozambique
Population of Maputo city and province, 2000	• 2 million • Maputo city 6 percent and Maputo Province 5 percent of Mozambican's population
Maputo city's population can be broken down by sex and race	

	Maputo Province	**Maputo city**
Male	48 percent	49 percent
Female	52 percent	51 percent
Black	98.5 percent	95 percent
Mixed	1. percent	3 percent
White	0.1 percent	1 percent
Other	0.4 percent	1 percent

INE. Census 1997

Principal languages

	Maputo Province	Maputo city
Xichangana	44 percent	34 percent
Xirhonga	26 percent	21 percent
Cichopi	4.9 percent	5 percent
Xitswa	5.1 percent	5 percent
Portuguese	13 percent	25 percent

INE. Census 1997

Gross Geographical Product (GGP), 2000

GGP = GDP of a region

GGP at real price (base 1996)	**Maputo Province**	**Maputo city**
GGP (Billion Meticais)	2.4	16.5
GGP (Million USD)	159	1,086
percent of Mozambique's GDP	5.4 percent	37 percent

Source: UNDP. 2002.

Sector's contribution to the Province's GGP

	Maputo Province	Maputo city
Agriculture, livestock, forestry, fisheries & mining	16 percent	4 percent
Manufacturing, Electricity and Water	29 percent	24 percent
Construction	22 percent	21 percent
Trade	13 percent	32 percent
Transport & Telecom.	12 percent	11 percent
Other (Financing, Education, Health, Tourism, Public administration & other)	8 percent	8 percent

Source: UNDP. 2002.

Maputo province and city's contribution to the total Mozambique Production by sector:	

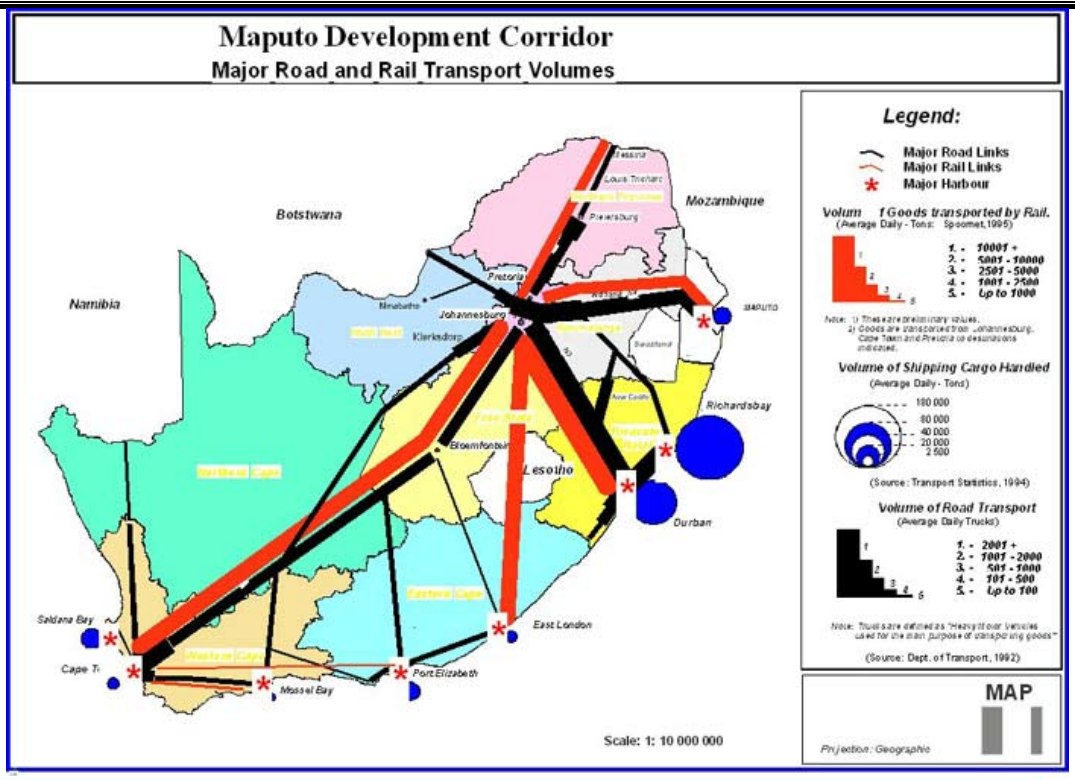
	Maputo Province	Maputo city
Agriculture, livestock, forestry, fisheries & mining	3 percent	5 percent
Manufacturing, Electricity and Water	10 percent	58 percent
Construction	12 percent	74 percent
Trade and Transport & commu.	4 percent	48 percent
Restaurants and hotels	1 percent	76 percent
Other (Financing, Education, Health, Tourism, Public administration & other)	4 percent	24 percent

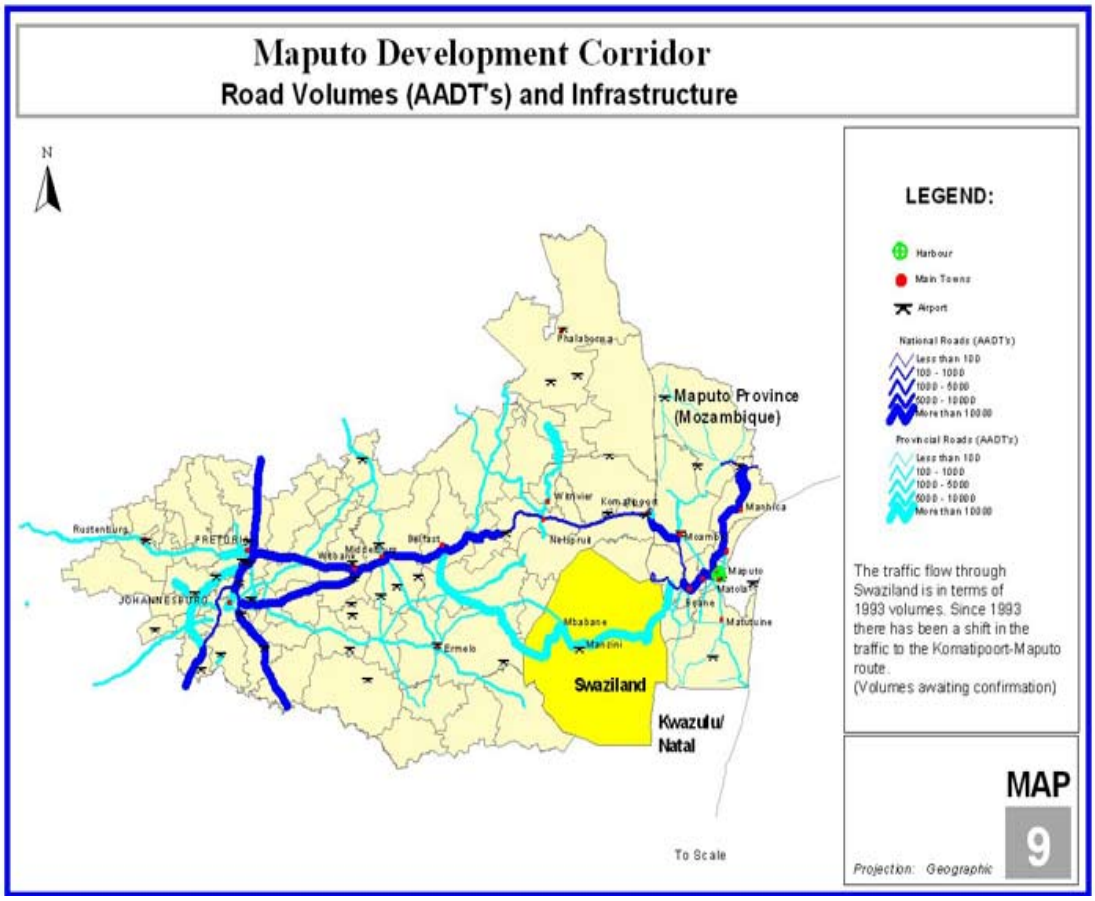
Source: UNDP. 2002.

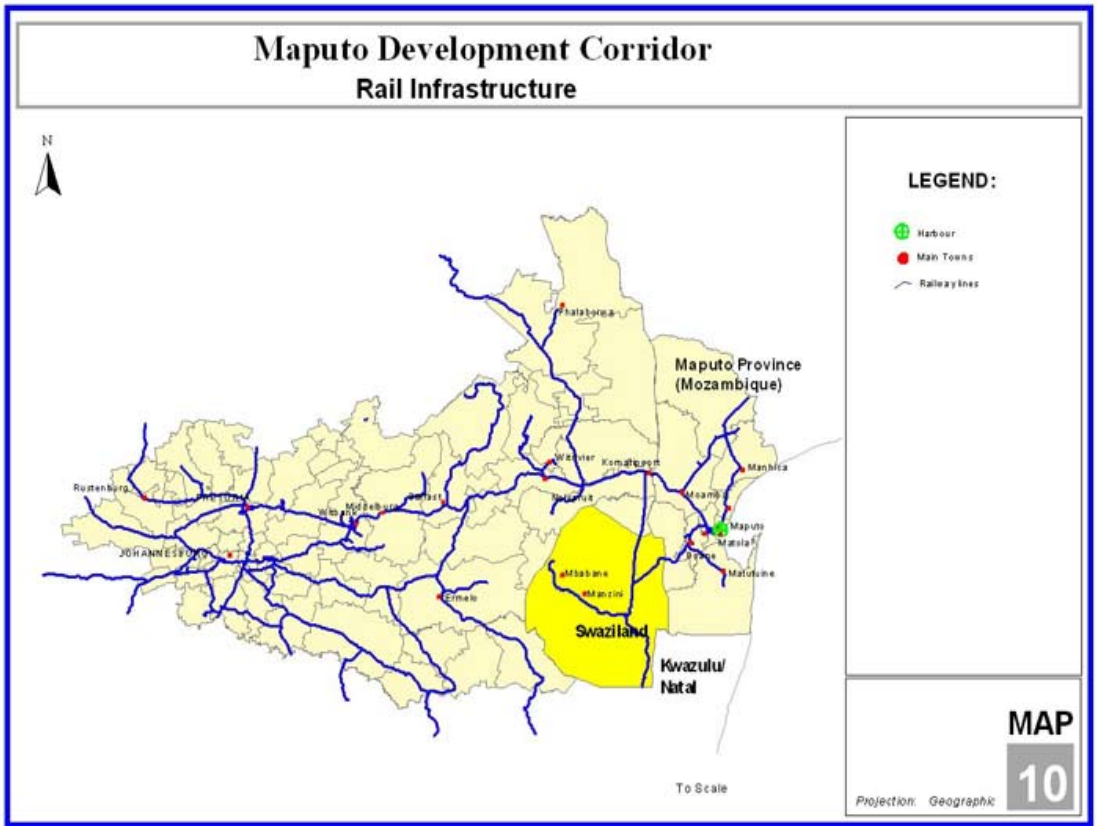
Human Development Index (2000) Adjusted to the international UNDP value	• Maputo city 0.746 • Maputo Province 0.328 • Mozambique 0.332
Personal Income Per Capita	• Maputo city USD 1,068 • Maputo Province USD 171 • Mozambique USD 171

2.4. Key features of the MDC

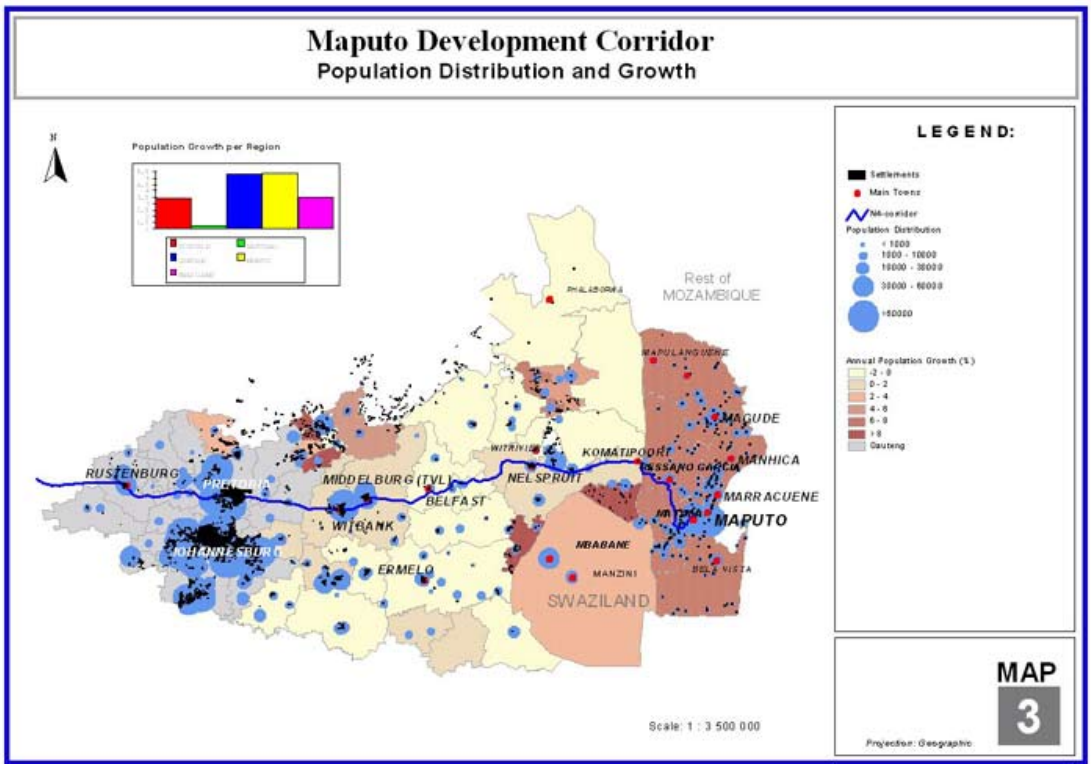
2.4.1 Freight volumes and infrastructure on selected routes


Maputo Development Corridor
Major Road and Rail Transport Volumes
Legend:
Major Road Links
Major Rail Links
Major Harbour
Volume of Goods transported by Rail.
(Average Daily - Tons: Spoornet,1995)
Volume of Shipping Cargo Handled
(Average Daily - Tons)
(Source: Transport Statistics, 1994)
Volume of Road Transport
(Average Daily Trucks)
(Source: Dept. of Transport, 1992)
Botswana
Mozambique
Namibia
Lesotho
Swaziland
Pretoria
Johannesburg
Durban
Richardsbay
East London
Port Elizabeth
Mossel Bay
Saldana Bay
Cape Town
Bloemfontein
Scale: 1: 10 000 000
Projection: Geographic
MAP
11

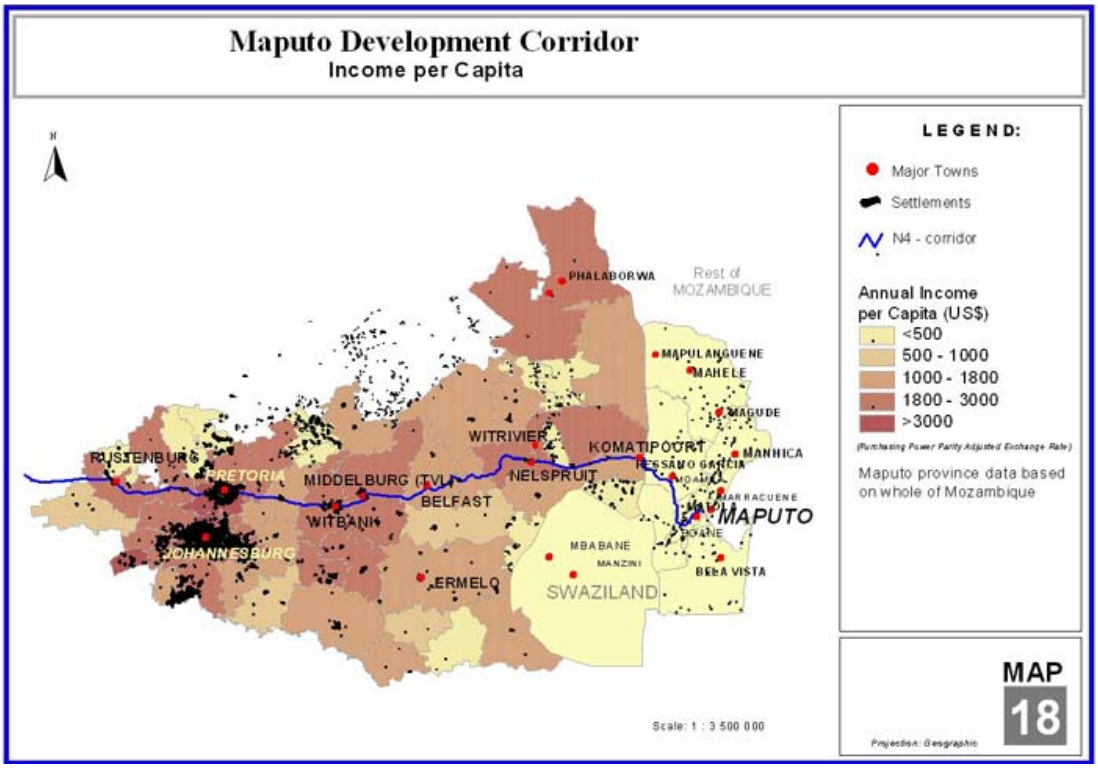

Maputo Development Corridor
Road Volumes (AADT's) and Infrastructure
N
LEGEND:
Harbour
Main Towns
Airport
National Roads (AADT's)
Provincial Roads (AADT's)
Maputo Province
(Mozambique)
Swaziland
Kwazulu/
Natal
JOHANNESBURG
PRETORIA
Rustenburg
Witbank
Middelburg
Belfast
Nelspruit
Komatipoort
Manhica
Maputo
Matola
Boane
Matutuine
Mbabane
Manzini
Ermelo
Phalaborwa
The traffic flow through Swaziland is in terms of 1993 volumes. Since 1993 there has been a shift in the traffic to the Komatipoort-Maputo route.
(Volumes awaiting confirmation)
To Scale
Projection: Geographic
MAP
9



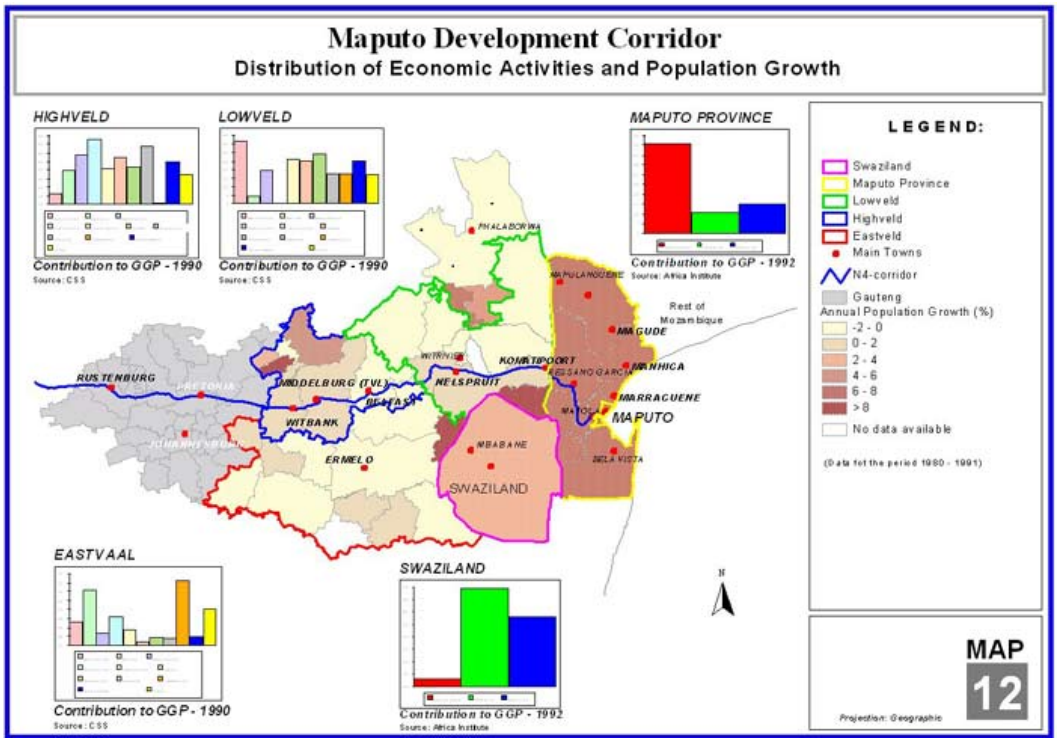
2.4.2 Population distribution



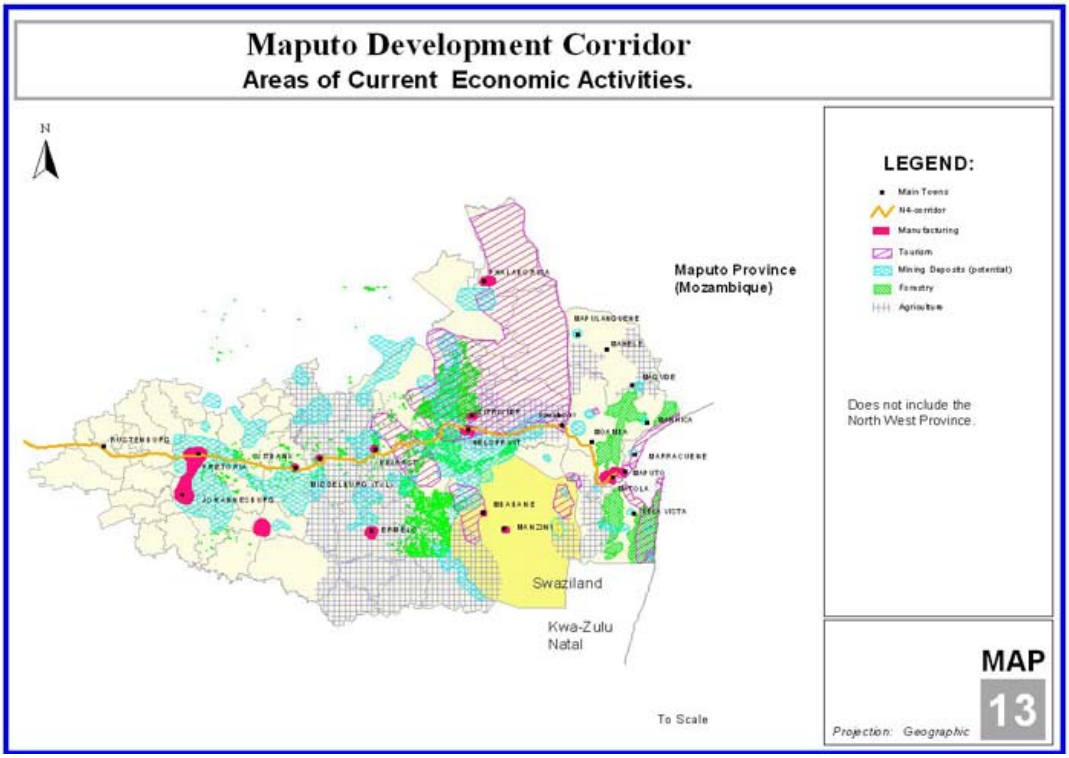
2.4.3 Income per capita


Maputo Development Corridor
Income per Capita
LEGEND:
Major Towns
Settlements
N4 - corridor
Annual Income per Capita (US$)
<500
500 - 1000
1000 - 1800
1800 - 3000
>3000
(Purchasing Power Parity Adjusted Exchange Rate)
Maputo province data based on whole of Mozambique
MAP 18
Projection: Geographic
Scale: 1 : 3 500 000
PHALABORWA
Rest of MOZAMBIQUE
MAPULANGUENE
MAHELE
MAGUDE
WITRIVIER
KOMATIPOORT
MANHICA
RUSTENBURG
PRETORIA
MIDDELBURG (TVL)
NELSPRUIT
BELFAST
WITBANK
JOHANNESBURG
ERMELO
MBABANE
MANZINI
SWAZILAND
BELA VISTA
MAPUTO

2.4.4 Distribution of economic activities and population growth



2.4.5 Areas of current economic activities



3. ANALYSIS FRAMEWORK

3.1. Introduction

This section discusses key concepts relevant to this study such as "spatial development initiative", "development corridor" and "anchor project". It explains the need for effective and efficient management of spatial development initiatives at both the strategic and operational levels, given the interrelationships between the elements of such initiatives and the consequent need for coordination. It also explains the relationship between enabling factors and desired outcomes. This is done to provide the necessary context for the approach adopted for the purpose of this study, as explained in Section 3.4.

3.2. Background to spatial development initiatives and anchor projects

3.2.1 Spatial Development Initiatives

A Spatial Development Initiative (SDI) can be defined as a type of regional development initiative aimed at unlocking the economic possibilities of specific areas with inherent potential for economic growth. The key economic factor justifying or driving the development of an SDI is transport cost savings and logistics. Other aspects are inherent economic potential, public-private partnerships, political commitment, and rapid planning and delivery. Particular emphasis is also placed on participative planning and networking as a means to create cross-border and public-private partnerships.

The 'ideal' SDI should comprise all of the following:

- *Anchor projects*, such as a major road project, linked to a port upgrading project, a major freight distribution centre and an industrial investment project;
- *Supplementary projects and programmes*, such as supporting infrastructure investment to create sub-corridors or local logistical support centres; Local Economic Development (LED) initiatives, and support programmes to assist small and emerging entrepreneurs;
- *Institutional, management and promotional initiatives*, including initiatives to build the entrepreneurial capacity of local government institutions, the establishment of environmental management frameworks, cross-border institutional arrangements, private-public partnerships, investment promotion, etc.

3.2.2 Development corridors as a special type of SDI

In the broadest sense, a development corridor is a geographic linkage created by policy decisions for the express purpose of economic development within certain regions. Development corridors can take many forms, but often manifest as a linear geographic area bisected by an existing or potential infrastructure route "spine". Such infrastructure enables access to points at both ends of, and within, the corridor, and is usually the critical link spurring development along the corridor. Often, investments in upgrading or constructing new spine highways, rail lines, canals, gas/oil pipelines,

or communications infrastructure are made to enhance opportunities within the corridor.

3.2.3 Anchor projects as building blocks of development corridors

Corridors can also be seen as a *combination of anchor projects*. Anchor projects are typically large core projects aimed at stimulating key resource-based industries, economic activity corridors or industrial-logistical complexes. Anchor projects are intended as both catalytic and integrative. They constitute the building blocks of SDIs and development corridors.

Figure 3.1 below provides a broad classification of the different types of anchor projects that could comprise a development corridor. This figure shows that anchor projects (or project packages) could be grouped under the headings *industrial* projects or *economic infrastructure* projects. The latter group could be both linkage infrastructure and water and energy infrastructure projects. Figure 3.1 also shows the need for coordination requirements between anchor projects (see also Section 2.1.3 below).

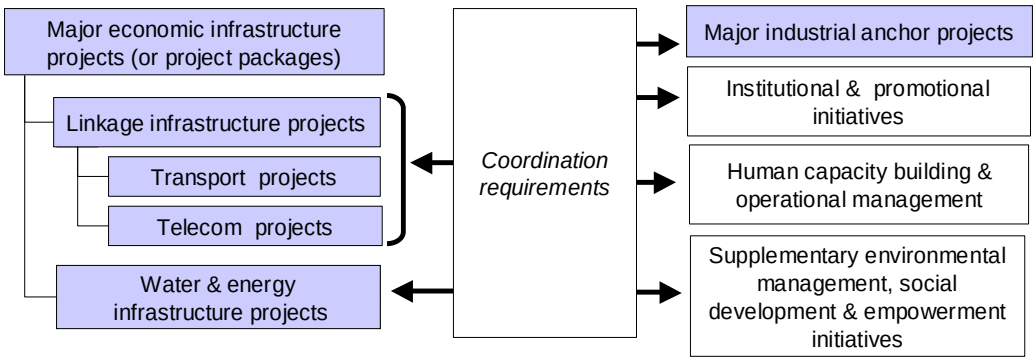


Figure 3.1: Types of anchor projects

3.2.4 Coordination requirements

Figure 3.1 also highlights a number of critical coordination requirements. Most of these relate to the oft-repeated adage that infrastructure is necessary but not sufficient for development (see box below).

"Infrastructure is necessary, but not sufficient"

- While investment in strategic infrastructure systems is a necessary condition for economic development, it is not sufficient for that purpose. Infrastructure, by itself, cannot ensure the economic development of underdeveloped areas.
- Infrastructure can induce economic development only if an economic base exists and/or a potential economic base can be developed, and if the infrastructure investment is part of a coherent package of development initiatives.
- The appropriate package of development initiatives must overcome certain critical development thresholds before a self-sustaining development process is set in motion.

Besides the need for good *coordination between investment activities* – i.e. investment in economic infrastructure and industrial anchor projects – there is a need to ensure effective promotion of the corridor. This, in turn, depends critically on the establishment of a *shared vision* among the constituent sub-regions. This vision should ideally be based on a good understanding and common appreciation of the requirements for sustainable development, embracing environmental, economic and social objectives.

The need for inter-linked initiatives to ensure the requisite human capacity building and operational management is also highlighted, since inadequate attention to these factors is one of the main reasons why anchor projects become "white elephants".

Finally, the bottom right hand box underlines the importance of supplementary environmental management, social development and empowerment initiatives.

3.3. Relationship between enabling factors and desired outcomes

For the purpose of this project, it is useful to classify the objectives identified for the corridor at the time of its inception under the headings *enabling factors* and *desired outcomes*. *Enabling factors* are defined as those interventions needed for creating an environment conducive to economic growth and development. They would typically comprise interventions of both an infrastructure and institutional nature and would give rise to immediate (direct) and positive transport-related impacts such as reduced transport cost, shorter transit times and improved system reliability. *Desired outcomes* are defined as "positive" outcomes resulting from an enabling environment, in particular an improved transport system. They would typically be measurable in terms of tangible impacts under the following headings:

- macro-economic impacts.
- socio-economic impacts.
- environmental impacts.

Figure 3.2 below provides a logical framework for unpacking the key enabling factors and the outcomes, and analysing the causal linkages between them.

Given that the MDC is a transport-related development corridor, most of the indicated causal effects relate to the commonly expected relationships between transport investment and economic development. These can be classified into three broad categories.

The *first* of these is the direct effect of transport investment *on access to markets, services and resources*, reflected by, or resulting in:

- Changes in the comparative transport costs, logistics efficiency and/or competitiveness of existing economic activities in all of the sub-regions or local areas that may be traversed by the corridor.

- The development of new economic or trade linkages (local, national, trans-frontier and/or international)[1].
- Attraction of new businesses.

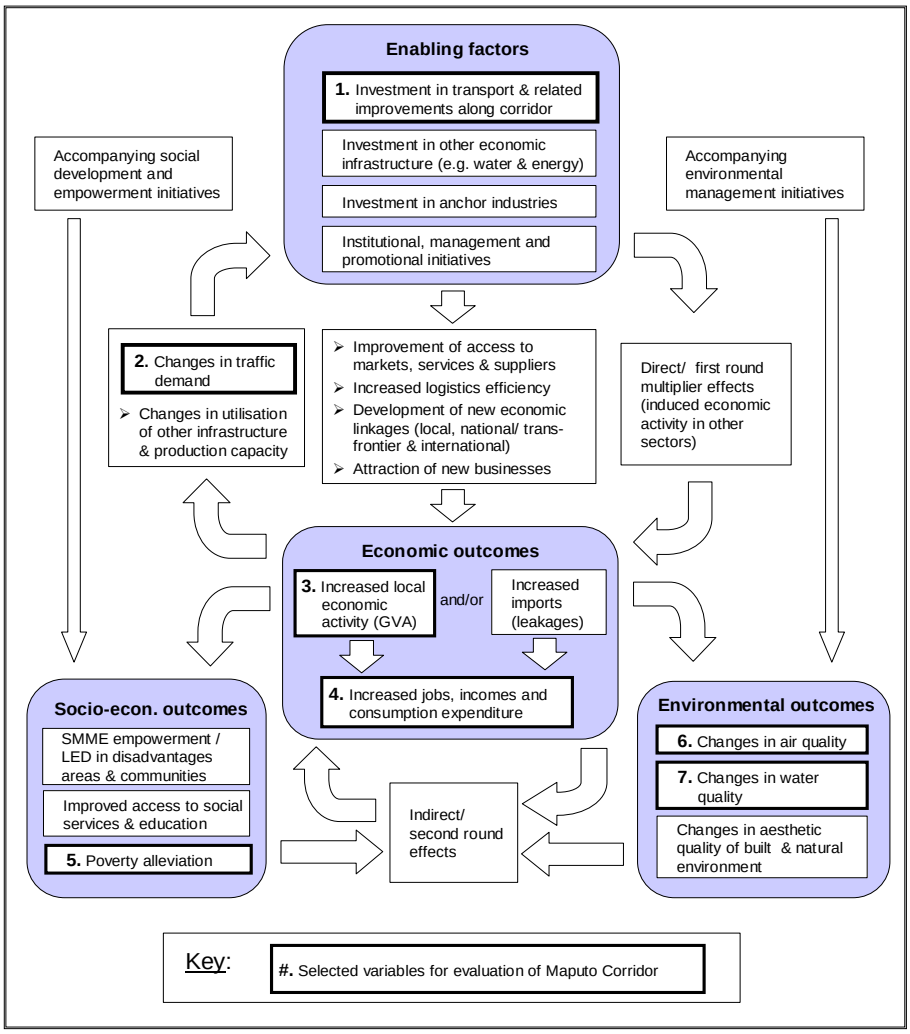


Figure 3.2: Linkage between enabling factors and outcomes

The *second* type of effect is the direct multiplier effect of increased transport expenditure – both during the *construction* and *operation* of new transport and related assets.

The *third* type of effect comprises the indirect or second-round impacts, following increases (or reductions) in the volume of local economic activity, employment creation, and changes in consumption expenditure. In the diagram it is shown that the second round effects also include the consequences of *induced socio-economic*

[1] It needs to be considered that the inducement of new linkages and activities are usually lagged (i.e. held up for a while) by the need for capital investment and other forms of capacity building. Because of this, and the possibility of considerable leakage to other areas with more established industries and labour competencies, the induced local impacts of a new growth sector (e.g. tourism) or transport anchor project are often disappointingly low.

development (e.g. a more educated workforce due to improved access to education) and *environmental changes* (e.g. worsening environmental quality leading to the closure of eco-tourism and related businesses).

3.4. Analysis methodology

3.4.1 Introduction

It is clear that the project impacts can be evaluated in at least two ways. Firstly, attention can be focused on the spatial distribution of impacts. Secondly, actual impacts can be compared to impacts anticipated at the inception stage of the project. These two approaches are discussed in Sections 3.4.2 and 3.4.3 below:

3.4.2 Spatial distribution of project impacts

Given the outline in Sections 3.2 and 3.3 above, it follows that the MDC was initiated for the sake of its anticipated "positive" impacts. The analysis of the *spatial distribution of project impacts* therefore implies testing the hypothesis that areas in close proximity of the corridor should have revealed a faster rate of change during the analysis period in respect of key indicators than areas further removed from the corridor. As was outlined in Section 1.6, this approach firstly involves an analysis of transport patterns during the analysis period to determine if the MDC initiative has indeed resulted in increased levels of passenger and freight movement along the corridor. It then focuses on changes in the values of selected indicators during this period. Indicators considered for this purpose can be grouped under the headings "macro-economic", "socio-economic" and "environmental". The objective of this analysis was to determine if positive changes (i.e. growth per annum in respect of these indicators) were more pronounced in areas close to the corridor than in areas further removed from the corridor, from which the "success" or "failure" of the initiative could be inferred.

3.4.3 Economic projections *with* and w*ithout* the MDC

This approach involves a comparison of project impacts on a *with and without* basis (i.e. with and without the MDC initiative) over an appropriate analysis period. This approach is consistent with the integrated approach and modelling technique outlined at the onset of the MDC by Capricon (1995) and aimed at quantifying the potential economic impact of the MDC on the Mpumalanga Province. Capricon's assessment is conceptually and methodologically useful for the present study and, indeed, at least for the South African area of the MDC, provides an *ex ante* assessment reference against which *ex post* impacts can be compared.

3.5. Study limitations and constraints

It is important to note that the issue of *causality* constitutes a limitation regarding the interpretation of the results of the study as the link between infrastructure and development cannot be statistically proven. In addition, further analysis at a more detailed level, e.g. local economic development, proved to be not possible due to time and data constraints and the inherent difficulty of this type of study.

4. ANALYSIS OF MOVEMENT ALONG THE CORRIDOR

4.1. Introduction

This section involves an analysis of movement along the corridor in order to determine the nature and extent to which the implementation of the project has led to increased passenger and freight volumes. To this end, attention is focussed on the level of activity at the border post, and traffic volumes for road, rail and air. It is, however appropriate to first provide an overview of infrastructure and traffic in Mozambique, with particular emphasis on the southern part of the country, for this is the nearest get away to Johannesburg and the obvious natural international access point for South Africa's eastern province of Mpumalanga.

4.2. Transport infrastructure and traffic in Mozambique

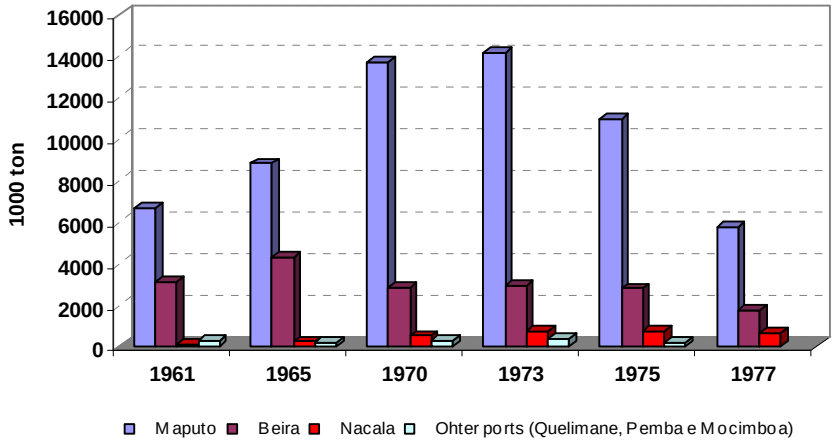
The transport needs of Mozambique are served by four modes of transport: road, rail, coastal shipping and air. Freight and passenger services are provided by all modes, except coastal shipping for passengers. The transport network in Mozambique is comprised of about:

- 28 000 km of classified roads;
- 3 000 km of railways (about 50 percent of which are operational);
- Five international airports (Maputo, Beira, Nampula, Pemba and Vilankoulus);
- Fourteen secondary airports;
- Three primary ports (Maputo, Beira, Quelimane);
- Fifteen secondary and tertiary ports.

The transport system in the east-west direction is much more developed than in the north-south direction due to the much higher demand on Mozambican's transport to and from the neighbouring South Africa, Zimbabwe and Malawi, Swaziland, and Zambia, particularly rail and port services, in the form of transit traffic.

The transit traffic is important not only to the railway corridors in Mozambique, but also to the country as a whole. In 1977, that is two years after the independence of the country, the transit traffic earned almost 100 million US dollars, more than a quarter of all foreign currency earnings at that time. This earning capacity was very unevenly distributed, as one can infer from Figure 4.1, which shows the tonnage traffic by region: south, centre and north.

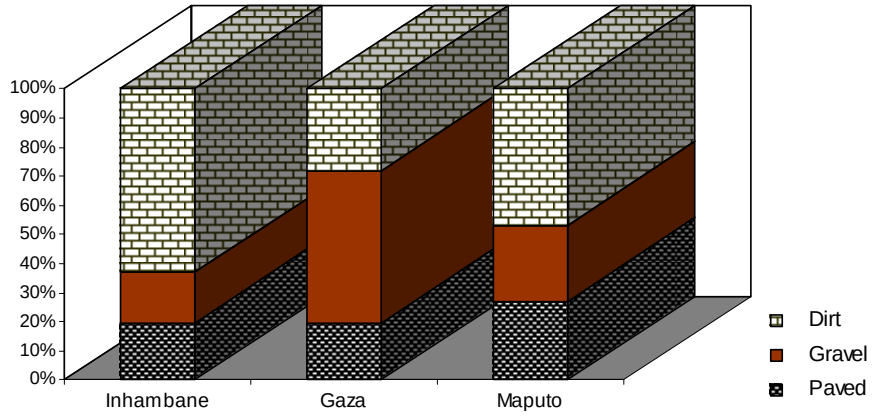
Figure 4.1: Goods Handled in the Mozambican Ports in 1961-1977



The provision of domestic transport infrastructure and services reflect the pattern of economic development in the country. Maputo is the major economic and population centre, with Beira, though much smaller, the second city. Thus, both the shipping and air services, which are the major means of long distance transport for goods and people respectively, are based in Maputo. The shipping services quite definitely, and the air services rather less so, can be characterized as predominant carriers between Maputo and the provinces, with services between provincial centres being of minor importance.

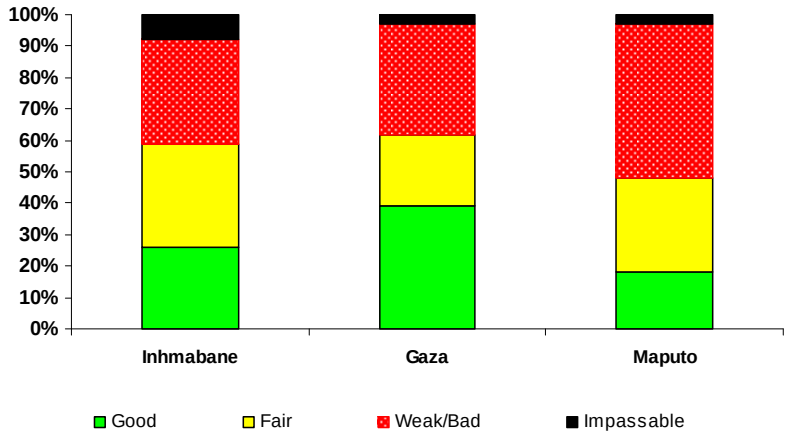
A similar situation can be seen in the road system, with the paved roads being concentrated in the south and the centre. Whilst the network is relatively dense for a country as sparsely populated as Mozambique, it is generally in very poor condition. The vast majority of roads are unpaved, and almost all roads, paved and unpaved, are in serious need of maintenance. Even in the southern region where roads are in a better condition than the rest of the country, only one fifth of roads are paved (see Figure 4.2) and less than one third of the roads are in a good condition (see Figure 4.3). As a consequence of the historical tendency to concentrate on east-west links, the asphalt road intended to link north and south is not yet complete.

Figure 4.2: Type of surface for classified roads in the Souther Region of Mozambique, 2002



Source: INE, 2003

Figure 4.3: Conditions of Classified Roads in the Southern Region of Mozambique 2002



The Maputo Corridor consists of three components: the port of Maputo, the rail network and the road network. Maputo port is one of the most important on the East African coast, with conditions which allow docking by vessels of 100 000 tonne capacity. The installed infrastructure allows handling of 14 million tonnes a year of diverse cargo, including sugar, citrus fruits, cement, steel, coal and petroleum. Its proximity to South Africa's industrial heartland lends it major importance in that country's trade. The port of Beira plays a dominant role in the export of goods from Zimbabwe, Zambia and Malawi. Its handling capacity is 7.5 million tonnes per year. This port is also an important point of linkage with the pipeline to Zimbabwe. With regards to the railway, there is only one line connecting to Zimbabwe, which enables the export of goods from Zambia, Malawi and the Democratic Republic of Congo. The road structure basically includes two roads, which connect it to Zimbabwe and Tete province (via Chimoio). The port of Nacala is regarded as the best deep-water harbour on the East Coast of Africa. It can take ships of any size and plays an

important role in trade to and from Malawi. The rail network consists of a line linking Malawi to Nacala, with 533 km of it inside Mozambican territory (see Table 4.1 below).

Table 4.1: The three main railway corridors in Mozambique: Nacala, Beira, Maputo

The railway lines of the NACALA corridor are:

- The Nacala – Cuamba – Entre-Lagos line, 610km, to the border of Malawi, fully rehabilitated in 1996
- The Cuamba – Lichinga Line, 262km
- The Lumbo – Monapo line, 42km, not operational

Mozambique, Malawi and Zambia have joined forces on a USD 24 million project for the Nacala development Corridor, which include the rehabilitation of 77km of railway line from Malawi to Entre Lagos in Mozambique, the construction of a bridge at Chiromo, and the extension of the railway line from Mchinji to Chipata in Zambia.

The railway lines of the BEIRA corridor are:

- The Beira – Machipanda line, 317km, connecting Beira to Zimbabwe
- The Sena Line, 578km, not operational

The Imhamitanga – Marromeu line, 88km, not operational.

The rail corridor consists of three railways:

- Goba line, 75km, connecting Maputo with Swaziland, with the most part rehabilitated in 1995.
- Ressano Garcia line, 78km, connecting Maputo with South Africa. An international consortium led by Spoornet of South Africa signed an agreement with the Mozambique Ports and Railways (CFM) to run, operate and rehabilitate the Ressano Garcia line.

Limpopo line, 534km, connecting Maputo with Zimbabwe, inaugurated in 1993.

Web: www.cfmnet.co.mz

4.3. Maputo as a gateway to southern Africa: Opportunities and constraints

Map 4.1 depicts the sea routes available to the landlocked Southern African countries and, in particular, the privileged geographical position of Mozambique. In turn, Table 4.2 summarizes recent movements of goods and passengers by transport mode in Mozambique.

Map 4.1: Maputo Corridor, a Gateway to Southern Africa

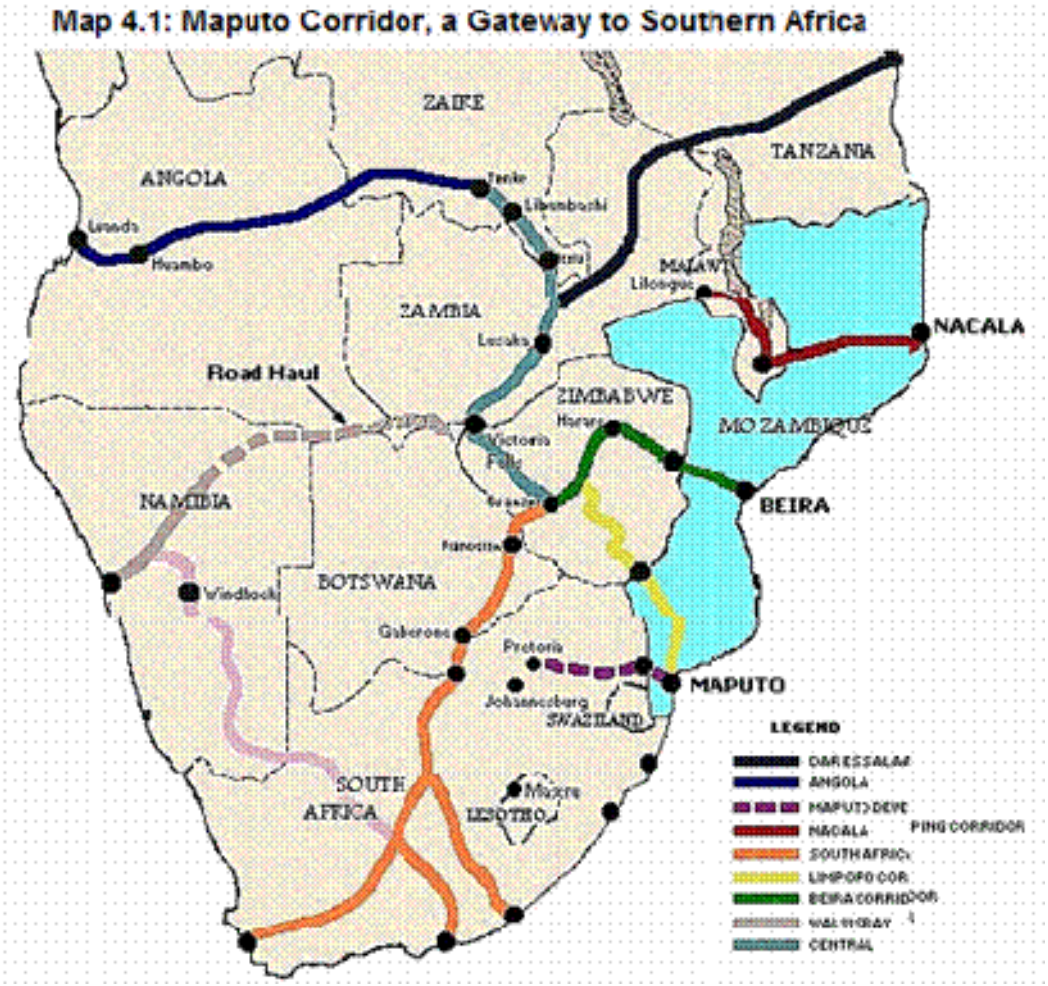


Table 4.2: Traffic distribution by transport mode 2000-2002			
	2000	**2001**	**2002**
Freight (million tonne-Kilometre)			
Rail	605	774	808
Sea	203	247	84
Road	224	245	1151
Air	7.2	7.0	3
Pipeline	233	234	790
Total	**1,272**	**1,164**	**2,837**
Passengers (million tonne-Kilometre)			
Rail (million passenger-kilometre)	130	142	138
Sea	2.2	2.3	85
Road	27,029	36681	7209
Air	378	272	394
Total	**27,539**	**37,097**	**7826**
Harbour traffic ('000 tonne-port)	6,097	7,312	7,312
Source: National Institute of Statistics (INE), *Anuário Estatístico 2001: 79 and 2002: 86*.			

Table 4.3 shows the data on throughput for specific commodities in three main Mozambican ports, Maputo, Beira and Nacala. The traffic is on its way up reaching, in Maputo, four million tonne shipped in the year 2001, though as Figure 4.4 shows, it is still far below the levels reached about three decades ago.

Table 4.3: Throughput per commodity in the main ports, Mozambique

(10^3 ton)

	1997			1999			2001		
	Maputo	**Beira**	**Nacala**	**Maputo**	**Beira**	**Nacala**	**Maputo**	**Beira**	**Nacala**
Agricutlural Products	1096	157	84	720	720	84	779	227	156.7
Fuel	184	1231	135	302	1231	135	371	1182	99.4
Minerals	1296	126	21	1604	126	21	2351	389	59.5
Containers	186	383	228	312	383	228	442	341	324.5
Cement	2	0	0	0	0	0	0	0	0
Timber	1	2	3	2	2	3	0	3	1.6
Fertilizer	0	126	49	5	126	49	0	152	24.8
Various	344	120	122	157	120	122	58	63	76.8
Total	3109	2143	642	3102	2706	642	4002	2356	743.3

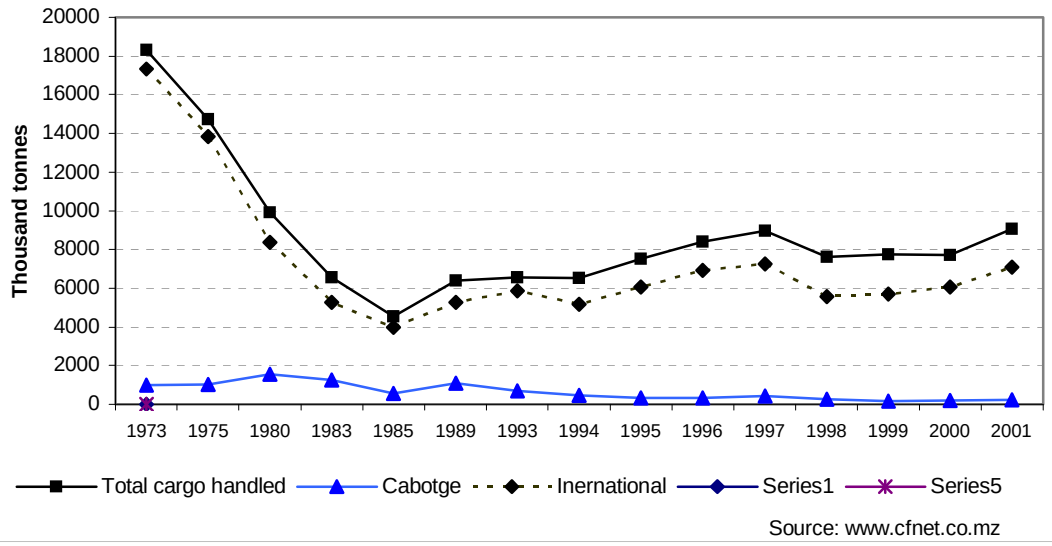
Source: www.cfnet.co.mz/portnacala.htm

The four million tonne handled in the port of Maputo in the year 2001 represent about 56 percent of the total traffic in the three main ports of Mozambique. However, when one compares this traffic in Maputo with the traffic flows in the 1970s, it still represents about 40 percent of the traffic in 1973, mainly because of the low contribution of international traffic, particularly from South Africa.

The domestic traffic in the years 2000 and 2001, when compared to the year 1973, was 141 percent and 154 percent, respectively. This very positive trend of the domestic traffic contrasts with the low level of international traffic, which represented

43 percent of the 1973 level in 2001. This gap in the international traffic is clearly illustrated by Figure 4.4 below.

Figure 4.4: Kinds of Goods Handled in the main ports of Mozambique, 1973-2001



Source: www.cfnet.co.mz

From this, it is evident what the level of international traffic handled in the Mozambican ports could have been if they had already recovered the level reached in 1973 (that is 95 percent of the total handled goods).

If the international weight distribution of the traffic flows today were as the one in 1973, when the domestic traffic represented only 5 percent, then international handled goods in 2001 should be around 28,900 tonnes. Since the international traffic in 2001 was still 7,500 tonne, this represents 43 percent of the level reached in 1973 and about 25 percent of what one can expect it would be if traffic had grown as fast as the domestic traffic during the period 1995-2001 (see Figure 4.5 and 4.6 below).

Figure 4.5: The Opportunity for Growth as depicted by the historical flow of goods in Mozambique, 1968 to 2002

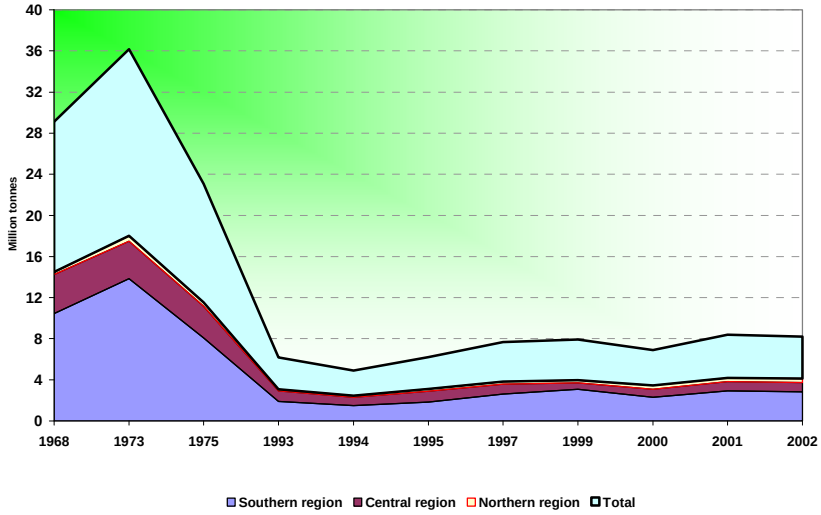
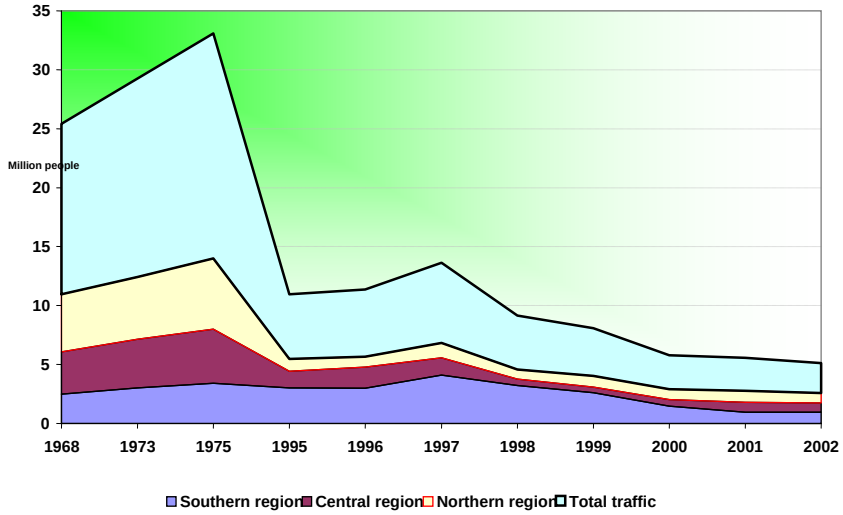


Figure 4.6: The Opportunity for growth as depicted by the historical data on number of railway passengers in Mozambique, 1968 to 2002



4.4. Level of activity at border post

Until fairly recently, the relevant border posts were primarily and strictly controlled by border police. With the change in the South African political situation, this has changed, with a far less control-oriented approach being followed. Border post processes for people not importing or exporting goods are handled by the Department of Home Affairs and involve standard passport and visa checking procedures. Although reliable, data between January 2000 and July 2003 that are kept on people movement across the border are not very detailed, consisting simply of the direction of movement and whether the traveller is South African or foreign. This information is shown in Figure 4.7 below.

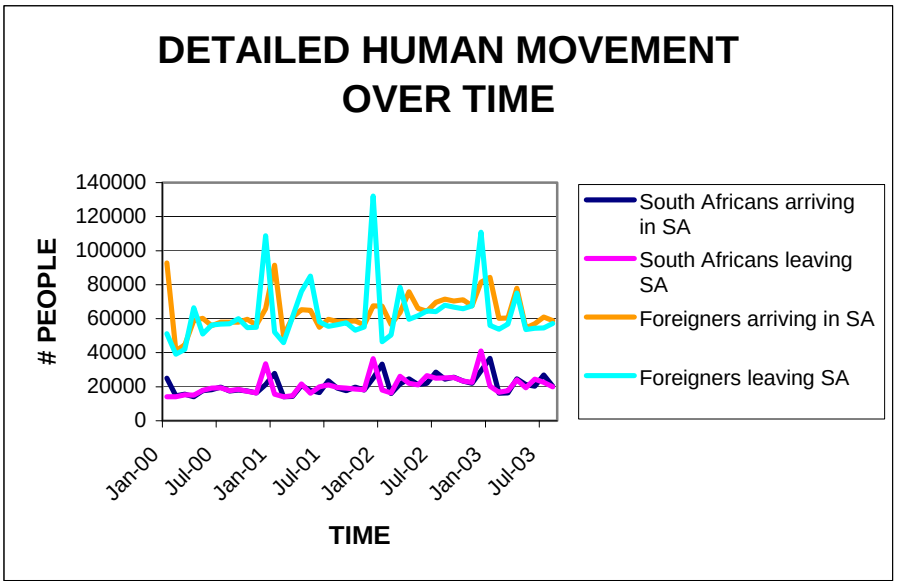


Figure 4.7: Detailed human movement over time

Pre-2000 archived data (from January 1993) consists simply of total people movement (all nationalities and in both directions) per month. This information is shown in Figure 4. 8 below.

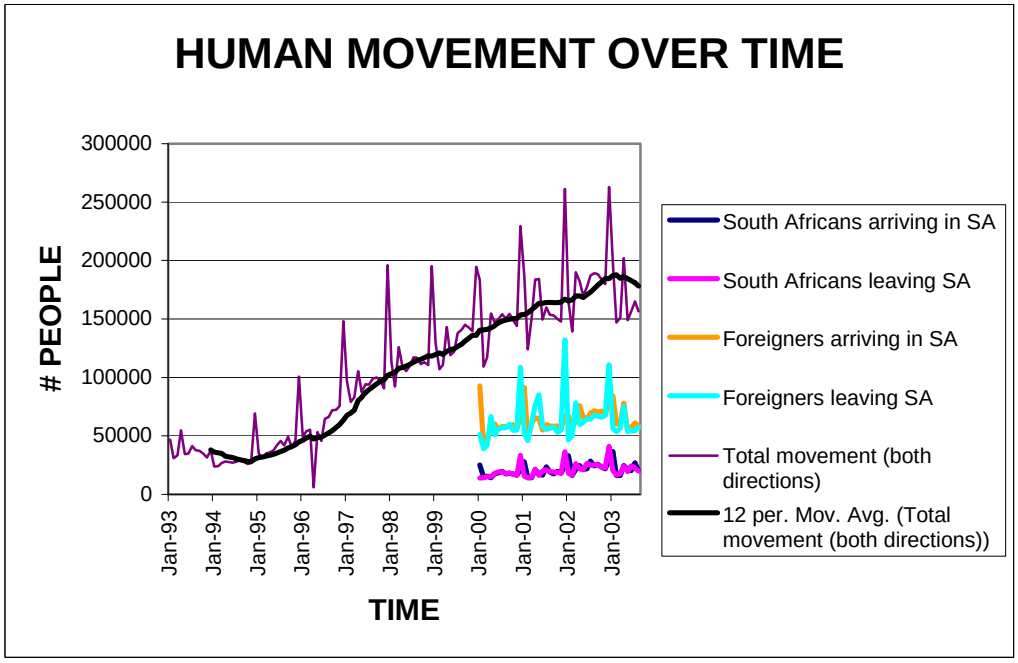


Figure 4.8 Human movement over time

Movement over the border had always been very seasonal, with very high peaks in December. When analysing more recent data, it can be seen that these peaks mainly represent:

- large number of foreigners entering Mozambique; from discussions with border post officials it was learnt that these generally represent Mozambicans working

in South Africa and returning to their families; some of these Mozambicans return to South Africa at the end of the festive season; many so-called "seasonal workers" however, only return later during the year as can be seen from foreigner movement in the detailed graph; and

- South Africans entering Mozambique, usually at the beginning of the festive season, to return either at the end of the season or in the beginning of January, as can be seen from South African movement in the detailed graph.

When smoothing out the peaks in people movement over the border to obtain an *annual* trend line (see thick black line in the figure above), it can be seen that annual people movement over the border had gradually increased from a low in 1995, until it seemed to have peaked in late 2002. This does not seem to be as a result of limitations posed by border post processes and activities *per se* as it is the *average* people movement over the full year that has decreased – the peaks remain consistently high and the pattern (very high peaks in December) have not changed.

4.5. Traffic volume

4.5.1 Road transport

Figure 4.9 below indicates the location of Comprehensive Traffic Observation (CTO) stations as well as toll plazas along the N4 highway. At the CTO stations electronic counting devices are attached to the road surface. These devices are data loggers that capture transport information that move over wires inserted on the road surface. The data is captured daily and processed to provide the National Roads Agency (SANRAL) with data on road traffic along their national highways.

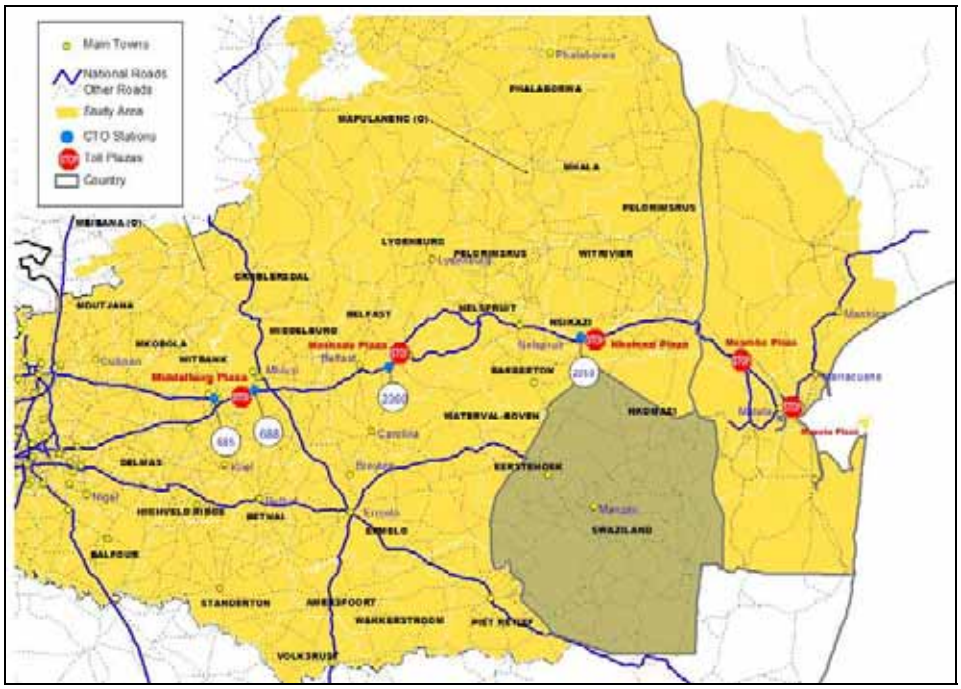


Figure 4.9: Location of CTO stations and toll plazas along the N4 highway

For the purpose of this analysis, time series data for the period 1997 to 2001 were extracted from these four CTO stations along the N4. Data prior to this were not used as some stations were not yet installed or fully operational. No such CTO stations are located in Mozambique. Results for annual daily traffic (ADT) and annual daily truck traffic (ADTT) respectively are shown in Figure 4.10 and Figure 4.11 below.

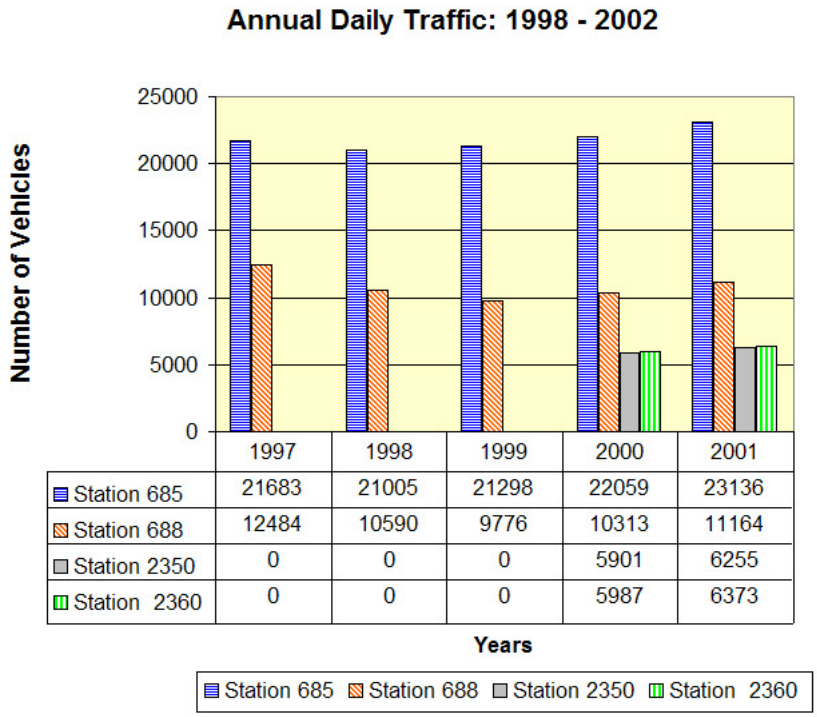


Figure 4.10: Annual daily traffic (ADT) volumes for the period 1998 to 2002 (Source: MICROS, 2003)

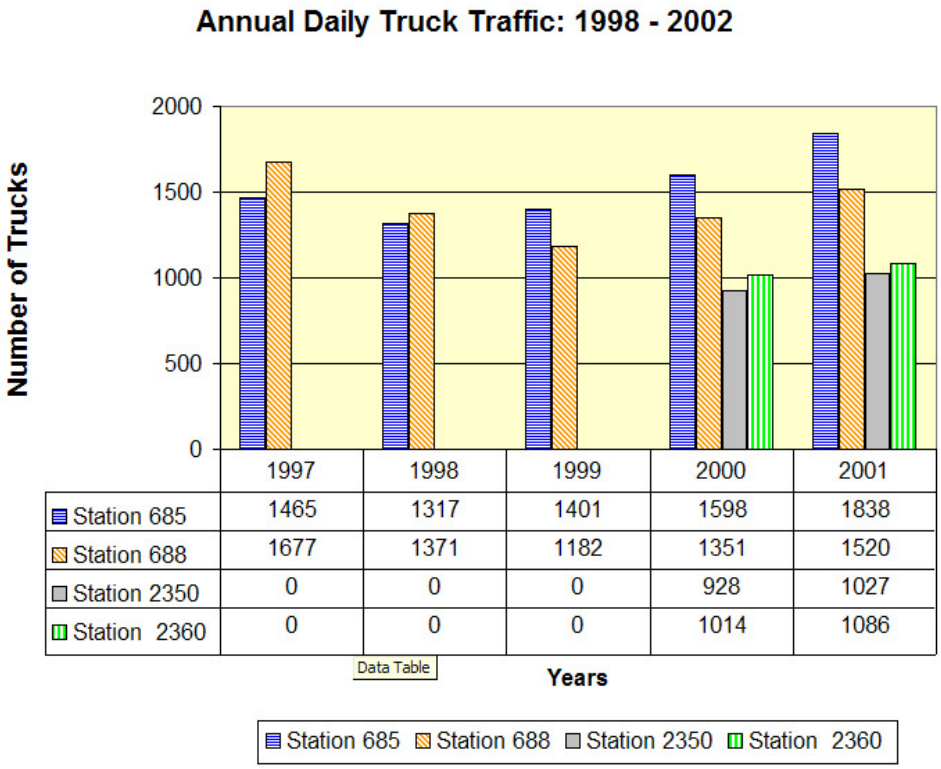


Figure 4.11: Annual daily truck traffic for the period 1998 to 2002 (Source: MICROS, 2003)

From Figure 4.10 (indicating annual daily traffic) it is clear that the relatively higher volume along the corridor occurs west of Machadodorp. The volume of traffic has remained fairly constant along this section and is showing signs of slow growth. Between Nelspruit and the border (Lebombo) the volumes are considerably less and appear to be fairly constant (6000 vehicles per day on average). From Figure 4.11 (indicating truck traffic) it is interesting to note that all along the N4 corridor there appears to be an increasing number of trucks operating on the route. Approximately 60 percent of truck traffic operates east of Machadodorp. It is clear however that agriculture and other activities between Nelspruit and the Lebombo border post contribute substantially to the amount of truck traffic along this section (sugarcane cultivation occurs in this area). This is supported when reviewing the toll plaza information, as this also contains information along the N4 to Maputo city in the Maputo Province.

In addition to the CTO-station data, data was also acquired from Trans African Concessions (TRAC), the current concessionaires of the N4 toll road. TRAC information was supplied for each toll plaza along the N4 for the period 1999 to 2002. As these toll plazas are newly built, no information exists prior to 1998. Given the sensitive nature of the information, the information supplied was limited to total flows. The Moamba plaza is located between the Lebombo border post and Maputo city and provides a good reflection of vehicle flows from/through Maputo city to South Africa. As indicated in Figure 4.12, the amount of traffic through the Moamba plaza is substantially less than those indicated for plazas on the South African side of the Lubombo border. The volume of traffic does appear to have increased annually since 1999 and appears to be growing at an average of 7 percent per year. Based on

discussions with the business sector in the region there is a clear interest in the use of the Maputo Port, especially from South Africa. The tourism industry in Mozambique has also grown, with a few new hotels and resorts being developed since 1995, part of which involved a direct investment of financial resources and human expertise and management from South Africa.

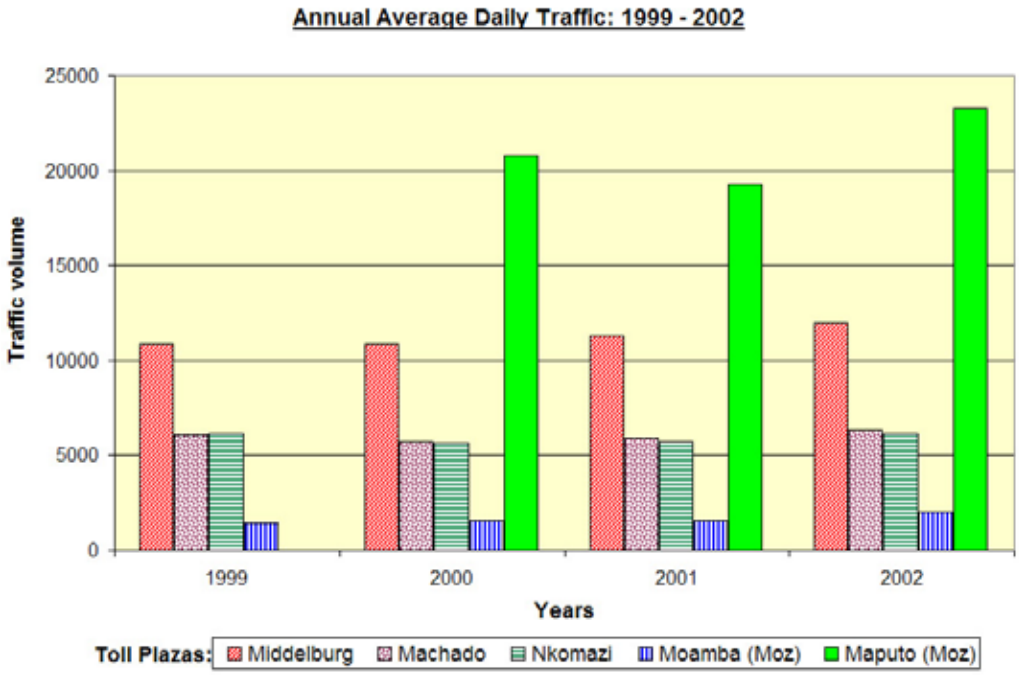


Figure 4.12: Toll plaza volumes for the period 1999 to 2002 (Source: TRAC, 2003)

The improved shorter road link from Maputo to the Lubombo border has also encouraged Mozambican to enter South Africa more frequently. Many Mozambicans in the region access commercial, health and educational opportunities in South Africa, namely in Nelspruit and Johannesburg. In mid-2003 the South African government has however made visa conditions for entering South Africa from Mozambique more stringent, this has, since its implementation, had severe results, mainly affecting the business community in Nelspruit. Mozambicans now travel less to South Africa as a result of extra costs and conditions. In reaction to this, the business community has, through the Maputo Corridor Coordination Initiative, recently taken up the issue with the South African Department of Home Affairs.

4.5.2 Air transport

Figure 4.13 indicates the number of passengers that travel by plane between South Africa (Gauteng) and Maputo. Since 1998 the number of passengers travelling by plane has increased annually. Year-on-year growth varies but for the period 2002/3 a 12,7 percent increase in passengers has been observed, with 128087 departures (passengers) being recorded for the same period. No air-freight transport information could be supplied by ACSA.

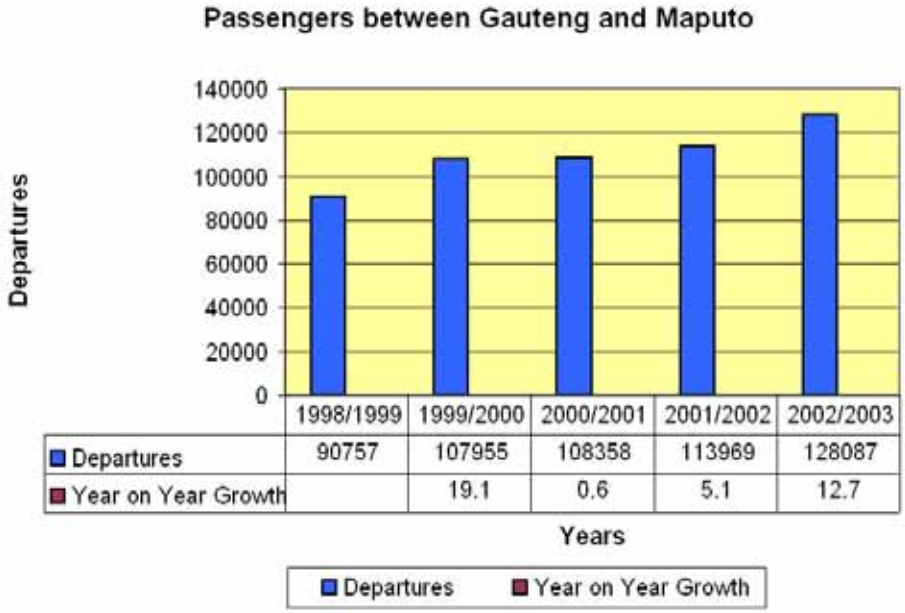


Figure 4.13: Air transport passengers travelling between Gauteng and Maputo (Source: ACSA, 2003)

4.5.3 Rail traffic

Figure 4.14 indicates rail freight flows in both directions between Gauteng and Maputo. The volume of goods transported from Maputo to Gauteng has decreased since 2000. In comparison, the volume of goods transported to Maputo has changed substantially since 1991. The volume reached a peak in 1996 (more than 200000 tonne/year), but this has decreased substantially since 1996.

Figure 4.15 indicates, in more detail, the nature of rail freight volumes to South Africa. During the period 1998/99 there was a substantial increase in the volume of goods to South Africa. Since then the volume of goods has decreased substantially (reaching a low of 1345 tonne in 2001). Since 2001 the volume of rail freight to SA has slowly increased (3485 tonne). Possible reasons for the strong decrease in rail volume from Maputo could include the following: (issues identified by the Maputo Corridor Coordination Initiative):

- Delays at the port;
- Return of empty rolling stock;
- Lack of rolling stock.

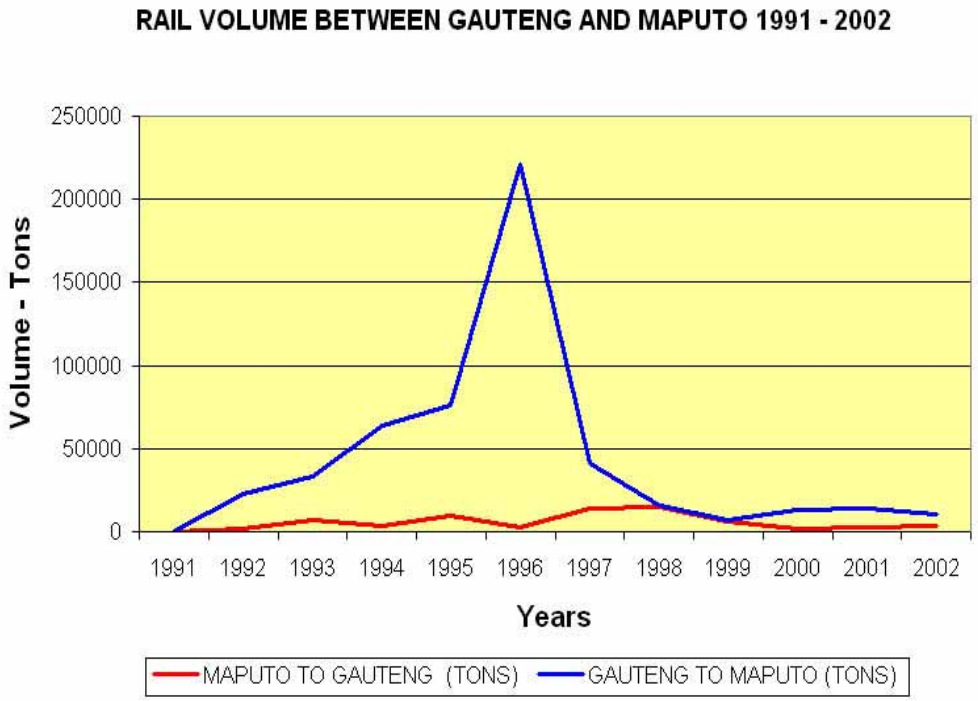


Figure 4.14: Rail volume (goods) between Gauteng and Maputo (Source: Spoornet, 2003)

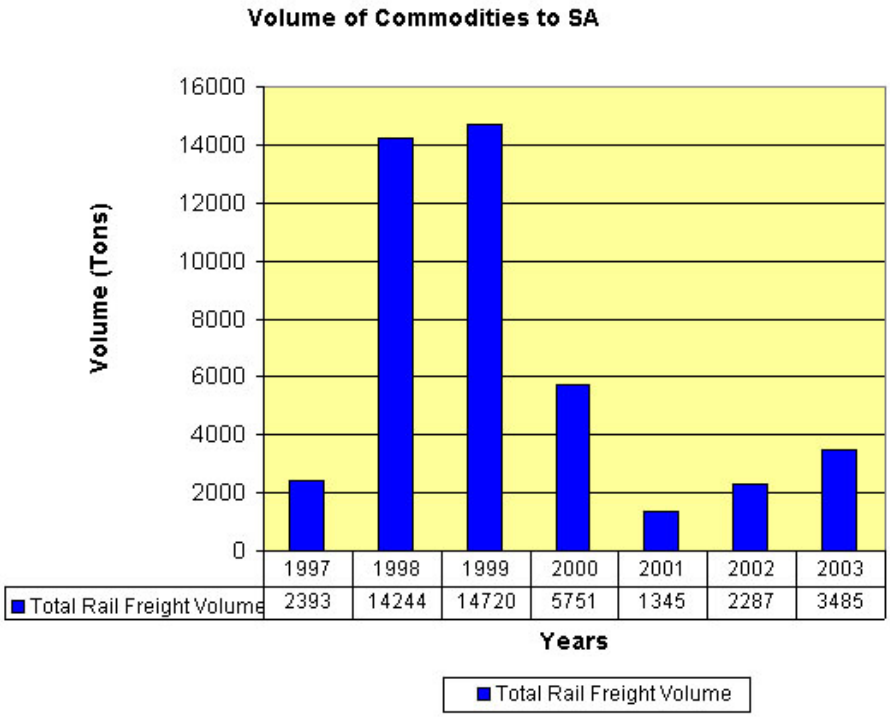


Figure 4.15: Rail freight to SA from Maputo.

5. ANALYSIS OF MACRO-ECONOMIC IMPACTS

5.1. Introduction

This section involves an analysis of the spatial economy of Mpumalanga and the southern part of Mozambique in order to establish the nature and extent of macro-economic impacts. The objective is to determine if positive changes in respect of selected variables during the analysis period are more pronounced in areas close to the corridor than in areas further removed from the corridor. To this end, attention is focused on selected key parameters of the macro economy, such as economic output, employment and income.

5.2. Data sources consulted

The availability of reliable information for the purpose of this study (i.e. for the analysis period and at sector and district level) proved more problematic than anticipated originally. At the project inception stage, it was assumed that data from the 2001 census in South Africa would be readily available from Statistics South Africa (SSA). However, it transpired that key datasets from SSA would only become available at the end of October 2003. It was nevertheless possible to identify alternative sources of data. From these sources, a comprehensive database was constructed that enables a detailed analysis of the likely impact of the MDC on the spatial economy of the study area.

5.3. South Africa

5.3.1 Economic output

Gross Value Added

In this section, attention is focused on Mpumalanga in a South African context. Attention is then focused on Mpumalanga, in particular the relative contribution of the different sectors to the provincial economy, and an analysis of the relative importance of the different spatial areas constituting the province in respect of the economy. This is followed by an analysis of growth trends for selected main sectors over the analysis period, and a comparison of Mpumalanga with other selected spatial areas in South Africa. This is done to lay the foundation for the subsequent detailed spatial analysis of the economic output of Mpumalanga.

Results obtained from the analysis are displayed in a number of graphs and maps. Figure 5.1 demonstrates the relative importance of Mpumalanga vis-à-vis other provinces in terms of economic output. This figure underlines the fact that Mpumalanga is a relatively small player in the South African context. In terms of growth rate over the analysis period, Figure 5.2 shows that Mpumalanga is on par with the other selected provinces. Regarding the different sectors of the Mpumalanga economy, Figure 5.3 shows that manufacturing is the most important contributor to the provincial economy, followed by the mining, electricity and service sectors.

Figure 5.4 highlights the fact that four spatial areas (Middelburg, Highveld, Witbank and Nelspruit) are responsible for the bulk of the provincial output. The importance of the manufacturing sector for the provincial economy is echoed by the fact that the growth rate for this sector by far outperforms that for selected spatial entities in South Africa (Figure 5.5). For Mpumalanga, this figure is in excess of 4 percent per annum as opposed to a national average (i.e. for South Africa) of less than 2 percent.

Figure 5.6 reveals that mining (the second most important economic sector in Mpumalanga) has increased by only 1 percent during the analysis period, vis-à-vis an overall negative trend for the whole of South Africa (minus 1 percent). This figure also underlines the volatility of this sector and its dependence on such external factors as the exchange rate, something that had to be carefully managed from an economic perspective.

The maps following Figure 5.6 contain a spatial analysis of the economic output of Mpumalanga, using GIS technology. An analysis was done for each of the nine sectors of the provincial economy, namely:

- Agriculture, forestry and fishing
- Mining, quarrying
- Manufacturing
- Electricity, water
- Construction
- Trade, catering
- Transport, communications
- Finance, real estate
- Community services.

On these maps, areas revealing a high annual growth for a given indicator are awarded a darker shade than areas with a lower growth. This makes it possible to visually detect spatial patterns over the analysis period. For each spatial entity (district), growth for that area is also shown as bar charts, where the first bar indicates the indexed value at the beginning and the second bar the value at the end of the analysis period.

From the map for “All sectors”, it is clear that areas in close proximity of the transport infrastructure spine have grown at a higher rate than areas further removed from the corridor. Regarding the individual sectors of the economy (see subsequent maps), this pattern is less pronounced in the case of agriculture and mining, as they are location/resource dependent and therefore less dependent on an intervention such as the MDC. For the other sectors, these maps show that growth in the vicinity of the MDC has outperformed growth in areas further removed from the corridor.

Figure 5.1: Economic output: Mpumalanga in the South African context

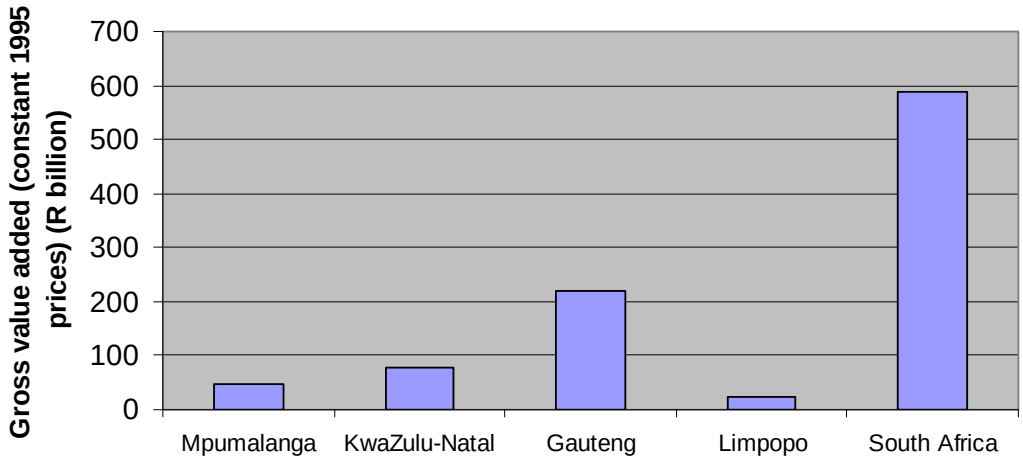


Figure 5.2: Economic growth: Mpumalanga in the South African context

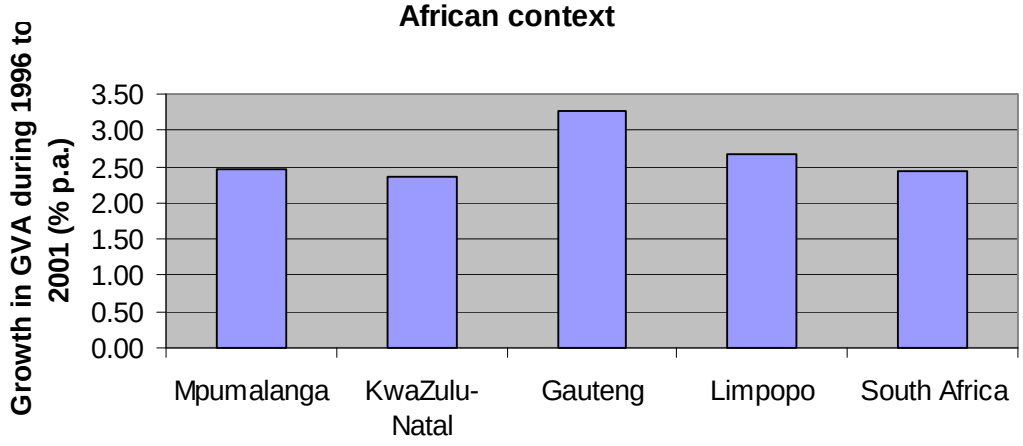


Figure 5.3: Mpumalanga: Gross Value Added by sector for 2001

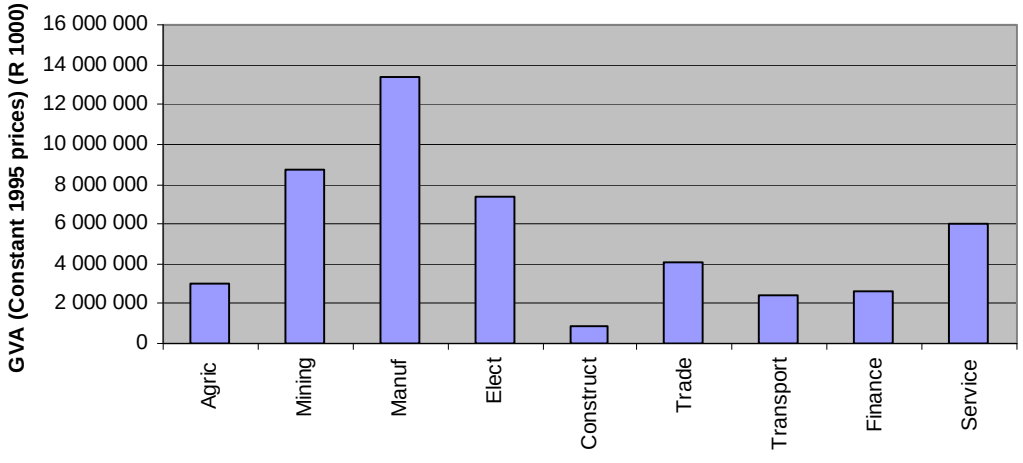


Figure 5.4: Gross Value Added for different districts

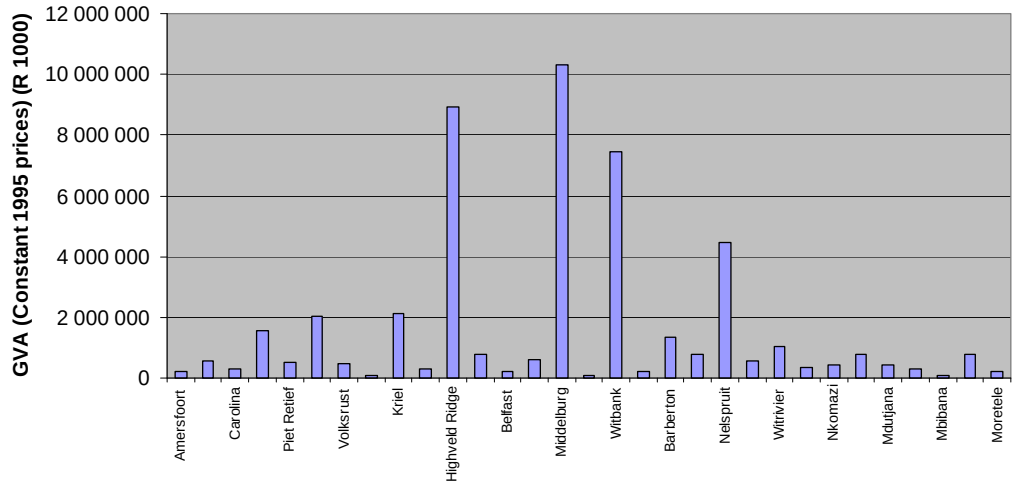


Figure 5.5: Growth in manufacturing for period 1996 to 2001 (% p.a.)

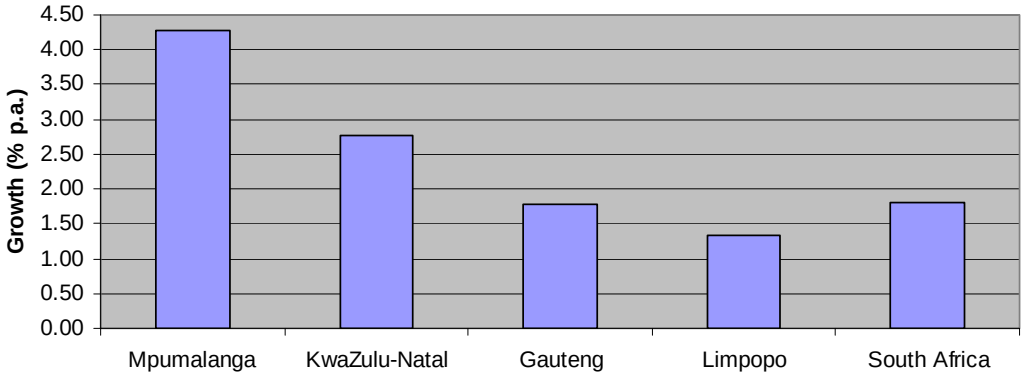
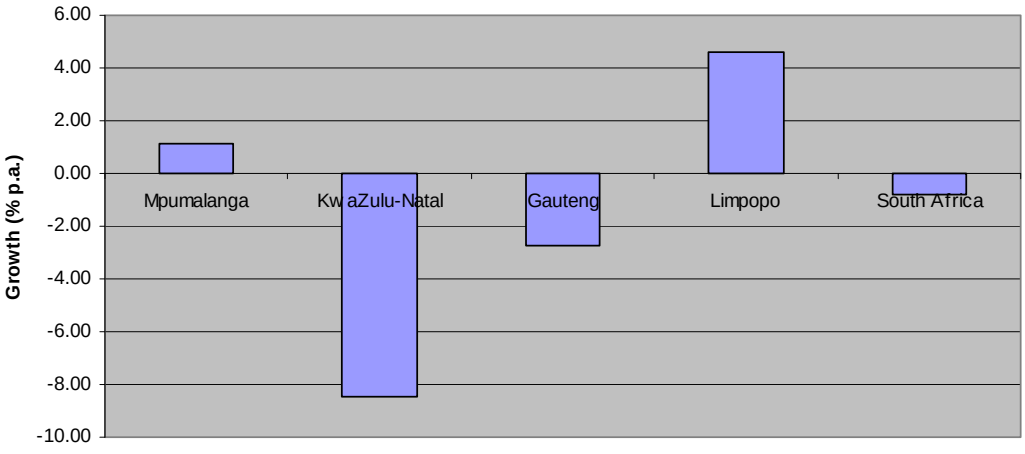
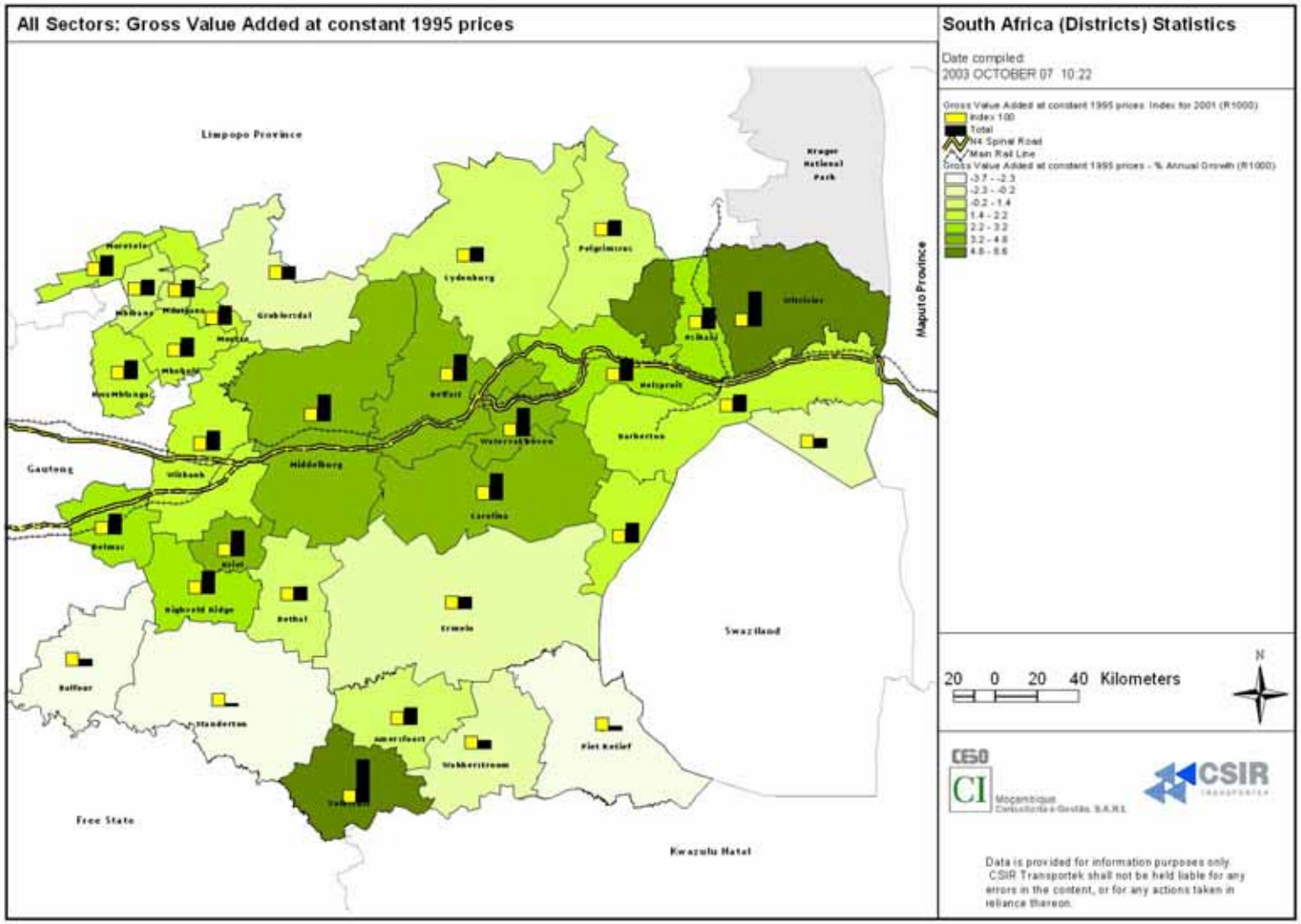
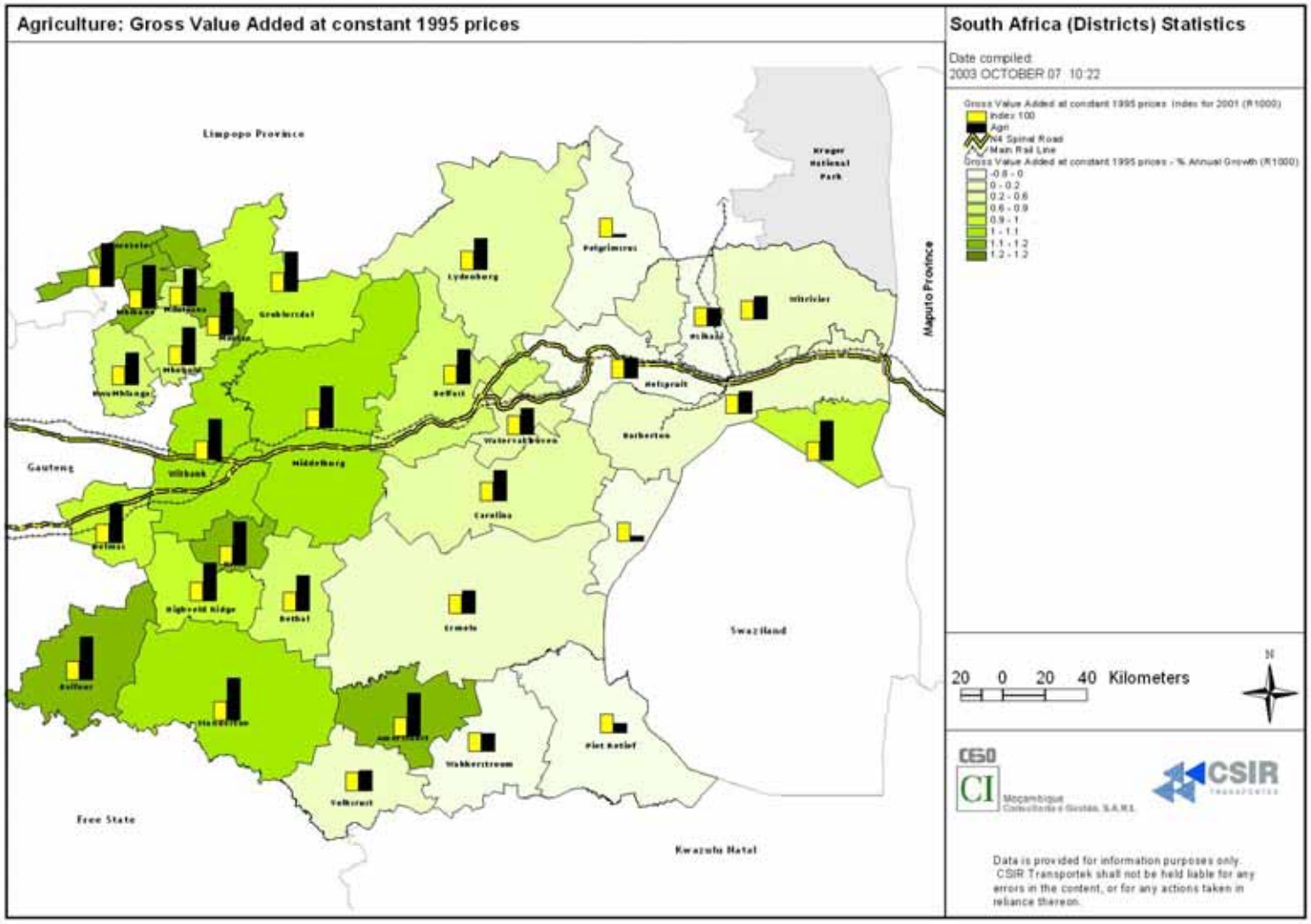


Figure 5.6: Growth in mining for period 1996 to 2001

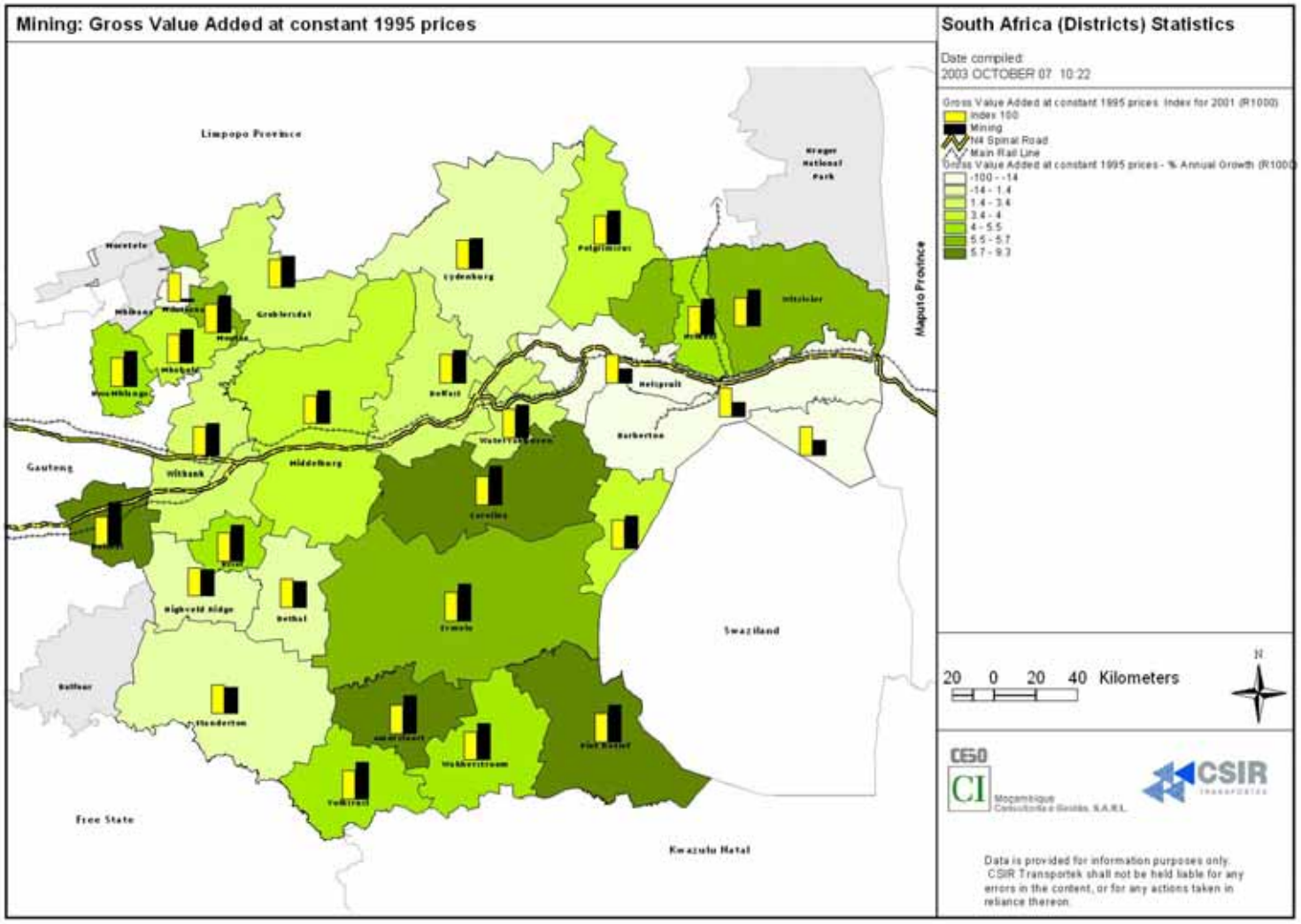




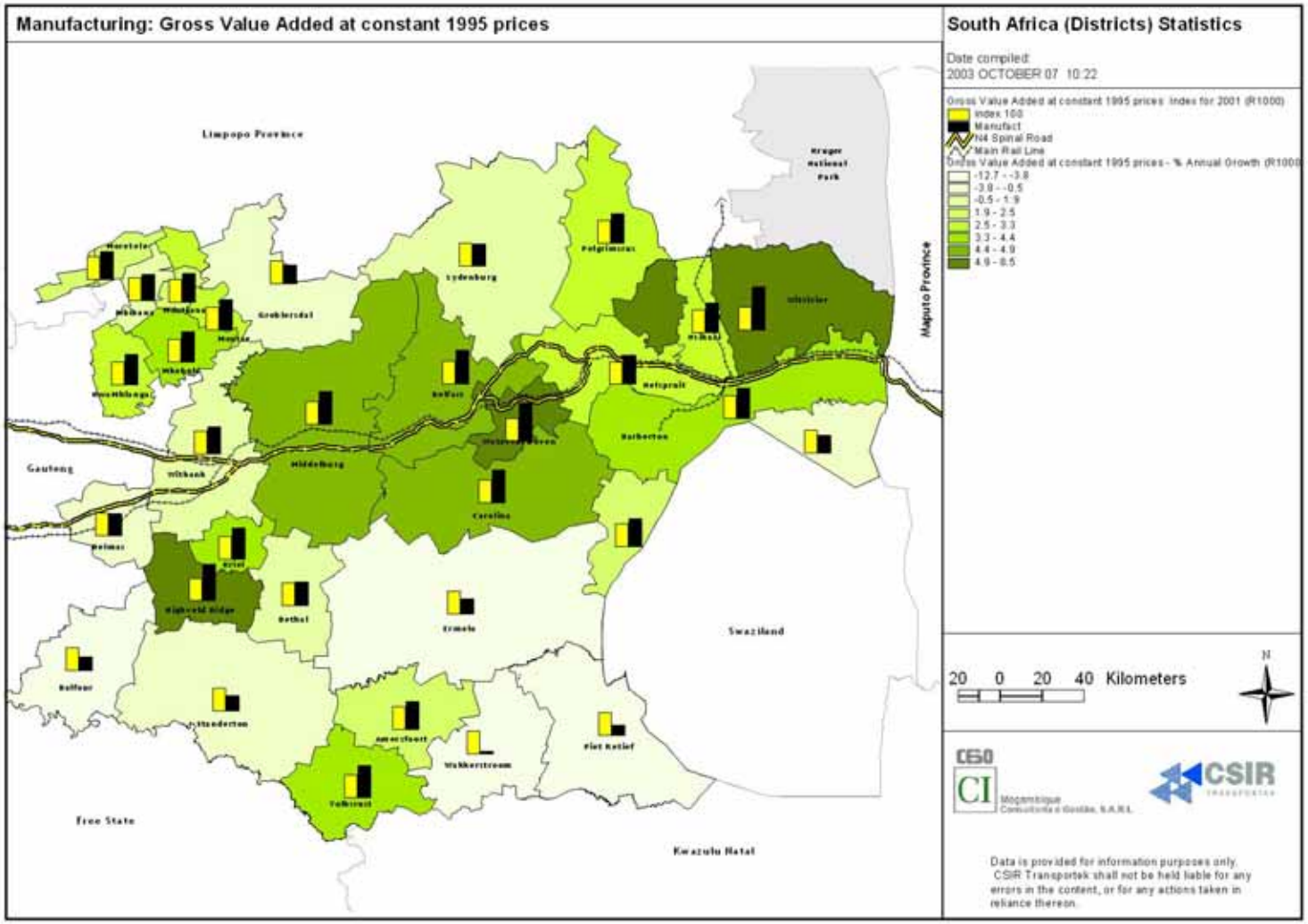
Map 5.1: Rate of change during the analysis period: Gross Value Added (all sectors)



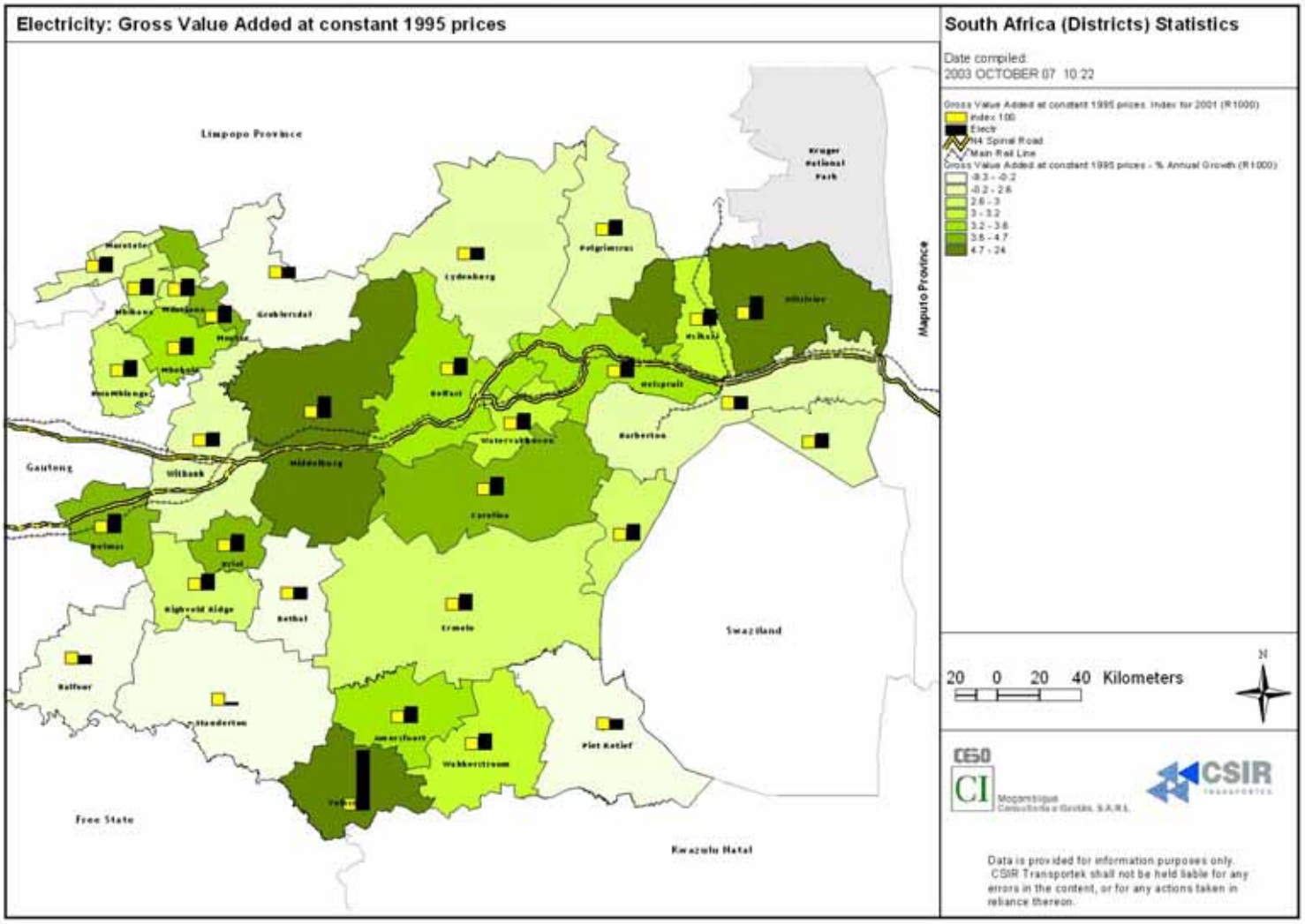
Map 5.2: Rate of change during the analysis period: Gross Value Added (Agriculture)



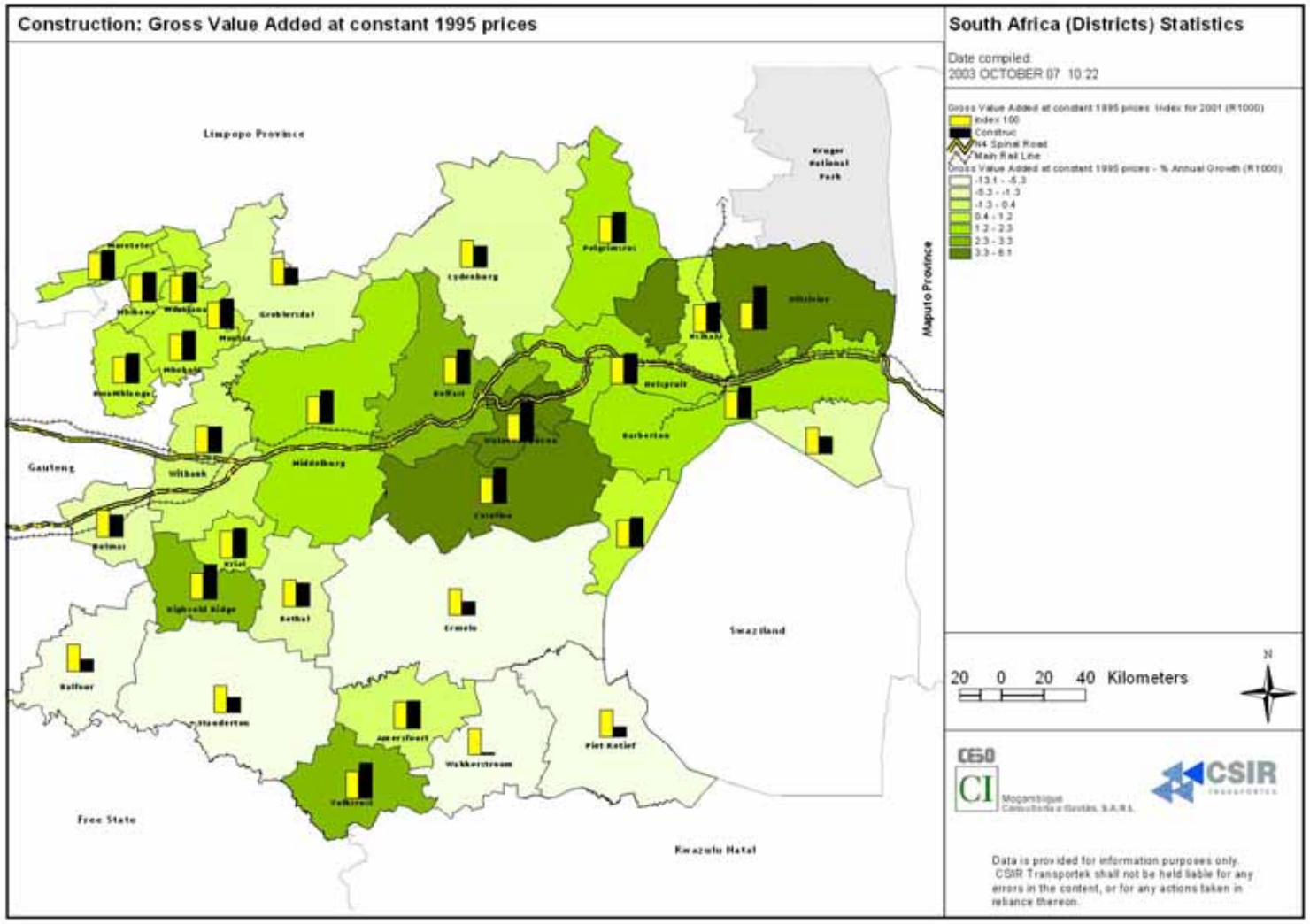
Map 5.3: Rate of change during the analysis period: Gross Value Added (Mining)



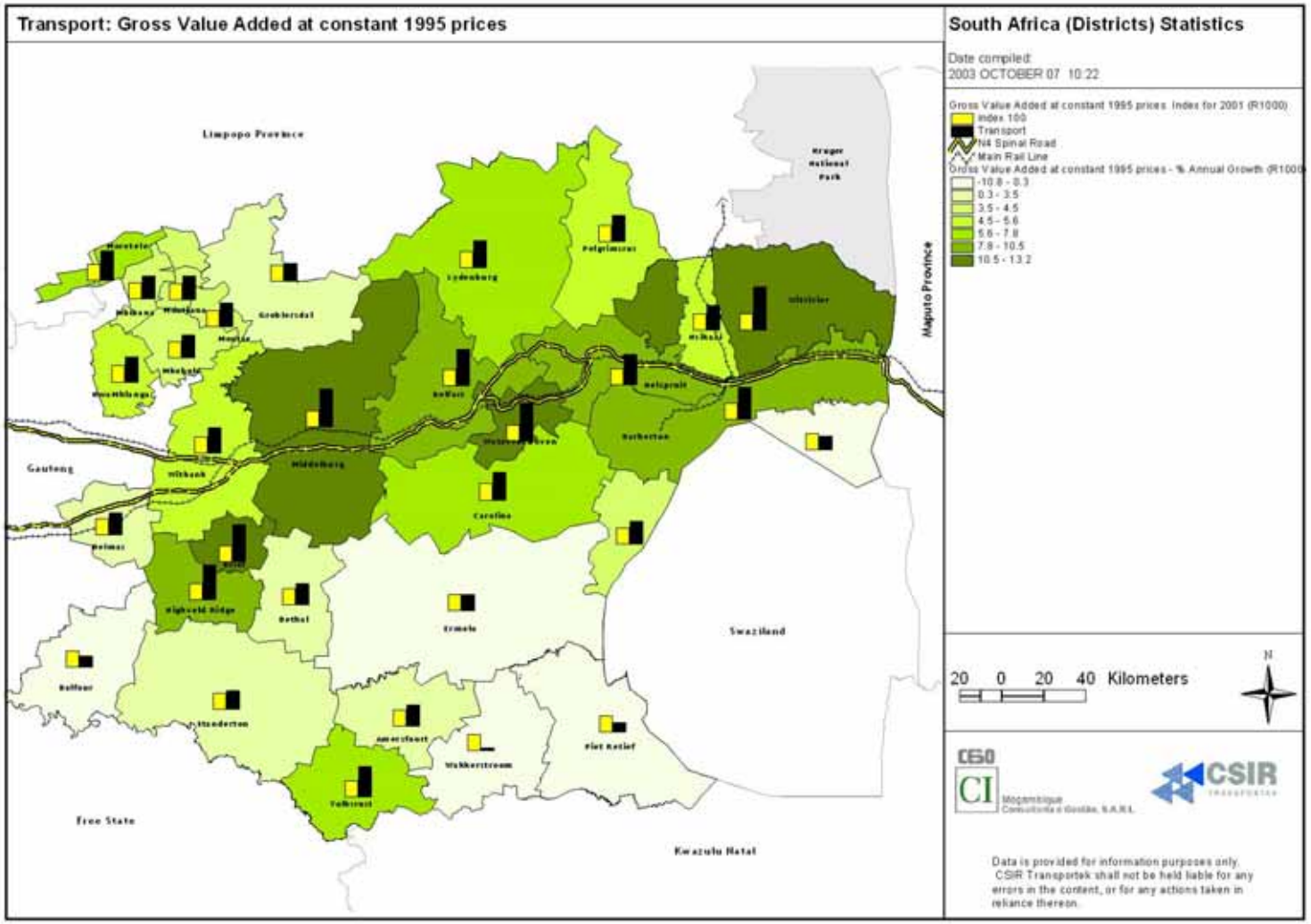
Map 5.4: Rate of change during the analysis period: Gross Value Added (Manufacturing)



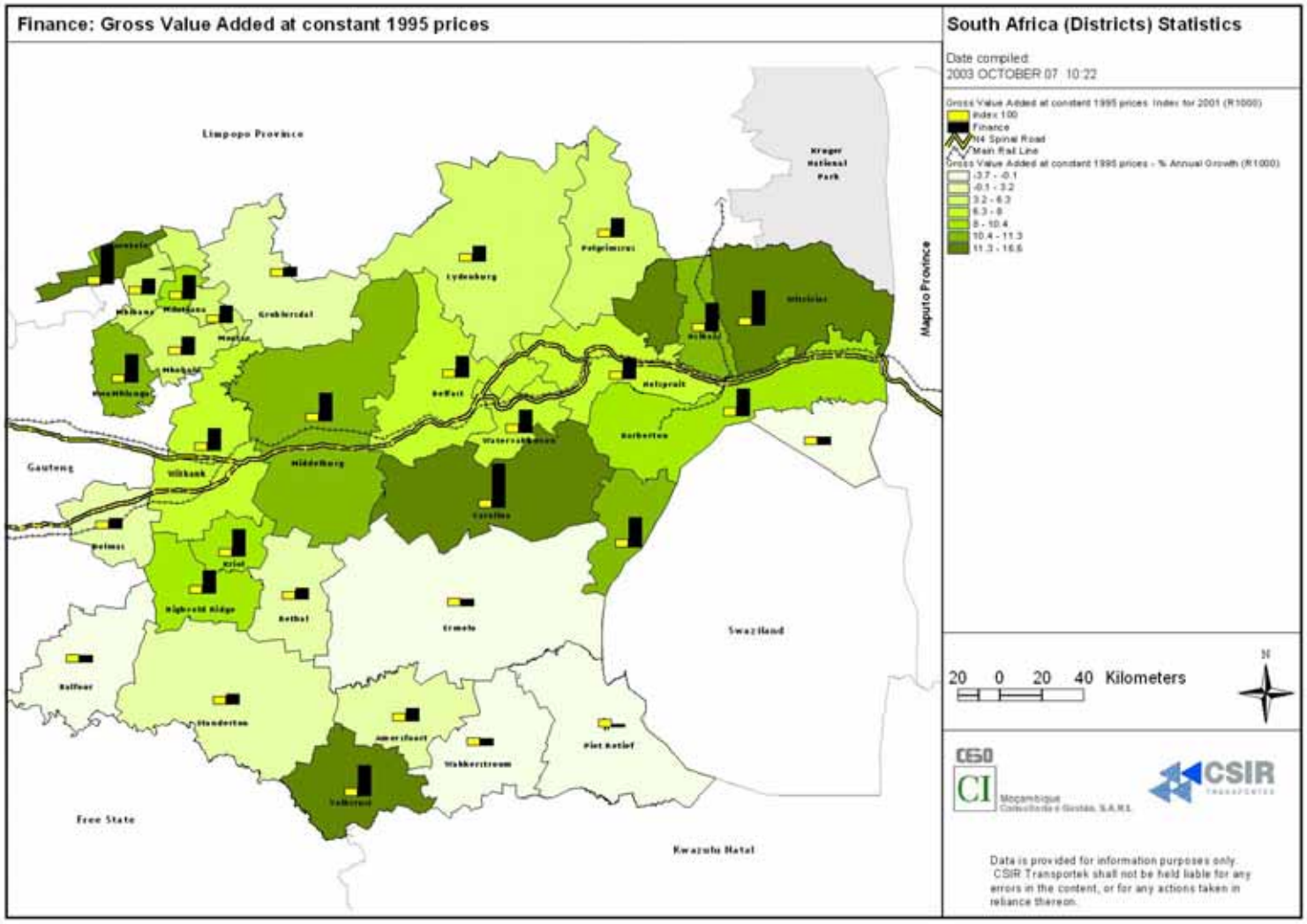
Map 5.5: Rate of change during the analysis period: Gross Value Added (Electricity)



Map 5.6: Rate of change during the analysis period: Gross Value Added (Construction)



Map 5.7: Rate of change during the analysis period: Gross Value Added (Transport)



Map 5.8: Rate of change during the analysis period: Gross Value Added (Finance)

GVA per capita

Of the provinces selected for comparison purposes, Figure 5.7 shows that Mpumalanga ranks second highest in terms of GVA per capita (expressed in constant 1995 prices). This figure also shows that Mpumalanga outperforms the national average (South Africa), but that GVA per capita for the province is only about 60 percent of that of Gauteng. In terms of growth in GVA per capita during the analysis period, however, Mpumalanga ranks lowest (Figure 5.8). Growth for the province amounts to only two-thirds of that for the whole country. Figure 5.9 shows that 9 of the 31 districts (almost a third) outperform the national average growth rate of 0.9 percent per annum during the analysis period. Finally, the map following Figure 5.9 shows that almost all nine districts are located around the corridor.

Figure 5.7: GVA per capita for selected areas: 1991 and 2001

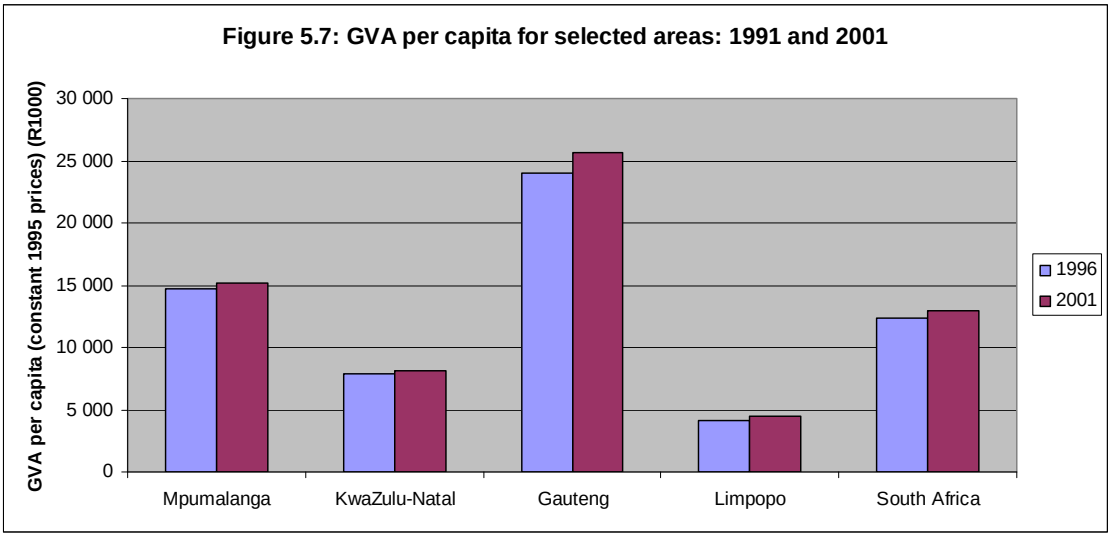


Figure 5.8: GVA per capita: Average annual change during analysis period for selected areas

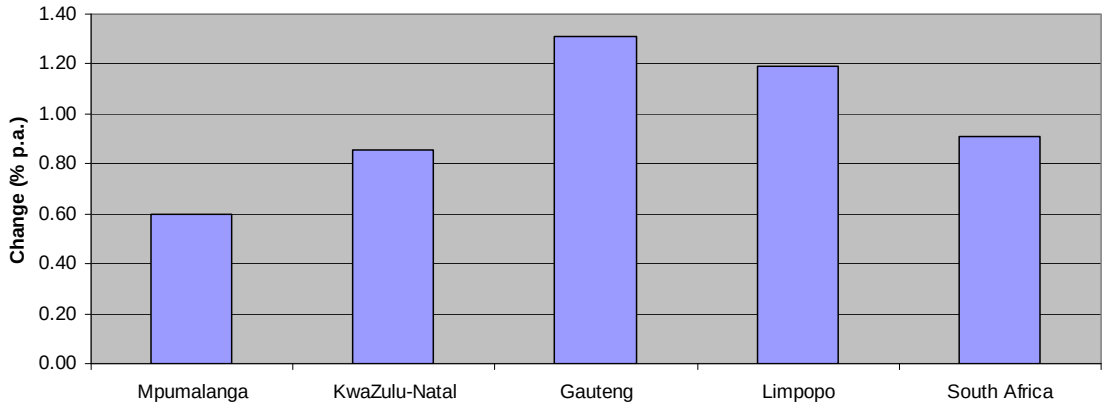
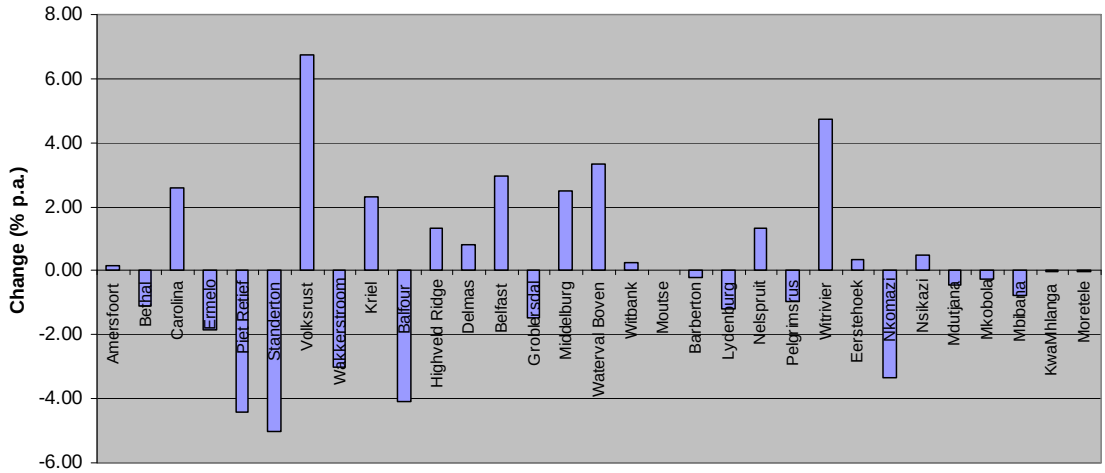
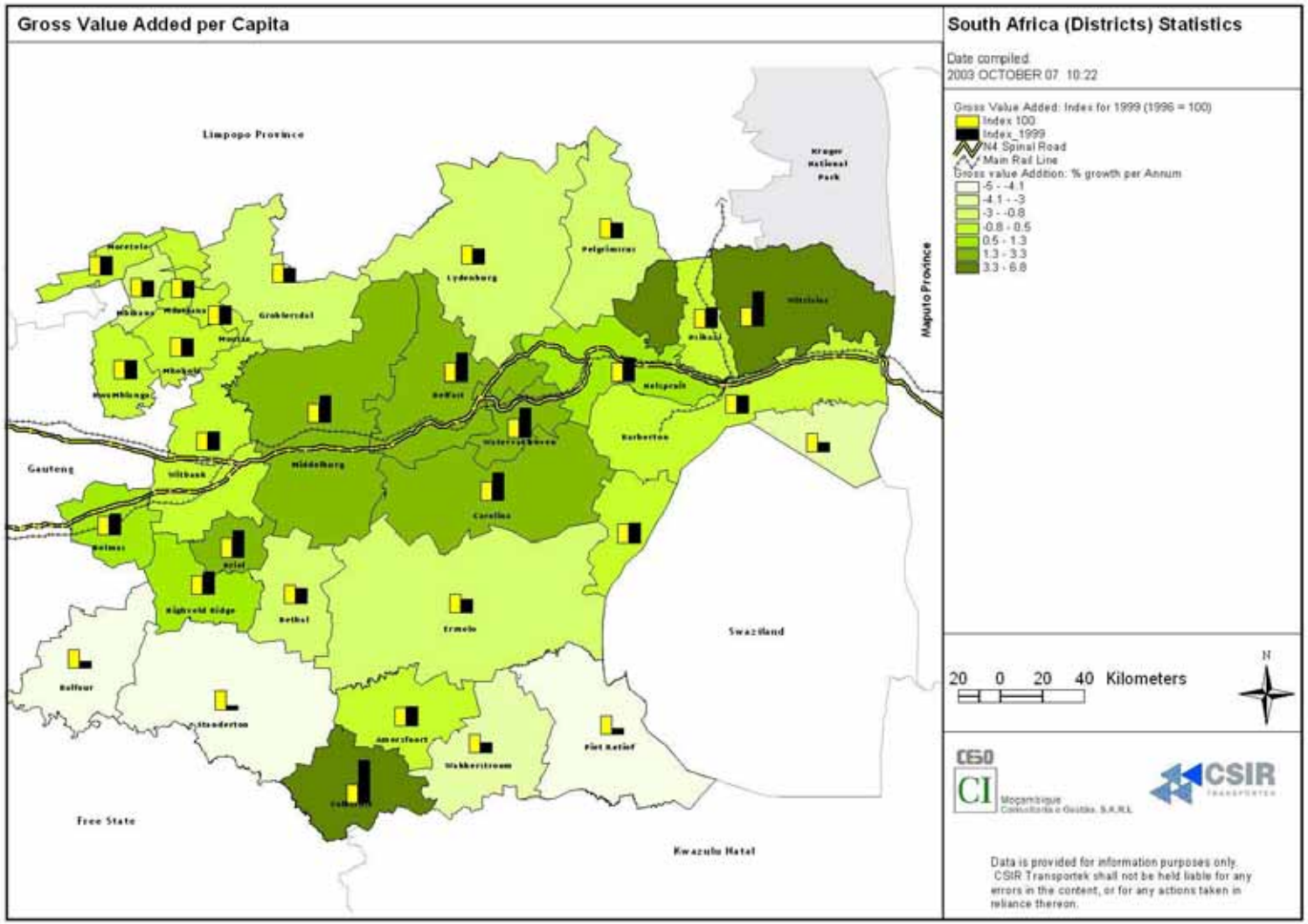


Figure 5.9: GVA per capita: Average annual change during analysis period for Mpumalanga districts





Map 5.9: Rate of change during the analysis period: Gross Value Added per capita

5.3.2 Employment

The analysis firstly involved an analysis of the breakdown of employment in Mpumalanga by economic sector and spatial area. The change (increase/decrease) in employment for the most important sectors of the economy is then compared to corresponding figures for KwaZulu-Natal, Gauteng, Limpopo and South Africa. Finally, a spatial analysis of employment at sector and district level was undertaken by focusing on changes in growth rates over the analysis period.

Regarding the relative importance of economic sectors, Figure 5.10 shows the dominance of trade in terms of employment. This is followed by the sectors community service, manufacturing and agriculture, each at approximately half that of trade. Regarding the relative importance of districts, Figure 5.11 confirms the dominance of Nelspruit, Witbank, Middelburg and Highveld Ridge as major employment centres. Regarding a comparison of Mpumalanga with other provinces, Figure 5.12 reveals that Mpumalanga, with an annual increase of more than 15 percent p.a. of employment in the trade sector, is well above the national average (for South Africa) of about 12 percent p.a. and also more than 50 percent higher than Gauteng, the economic hub of South Africa.

In terms of Figure 5.13, the increase in employment for the sector community service is fairly similar for the selected provinces and the national average, with Mpumalanga averaging between 4 and 5 percent p.a. Figure 5.14 shows that employment in the manufacturing sector for South Africa as a whole has decreased during the analysis period, compared to an annual increase of more than 4 percent in the case of Mpumalanga. Figure 5.15 summarises the situation in the agriculture sector, and reveals the fact that employment in this sector has decreased in all selected areas, but with Mpumalanga manifesting the lowest rate of decrease.

The results of a more detailed analysis at sector and district level are shown visually on the maps that follow. For total employment (all sectors combined), the first map shows a moderately higher growth in employment for districts towards the east of the study area. For agriculture, the higher growth rates are revealed towards the west of the study area. As could be expected, growth patterns in the case of mining show no correlation with proximity to the corridor. Regarding the remaining sectors, growth in areas closest to the corridor is most pronounced in the case of the construction, trade and transport sectors.

Figure 5.10: Mpumalanga: Employment by economic sector

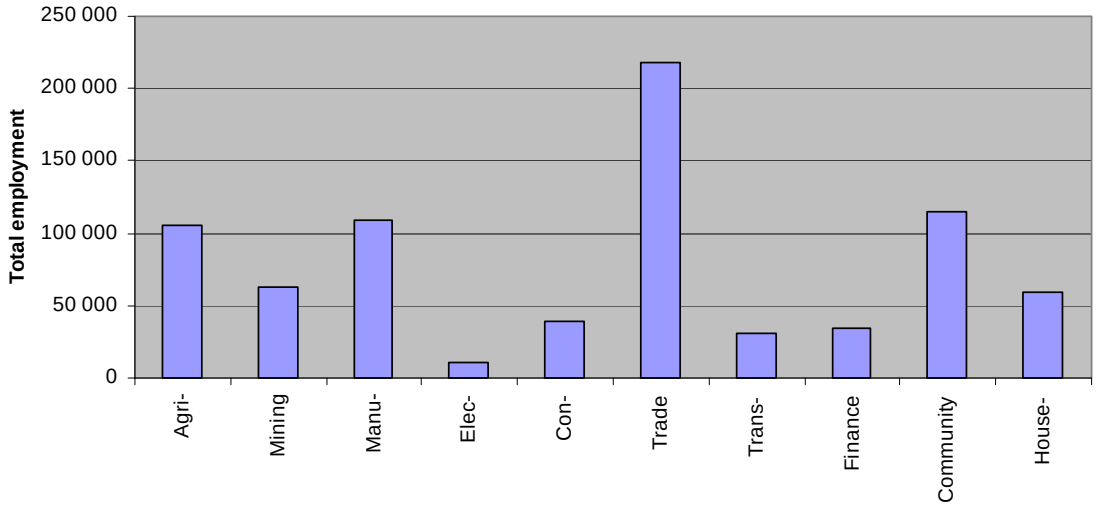


Figure 5.11: Mpumalanga: Employment by district

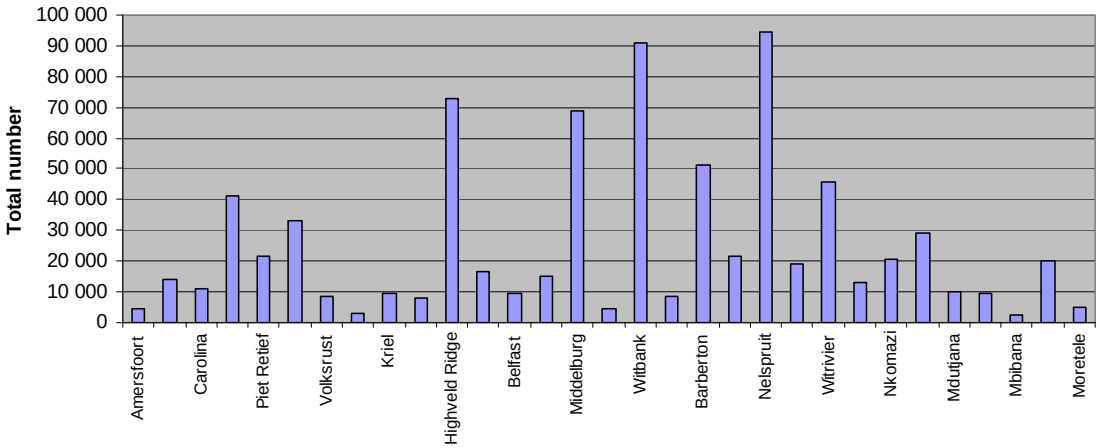


Figure 5.12: Trade: Increase in employment during 1996 to 2001

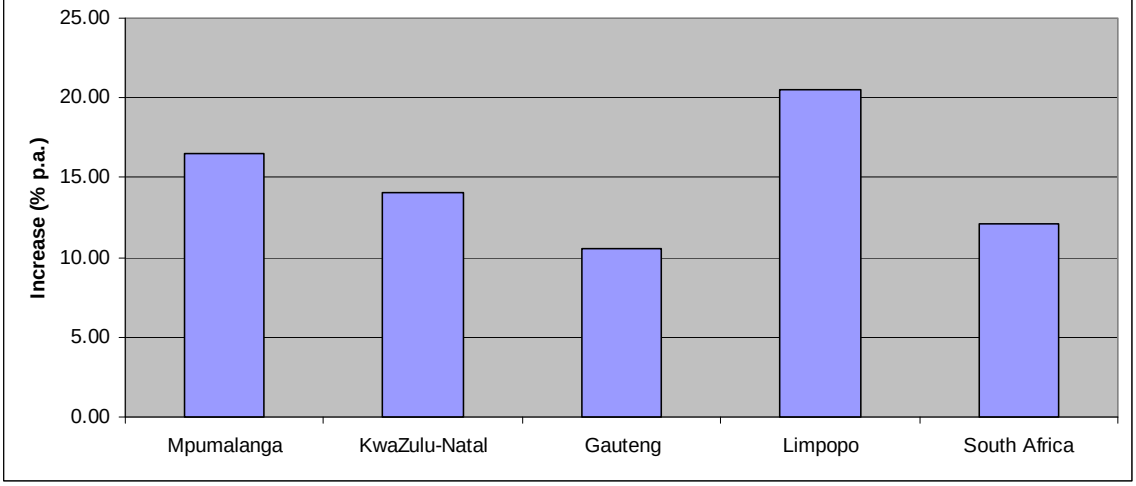


Figure 5.13: Community service: Increase in employment during 1996 to 2001

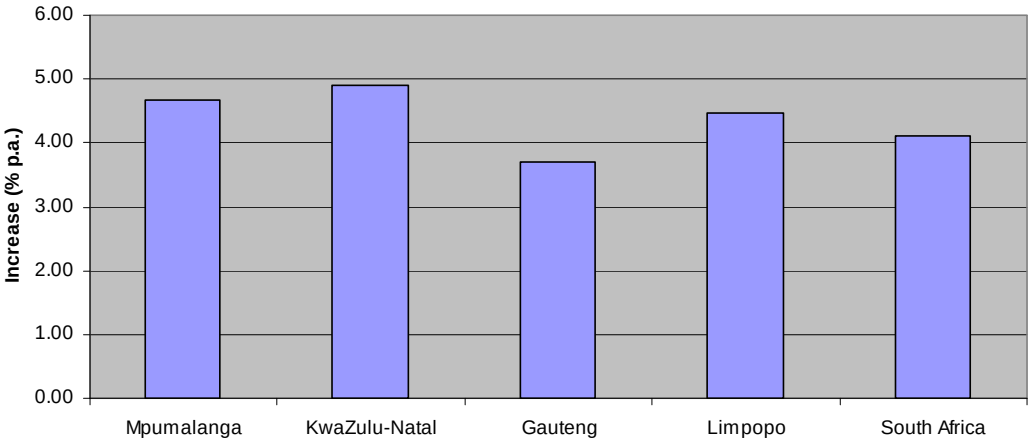


Figure 5.14: Manufacturing: Increase in employment during 1996 to 2001

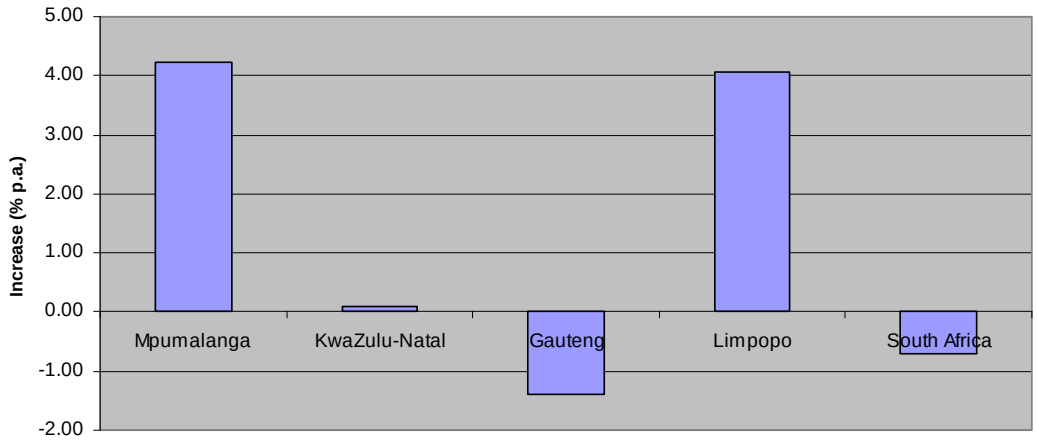
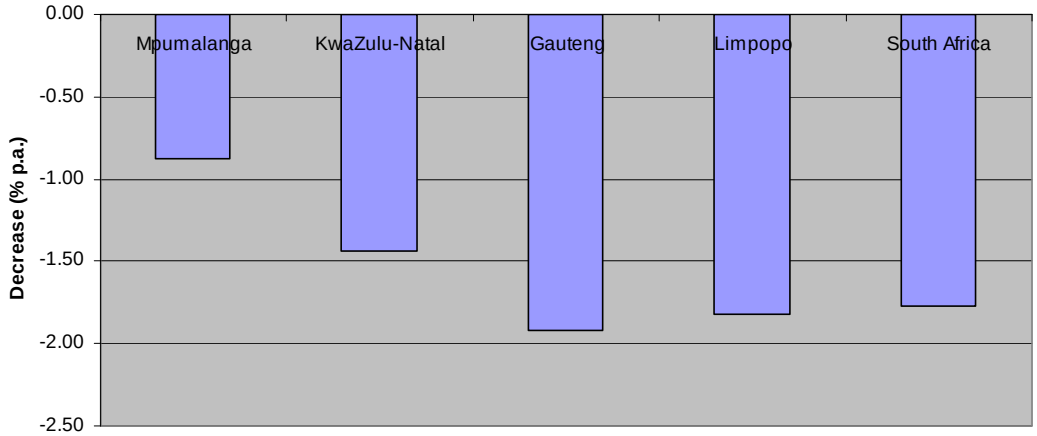
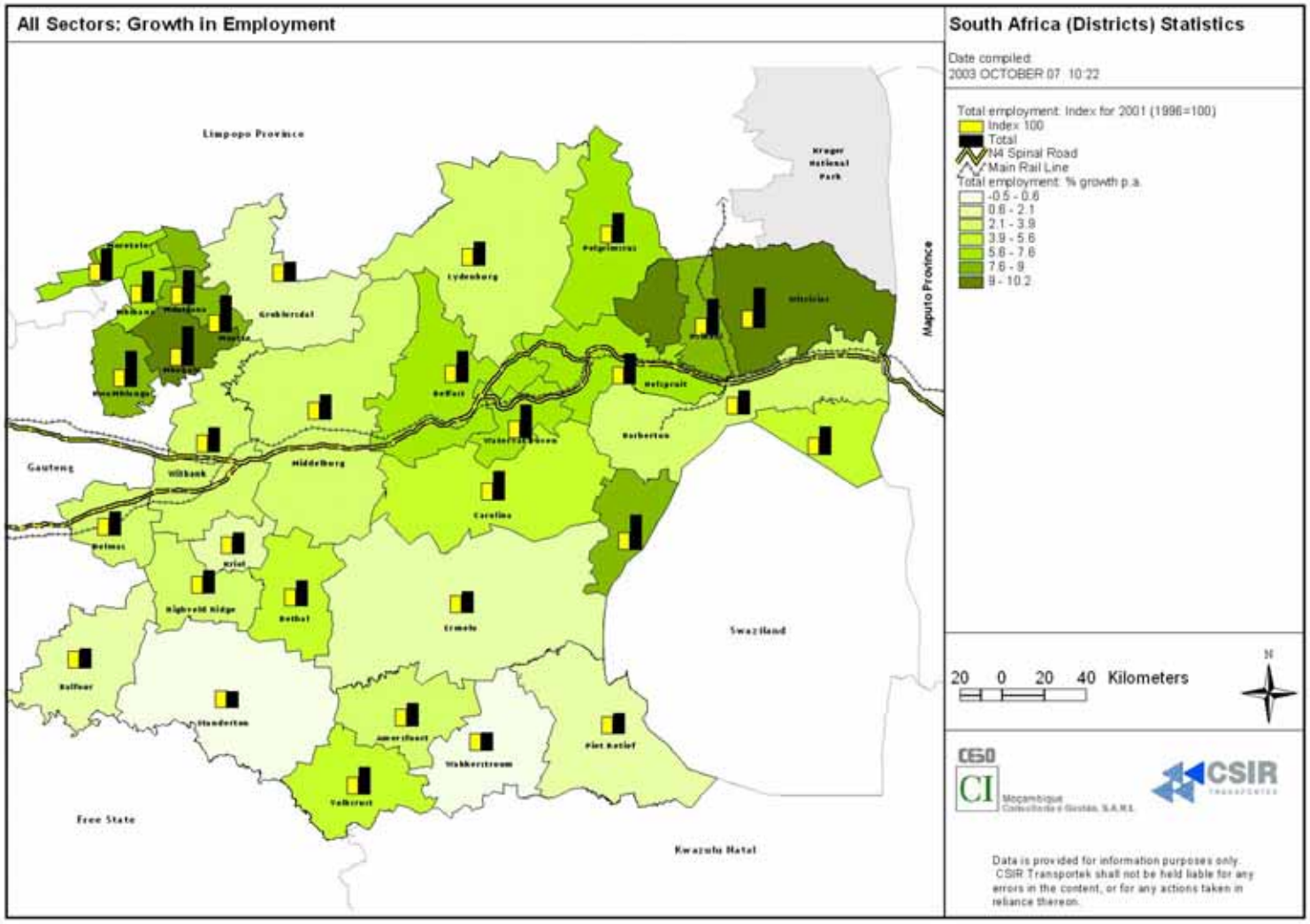
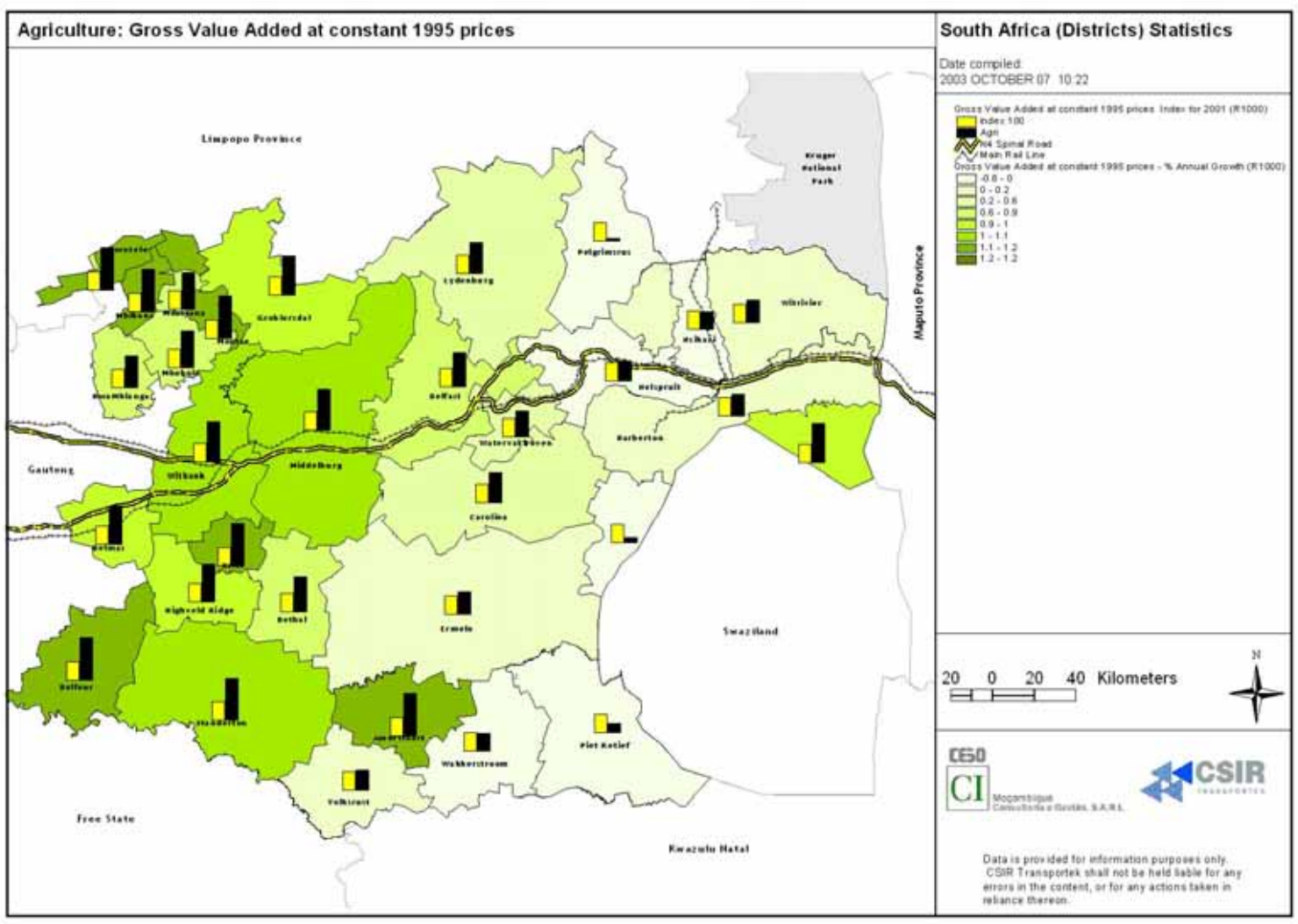


Figure 5.15: Agriculture: Decrease in employment during 1996 to 2001

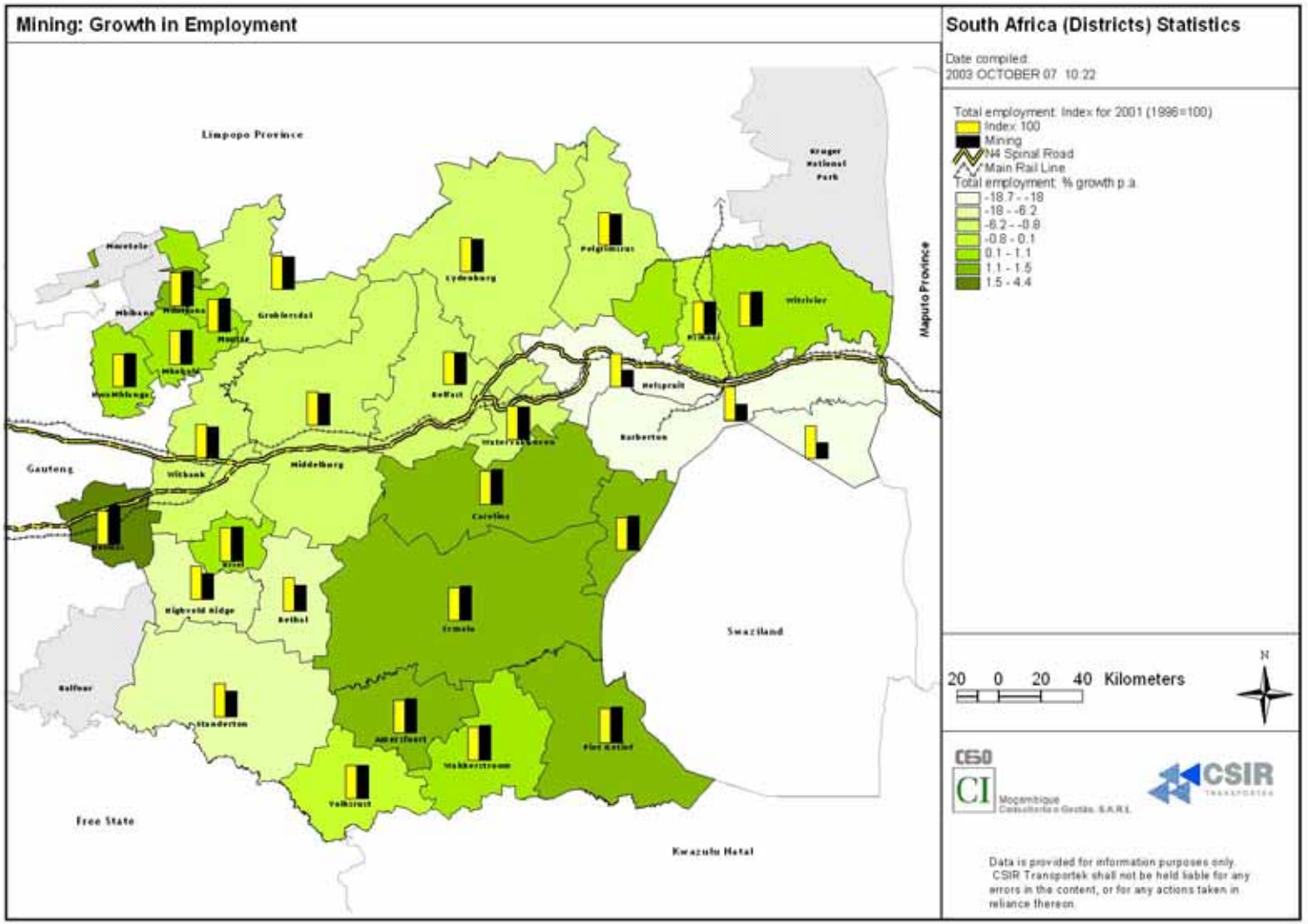




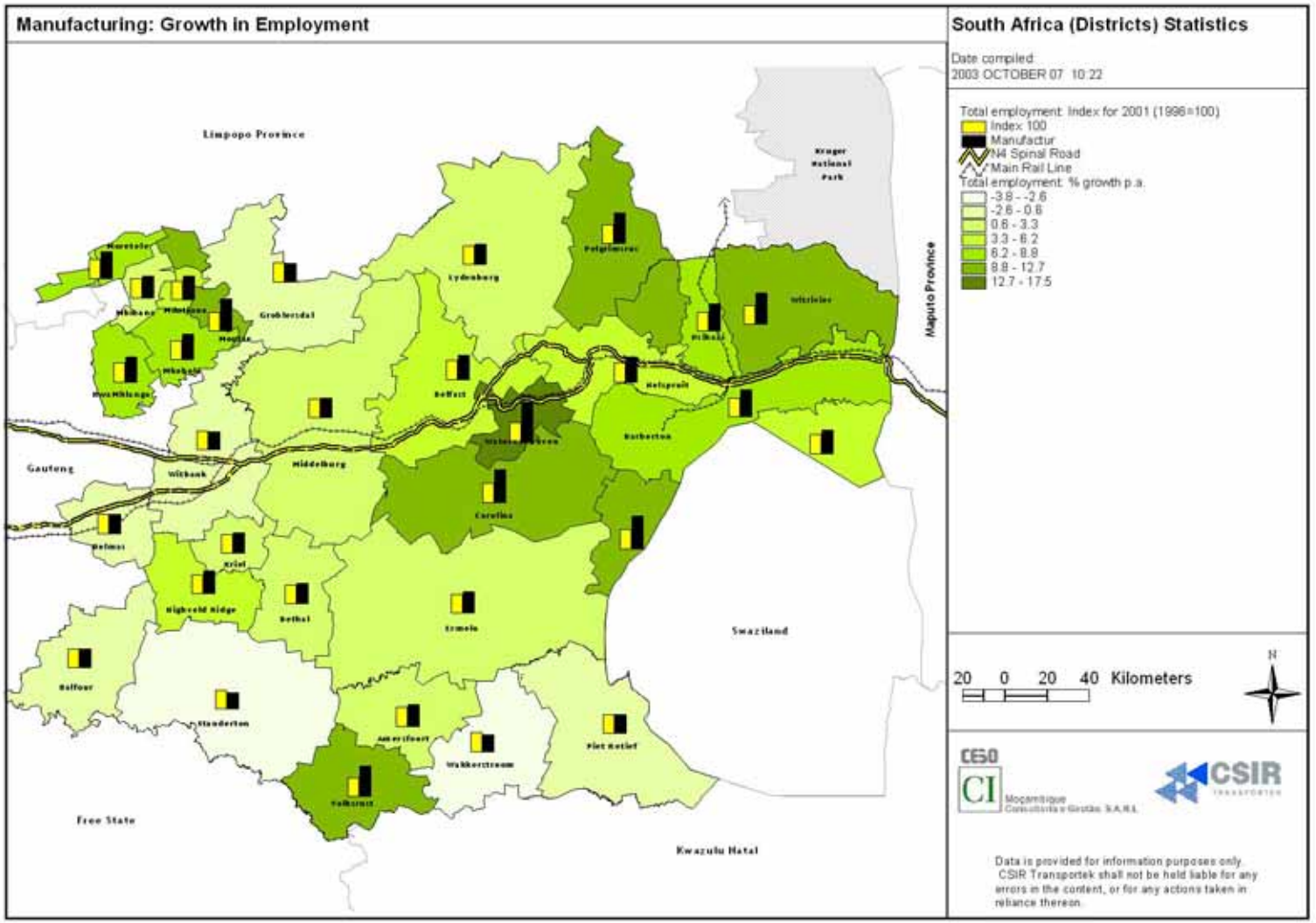
Map 5.10: Rate of change during the analysis period: Employment (all sectors)



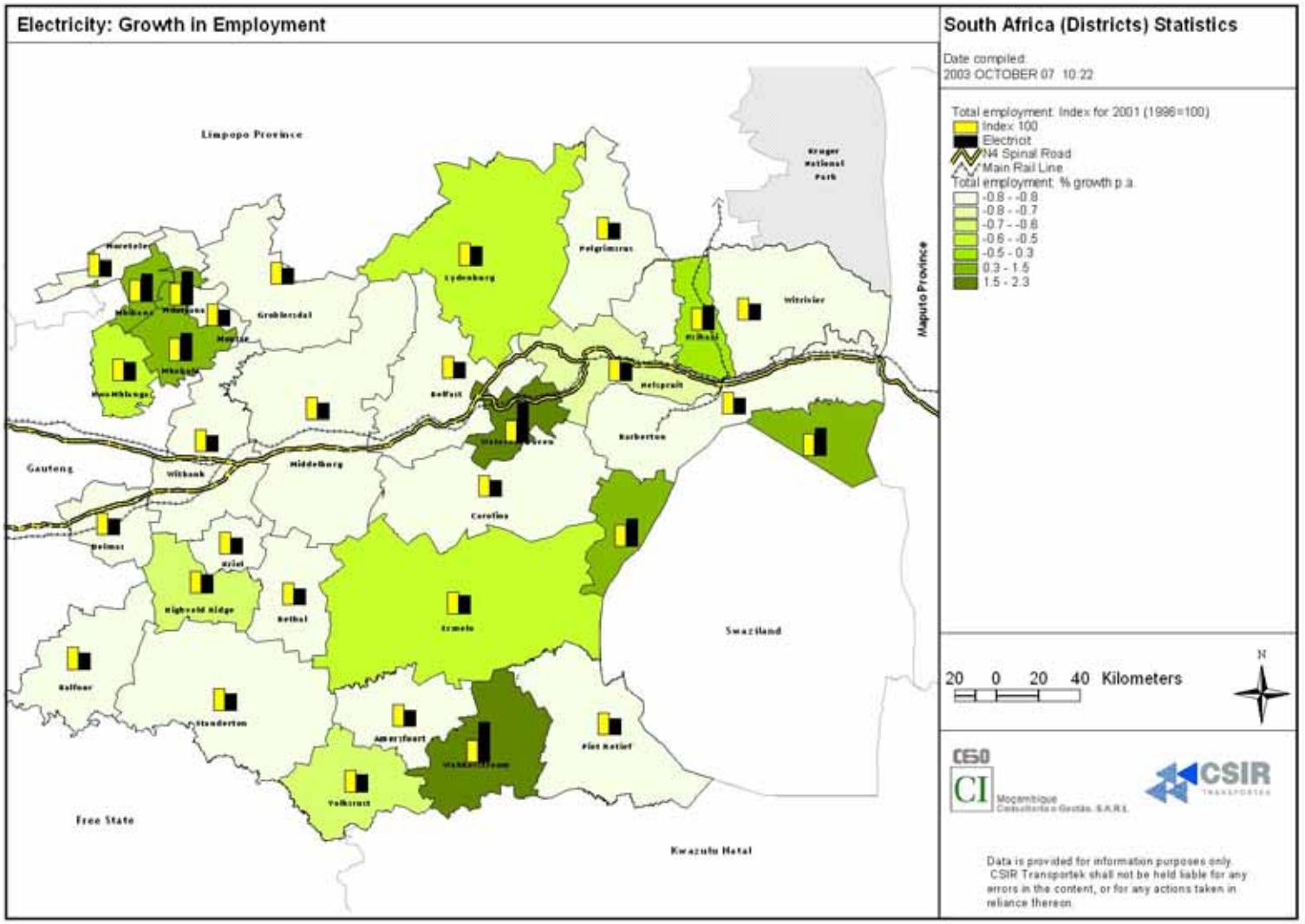
Map 5.11: Rate of change during the analysis period: Employment (Agriculture)



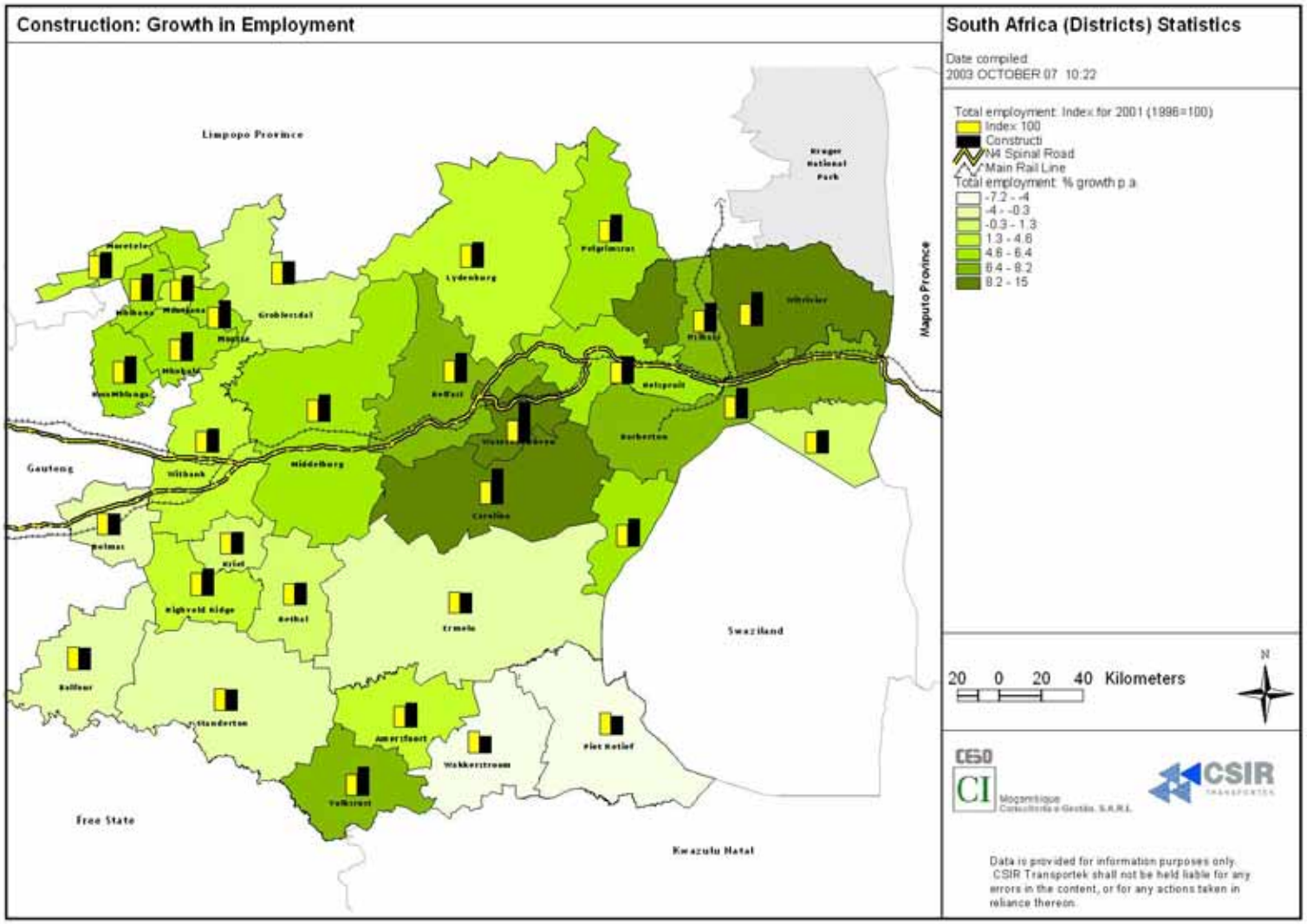
Map 5.12: Rate of change during the analysis period: Employment (Mining)



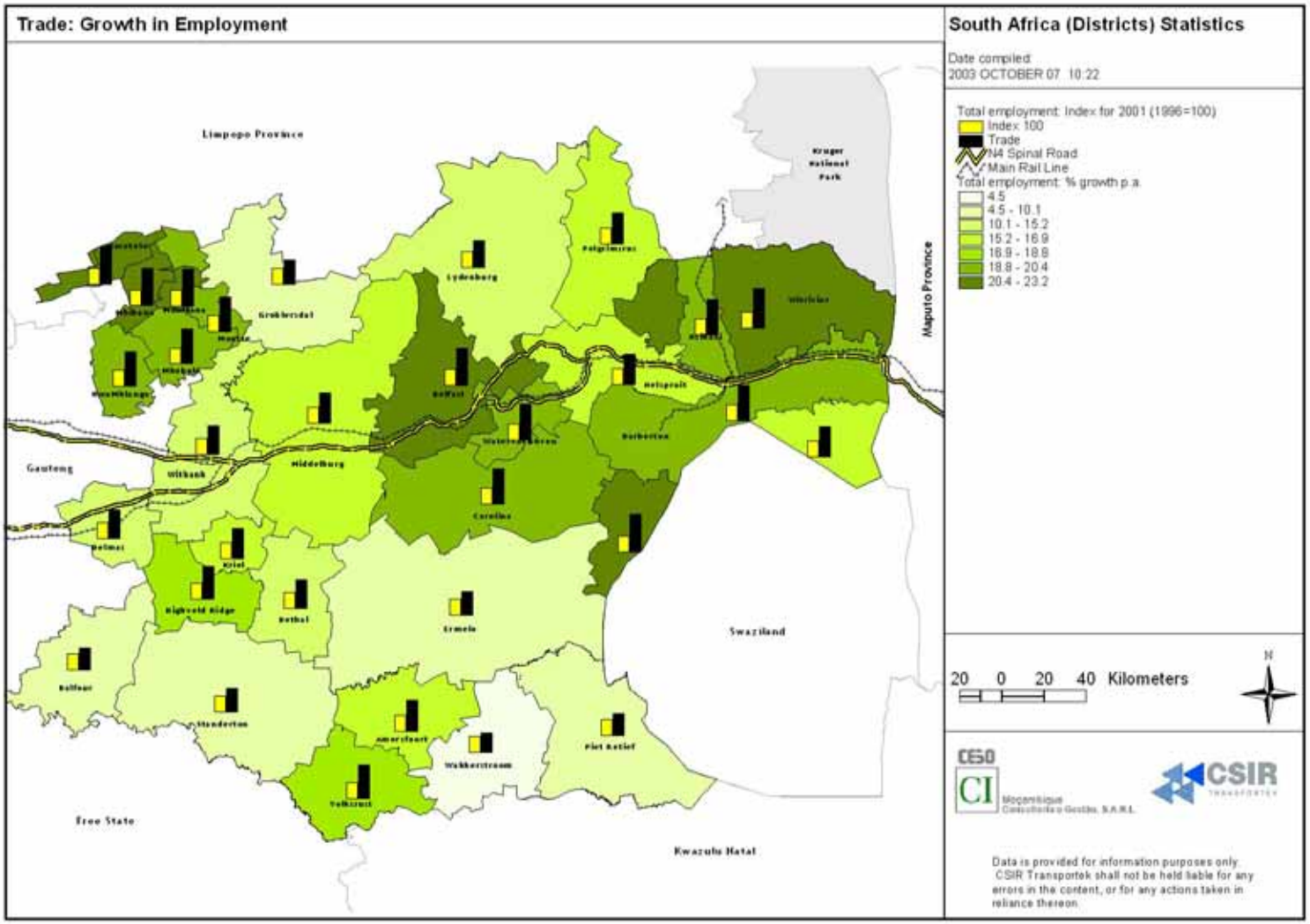
Map 5.13: Rate of change during the analysis period: Employment (Manufacturing)



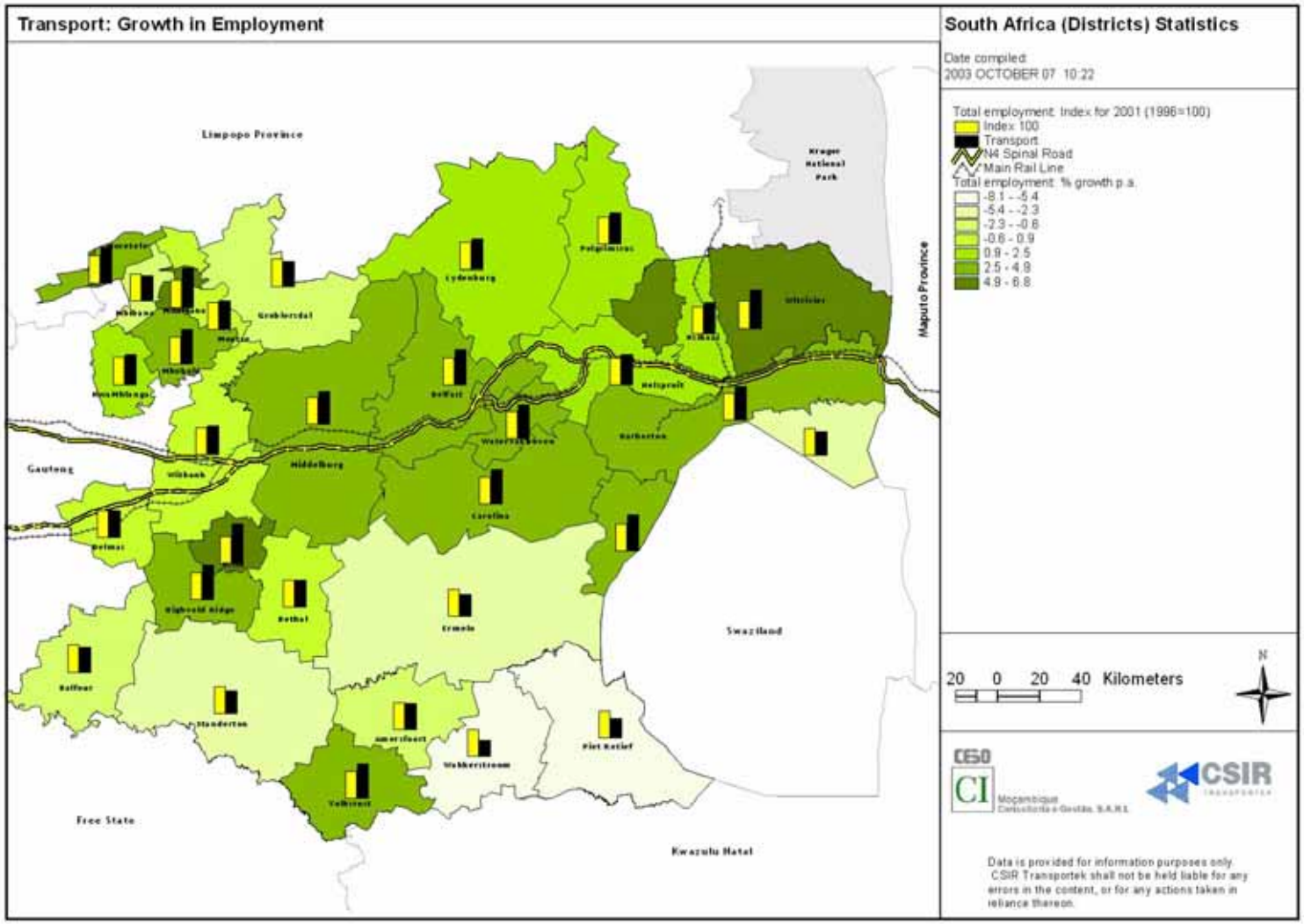
Map 5.14: Rate of change during the analysis period: Employment (Electricity)



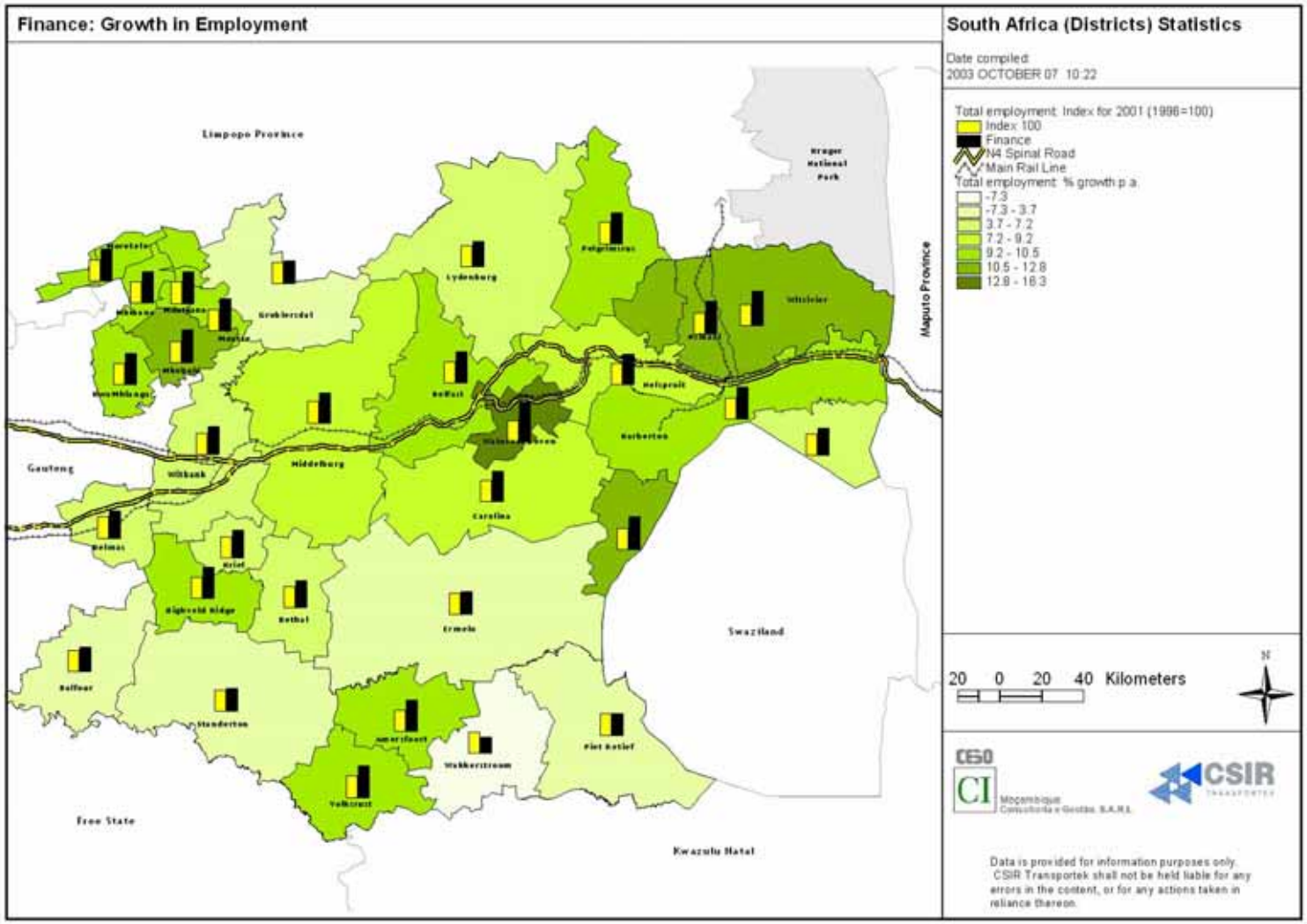
Map 5.15: Rate of change during the analysis period: Employment (Construction)



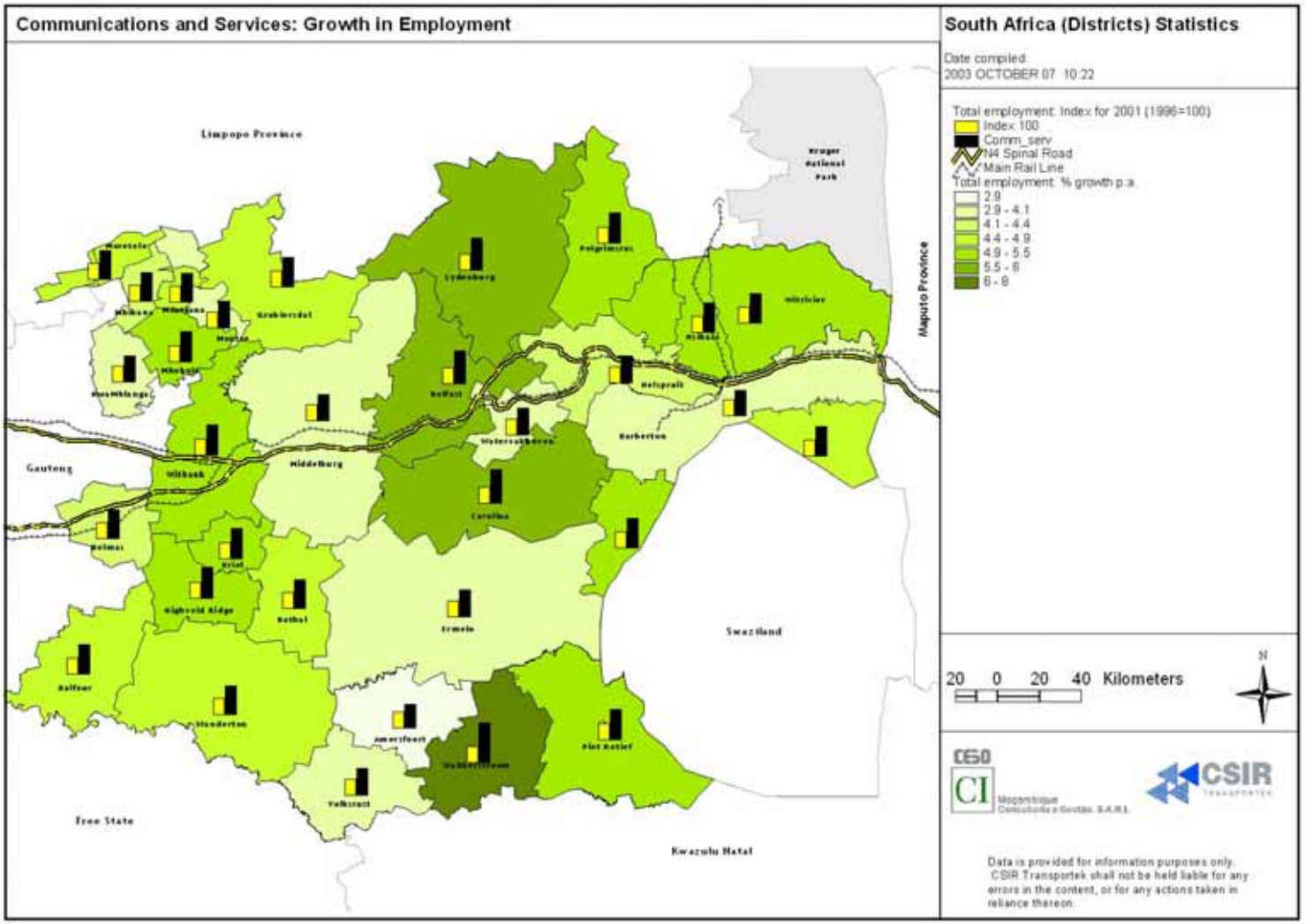
Map 5.16: Rate of change during the analysis period: Employment (Trade)



Map 5.17: Rate of change during the analysis period: Employment (Transport)



Map 5.18: Rate of change during the analysis period: Employment (Finance)



Map 5.19: Rate of change during the analysis period: Employment (Communications and services)

5.3.3 Income per capita

An analysis of income per capita for Mpumalanga shows that the province is underperforming relative to the national average. Figure 5.16 underlines the fact that the income per capita for Mpumalanga is lower than the corresponding figure for South Africa. Likewise Figure 5.17 shows that the increase (in real terms) in income per capita during the analysis period for Mpumalanga is lower that the national average. In fact, Mpumalanga performs worse than all the other areas selected as benchmarks for this purpose. Of the districts comprising the province, Nelspruit and Witrivier have the highest incomes per capita (see Figure 5.18).

In terms of a spatial analysis at district level, the map that follows shows a remarkable concentration of areas with a relatively high growth in income per capita during the analysis period around the corridor.

Figure 5.16: Income per capita in selected areas

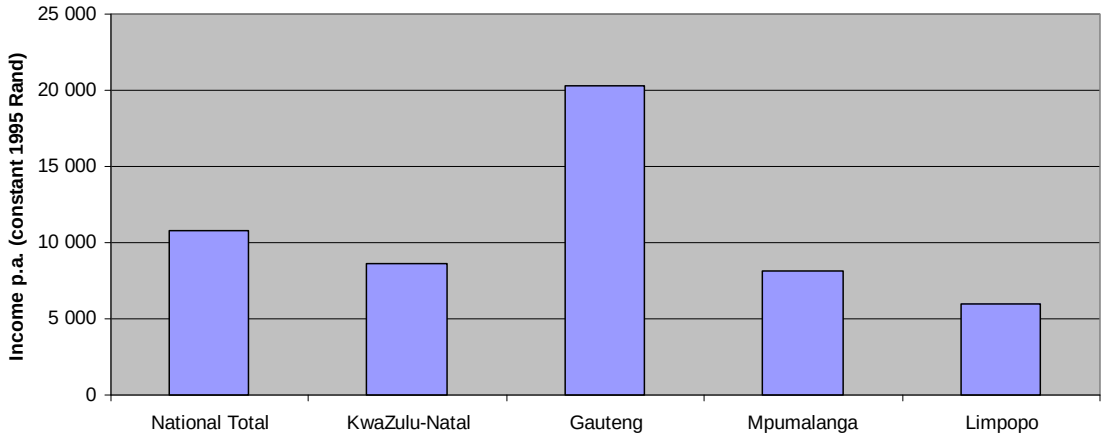


Figure 5.17: Income per capita: Increase during 1996 to 2001

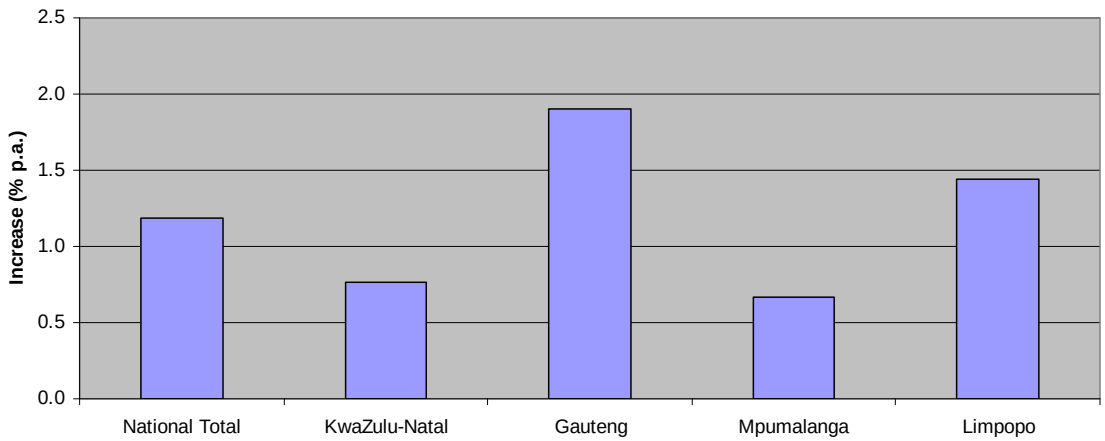
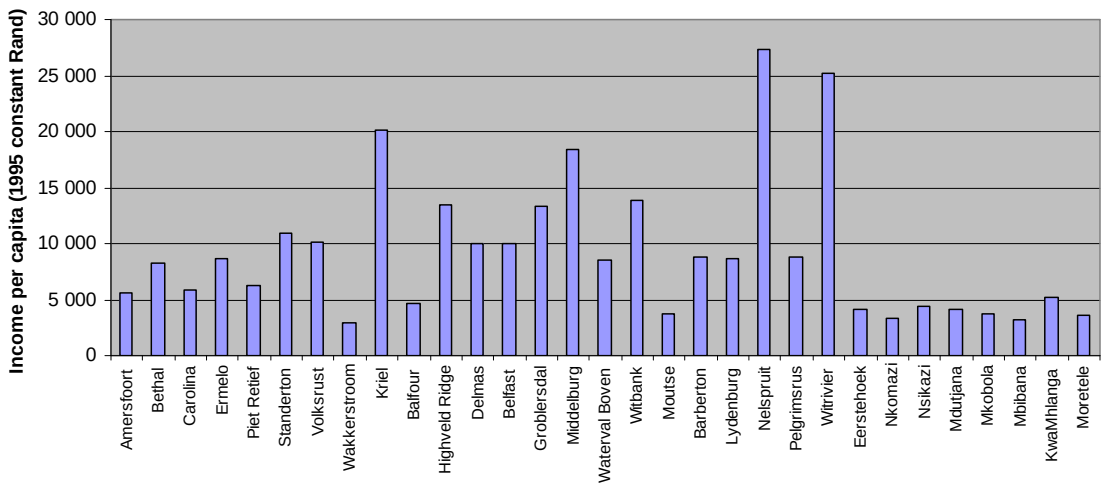
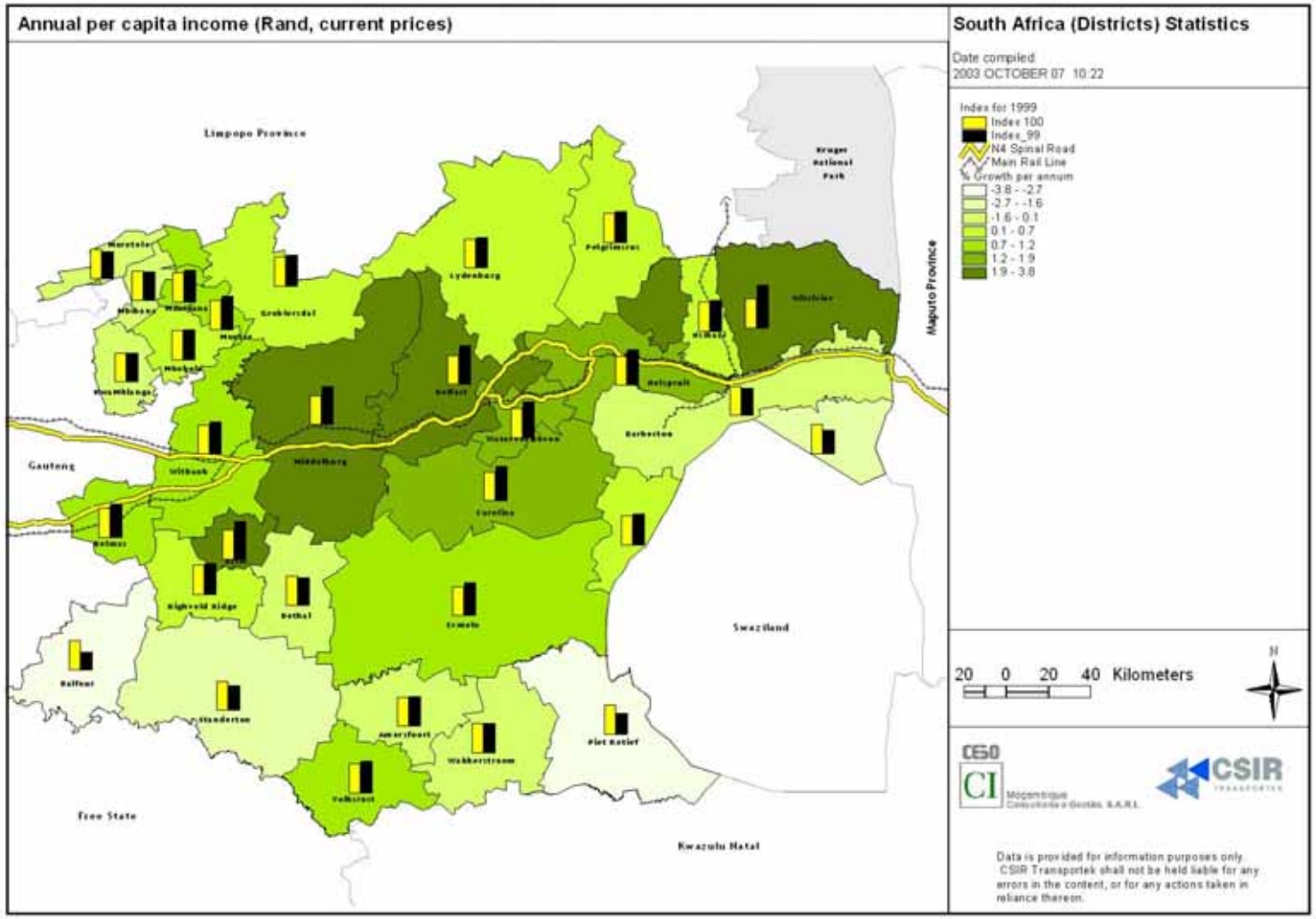


Figure 5.18: Mpumalanga: Income per capita by district





Map 5.20: Rate of change during the analysis period: Income per capita

5.3.4 Diversification of the economy

"The Tress index indicates the level of concentration or diversification in an economy. It is estimated by ranking the nine sectors according to their contributions to GVA (Gross Value Added) or employment, adding the values cumulatively and indexing them. A tress index of zero represents a totally diversified economy, while a number closer to 100 indicates a high level of concentration."[2]

Figure 5.19 shows that the economies in all selected areas have become less diversified (i.e. more concentrated) during the period 1990 to 2002, with the exception of Mpumalanga that has succeeded to diversify its economy. This figure also shows that Mpumalanga is closest to the national average of all selected areas. Figure 5.20 and the map following Figure 5.20 show the Tress index for Mpumalanga at district level.

Figure 5.19: Diversification of the economy between 1996 and 2001

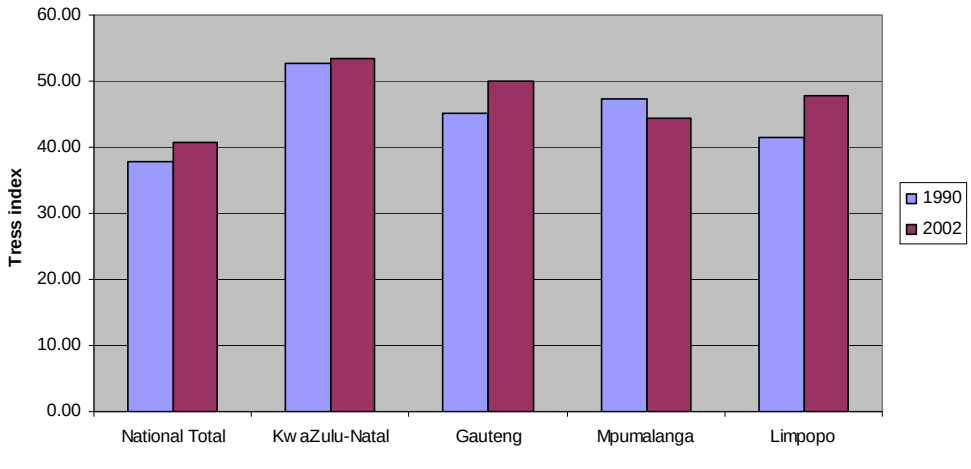
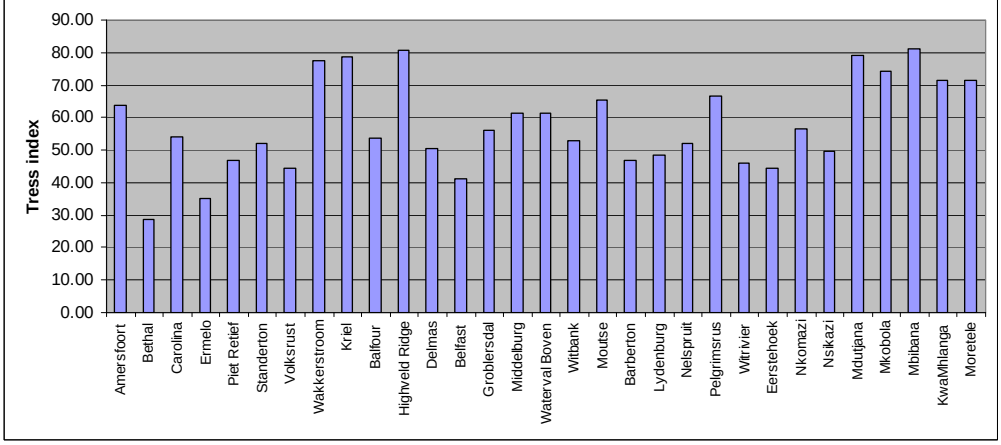
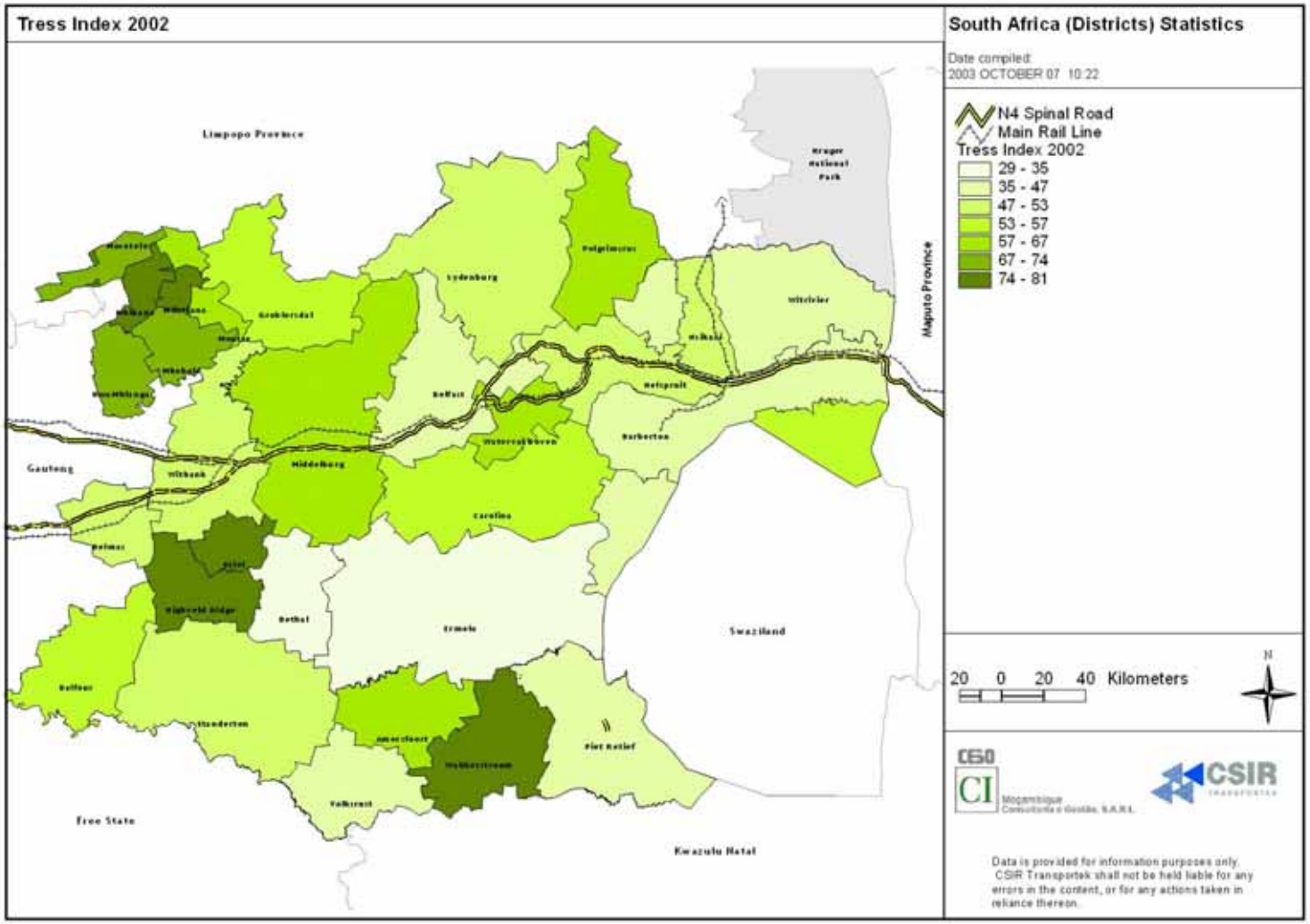


Figure 5.20: Tress index for Mpumalanga districts



[2] South African Regional Economic Focus. Global Insight (Southern Africa)



Map 5.21: Tress index

5.3.5 Comparative advantage

"The location quotient is an indication of the comparative advantage of an economy. A provincial or magisterial economy has a location quotient larger (smaller) than one, or a comparative advantage (disadvantage) in a particular sector when the share of that sector in the provincial economy is greater (less) than the share of the same sector in the national economy."[3]

Table 5.1 shows changes in this indicator at district and sector level during the period 1996 to 2002.

[3] South African Regional Economic Focus. Global Insight (Southern Africa)

Table 5.1: Location quotients for 1996 and 2002

c:\myfiles\mdc18.xls Sheet calc 10/10/2003

	Agriculture		Mining		Manufacturing		Electricity		Construction		Trade		Transport		Finance		Comm serv		Total
	1996	2002	1996	2002	1996	2002	1996	2002	1996	2002	1996	2002	1996	2002	1996	2002	1996	2002	
Amersfoort	7.2	7.3	0.0	0.0	0.2	0.2	0.4	0.5	2.3	2.5	0.6	0.7	1.0	1.0	0.5	0.5	1.7	1.9	1.0
Bethal	1.3	1.5	0.6	0.6	0.4	0.4	1.6	1.6	1.1	1.2	1.9	2.1	1.1	1.2	1.8	1.8	0.9	1.1	1.0
Carolina	5.9	5.3	0.2	0.2	0.2	0.3	0.1	0.1	0.3	0.3	1.3	1.4	1.1	1.1	2.5	3.2	1.6	1.4	1.0
Ermelo	1.9	2.2	0.3	0.5	0.2	0.1	0.7	0.8	0.9	0.7	2.0	1.8	2.9	2.5	2.7	2.2	1.5	1.7	1.0
Piet Retief	2.9	3.8	0.4	0.5	1.1	0.9	0.1	0.1	1.2	0.9	1.6	1.3	1.7	1.2	1.5	1.1	1.1	1.3	1.0
Standerton	1.9	2.3	1.3	1.4	0.3	0.3	2.3	2.2	0.9	0.8	0.7	0.7	0.7	0.7	0.5	0.5	0.6	0.8	1.0
Volksrust	3.9	3.6	0.1	0.1	0.0	0.0	1.3	2.2	3.5	3.6	1.6	1.7	2.2	2.2	1.0	1.0	1.3	1.1	1.0
Wakkerstroom	4.5	5.4	0.1	0.1	0.0	0.0	0.1	0.1	2.0	1.0	0.7	0.4	1.2	0.5	0.7	0.5	3.3	3.7	1.0
Kriel	0.1	0.1	1.4	1.8	0.0	0.0	4.1	4.3	0.4	0.4	0.1	0.1	0.2	0.2	0.1	0.1	0.8	0.8	1.0
Balfour	3.4	4.4	0.0	0.0	0.3	0.2	2.0	2.1	1.1	1.1	2.7	2.6	0.8	0.7	0.7	0.7	0.8	1.1	1.0
Highveld Ridge	0.1	0.1	1.9	1.4	2.0	2.1	0.1	0.1	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.4	0.2	0.2	1.0
Delmas	4.5	4.2	0.9	1.1	0.2	0.1	0.1	0.1	1.0	0.9	1.1	1.0	2.3	2.1	1.7	1.4	1.3	1.3	1.0
Belfast	2.8	2.3	0.3	0.6	0.3	0.3	0.2	0.2	2.3	2.2	1.5	1.4	5.1	5.3	0.6	0.5	1.6	1.4	1.0
Groblersdal	2.4	2.6	0.0	0.1	0.5	0.4	0.2	0.2	0.4	0.3	1.9	1.8	2.0	1.8	1.8	1.6	2.3	2.7	1.0
Middelburg	0.6	0.5	1.2	1.3	1.5	1.3	1.0	1.1	0.5	0.5	0.4	0.4	0.4	0.5	0.8	0.8	0.7	0.7	1.0
Waterval Boven	1.8	1.5	0.2	0.4	0.4	0.5	0.0	0.0	0.2	0.2	0.7	0.7	6.4	6.7	0.1	0.1	2.6	2.2	1.0
Witbank	0.1	0.1	1.3	1.5	0.5	0.4	2.4	2.5	1.1	1.2	0.8	0.8	1.1	1.2	1.1	1.2	0.7	0.7	1.0
Moutse	1.1	1.0	0.3	0.4	0.1	0.1	0.0	0.0	1.2	1.1	2.1	2.1	1.7	1.5	1.4	1.3	3.4	3.4	1.0
Barberton	2.2	2.4	0.7	0.3	1.2	1.2	0.2	0.2	1.2	1.3	1.3	1.5	1.2	1.4	1.1	1.2	1.0	1.1	1.0
Lydenburg	0.7	0.7	0.4	1.0	1.2	0.9	0.1	0.1	1.3	1.1	2.2	1.8	1.5	1.4	1.3	1.1	1.5	1.4	1.0
Nelspruit	1.1	1.1	0.0	0.0	1.2	1.1	0.2	0.2	1.5	1.5	2.0	2.1	2.1	2.1	2.4	2.3	1.4	1.3	1.0
Pelgrimsrus	8.4	8.7	0.1	0.2	0.4	0.5	0.1	0.1	1.3	1.2	0.9	0.8	0.8	0.7	0.6	0.6	1.0	0.9	1.0
Witrivier	1.6	1.4	0.0	0.0	0.8	0.8	0.3	0.3	2.4	2.6	2.7	2.9	1.8	2.1	1.5	1.7	1.6	1.3	1.0
Eerstehoek	1.6	1.8	0.4	0.4	0.2	0.2	0.8	0.8	2.8	2.9	2.5	2.7	0.6	0.5	0.9	1.1	2.1	2.1	1.0
Nkomazi	1.3	1.6	0.1	0.0	0.7	0.5	0.3	0.4	4.2	3.8	2.6	2.4	1.0	0.8	0.7	0.6	2.1	2.6	1.0
Nsikazi	0.3	0.3	0.2	0.3	0.7	0.7	0.4	0.4	2.9	2.9	2.8	2.9	1.2	1.2	0.9	1.1	2.2	2.1	1.0
Mdutjana	0.2	0.2	0.0	0.0	0.2	0.2	0.6	0.8	1.0	1.1	1.2	1.2	0.7	0.7	0.4	0.4	4.6	4.7	1.0
Mkobola	0.4	0.4	0.0	0.1	0.3	0.3	0.1	0.2	0.9	0.9	2.8	2.9	1.0	0.9	0.3	0.3	3.7	3.8	1.0
Mbibana	0.8	0.8	0.0	0.0	0.0	0.0	0.3	0.4	1.9	2.0	0.7	0.7	0.5	0.5	0.5	0.5	5.0	5.2	1.0
KwaMhlanga	0.2	0.2	0.0	0.0	0.4	0.4	0.3	0.3	1.3	1.3	2.0	2.2	1.1	1.1	0.6	0.7	3.7	3.8	1.0
Moretele	0.3	0.3	0.0	0.0	0.1	0.1	2.1	2.3	1.4	1.6	0.6	0.7	1.1	1.2	0.6	0.9	3.4	3.6	1.0
Mpumalanga	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**

5.4. Mozambique

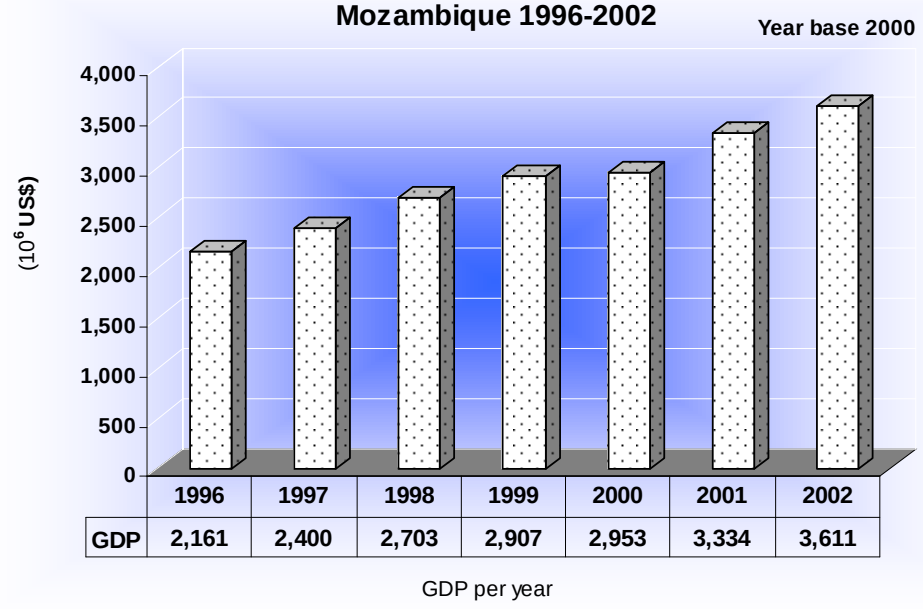
5.4.1 Economic output

The approach adopted for Mozambique, like for South Africa, involves viewing Maputo city and Province in a Mozambican context. Attention is then focused on Maputo city and Province, particularly the relative contribution of their different sectors to the capital-city and provincial economy. The data available for the Mozambican side are not as disaggregated as in the case of South Africa, and thus the analysis of the relative importance of the different spatial areas constituting the province in respect of the economy cannot be presented with similar detail. However, the following pages paint the overall picture of the economic output in the region of the MDC, an analysis of growth trends for selected main sectors over the analysis period, and a comparison of Maputo city and Province with other provinces and main regions in South Africa.

In summary, the broad definition of the MDC-Mozambique covers about 23 thousand square kilometres of surface area, and about 2,1 million inhabitants. This represents around three percent of the total surface area of Mozambique, and two percent of the country's total population projected for 2002.

In a narrower definition, the MDC can be assumed to cover about six thousand square kilometres and around 47 percent of Maputo Province and City's population. Mozambique's southern region, which includes the MDC, produced almost 43 percent of the national economy, estimated at an annual average of 3.2 billion US dollars in the period 1996 (see Figure 5.21 below).

Figure 5.21: Real Gross Domestic Product, Mozambique 1996-2002

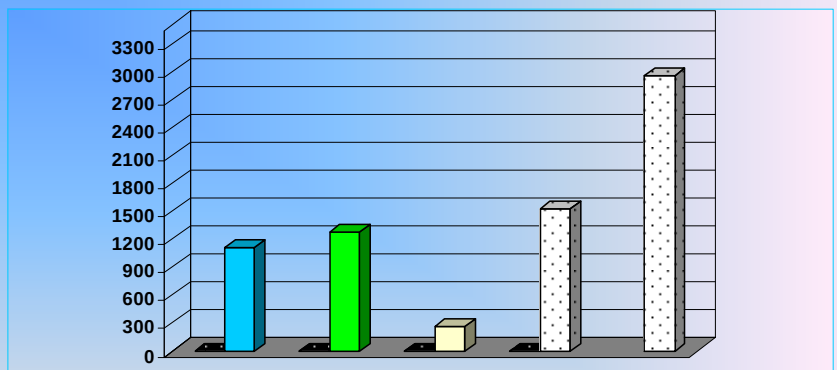


However, as Figure 5.22 shows, of the 43 percent, Maputo city and province represented in 2000 respectively about 38 and 4.5 percent of the Mozambican GDP,

while the remaining two southern provinces (Gaza and Inhambane) represented only 9 percent.

Figure 5.22: Weight of the MDC GGP in the Wider Context of the Mozambican GDP in 2000

(Annual Average in US$ 10^6)



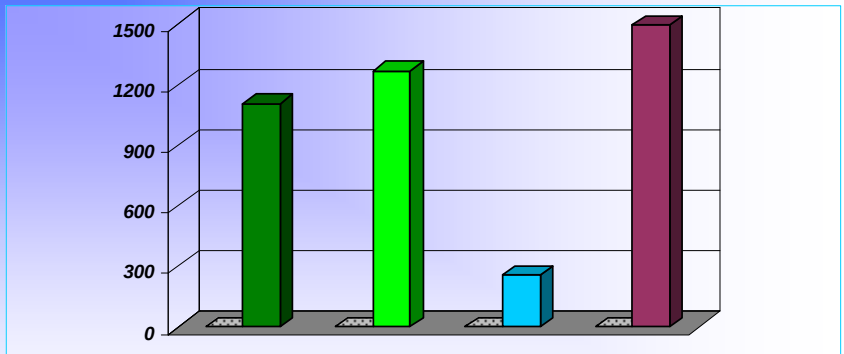
	Maputo City	MDC-MaputoC.&P.	Rest of Southern Region	Southern Region/Country	Mozambique
"%"	38%	43%	9%	52%	
"US$ 10^6"	1,112	1,272	256	1,529	2,953

Source: UNDP, 2002

Clearly, Maputo City is by far the biggest player in the Mozambican economic context, in general, and the MDC or the southern regional economy, in particular. Within the southern region of Mozambique, Maputo City represents 73 percent (see Figure 5.23). Thus the MDC represents currently more than eighty percent of the southern region's economy.

Figure 5.23: Weight of the GDP of the MDC Region in the Economy of the Southern Region, Mozambique 1996-2000

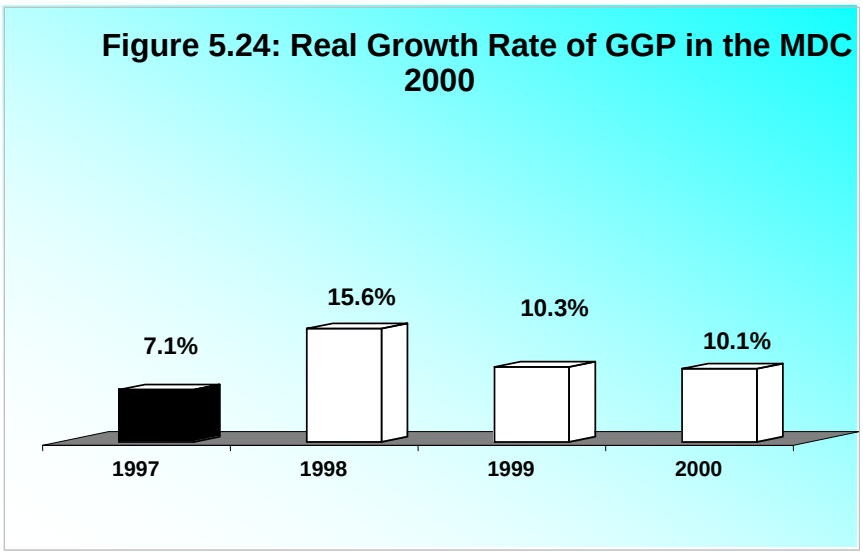
(in US$ 10^6)



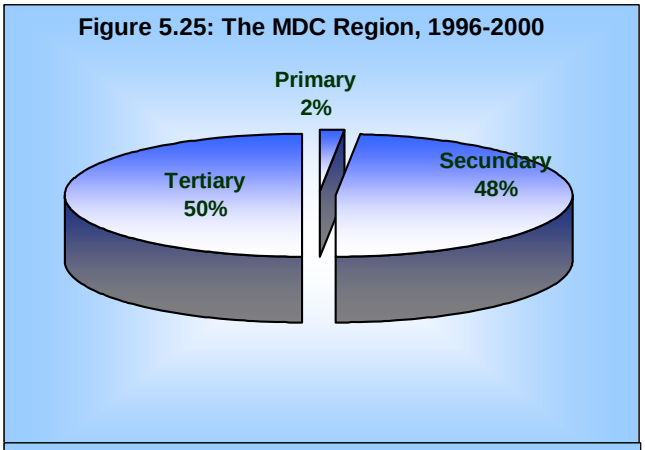
	Maputo City	MDC-MaputoC.&P.	Rest of Southern Region	Southern Region/Country
Percent	73%	83%	17%	100%
GGP	1,112	1,272	256	1,529

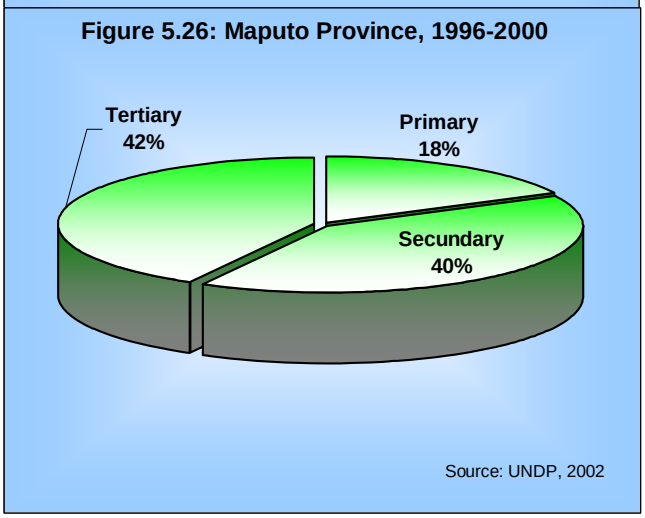
Source: UNDP, 2002

Figure 5.24 provides another angle of the Maputo City economy within the Southern region.



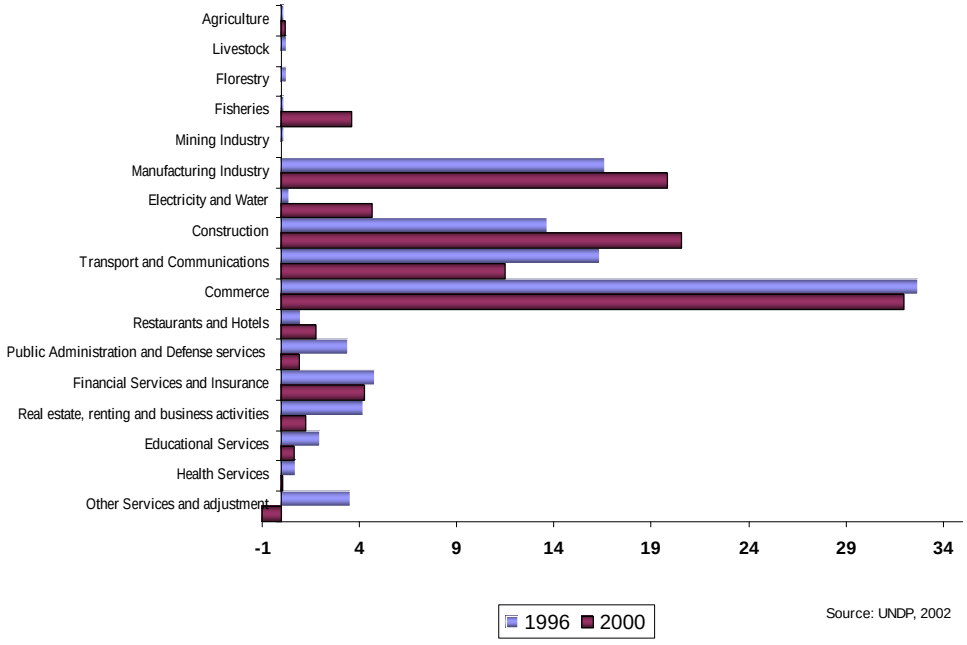
Figures 5.25 and 5.26 highlight the relatively low contribution of the primary sector in the MDC region, mostly because of the role plaid by the economy of Maputo City.





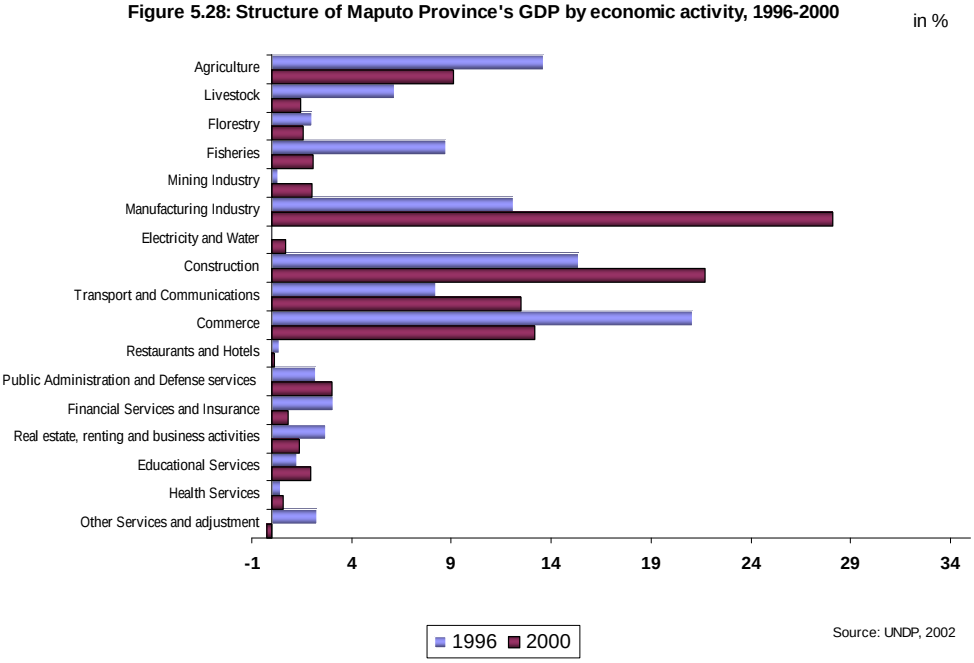
In Maputo City the service sector is the most important contributor to the provincial economy, followed by the manufacturing and construction sectors (see Figure 5.27).

Figure 5.27: Structure of Maputo City's GDP by economic activity, 1996-2000



In Maputo Province the Manufacturing industry is increasingly the most important contributor to the provincial economy (see Figure 5.28).

Figure 5.28: Structure of Maputo Province's GDP by economic activity, 1996-2000



5.4.2 Employment

Special attention has to be paid to the Mozambican economic structure and, in particular, the composition and structure of its working force. Its domain is still the subsistence economy throughout Mozambican territory, either in urban, peri urban or rural contexts.

According to the latest data of the most detailed enterprise survey undertaken in the last 10 years in Mozambique, more than 3 million households predominantly focussing economic activities in the sense of "self help work" stand in opposition to about 50 thousand formal economic organizations (31 735 enterprises, 12 196 organizations of public administration and 4 217 non profit organizations) employing 521 207 persons and 12 196 public entities with more than 173 thousand employees. The statistics include all officially registered units. The rubric "enterprises" includes 811 limited companies, 4052 shareholder companies and more than 25 thousand (individual) entrepreneurs. More than 65 percent (20.400) of the almost 31 thousand companies in Mozambique are concentrated in Maputo, Gaza and Sofala provinces. Wholesale and retail trade (17.776 - 56 percent of all registered companies), hotels and restaurants (5 984 - 18,9 percent of all registered companies) and real estate, renting (including security services) and business activities (680 - 2,1 percent of registered companies) are the main activities of registered companies in Mozambique. They amount to almost 78 percent of all companies and offer more than 52 percent of all dependent employment opportunities in the private sector of Mozambique.

In 1996/97, the official unemployment rate (formal wage-earning employment) was estimated at around 69 percent. This figure is almost the same as the total number added to the Mozambican population every year, most of which are by definition not regarded as unemployed simply because they do not actively seek for a job or employment. While, on the one hand, Mozambique has about 350.000 people assumed to be unemployed in the formal economy, on the other hand, every year the subsistence and the informal economy add almost the same number of people to its existing economically active population.

Against this rather high demand for work opportunity, either through job employment or through own employment, over the past five years or so, less than 200 new investment projects have emerged in Mozambique annually. Such a modest investment generates about 35.000 new jobs per year, which means a satisfaction of not more than 10 percent both of the existing natural demand for new work opportunities in the subsistence and informal economy, and the estimated unemployment level directly associated with the formal economy.

Only about 15 percent (4.500 companies) contribute to any kind of transformation of products, either in the sectors of agriculture, hunting and forestry (2,3 percent - 741 companies), manufacturing (10,1 percent - 3.220 companies), construction (1,1 percent - 345 companies) or fishing industry (0,5 percent - 153 companies). This is almost the same amount of organizations (4.217) which legally are ruled under non

profit status, in the main represented by associations and foundations (3.754 organizations in Mozambique) employing about 46.567 persons, almost 75 percent the number of employees of nearly 26 thousand small companies. Company sizes and their turnovers are compared to other small sub Saharan African countries (see Table 5.2 below).

Table 5.2: Enterprise profile (formal, private & parastatal economy), subsistence production profile and work force profile in Mozambique (in 2003)

Company size	Number of persons per company	Number of companies	Number of companies (of total)	Number of employees	Number of employees (of total)	Company turnover (of total)
Small	(0 to 9)	25.853	89.5 percent	60.149	20.0 percent	24.0 percent
Medium	(10 to 99)	2.621	9.1 percent	69.076	22.9 percent	17.5 percent
Large	(100 to 999)	365	1.3 percent	92.662	30.8 percent	58.5 percent
	(more than 1000)	31	0.1 percent	79.258	26.3 percent	
Total (private & parastatal formal economy)		28.870	100 percent	301.145	100 percent	100 percent
TOTAL (public administration)		Number of entities (12.196)	Number of entities from total of formal organizations (25.3 percent)	173.495		Number of employed in formal economy (0.52 Million)
TOTAL (non profit organizations)		Number of organizations (4.217)	Number of organizations from total of formal organizations (8.8 percent))	46.567	Estimation on unemployment rate (70 percent of 0.52 Million)	
TOTAL (subsistence sector)		Number of households (3 million)		Number of persons engaged in subsistence sector (8 Million)		Economic Active Population (almost 9 Million)

Sources: CEMPRE 2003 preliminary results. INE 2003. Maputo; PARPA 2001-2005. Mozambique., in ETC International 2003.

The labour force and its engagement in the Mozambican economy can be characterized as follows:

- The economically active population (persons aged over 15) of Mozambique amounts to almost 9 Mio persons, with an annual increase of almost 2 percent of the total population (18 Mio persons).
- Annually, more than 300 000 new job seekers are looking for employment and income opportunities.
- Almost 90 percent of the economically active population (almost 9 Mio persons aged 15 or older) in Mozambique is engaged in subsistence economy.
- Only more than 520 thousand persons earn their money either in private, parastatal or non profit registered organizations.
- Almost 170 000 employees are engaged in more than 12 000 organizations (25 percent of total) in public administration.
- Almost 90 percent of private companies (25 800) employ 20 percent (60 000) of the total number of employees engaged in the private sector (300 000), even less than the 31 biggest companies (79 000 employees).
- Almost 400 companies employ 172 000 persons (57 percent of total) contributing to almost 60 percent of turn over of all private and parastatal registered organizations in Mozambique.

Estimates on unemployment rate (70 percent of EAP in formal economy[4]) are merely academic, as the labour market is highly informal. The exact determination of the work force number, being in conditions of unemployment or underemployment in Mozambique, is not possible and depends on the parameters used for statistical purposes.

An outlook for employment patterns in the Mozambican economy is determined by following general trends and conditions, such as the fact that the distribution of population by age is extremely skewed to the younger population groups, reducing significantly the average age of the workforce. On the one hand this results in a surge of inexperienced and unskilled job seekers, as the public and private capacity of skills provision (number of VE schools, VT centres, universities) will continue in the coming years with the estimated 6 000 graduates annually far beyond the gross demand for training.

The remainder of employment was, and still is, agricultural, with a continuously more sizeable informal urban sector[5]. It still absorbs the large annual additions to the labour force by demographic growth of economically active population, estimated in average at 350 000 per annum[6]. Although Mozambique is estimated to have the world's seventh highest AIDS/HIV infection rate and data from 1998 suggest that

[4] According to inquiry to the families on the livelihood conditions done between 1996-97 by the Ministry of Planning and Finance (IAF 1996/97) / Ministry of Labour, Mozambique, 2003.

[5] Internationally and in comparison to average of sub Sahara Africa, Mozambique is still at the beginning of a "urbanization decade". World wide it is amongst the countries with the lowest urbanization rates (less than 25 percent), like Bhutan and Laos.

[6] 2 percent annual natural growth rate of total population (18 Mio), including scenarios about consequences of AIDS/HIV to the demographic growth rate.

almost 17 percent of all Mozambicans aged 15 to 49 were infected[7] and prevalence still tends to increase, especially among the age group of 21 to 35, the increase of above mentioned growth rate of new job seekers will still be far higher than the net job creation rate per annum in Mozambique. The high AIDS prevalence is above average for teachers and instructors. This mans that more resources should be allocated to teacher and instruction training than under normal conditions.

Compared to other countries in the SADC region, the ratio of entrepreneurs[8] per thousand habitants in Mozambique is still very low and to take the risk to invest in a business is still very high. It shows that, at microeconomic level, the economic responses in the form of promoting competitiveness, productivity and employability still do not satisfy the outstanding amount of jobs which have to be created annually in order to sustain the prevailing spirit in Mozambique of deepening economic and social reforms and implementation at all levels of Government programs to reduce poverty.

Until recently, public administration employment and employment in parastatal companies dominated the formal labour market. According to public sector reform programs of Mozambique[9], public administration employment tends to rise only in a few sectors, mainly in education (especially primary and secondary education teachers) and, in the next five years, in municipal and district governments.

5.4.3 Income

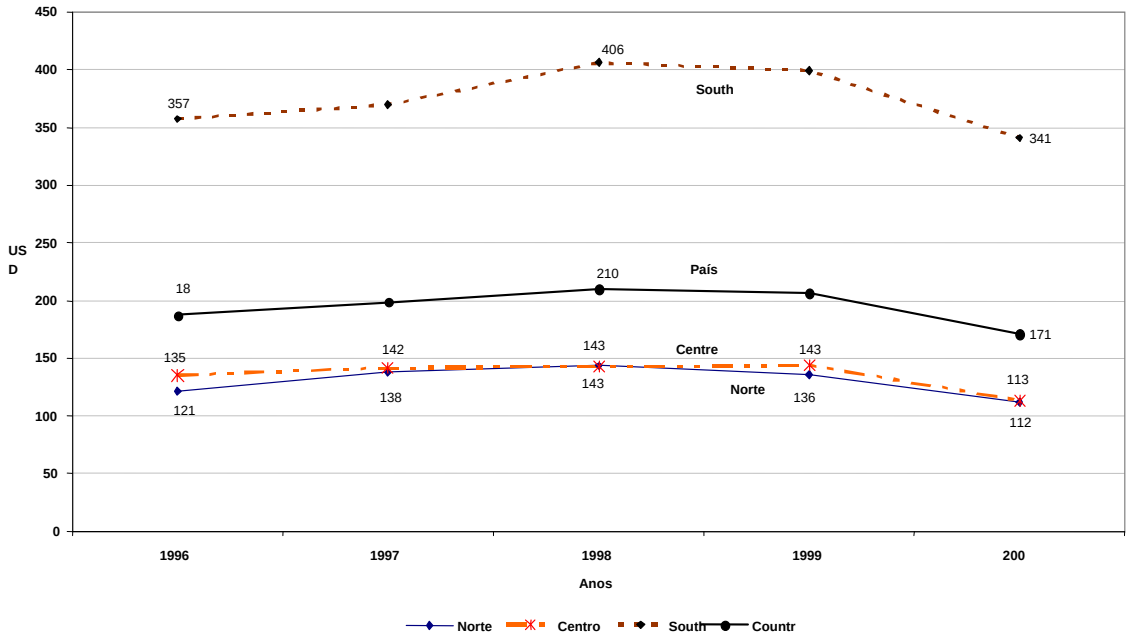
The UNDP's National Human Development Report 2001, published in 2002 and the latest with GDP data disaggregated by province, indicated a fall of the real GDP per capita in 2000 in all provinces of Mozambique, during the period 1996-2000. Although more updated GDP data disaggregated by province have so far not been released, there are several indications that the downward trend might have been reversed, at least in Maputo province and city (see Figures 5.29 and 5.30).

[7] Ministry of Education of Mozambique (November 2000):Assessment of the Impact of HIV/AIDS on the Education Sector in Mozambique. Prepared by Verde Azul Consult Lda, Maputo, Mozambique.

[8] Entrepreneurs (formalized), who generate a business, create jobs, pay salaries and taxes.

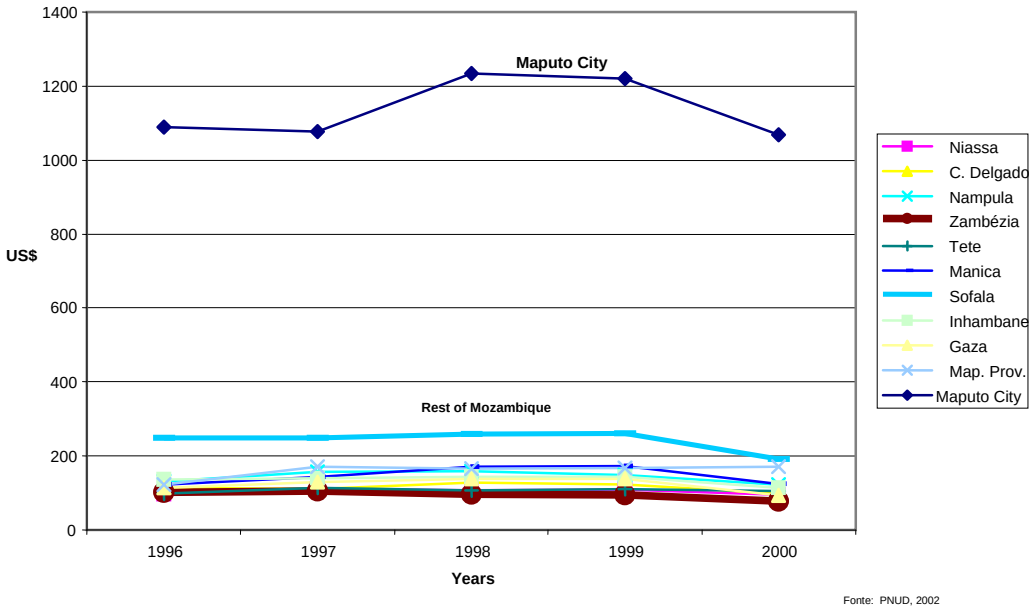
[9] See in: José Jaime Macuane e Bernhard Weimer (eds): Governos Locais em Moçambique. Desafios de Capacitação Local. Comunicações do Seminário Internacional, realizado em Maputo (18 a 20 de Fevereiro de 2002). Maputo 2003.

Figure 5.29: Real per capita GDP (USD), Mozambique 1996-2000



Prepared by AF, Source Table 17, NHDR2001

Figure 5.30: Real per capita GDP by Provinces, Mozambique 1996-2000



Fonte: PNUD, 2002

Between 1996 and 2002 the real GDP increased by 62 percent. Despite being slighter, the growth of real consumption per capita still experienced an impressive increase of 50 percent. Moreover, data of the Food Security Early Warning System (FEWS) show growth on the production of grains per capita of about 14 percent in the period 1996-2002. The rural survey on the rural households' income (TIA) was also

conducted in 1996 and 2002. Using the food baskets developed by IAF of 1996-97 and 2002-03 to generate comparisons of real income, the real or the medium net income of the production per capita increased by about 26 percent between 1996 and 2002 between 1996 and 2002.

Yet, as the recent data on poverty also show, the relatively high economic growth is not always translated into poverty reduction, at least in some parts of Mozambique, including the MDC region.

5.5. Assessment of the initial expectations and projections of the MDC potential impact

At the beginning of the MDC, in the middle 1990s, Capricon (1995) put forward an assessment of the potential future impact of this Corridor on economic development in the Mpumalanga Province. To the knowledge of the consultant no assessment similar to the one prepared by Capricon has been undertaken ever since, though when one now undertakes an evaluation of the MDC in the past five year or so Capricon's integrated approach and modelling technique become useful in two ways. On the one hand, based on the data available one can review and evaluate the *ex-ante* assessment and expectation specifically for Mpumalanga Province. On the other hand, although Capricon did not include the total MDC, its approach and modelling technique can also be used to attempt an *ex ante* analysis for the Mozambican part of the MDC.

5.5.1 Capricon's projections for Mpumalanga

Approach

The Capricon projections involved four steps, as outlined below.

Step 1: Base economic projections per sector

This step involves the projection of future levels of economic activity (GGP) *without* the MDC, using historical growth rates. This was done for the main sectors of the economy, using the Standard Industrial Classification (SIC) system. This step also involves the conversion of GGP to production (output) to enable the application of input/output multipliers.

Step 2: MDC sectoral growth scenarios

This step consists of projecting future levels of economic activity in the province, taking into account expected benefits likely to be derived from the MDC

Step 3: Contribution of sectoral inputs resulting from the MDC

This step involves determining the contribution of the MDC to total projected sectoral output of the province.

Step 4: Sectoral impacts of MDC scenario

The final step involves interpreting the future impact of the MDC on sectoral economic performance in terms of the following:

- GGP
- Employment
- Capital investment
- Imports.

Results obtained

Results of the analysis (for all sectors combined) are contained in Table 5.3 below.

Table 5.3: Summary of MDC impacts on selected variables for Mpumalanga

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Variable	Total MDC impact per annum (R million at constant 1985 prices except for Employment: see note below)			Total MDC impact per annum as % of GGP for Mpumalanga except for Employment: see note below		
	2000	2005	2010	2000	2005	2010
GGP	1 976	3 521	4 461	10.20	13.70	13.60
Employment	40 235	74 604	94 835	49 118	47 190	47 039
Capital investment	7 173	13 092	16 973	37.02	50.94	51.74
Imports	400	746	967	2.07	2.90	2.95
Note:	***Employment (in the column "total MDC impact per annum") = number of employment opportunities***					
	Employment (in the column "total MDC impact per annum as % of GGP") = GGP per employee					

Projections for the period 1996 to 2001 (the analysis period used for the investigation of spatial impacts) are shown in Figures 5.31, 5.32 and 5.33 below.

Figure 5.31: Projected production for Mpumalanga (with MDC) for selected sectors

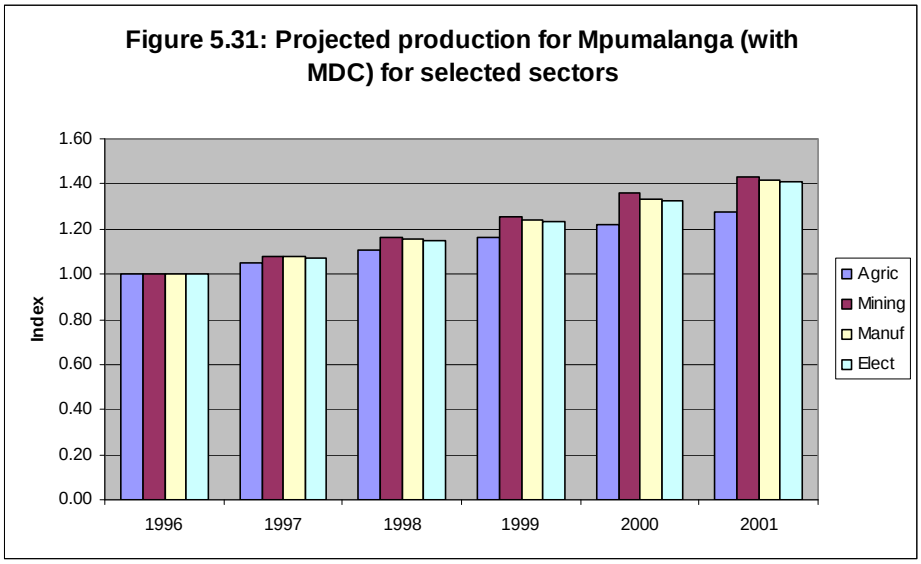


Figure 5.32: Project production for Mpumalanga (with MDC) for selected sectors

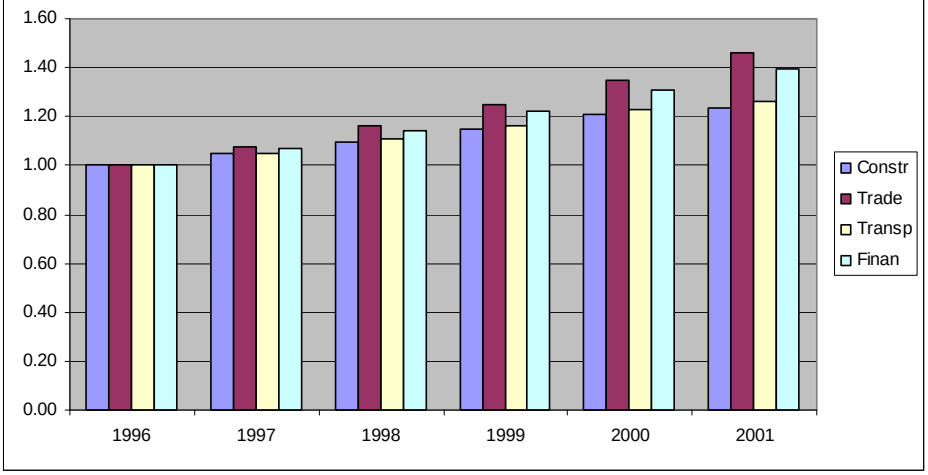
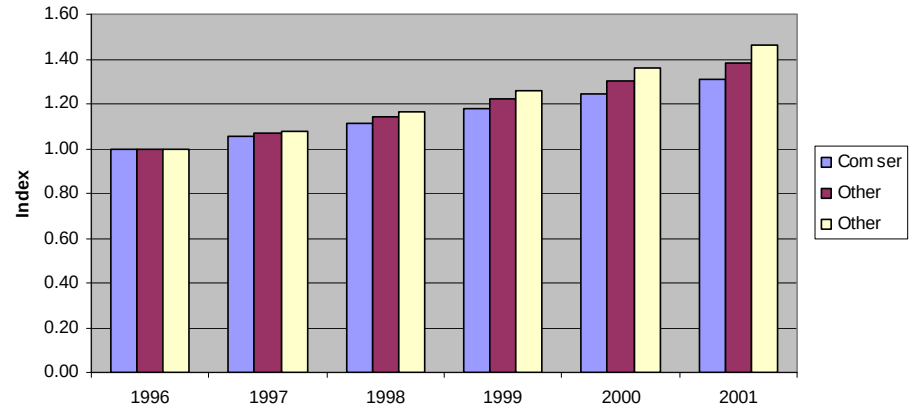


Figure 5.33: Projected production for Mpumalanga (with MDC) for selected sectors



Comparison of predicted and actual impacts

Predicted and actual impacts in respect of production (in the case of Capricon) and GVA (in the case of spatial impacts), and in respect of employment, are summarised in Table 5.4, and also presented in Figures 5.34 and 5.35 below. No data are available in respect of capital investment and imports, which meant that no comparison could be made in these cases. Figure 5.35 shows that the projections were over-optimistic in all cases except for the sectors *transport* and *finance*. Figure 5.35 also shows that the total economy (all sectors combined) grew by less than 2,5 percent per annum during the analysis period (1996 to 2001) as opposed to the projected figure of 7 percent per annum. Likewise, Figure 5.36 demonstrates a substantial "mismatch" between predicted and actual employment. The biggest discrepancies appear in the case of the mining and trade sectors. For the total economy, however, the picture is less alarming: actual employment grew by 4,6 percent per annum during the analysis period, as opposed to a projected figure of 7 percent per annum.

Table 5.4: Comparison of actual and predicted growth rates for the period 1996 to 2001 (% per annum)												
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Item	Agric	Mining	Manuf	Elect	Constr	Trade	Transp	Finan	Com ser	Gov	Other	Total
Predicted												
Production	4.99	7.45	7.22	7.06	4.36	7.83	4.79	6.84	5.48	6.73	7.94	7.00
Actual												
GVA	0.49	1.11	4.28	2.00	0.48	1.78	6.07	7.00	0.28	NA	NA	2.47
Employment	-0.87	-3.82	4.22	-0.67	4.55	16.54	1.55	7.80	4.67	NA	NA	4.58

Figure 5.34: Predicted and actual growth rates for production and GVA respectively: 1996 to 2001

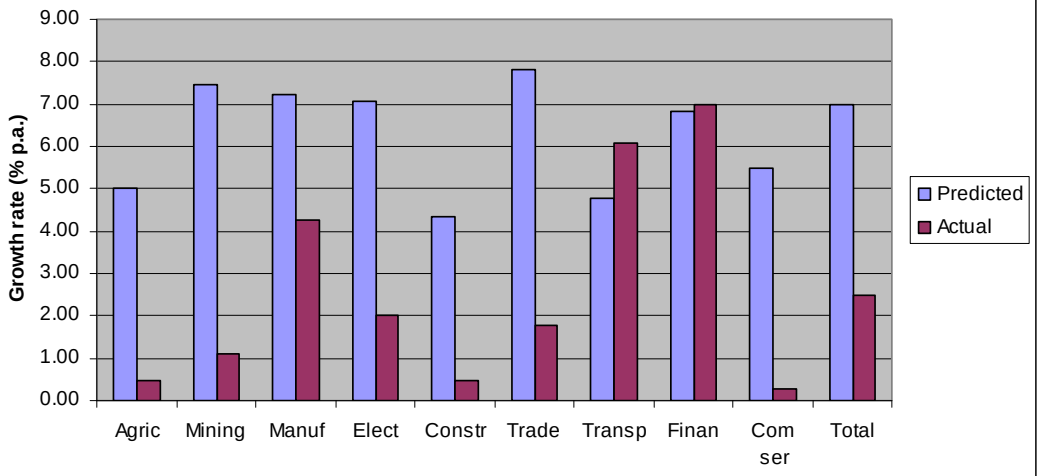
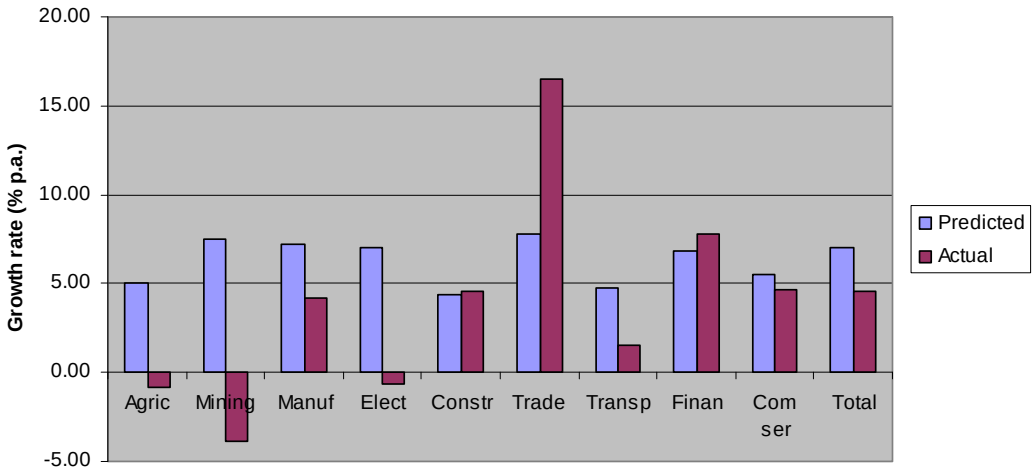


Figure 5.35: Predicted and actual growth rates for employment: 1996 to 2001



Comments on the Capricon approach

Although the Capricon exercise was intended as an integrated approach and modelling technique, in order to quantify the potential economic impact of the MDC

on the Mpumalanga, it suffered from limited basic information available at the time of the assessment. It also contained a number of unsubstantiated assumptions. An example is the unscientific method for determining the estimated increase over the base projections resulting from the MDC.

5.5.2 Post-ante expected MDC potential economic impact in Maputo

Capricon did not take into consideration the Mozambican part of the MDC, but even if it had tried to do so it would have faced serious problems of lack of data. In 1995 data on Mozambique's GDP were available as a single and sectorial aggregate, but not disaggregated by province. The latter became available for the first time in 1999, and only for the period 1996-1999. In any case, for the purpose of the present post-ante assessment, one can imagine that if Capricon's exercise had in 1995 included the Mozambican part it most probably would have taken into consideration the economic growth experience than in the previous years. In that perspective, for instance, it is known that Mozambique's GDP was starting its recovery following the peace settlement, the first multi-party elections and a set of economic reforms introduced by the Government since 1985, and more systematically after the 1990 new Constitution.

Between 1994 and 1996 Mozambique's GDP grew at an average annual growth rate of 4 percent. Moreover, between 1996 and 1997 the average economic growth of Maputo province and city was 7.1 percent per annum, half of the national GDP growth but the same as the national annual average growth rate of Mozambique's GDP during the period 1993-1996 (INE, 1997: 134). Based on this information, a first scenario, here called Scenario 1, has been prepared to simulate a possible projection of the future level of the economic activity in the Maputo province and city under the circumstances about a decade ago, i.e. under the conditions where the provincial economy is assumed to continue to be influenced by the same factors and in similar proportions as those experienced during the period 1995-97, that is before the introduction of the MDC programme.

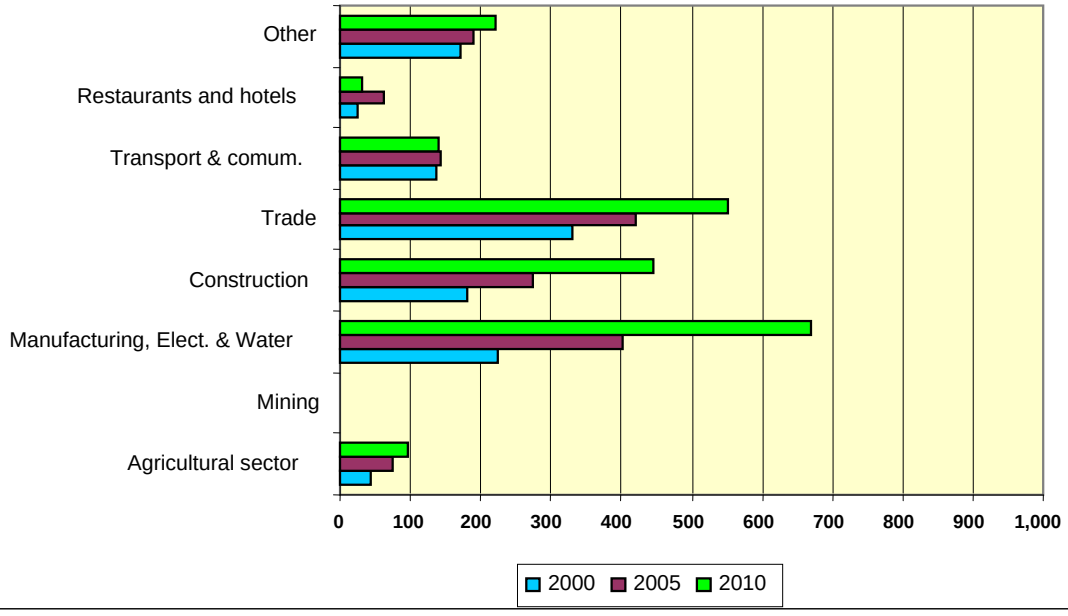
So, if the economic circumstances a decade ago were maintained more or less unchanged until 2010, one can roughly imagine what Capricon could have expected in 1995 about Maputo city and province in 1995 without the MDC. Table 5.5. summarizes the data of Scenario 1. One of the important findings of Scenario 1 is that, even without the introduction of the MDC, the economy of Maputo city and province would most probably have grown at a relatively rapid and positive growth rate (i.e. 7.1 percent), simply because the overall economy was beginning a recovery as a result of peace and liberal economic reforms. It needs to be stressed, though, that such a recovery was rapid but starting from a very low basis.

In any case, the GGP per capita in Maputo province and city could be expected to reach about USD 570 in 2000, USD713 in 2005 and USD 895 in 2010. Furthermore, such an economic growth would have stood on a structure of the provincial economy characterized by a relatively balanced proportion of the key factors in terms of GGP production and economic growth (see Figure 5.36).

Table 5.5: MDC Region - Base Projections of GGP (USD) at Constant 2000 Prices (Without MDC)

	GGP 1996	2000	Growth 1995-1996 %	GGP 2005 USD'10[6]	2010 USD'10[6]
Total Southern Region	1,051	1,383	7.1	**1,948**	**2,744**
Total MDC	**847**	1,114	7.1	**1,570**	**2,211**
Agriculture, livestock, forestry, fisheries	28	45	5.2	76	98
Mining	1	2	-3.3	2	2
Manufacturing, Electricity and Water	141	224	10.7	403	669
Construction	117	181	10.2	274	445
Trade	268	330	5.5	421	551
Transport & communication	132	137	-0.3	143	141
Restaurants and hotels	8	23	-12.3	62	32
Other (Financing, Education, Health, Public administration & other)	152	171	3.3	188	222
Population Southern Region Mozambique (10[6])	4.0	4.4	2.5	5.0	5.7
Population in the MDC (10[6])	1.8	2.0	**2.5%**	2.2	2.5
Exchange rate in 2000	15,141	15,141		15,141	15,141
GGP per capital in the Southern Region	263	313		389	484
GGP per capita in the MDC	**477**	**570**		**713**	**895**

Figure 5.36: Scenario 1: Maputo province and city without the MDC 2000-2010



A second scenario, here called Scenario 2, depicts what has actually happened in the period 1996-2000, according to the data available regarding the economy of Maputo province and city. This Scenario 2 takes into consideration the MDC impact as it has been implemented between 1996 and 2000, and then the data in the proportions found are projected for the period until 2010.

The important inference to be drawn from Scenario 2 (with MDC), as compared to Scenario 1 (without MDC), is that the MDC has accelerated economic growth and increased wealth production in Maputo city and province. The average GGP per capita of Maputo city and province reached USD652 in 2000, though the gap between the two provinces is substantial: Maputo city USD1070 and Maputo province USD171.

Yet, the bulk of the macro and regional economic impacts associated with several MDC initiatives, namely mega-projects such as MOZAL and others in the process of being implemented soon (both in the narrow MDC and in the wider MDC, the Southern region of Mozambique) are not captured by the data for the period 1996-2000. Hence, in projecting economic growth for the MDC region until 2010, it needs to be expected that already relatively high economic growth experienced in the past five or six years will most probably accelerate further. This is what is depicted by Scenario 2 (see Table 5.6 and Figure 5.37), in which the average annual economic growth rate in the MDC increases from 11 percent in 1996-2000 to at least 16 percent and 22 percent per year, respectively, during the periods 2000-2005 and 2006-2010. If such an expectation does take place, then the GGP per capita in the MDC is likely to improve more rapidly then in the case of Scenario 1, without the MDC; from the USD 652 in 2000 to USD 1,222 and 2,927, respectively in 2005 and 2010.

Table 5.6: MDC - Projections of GGP (USD) at Constant 2000 Prices (With MDC)

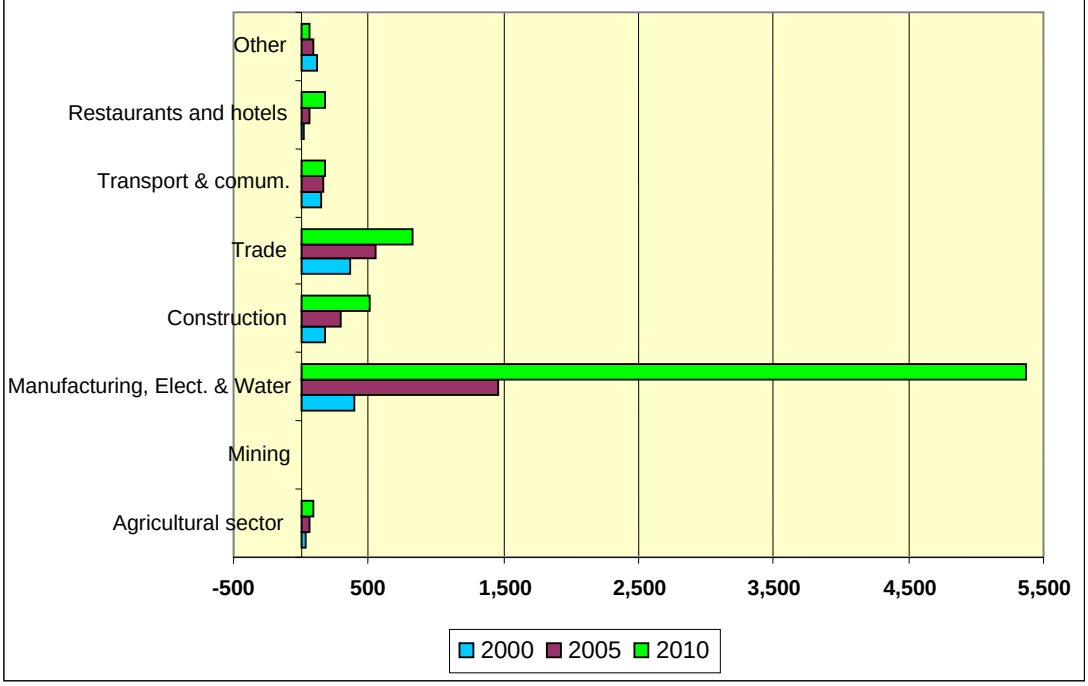
	GGP 19961996-2000		Growth GGP 2000		2005 USD'10[6]		Average 2010 USD'10[6]
		%					
Total Southern Region	**1,051**	**9.4%**	1,506	16%	**3,184**	21.9%	**8,562**
Total MDC	**847**	10.7%	**1,272**	16%	2,690	21.9%	7,233
Agriculture, livestock, forestry, fisheries	28	9%	39	9%	61	9%	94
Mining	1	13%	2	13%	4	13%	8
Manufacturing, Electricity and Water	141	30%	398	30%	1,462	30%	5,369
Construction	117	11%	177	11%	298	11%	503
Trade	268	8%	370	8%	551	8%	823
Transport & communication.	132	2%	145	2%	163	2%	183
Restaurants and hotels	8	25%	19	25%	60	25%	184
Other (Financing, Education, Health, Public administration & other)	152	-6%	121	-6%	91	-6%	68
	847		1,272		2,690		7,233
Population Southern Region Mozambique[6](10	4.0	2.5	4.4	2.6	5.0	2.5	5.7
Population in the MDC (10	1.8	2.4	2.0	2.4	2.2	2.3	2.5
Exchange rate in 2000	15,141		15,141		15,141		15,141
GGP per capital in the Southern Region	263		341		636		1,510
GGP per capita in the MDC	**477**		**652**		**1,222**		**2,927**

However, contrary to Scenario 1 when one considers the composition and determinant factors of economic growth in Scenario 1, the new conditions where the economy of Maputo province and city can be expected to grow are characterized by a much more lop-sided structure in the Mozambican part of the MDC region. This becomes apparent in the graph corresponding to Scenario 2 below, which depicts a remarkable growth of the manufacturing, electricity and water sectors, in sharp contrast to contributions from other sectors, particularly the financing, educational,

health, public administration sectors and others. The latter, under the present economic conditions, even show a negative growth, which seems consistent with the new poverty data recently released showing poverty on the rise in Maputo province and city.

According to the available data, the economy in Maputo province and city, as it is now, shows a rather unbalanced structure. Without specific actions aimed at correcting the existing lop-side structure of the provincial economy, such a structure will most probably either remain as it is or, perhaps, even further strengthen its discrepancies and disproportional determinants for growth. Because of this finding, it seems useful to simulate a third scenario, one entailing the influence of a more pro-active and comprehensive MDC strategic programme in future.

Figure 5.37: Scenario 2: Maputo province and city without the MDC 2000-2010



Scenario 3 (see Table 5.7) provides a slightly different projection from the one presented in Scenario 2, as a result of a strategic programme aimed at correcting the lop-sided structure of the economy and attempting a dynamic in the currently less productive sectors, such as social and administrative sectors, as well as agricultural, trade and transport activities.

So, Scenario 3 can be seen as a more pro-active MDC strategic programme. As a result the impact of the MDC can be expected not only to be more dynamic in terms of economic growth but more extensive in terms of socio-economic development. As a result, the GGP per capita in the period 2005-2010 grows more rapidly, but perhaps even more important, though not immediately apparent from the aggregate indicators

presented in the table on Scenario 3, in such a growth is the outcome is better distributed than in Scenario 2.

Table 5.7: MDC - Projections of GGP (USD) at Constant 2000 Prices (With MDC within a New Strategic Programme)

	GGP	Growth	GGP		Average
	1996	1996-2000	2000	2005	2010
		%		USD'10^6	USD'10^6
Total Southern Region	1,051	9.4%	1,506	16.4% 3,224	24.9% 9,814
Total MDC	**847**	10.7%	**1,272**	16.4% 2,723	24.9% 8,290
Agriculture, livestock, forestry, fisheries	28	9%	39	61	146
Mining	1	13%	2	4	12
Manufacturing, Electricity and Water	141	30%	398	1,462	5,369
Construction	117	11%	177	298	683
Trade	268	8%	370	551	1,280
Transport & communication.	132	2%	145	163	292
Restaurants and hotels	8	25%	19	60	184
Other (Financing, Education, Health, Public administration & other)	152	-6%	121	124	325
	847		1,272	2,723	8,290
Population Southern Region Mozambique (10^6)	4.0	2.5	4.4	5.0	5.7
Population in the MDC (10^6)	1.8	2.4	2.0	2.2	2.5
Exchange rate in 2000	15,141		15,141	15,141	15,141
GGP per capital in the Southern Region	263		341	644	1,730
GGP per capita in the MDC	**477**		**652**	**1,238**	**3,355**

Moreover, regarding the structure of the Mozambican MDC economy, as shown in Figure 5.38, the improvement in several economic sectors compared to Scenario 2 is visible.

Figure 5.38: Scenario 3: Maputo province and city without the MDC 2000-2010

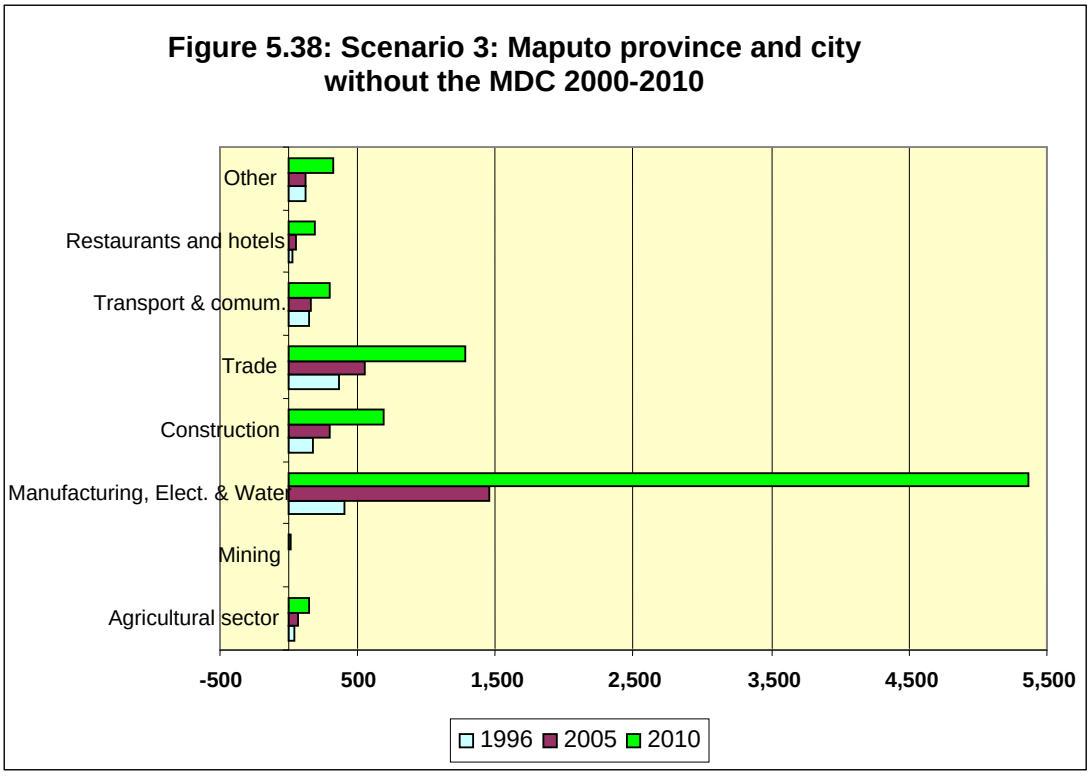


Table 5.8: Summary of Three Scenarios for the MDC Impact on Economic Development in Maputo city and province, 2000-2010

IMPACT VARIABLE	Total ZVSP Impact per Annum US Dollars at 2000 US Dollar Prices			Total ZVSP Impact per Annum as % of Total Province GGP			
	2000	2005	2010	2000	2005	2010	Average
GGP-S1 (Million)	82	113	139	7.4%	7.2%	6.3%	**7.0%**
GGP-S2 (Million)	151	490	1,669	11.8%	18.2%	23%	**17.7%**
GGP-S3 (Million)	156	522	2,157	12.3%	19.2%	26.0%	**19.2%**
EMPLOYMENT-S1[1)]	6,488	9,223	7,539 [2)]	12,691	12,292	18,461	
EMPLOYMENT-S2[1)]	3,987	6,172	9,554 [2)]	37,774	79,454	174,683	
EMPLOYMENT-S3[1)]	3,987	6,172	31,028 [2)]	39,158	84,574	69,526	
CAPITAL INVESTMENT-S1 (1000)	288	450	596	26%	29%	27%	**27%**
CAPITAL INVESTMENT-S2 (1000)	855	3,100	11,238	67%	115%	155%	**113%**
CAPITAL INVESTMENT-S3 (1000)	940	3,036	11,945	74%	111%	144%	**110%**
IMPORT-S1 (1000)	261	364	463	23%	23%	21%	**22%**
IMPORT-S2 (1000)	644	2,186	7,622	51%	81%	105%	**93%**
IMPORT-S3 (1000)	874	3,025	12,106	69%	111%	146%	**129%**

1) Number of employment opportunities
2) GGP per employee

The following inferences and conclusions in respect of the economic impact of the Mozambican MDC on Maputo province and city can be made by drawing on the information summarized in Table 5.8:

- Scenario 1 shows the contribution under conditions where the regional economy continued to be influenced by the same factors in similar proportions as was the case before the introduction of the MDC. In this case, the economy would grow reasonably, but as a result of its recovery from the previous crisis.
- Scenario 2 presents the results of what can be regarded as the impact of the existing MDC. Although economic growth has accelerated, the structure of the economy in Maputo city and province has also become more lop-sided and some socio-economic sectors are experiencing a negative growth.
- Scenario 3 provides a simulation of the impact of a more pro-active and comprehensive MDC programme aimed at stimulating the contribution of several socio-economic sectors and attempting to balance the structure of the provincial economy.
- The additional capital investment in production capacity (machinery, equipment, vehicles and building) that Scenario 3 will require to meet the increase in demand for final goods and services, will amount to approximately 110 percent of the MDC's regional GGP against 37 percent in Scenario 1. This represents an immense burden on the capital resources in Maputo city and province.
- Scenario 3 is the one that shows the impact of a more pro-active and comprehensive strategic programme in the MDC region, aimed at taking advantage of its competitive endowments. While Scenario 3 stands on an intensive capital investment, the difference compared to Scenario 2 is in the effort to overcome the lop-sided and negative contribution of relevant sectors.
- The increase in imports required in the production process in order to meet the increase in demand is expected to reach a 129 percent of the GGP by 2010.

This, again, represents a serious burden to the region and the national economy in general.

6. ANALYSIS OF SOCIO-ECONOMIC AND ENVIRONMENTAL IMPACTS

6.1. Introduction

This section focuses on human development and the environment in Mpumalanga and the southern part of Mozambique, in order to establish the nature and scope of the socio-economic and environmental impacts in the MDC vis-à-vis other areas further removed from the influence sphere of this initiative. Attention is focused on selected parameters of human development such as poverty, education and life expectancy. Regarding the environment, attention is focused on air and water quality.

6.2. Socio-economic impacts: South Africa

6.2.1 Population

Figure 6.1 shows the total population of Mpumalanga relative to other selected areas. Although it has the smallest total population, Figure 6.2 shows that the population growth rate for Mpumalanga exceeds that of South Africa. Population growth rates at district level are portrayed in Figure 6.3 and the subsequent map.

Figure 6.1: Total population: 1996 and 2001

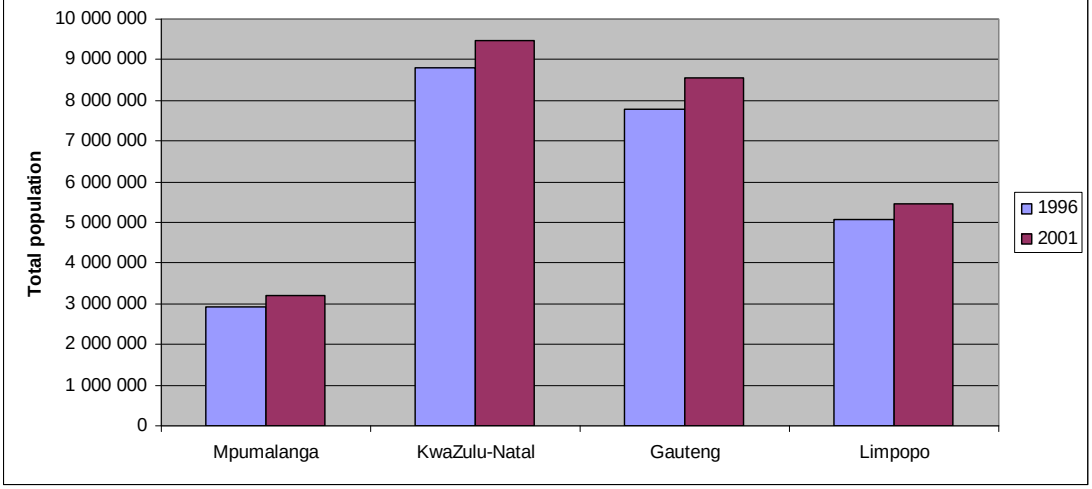


Figure 6.2: Total population: Average annual change over analysis period

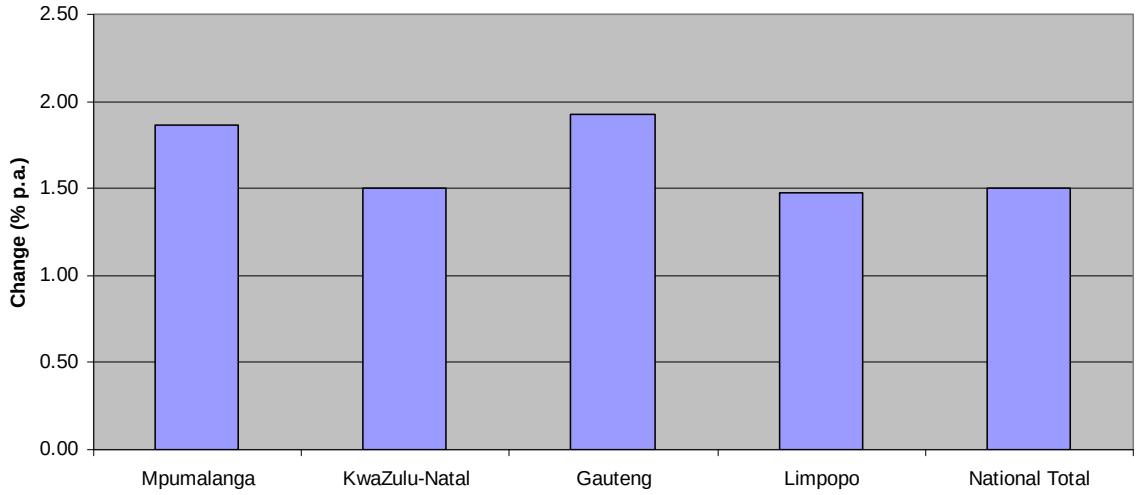
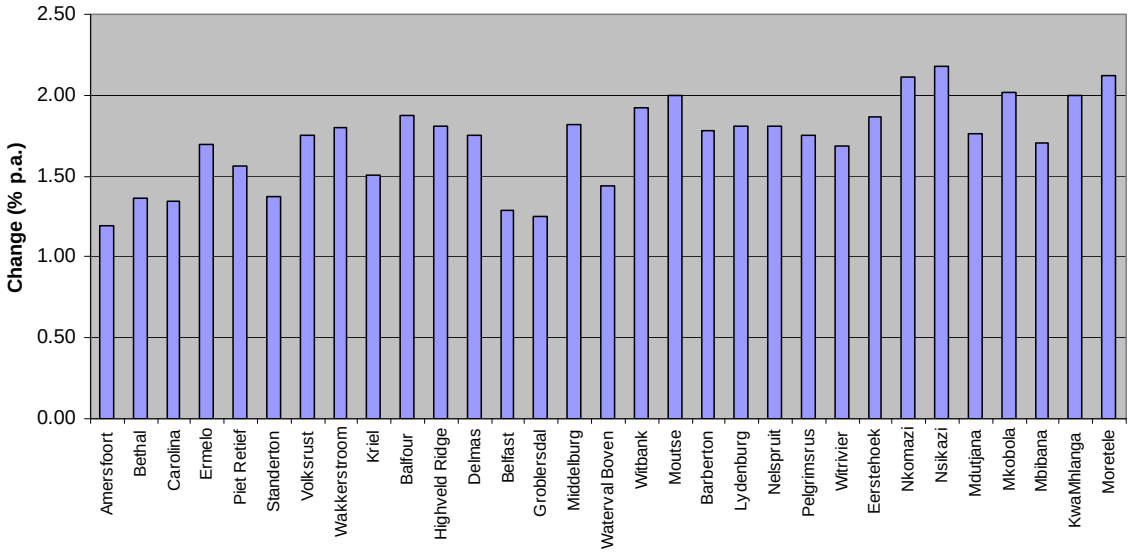
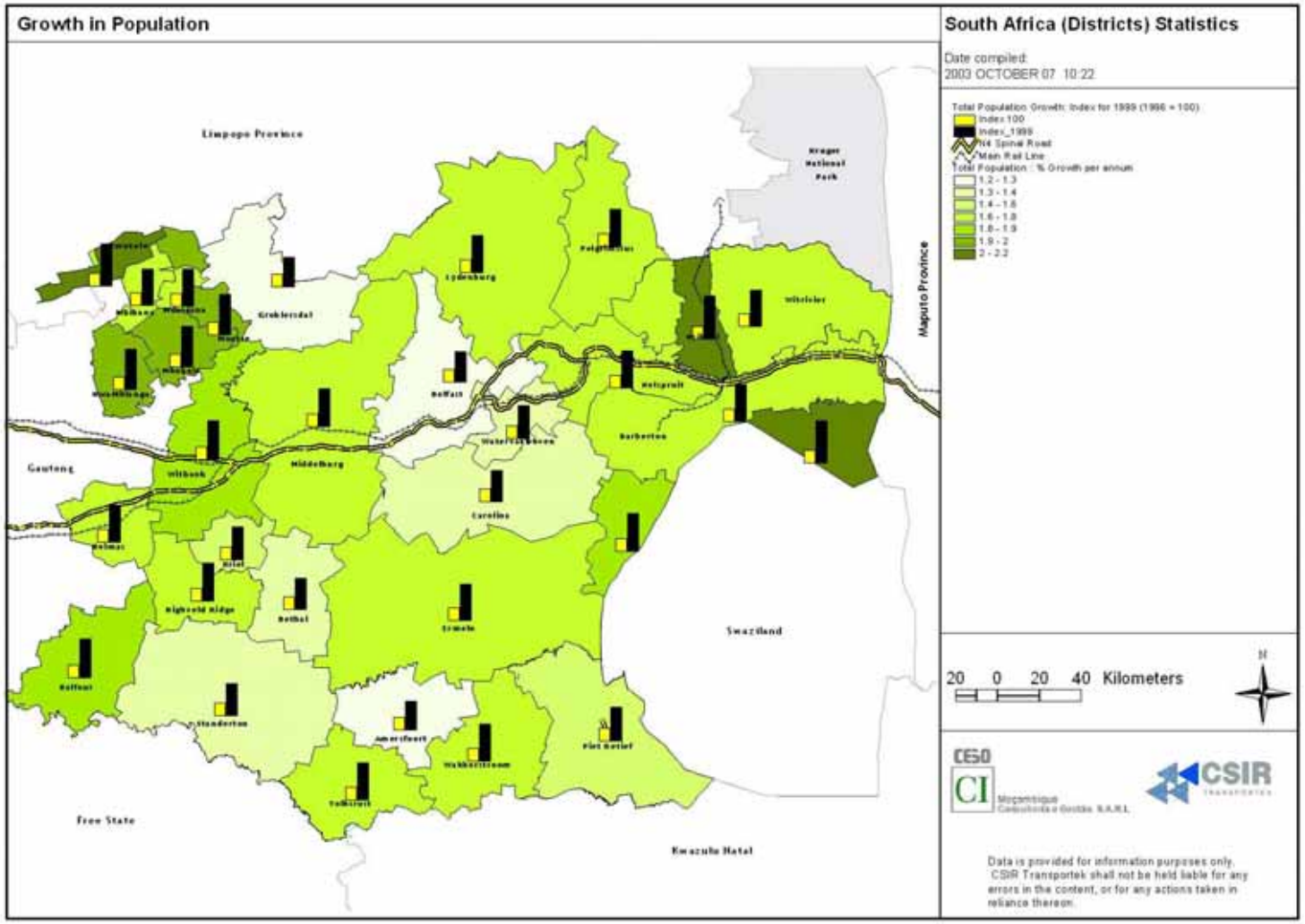


Figure 6.3: Total population: Average annual change during analysis period



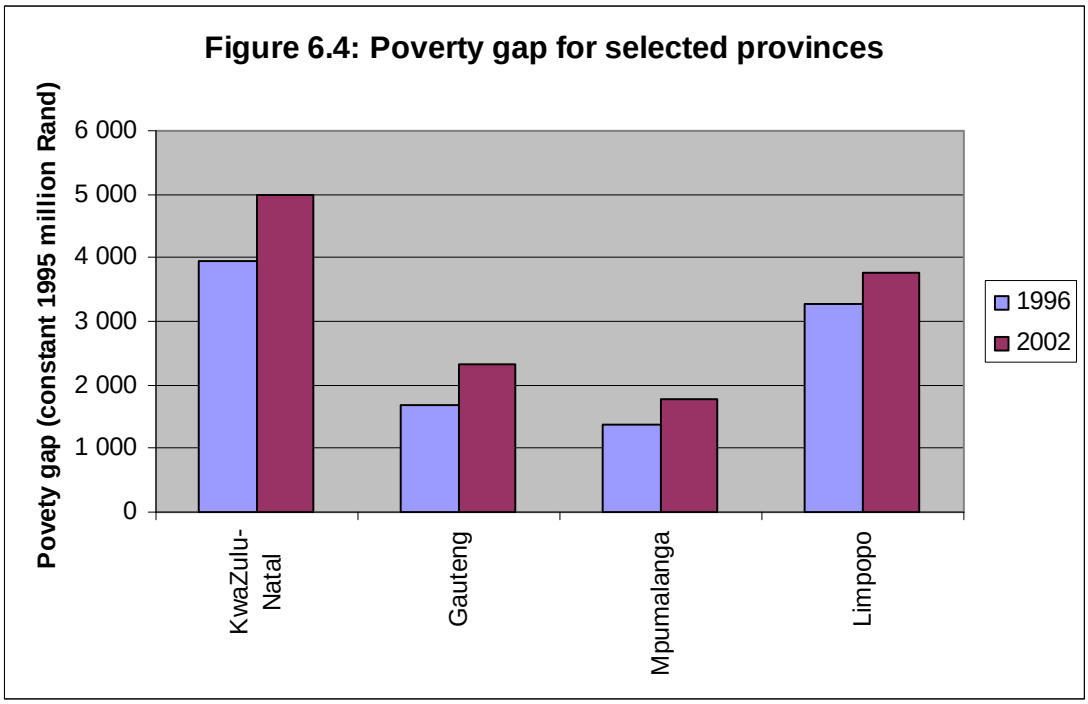


Map 6.1: Rate of change during the analysis period: Population

6.2.2 Poverty

"The poverty gap measures the difference between each poor household's income and the poverty line. It thus measures the depth of poverty of each poor household. The aggregate poverty gap is calculated by summing up the poverty gaps of each poor household. It is thus equivalent to the total amount by which the incomes of poor households need to be raised each year to bring all households up to the poverty line and hence out of poverty."[10]

Figure 6.4 shows that poverty has increased in all four provinces included in the analysis. The rate of increase of poverty, as measured by the poverty gap, is however lower for Mpumalanga than for South Africa, albeit by a small percentage (4,3 percent versus 4,6 percent p.a.; see Figure 6.5). Figure 6.6 reveals a wide variation in poverty levels at district level. The subsequent map shows that poverty has "grown" least in the areas adjacent to the corridor.



[10] South African Regional Economic Focus. Global Insight (Southern Africa)

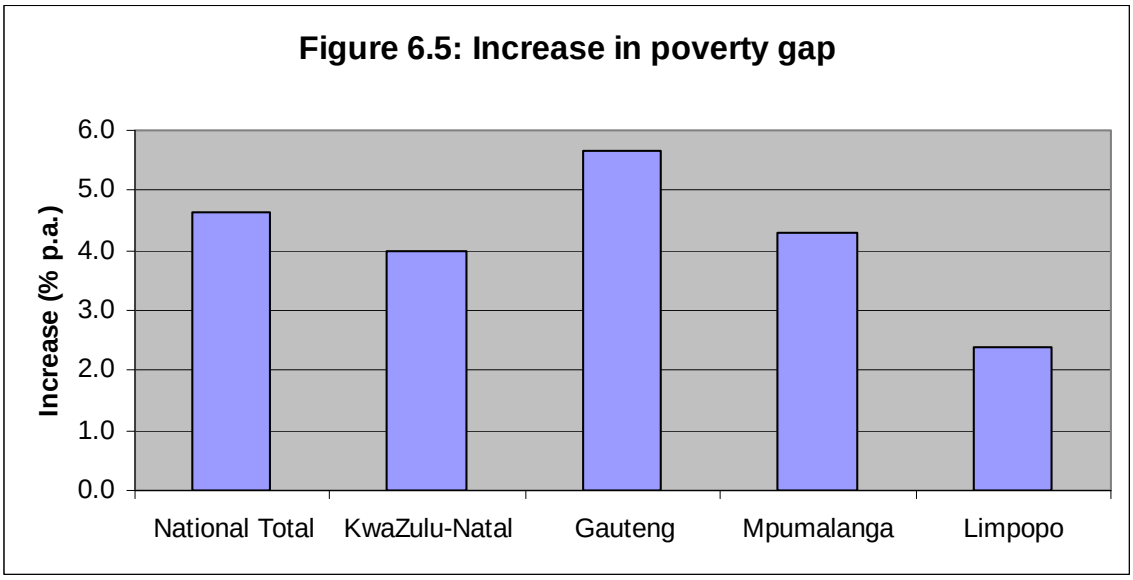


Figure 6.5: Increase in poverty gap
Increase (% p.a.)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
National Total
KwaZulu-Natal
Gauteng
Mpumalanga
Limpopo

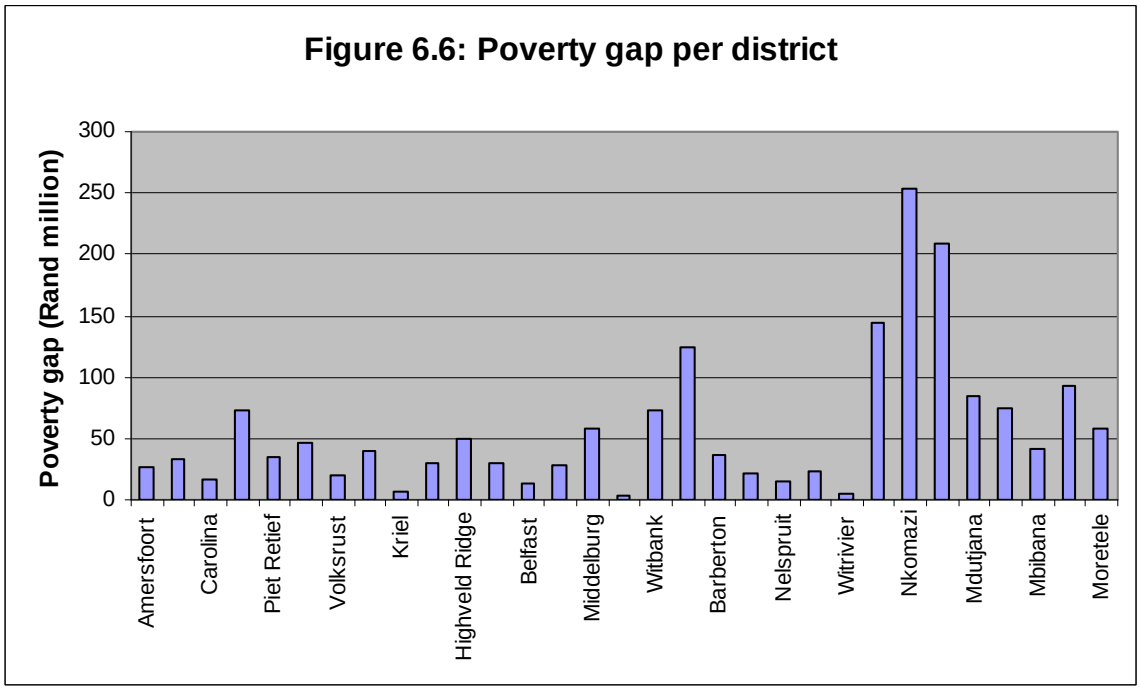
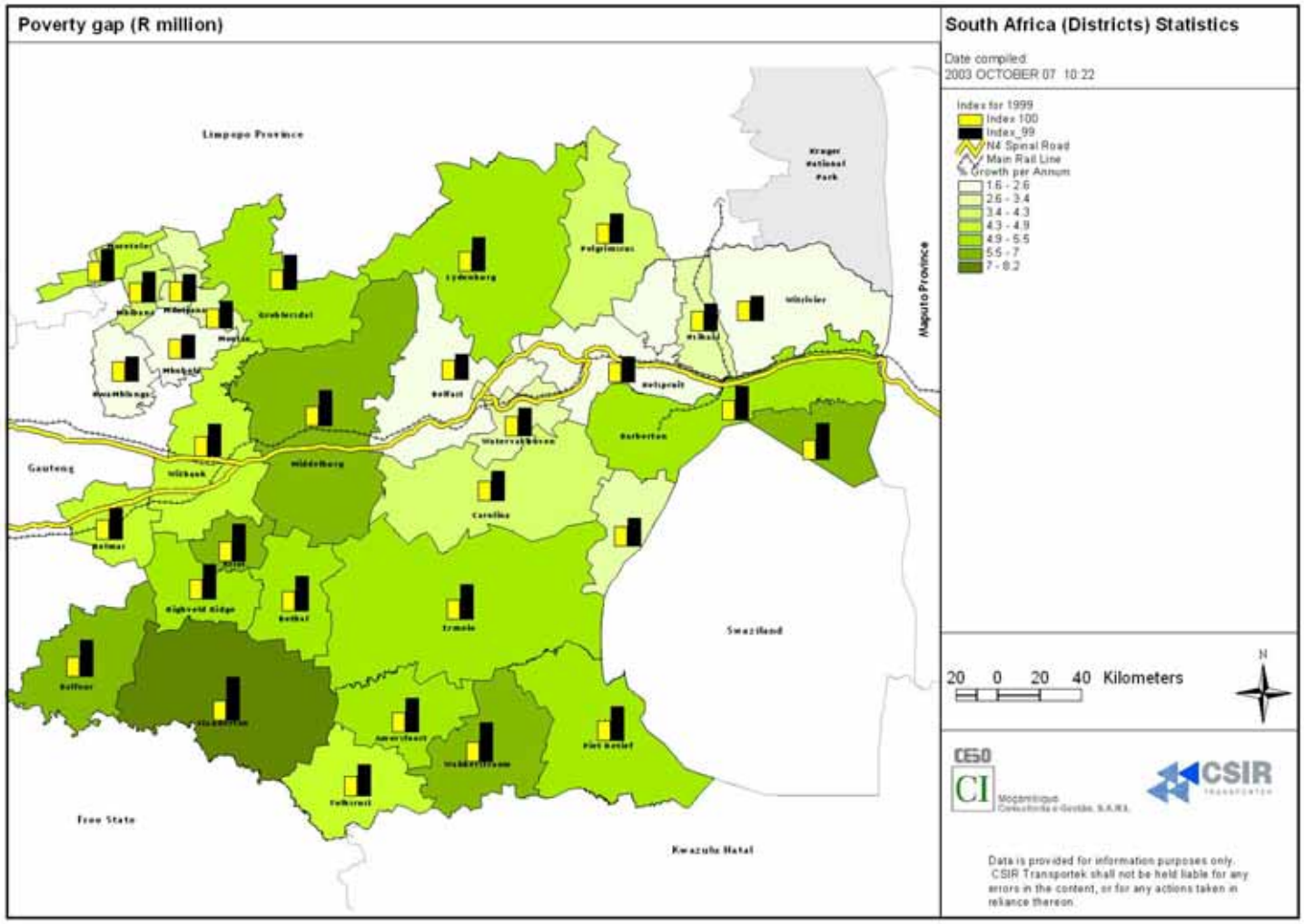


Figure 6.6: Poverty gap per district
Poverty gap (Rand million)
300
250
200
150
100
50
0
Amersfoort
Carolina
Piet Retief
Volksrust
Kriel
Highveld Ridge
Belfast
Middelburg
Witbank
Barberton
Nelspruit
Witrivier
Nkomazi
Mdutjana
Mbibana
Moretele



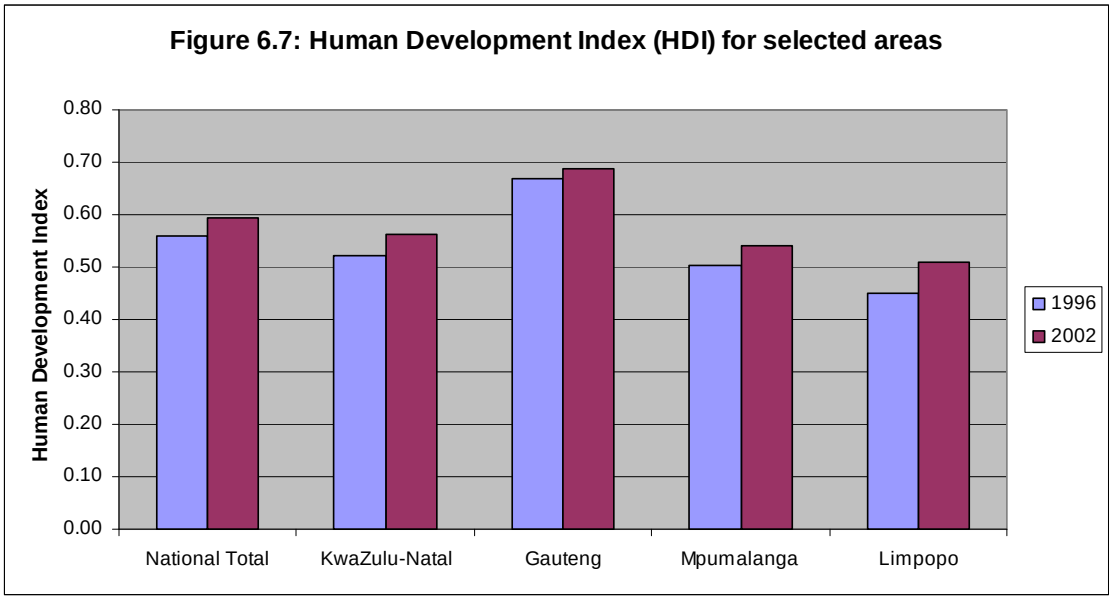
Map 6.2: Rate of change during the analysis period: Poverty gap

6.2.3 Human development

"The Human Development Index (HDI) is a composite, relative index that attempts to quantify the extent of human development of a community. It is based on measures of life expectancy, literacy and income. It is thus seen as a measure of people's ability to live a long and healthy life, to communicate, to participate in the life of the community and to have sufficient resources to obtain a decent living. The HDI can assume a maximum level of 1, indicating a high level of human development, and a minimum value of 0."[11]

Figure 6.7 reveals a low value for HDI for Mpumalanga relative to the other selected areas. The HDI for Mpumalanga is also lower than the national average. Regarding the rate of change of this index during the analysis period, Mpumalanga has performed better than the national average (see Figure 6.8). Figure 6.9 shows that the HDI varies between a low of 0,40 for Wakkerstroom to a high of 0.70 for Nelspruit. The rates of change in these indicators at district level are depicted in the following map, from which no correlation between the rate of change and proximity to the corridor is evident.

Figure 6.7: Human Development Index (HDI) for selected areas



[11] South African Regional Economic Focus. Global Insight (Southern Africa).

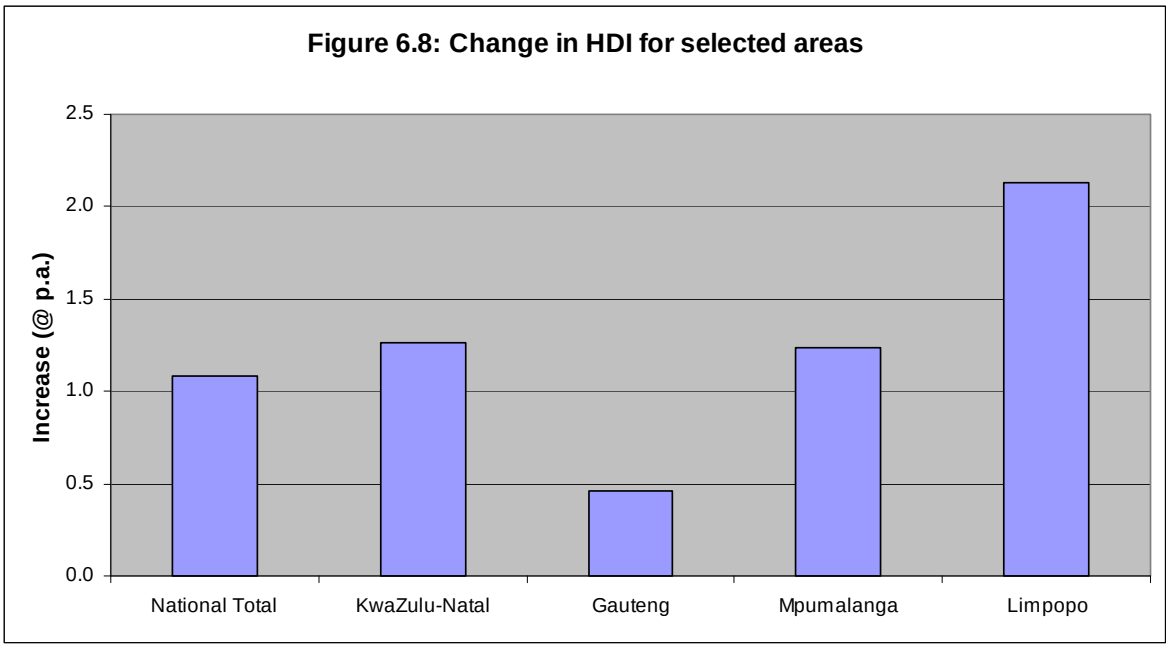


Figure 6.8: Change in HDI for selected areas
Increase (@ p.a.)
2.5
2.0
1.5
1.0
0.5
0.0
National Total
KwaZulu-Natal
Gauteng
Mpumalanga
Limpopo

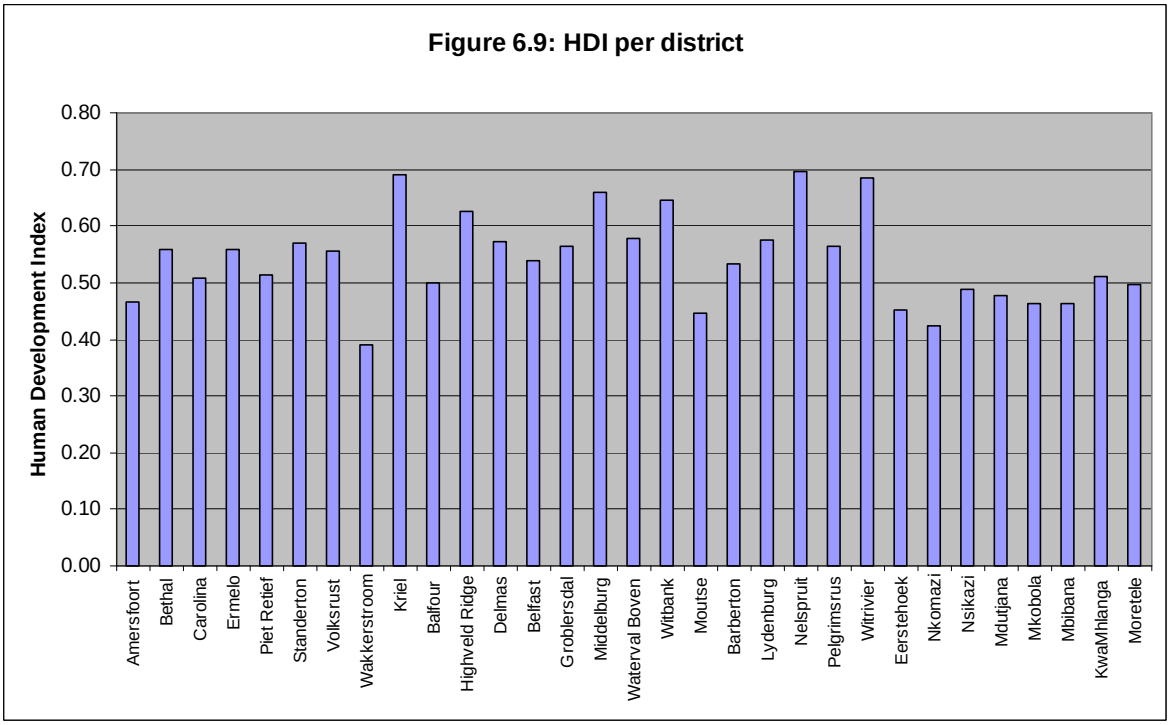
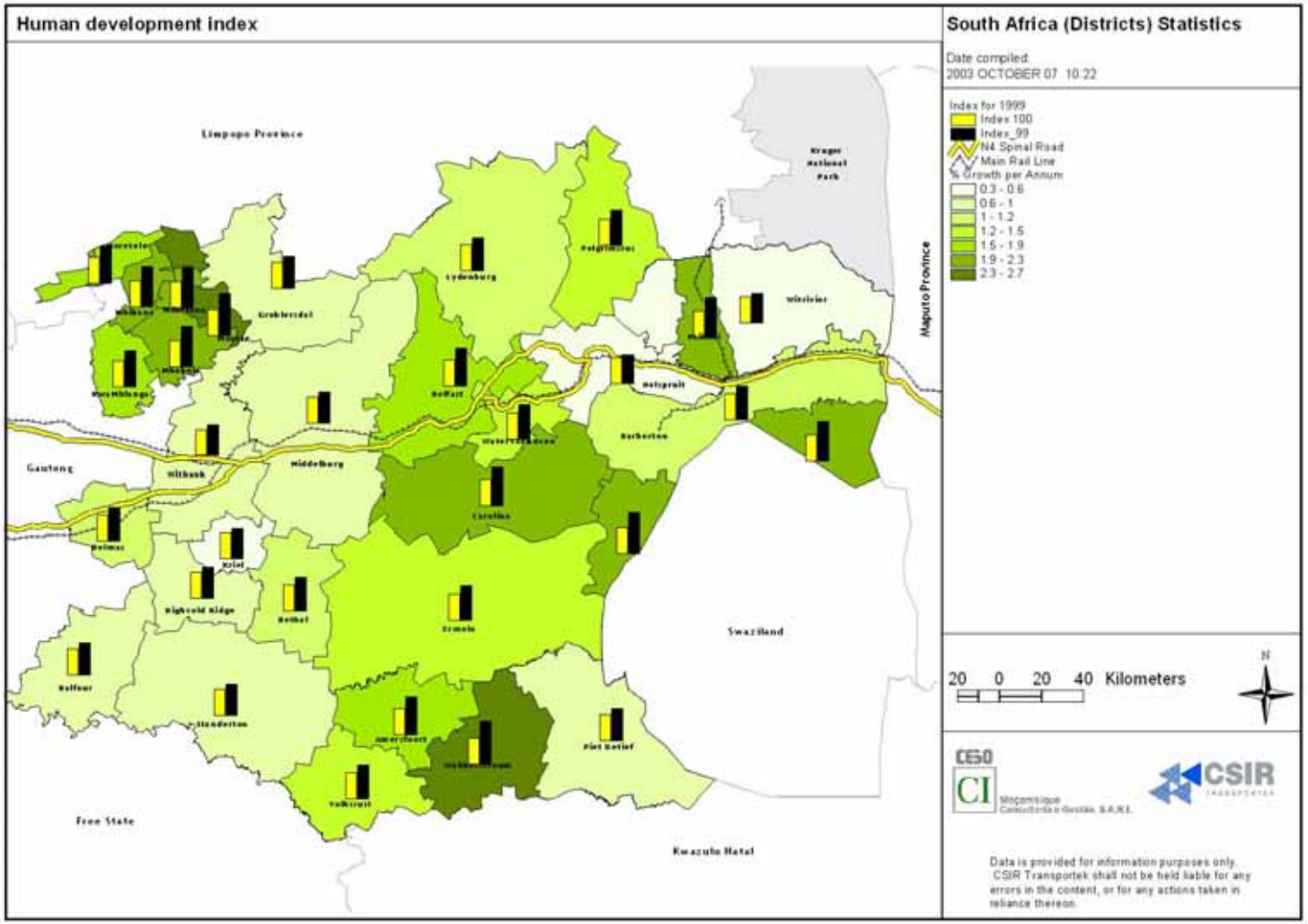


Figure 6.9: HDI per district
Human Development Index
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Amersfoort
Bethal
Carolina
Ermelo
Piet Retief
Standerton
Volksrust
Wakkerstroom
Kriel
Balfour
Highveld Ridge
Delmas
Belfast
Groblersdal
Middelburg
Waterval Boven
Witbank
Moutse
Barberton
Lydenburg
Nelspruit
Pelgrimsrus
Witrivier
Eerstehoek
Nkomazi
Nsikazi
Mdutjana
Mkobola
Mbibana
KwaMhlanga
Moretele



Map 6.3: Rate of change during the analysis period: Human Development Index

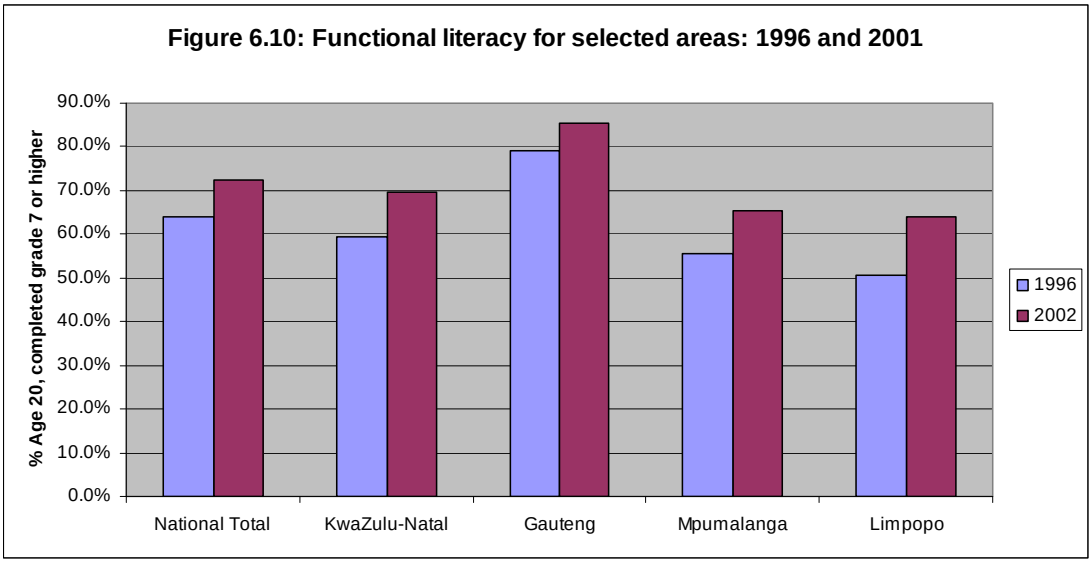
6.2.4 Education

"Functional literacy is defined as the proportion of persons aged 20 and above that has completed Grade 7."[7]

Figure 6.10 shows an increase in this indicator during the analysis period for all areas included in the analysis. Mpumalanga, however, is still below the national average. The situation in Mpumalanga is nevertheless improving at a faster rate than the national average, as shown in Figure 6.11. Figure 6.12 highlights the high variation in Functional literacy at district level, ranging from a low of about 40 percent to a high of 80 percent.

From the subsequent map, which depicts the rate of change in this index during the analysis period, it is evident that areas adjacent to the corridor reveal both a low and a high rate in change, from which it follows that no pattern is emerging regarding rate of change and proximity to the corridor.

Figure 6.10: Functional literacy for selected areas: 1996 and 2001



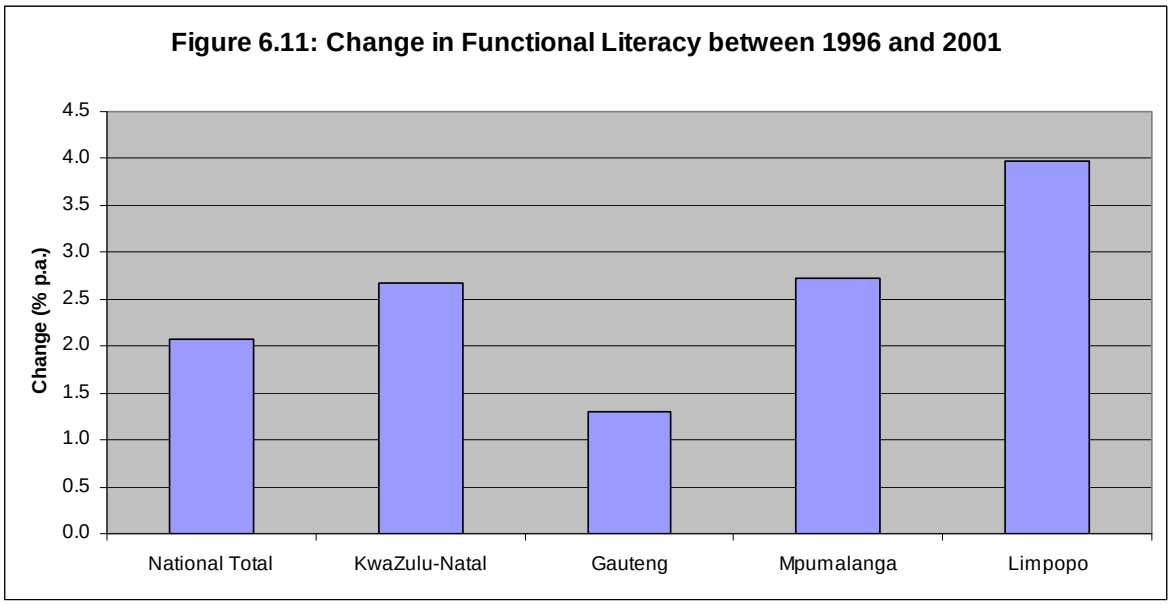


Figure 6.11: Change in Functional Literacy between 1996 and 2001
Change (% p.a.)
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
National Total
KwaZulu-Natal
Gauteng
Mpumalanga
Limpopo

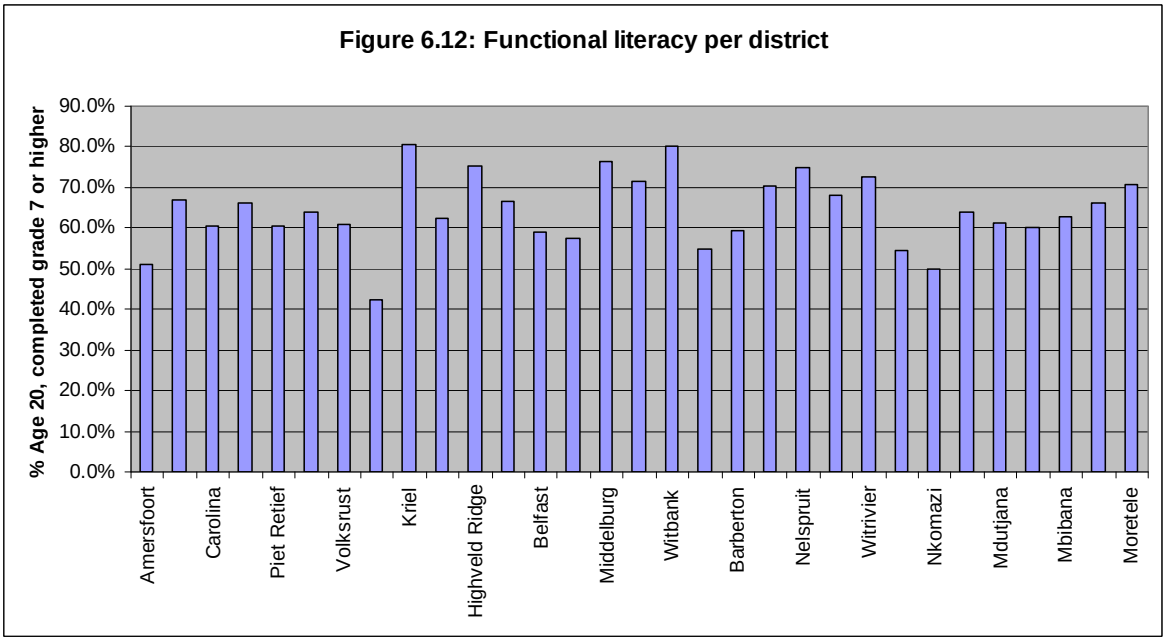
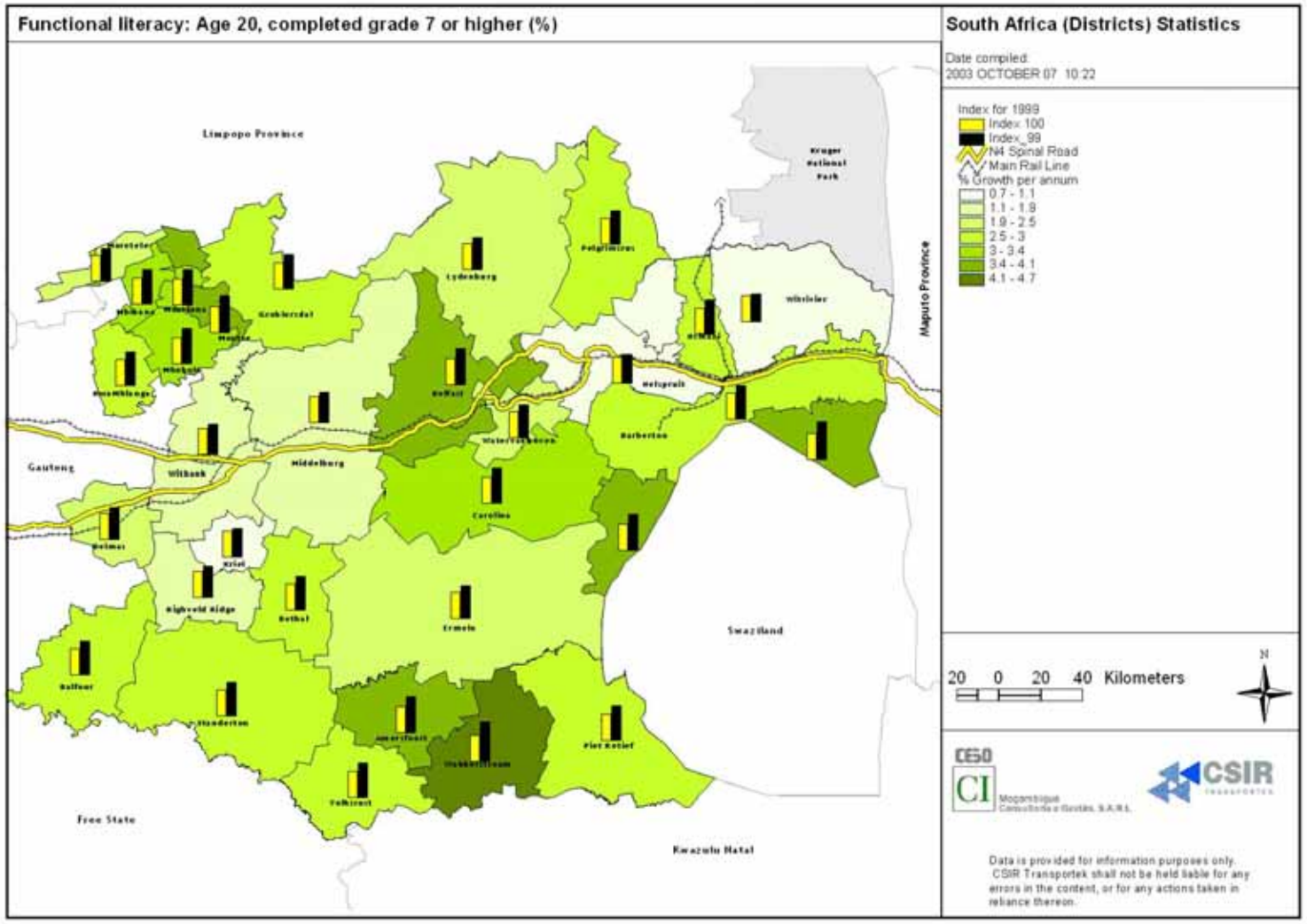


Figure 6.12: Functional literacy per district
% Age 20, completed grade 7 or higher
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
Amersfoort
Carolina
Piet Retief
Volksrust
Kriel
Highveld Ridge
Belfast
Middelburg
Witbank
Barberton
Nelspruit
Witrivier
Nkomazi
Mdutjana
Mbibana
Moretele



Map 6.4: Rate of change during the analysis period: Functional literacy: Age 20, completed grade 7 or higher (percent)

6.3. Socio-economic impacts: Mozambique

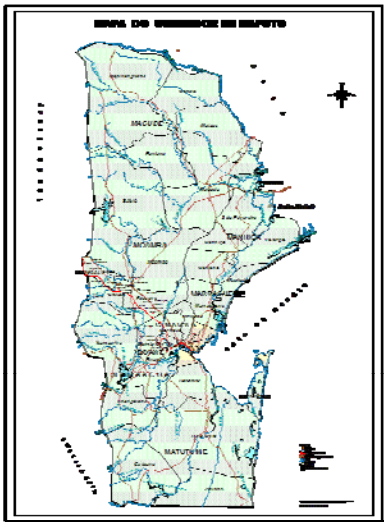
6.3.1 Demography

Table 6.1 shows the total population of Maputo city and province, which comprise the MDC areas. Population growth rates at district level are portrayed in Table 6.2, showing that a major population increase is found in the districts directly affected by the Maputo-Witbank (N4) road within a range of about ten kilometres.

Table 6.1 Estimate of the surface area and population of the MDC in Mozambique, 1997-2002

District	Surface (1000 km2)	%	Population 1997	2000 (1000 people.)	2002	%	Population Density
Maputo City & Province	**23.0**	**100**	**1,846**	**2,024**	**2,135**	**100**	**93**
Maputo City	**0.316**	**1.4**	**1,015**	**1,090**	**1,131**	**53**	**3,580**
District 1	0.137	0.6	162	168	171	8	1,245
District 2	0.007	0.0	169	178	183	9	26,175
District 3	0.068	0.3	220	233	238	11	3,507
District 4	0.034	0.1	242	258	268	13	7,869
District 5	0.070	0.3	223	254	272	13	3,879
Maputo Province	**22.7**	**99**	**831**	**934**	**1,004**	**47.0**	**44**
Matola City	0.384	2	437	514	563	26.4	1,466
Boane	0.924	4	58	66	72	3.4	78
Magude	6.655	29	40	42	45	2.1	7
Manhiça	2.362	10	136	139	144	6.8	61
Marracuene	0.733	3	43	46	48	2.2	65
Matutuine	5.315	23	38	40	42	2.0	8
Moamba	4.461	19	45	47	49	2.3	11
Namaacha	1.839	8	34	38	41	1.9	22

Source: INE. 1999. *Demographic Projections 1997-2010*



As Tables 6.2 and 6.3 show the population directly benefiting from the main road includes particularly the people in the urban districts 1 and 2 of Maputo city, and the districts of Boane, Moamba, and Matola city of Maputo Province. A higher population growth rate can also be seen in the districts directly affected by the N4 road. In the period 2000-02, the annual growth rate in Maputo province and city were 2.4 and 1.2 per cent, respectively.

Table 6.2: Estimated Population Directly Associated with the MDC, 1997-2002

PROVINCES, DISTRICTS AND CITIES	TOTAL POPULATION 1997	1998	1999	2000	2001	2002	Growth Rate (in percent) 1997-99	2000-02	Area Sq	Density Hab/sq. 2002
MAPUTO CORRIDOR	**1846174**	**1904684**	**1964037**	**2024283**	**2085243**	**2135334**	**2.1**	**1.8**	**22989**	**92.9**
Directly Benefiting	**871093**	**905744**	**939312**	**974049**	**1007333**	**1037687**	**2.5**	**2.1**	**5913**	**175.5**
MAPUTO PROVINCE*										
DIST. Boane	58386	61061	63758	66481	69230	72006	3.0	2.7	924	77.9
Moamba	44861	45092	46326	47385	48145	49076	1.1	1.2	4461	11.0
MATOLA CITY	436781	463598	488318	514048	538627	562818	3.8	3.1	384	1465.7
MAPUTO CITY										
DIST. URBAN 1	161854	163538	165725	167672	169884	170561	0.8	0.6	137	1245.0
DIST. URBAN 2	169211	172455	175185	178463	181447	183226	1.2	0.9	7	26175.1
BeneficiarY within 50 Kms	**1598502**	**1653614**	**1708196**	**1764200**	**1819180**	**1862802**	**2.2**	**1.8**	**6818**	**273.2**
MAPUTO PROVINCE*										
DIST. Boane	58386	61061	63758	66481	69230	72006	3.0	2.7	924	77.9
Moamba	44861	45092	46326	47385	48145	49076	1.1	1.2	4461	11.0
Marracuene	43208	44172	45086	45954	46779	47560	1.4	1.2	733	64.9
MATOLA CITY	436781	463598	488318	514048	538627	562818	3.8	3.1	384	1465.7
MAPUTO CITY	1015266	1039691	1064708	1090332	1116399	1131342	1.6	1.2	316	3580.2

Source : INE, Table prepared by CESO Consultants

TABLE 6.3: POPULATION OF MAPUTO CITY AND PROVINCE BY DISTRICT, 1997-2002

PROVINCES, DISTRICTS AND CITIES	TOTAL POPULATION						Growth Rate (in percent)		Area Sq	Density Hab/sq.
	1997	1998	1999	2000	2001	2002	1997-99	2000-02		2002
MAPUTO PROVINCE*	830908	864993	899329	933951	968844	1003992	2.7	2.4	22,673	44.3
DIST. Boane	58386	61061	63758	66481	69230	72006	3.0	2.7	924	77.9
Magude	39959	40722	41439	42148	43551	44520	1.2	1.8	6655	6.7
Manhica	135579	136572	138447	139325	141256	144423	0.7	1.2	2362	61.1
Marracuene	43208	44172	45086	45954	46779	47560	1.4	1.2	733	64.9
Matutuine	37993	38238	39021	40279	41526	42458	0.9	1.8	5315	8.0
Moamba	44861	45092	46326	47385	48145	49076	1.1	1.2	4461	11.0
Namaacha	34141	35538	36934	38331	39730	41131	2.7	2.4	1839	22.4
MATOLA CITY	436781	463598	488318	514048	538627	562818	3.8	3.1	384	1465.7
CITYMAPUTO	1015266	1039691	1064708	1090332	1116399	1131342	1.6	1.2	316	3580.2
DIST. URBAN 1	161854	163538	165725	167672	169884	170561	0.8	0.6	137	1245.0
URBAN 2	169211	172455	175185	178463	181447	183226	1.2	0.9	7	26175.1
URBAN 3	219659	224024	228223	232988	236461	238444	1.3	0.8	68	3506.5
URBAN 4	241730	244516	250452	257535	264716	267554	1.2	1.3	34	7869.2
URBAN 5	222812	235158	245123	253674	263891	271557	3.2	2.3	70	3879.4

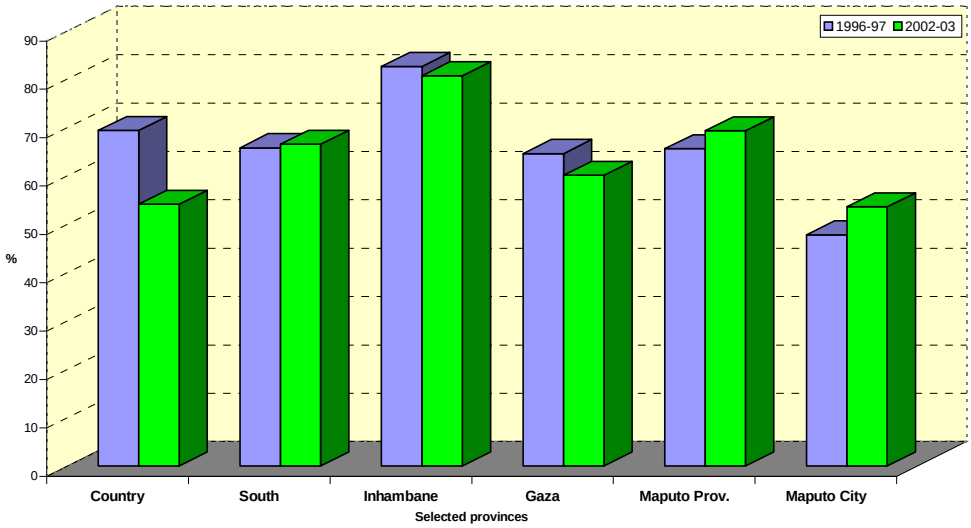
Source: INE; Table prepared by CESO's Consultants

6.3.2 Poverty

Data from the second national survey on the consumption of households (IAFII) conducted between 2002 and 2003 have just been released. Just as the IAF I related to the period 1996-97, this second survey draws upon the "cost of the basic needs" approach. The key outcome of IAF II is the finding of poverty incidence at 54.1 percent, which suggests a decline by 15.3 percent when compared to the 69.4 percent in 1996-97.

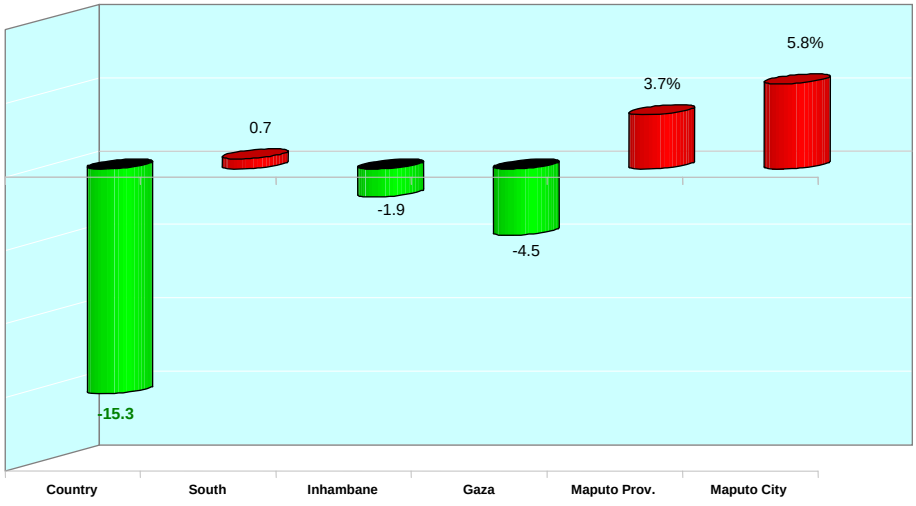
Yet, as Figures 6.13 and 6.14 show, contrary to the national trend, in Maputo Province and Maputo city, poverty incidence appears to be on the rise between 1996 and 2003. Estimated poverty headcount ratios in Maputo Province and Maputo City increased by 3.7 and 5.8 percentage points, respectively. The report conjectures that such an increase might be due to the rapid appreciation of the Rand against the o Metical (40 percent between January 2002 and June 2003), but no evidence is provided for such an hypothesis except that Maputo depends strongly on importing food and non-food products from South Africa, and the rapid appreciation of the Rand had substantial implications for the basic cost of living during the period when the household survey was conducted.

Figure 6.13: Changes in poverty headcount in the MDC region place in the Southern and National Context, 1996-2003



Source: NDPB et al. 2004

Figure 6.14: Change in poverty headcount in the MDC region placed in the National Context 1996 and 2003



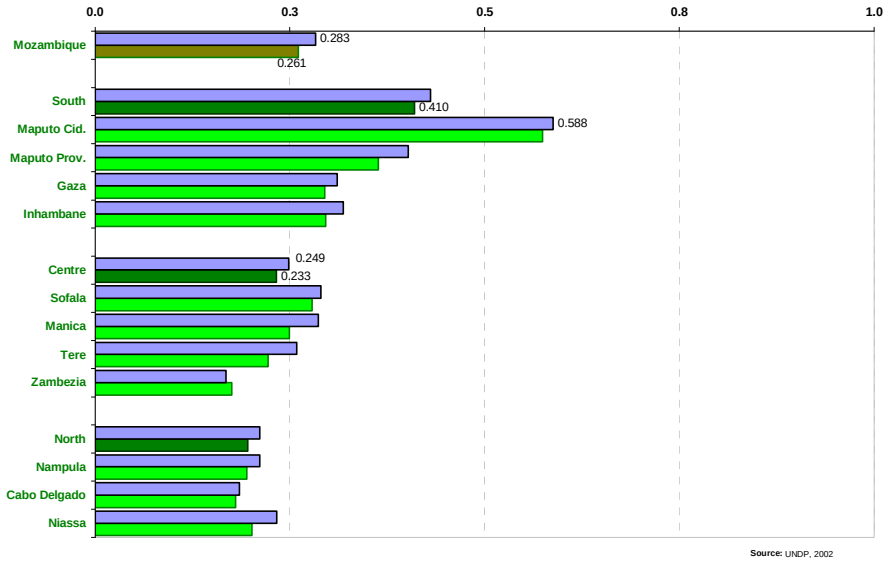
Source: NDPB et al. 2004

6.3.3 Human development

Figure 6.15 reveals a relatively high value for the HDI for Maputo city and province relative to the other selected areas. Maputo city is the only area of Mozambique with an HDI above 0.500, which affects the overall average level of the HDI in the southern region of the country. Regarding the rate of change of this index during the analysis period, although the data available cover the period 1996-2000 only, there are several indications that the improvement in the components of the HDI are likely to continue improving, including in the MDC region. Yet more in-depth and localized studies are needed to find out the specific differences at the district and local level in

relation to the three variables comprising the HDI: income generation, life expectancy and educational level.

Figure 6.15: Expected Human Development Index in Mozambique, Without taking into acocunt the HIV-AIDS Impact, 1996-2000



6.3.4 Life expectancy

Figures 6.16 and 6.17 on life expectancy at birth and Figures 6.18, 6.19 and 6.20 on infant mortality rate, indicate a general improvement between 1997 and 2002, both in the MDC area and in the rest of Mozambique. However, some caution is needed in interpreting these figures because their data are based on projections not yet confirmed with actual empirical data. This is particularly important when one considers the findings from studies on the impact of HIV-AIDS.

Figure 6.16: Life expectancy: 1997 and 2002

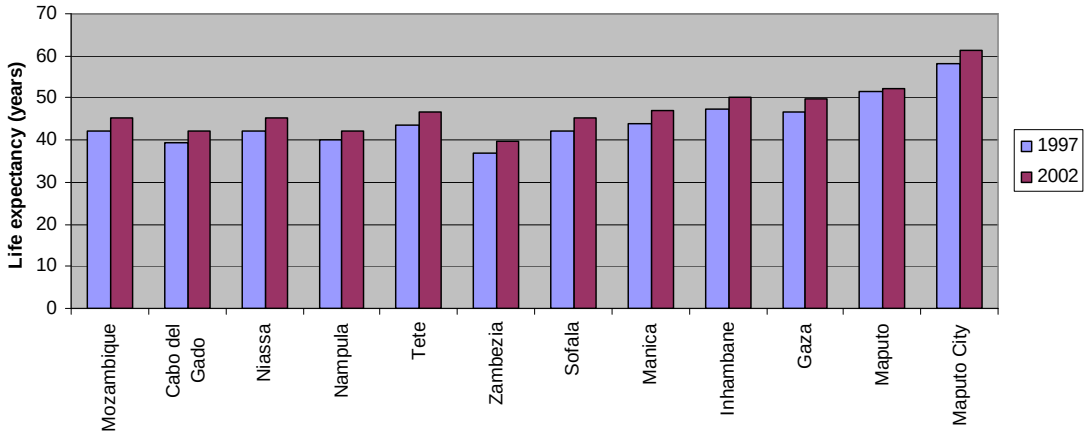


Figure 6.17: Change in life expectancy between 1997 and 2002

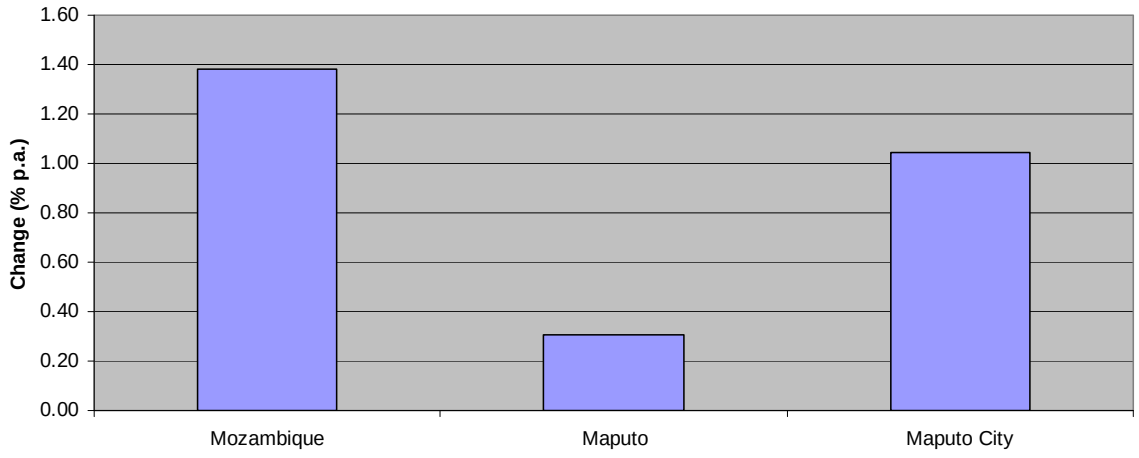


Figure 6.18: Infant mortality rate: 1997 and 2002

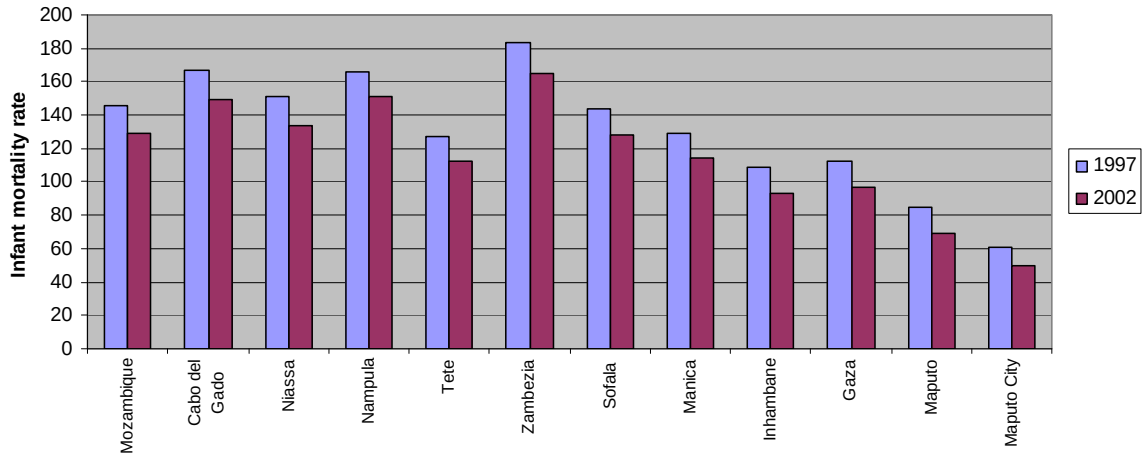
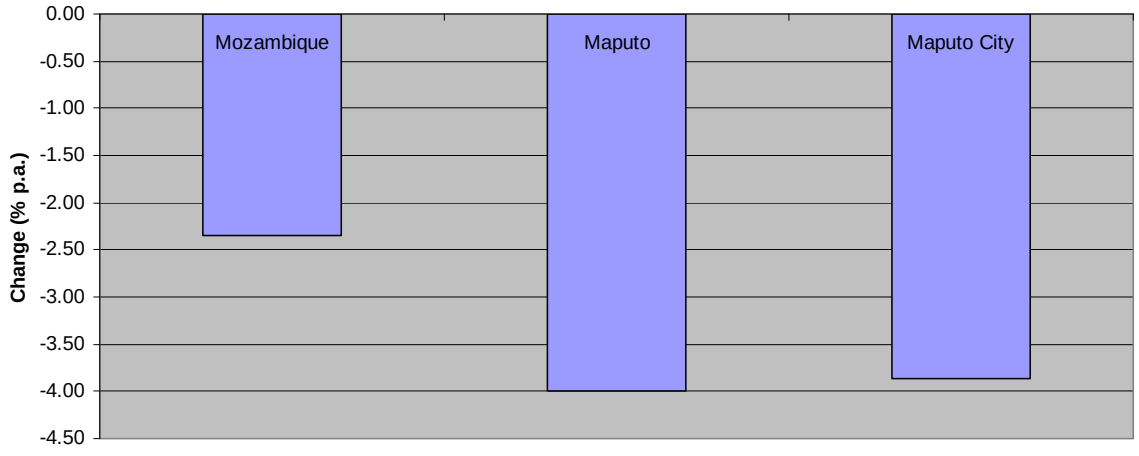
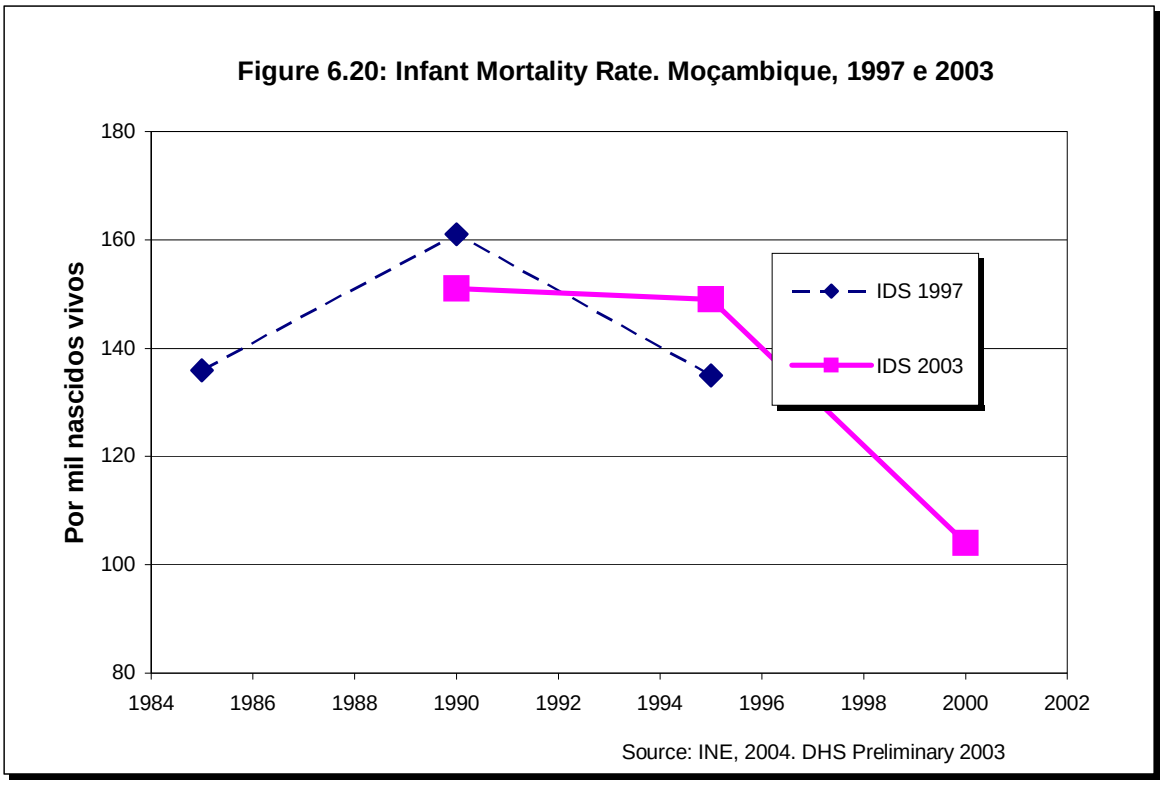


Figure 6.19: Change in infant mortality between 1997 and 2002





Based on recent information, from the 2002 epidemiological survey, the data on demographic impact of HIV/Aids in Mozambique, for the period 2003 to 2010, indicates rather different estimates on life expectancy of the populations. Figure 6.21 below presents the southern region HIV projected life expectancy with and without AIDS between 1999 and 2010.

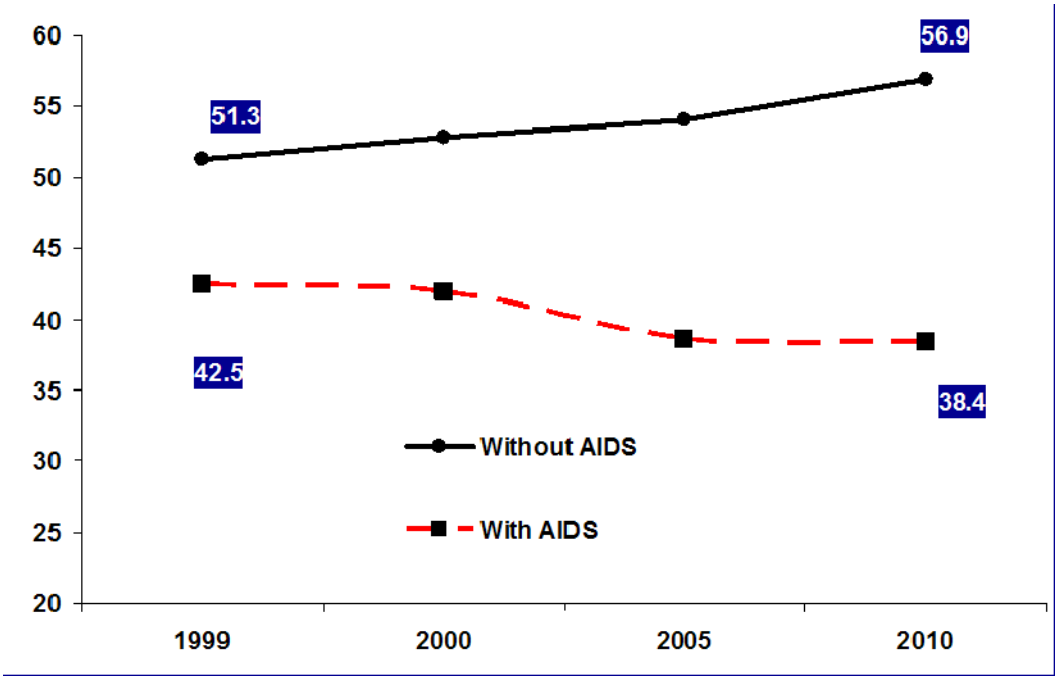


Figure 6.21: Life expectancy in the southern region

In turn, a recently preliminary Demographic Health Survey (DHS2003) report provides data showing a decline in the infant mortality rate in the country overall, and the MDC region as well. Since this indicator is paramount in the calculation of life expectancy at birth, a more in-depth study needs to be done in order to confront and assess the different data sources, and the true impact of the HIV-AIDS epidemic.

6.3.5 Education

"Illiteracy is defined officially as the proportion of persons aged 15 who do not know how to read and write, either in Portuguese or in any other national language".

Figure 6.22 shows a decline in the illiteracy rate in general and particularly in the provinces directly or indirectly related to the MDC region. Indeed, Maputo city and provinces are the best performers in the country. A survey undertaken by INE in 2002 found an illiteracy rate of 13 percent in Maputo city and 33 percent in Maputo Province, much lower than the national average estimated at 57 percent.

From Figure 6.23, which shows the rate of change in this index during the analysis period, it is evident that area adjacent to the MDC region reveals both a low and a high rate in change. However, from the available data it is not possible to infer any specific or different pattern regarding rate of change and proximity to the corridor.

Figure 6.22: Illiteracy rate: 1997 and 2000

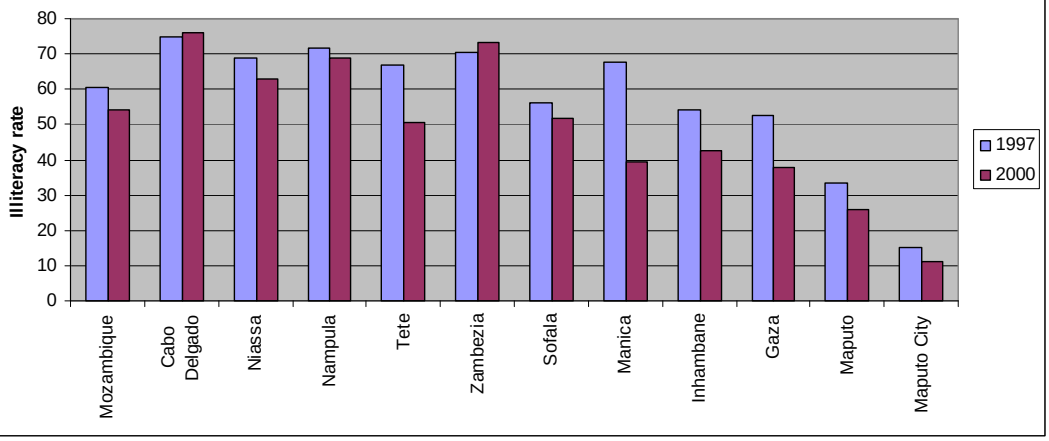
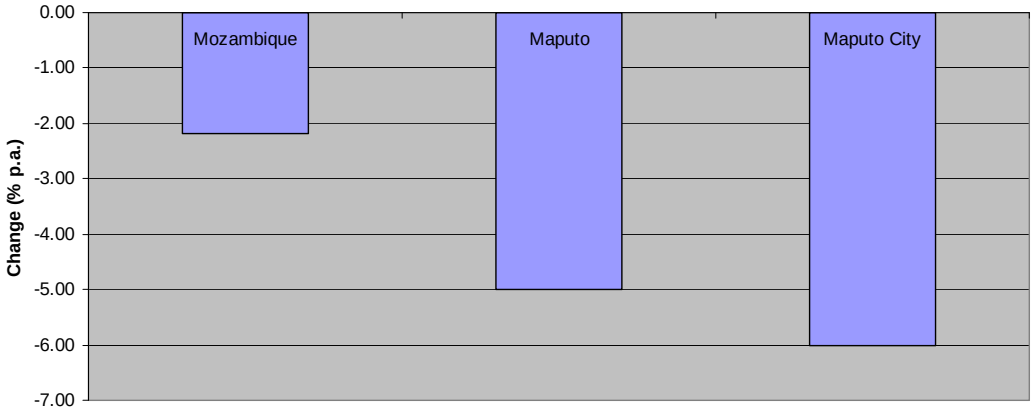


Figure 6.23: Change in illiteracy rate between 1997 and 2000



6.4. Environmental impacts

For the purpose of this study, air quality was used as proxy for environmental impacts. The main organisation involved in the monitoring of air pollution is Escom. It has some of the largest coal fired power stations in the world and needs to ensure compliance with air quality guidelines. In addition to stack monitoring to determine emissions, Escom also assesses ambient air quality. It was this air quality, taken some distance away (usually about 6 km from the relevant smokestacks) that was used in the calculation of the ambient air quality.

The main indicators used to determine air pollution in this instance are Sulphur emissions (SO_2) and particulate matter. SO_2 is an indicator of power generation and domestic coal burning, whilst increased particulate matter (dust / decreased visibility) results mainly from veld fires and other biomass burning, industrial pollution, dust entrainment by high winds (often increased in areas with increased deforestation or erosion) and vehicle emissions.

The SO_2 and particulate matter results obtained from 1996 to 2001, in the vicinity of a number of power stations, as well as the average values over time are shown in Figures 6.24 and 6.25 below.

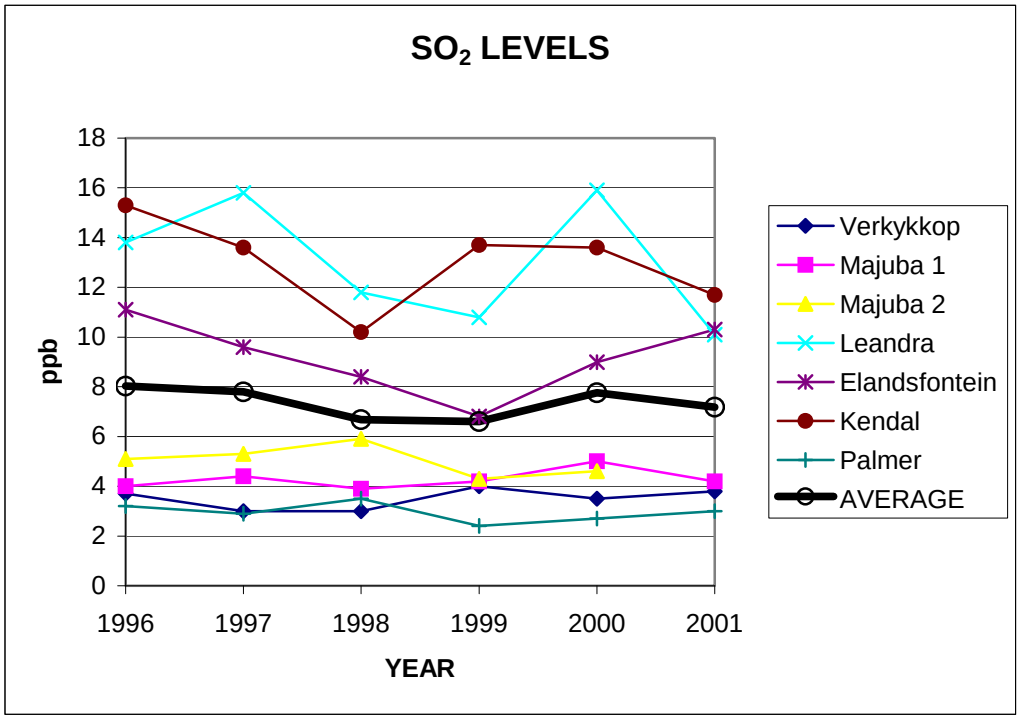


Figure 6.24: SO2 levels

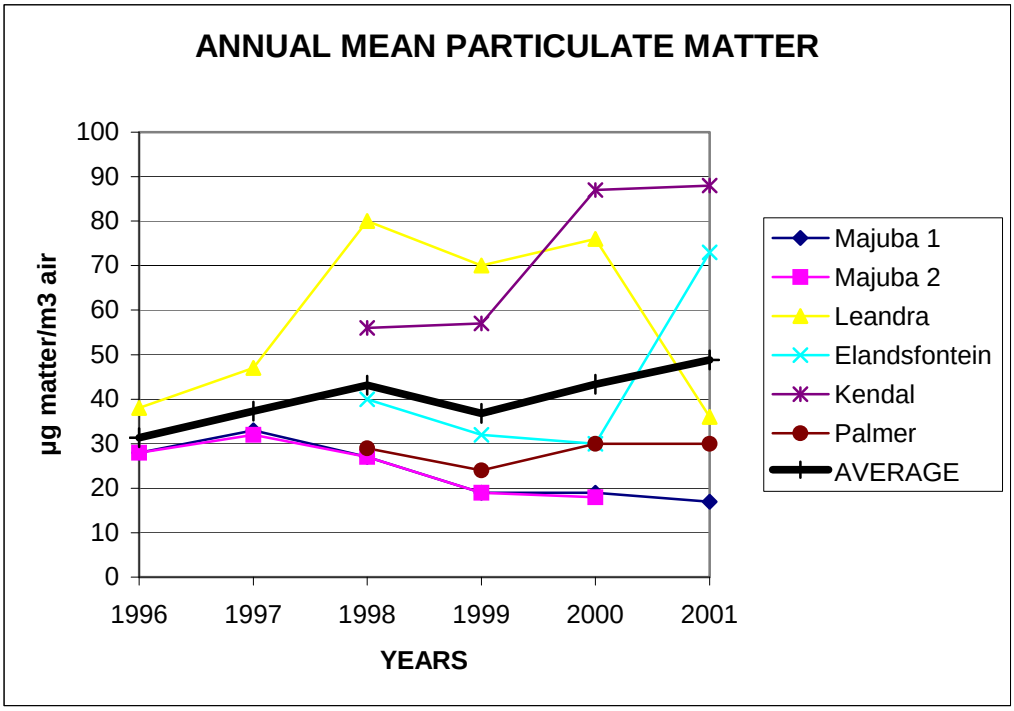


Figure 6.25: Annual mean particulate matter

When analysing the average SO_2 emissions over a 6-year period, it can be seen that the pollutant-concentration in the air had remained more or less constant and had even to some extent started to diminish. The average mean particulate matter has, however, steadily increased until the 2001 figure is almost 60 percent higher than the 1996 figure.

7. RESULTS FROM THE ANALYSIS

7.1. Introduction

This section summarises the results obtained from the analysis described in Sections 4, 5 and 6. Although the MDC constitutes a single entity/initiative, the format and availability of data necessitated the results to be presented separately for South Africa and Mozambique, in the case of macro-economic and socio-economic impacts.

In general, the analysis revealed a stronger correlation between positive changes and proximity to the corridor in the case of macro-economic impacts than in the case of socio-economic impacts.

7.2. Movement along the corridor

Movement along the corridor was analysed in terms of the rate of change (growth) during the analysis period for a number of indicators. Regarding *activity at the border post*, the analysis shows that the total number of persons crossing the border increased substantially during the period 1995 to 2003. This increase represents a growth rate of about 17 percent per annum (depending on the actual start and end date of the period). For *road transport*, the growth rate was in the order of 6 percent per annum, substantially higher than the growth rates on other routes. For trucks alone, growth rates of more than 10 percent per annum were found in some cases. *Air transport* grew by 9 percent per annum between 1999 and 2000. In the case of *rail transport*, there was an initial increase in the volume of goods to South Africa, followed by a substantial decrease and a slow recovery. The poor performance in the case of rail can be ascribed to a number of reasons, such as delays at the port, return of empty rolling stock and the lack of rolling stock. In summary, therefore, the analysis shows that, with the exception of rail, transport activity on the corridor revealed high growth rates.

7.3. Macro-economic impacts

In interpreting macro-economic impacts (see Sections 7.3.1 to 7.3.4 below), a broader view of the three economies involved (Gauteng, Mpumalanga and Maputo city) is important. The difference in size of the relevant economies is perhaps the most important distinguishing feature.

7.3.1 Economic output

Mpumalanga's growth during the analysis period, in terms of *economic output* (as measured by Gross Value Added (GVA)), was on a par with that of South Africa (about 2,5 percent per annum). The analysis however revealed that areas close to the corridor reveal a higher growth rate than areas further removed from the corridor. This applies to total economic output as well as to most of the individual sectors of the economy, in particular the sectors manufacturing, electricity, construction, trade, transport and finance. Regarding *GVA per capita*, the analysis revealed that Mpumalanga is slightly above the national average. Again, the analysis showed that

areas close to the corridor had a higher growth rate in terms of GVA per capita than areas further removed from the corridor.

On the Mozambican side, Maputo city constitutes the biggest player in the Mozambican economy in general and in the southern regional economy in particular. Maputo city contributes 73 percent and the MDC more than 80 percent to the economy of the southern region. Regarding economic growth, it is maintained that the MDC contributed to the already high economic growth rate in the Maputo province and city during the analysis period through investments and other actions associated with the MDC.

7.3.2 Employment

For Mpumalanga and in the case of manufacturing, construction, trade, transport and to a lesser extent the finance sector, there seems to be relatively a strong correlation between growth in employment during the analysis period and proximity to the corridor.

Regarding the Mozambican part of the MDC, the 1996/97 official unemployment rate (formal wage-earning employment) was estimated at around 69 percent. This figure is almost the same as the total number added to the Mozambican population every year, most of which are, by definition, not regarded as unemployed simply because they do not actively seek for jobs or employment. While, on the one hand, Mozambique has about 350 000 people assumed to be unemployed in the formal economy, on the other hand, every year the subsistence and the informal economy contribute almost the same number of people to its existing economically active population. Moreover, more than 65 percent (20 400) of the almost 31 000 companies in Mozambique are concentrated in the Maputo, Gaza and Sofala provinces. Wholesale and retail trade (17 776 or 56 percent of all registered companies), hotels and restaurants (5 984 or 18,9 percent of all registered companies) and real estate, renting (including security services) and business activities (680 or 2,1 percent of registered companies) are the main activities of registered companies in Mozambique. They amount to almost 78 percent of all companies and offer more than 52 percent of all dependent employment opportunities in the private sector of Mozambique.

7.3.3 Income per capita

Income per capita for Mpumalanga is about 80 percent of the national average. The analysis however shows that income per capita has grown at a faster rate in the areas closer to the corridor than the areas further removed from the corridor.

Regarding Mozambique, the average GGP per capita in Maputo city and province amounted to USD652 in 2000, though the gap between the two provinces comprising the MDC remains rather wide: Maputo city USD1070 and Maputo province USD171.

7.3.4 Capricon projections

For Mpumalanga, actual impacts (in respect of GVA and employment) were compared to predicted impacts (as measured by production). For this purpose, the

actual annual growth rate of these variables was compared to the predicted growth rate during the analysis period. No data are available in respect of capital investment and imports, which meant that no comparison could be made in these cases. Regarding *GVA*, the comparison showed that the projections were over-optimistic in all cases, except for the sectors *transport* and *finance*. It also showed that the total economy (all sectors combined) grew by less than 2,5 percent per annum during the analysis period (1996 to 2001) as opposed to the projected figure of 7 percent per annum. Regarding *employment*, a substantial "mismatch" between predicted and actual employment was demonstrated. The biggest discrepancies appear in the case of the mining and trade sectors. For the total economy, however, the picture is less alarming: actual employment grew by 4,6 percent per annum during the analysis period, as opposed to a projected figure of 7 percent per annum.

On the Mozambican side, the bulk of the macro and regional economic impact associated with several MDC initiatives, namely mega-projects such as MOZAL and others in the process of being implemented soon (both in the narrow MDC and in the wider MDC, the southern region of Mozambique), are not captured by the data for the period 1996-2000. Hence, in projecting economic growth for the MDC region until 2010, it needs to be expected that the already relatively high economic growth experienced in the past five or six years will most probably accelerate further. This is what is depicted by Scenario 2, in which the average annual economic growth rate in the MDC increases from 11 percent in 1996-2000 to at least 16 percent and 22 percent per year for the periods 2000-2005 and 2006-2010 respectively. If this does not happen, the GGP per capita in the MDC is likely to improve more rapidly than in the case of Scenario 1 (i.e. without the MDC); namely from USD652 in 2000 to USD1 222 and USD2 927 in 2005 and 2010 respectively.

7.4. Socio-economic impacts

7.4.1 Demography

At about 1,8 percent per annum, the growth rate of Mpumalanga's population is slightly higher than that of South Africa (at 1,5 percent per annum). However, the analysis did not reveal any correlation between proximity to the corridor and population growth rates.

On the Mozambican side, the population directly benefiting from the main road includes the people in urban districts 1 and 2 of Maputo city, and the districts of Boane, Moamba, and Matola city of Maputo Province. A higher population growth rate can also be noticed in the districts directly affected by the N4 road. In the period 2000 to 2002, the annual growth rate in Maputo province and city were 2,4 and 1,2 per cent respectively.

7.4.2 Poverty

Poverty for the whole of Mpumalanga (as measured by the indicator "Poverty gap") has increased during the period 1996 to 2002. However, the analysis reveals that the rate of increase generally was slower in the districts close to the corridor, particularly in the eastern areas of the study area.

In Mozambican MDC area, contrary to the national trend, poverty incidence appears to be on the rise between 1996 and 2003 in Maputo Province and Maputo city. Estimated poverty headcount ratios in Maputo Province and Maputo City increased by 3,7 and 5,8 percent respectively.

7.4.3 Human development

The analysis revealed that, for Mpumalanga, there is a positive correlation between the rate of increase in human development (as measured by the indicators "Human Development Index" and "Functional literacy") and proximity to the corridor. This relationship, however, is less pronounced than in the case of macro-economic impacts (see above).

On the Mozambican side, available data reveal a relatively high value for HDI for Maputo city and province relative to the other selected areas. Maputo city is the only area of Mozambique with an HDI above 0,5. This affects the overall average level of the southern region of the country. Regarding the rate of change of this index during the analysis period, although the data available cover the period 1996 – 2000 only, there are several indications that the improvement in the components of the HDI is likely to continue improving, including in the MDC region. Yet more in-depth and localized studies are needed to find out the specific differences at the district and local levels in relation to the three variables comprising the HDI, namely income generation, life expectancy and educational level.

7.4.4 Education

For Mpumalanga as a whole, education levels (as measured by the index "functional literacy") increased during the analysis period. The analysis however did not reveal a higher rate of increase in areas closer to the corridor than in areas further removed from the corridor. These observations are also valid for the Mozambican part of the MDC.

7.5. Environmental impacts

Regarding air quality, an analysis of appropriate indicators reveals that SO_2 levels have remained constant during the analysis period. The average mean particulate matter has however steadily increased during the analysis period and the 2001 figure is almost 60 percent higher than the 1996 figure.

8. CONSTRAINTS AND OPPORTUNITIES

8.1. Introduction

It is clear that a quantitative analysis alone would be insufficient to identify the real or underlying issues affecting the development of a region or specific sectors within a region. The quantitative analyses (see the previous sections) were therefore supplemented by a qualitative analysis of issues through interactions with key role-players from the business, and local and provincial government. The following section is a summary of the main issues affecting development of the corridor region, focusing on the utilisation of the road, rail border and port infrastructure.

In mid-2003, an initiative was launched by the Mpumalanga business sector which was called the Maputo Corridor Logistics Initiative (MCLI), to address current constraints in the utilisation of the Maputo Port. One of the key objectives of the MCLI was to utilise the Maputo Port as a major import/export port within the region. This process necessitated a series of infrastructure improvements aimed at improving access to the port and the city of Maputo. Consequently, improvements to road, rail and port infrastructure resulted, based on commitments and actions from South Africa and Mozambique. Constraints, however, still remain that prohibit the full utilisation of the Maputo Port. The following is a listing of potentials and constraints identified by the MCLI during a recent series of stakeholder forums and meetings.

8.2. Maputo Port

8.2.1 Constraints

- Dredging of the Polana Channel is required as current depth limits shipping. (This process was already started in August 2003).
- Safety standards at the port are currently being questioned (i.e. port needs to comply with International Safety Standards). (The process of improving safety standards was commenced in late 2003.)
- The port requires more tug boats and trained harbour pilots to manage with the potential increased shipping at the port. (Two new tugs have already been ordered.)
- Internal road network as well as access roads to the port are insufficient and in poor condition. (Planned improvements to the road network constitute part of a three-year plan to improve facilities at the port.)
- At present, there is no facility for handling *sterilized* fruit exports. The main constraint i.r.o. growth in the fruit trade is delays in rail deliveries to the port.
- A lack of co-ordination with customs causes delays and adds to the costs of imports/exports. (This issue needs to be addressed by both the South Africa and Mozambican Governments).

8.2.2 Opportunities

- Port can be linked to rail, road link and terminals that are privatised.
- Maputo is the only fully privatised port in Southern Africa, and is the shortest route for export for many producers in the region.

- A new facility for handling sterilised fruit could provide additional opportunity for fruit exports.

8.3. Terminals

8.3.1 Constraints

- Cold storage facilities are limited.
- Bulk cargo handling is constrained by limited storage space. Covered storage areas for steel products are lacking.
- Similar to port draft restriction, restrictions alongside terminals limit the size of vehicles that can utilise the terminals.
- Insufficient reefer plug points – 116 needed.
- Lack of collaboration between terminals, i.e. MIPS (Containers) and the break bulk handling section (run by the Maputo Port Development Company).

8.3.2 Opportunities

- Has a modern container terminal with substantial spare capacity to handle container freight.
- Privatised terminals are a draw card for international shipping given the expected more efficient operation.

8.4. Road transport

8.4.1 Constraints

- Border restrictions, such as limited operating hours (not a 24-hour operation) and slow customs clearance, result in delays and adds to trucking congestion. This issue has recently been partly addressed and opening hours of the Lebombo border post have been extended to 6 pm for commercial freight vehicles.
- Truck Permit issuing between South Africa and Mozambique differ and add time consumed. This requires standardisation.
- The Lubombo - Recano Garcia border operators are creating congestion at the border post. This is due largely to limited cooperation and agreement on standardised and simplified documentation.
- There is a lack of return loads, increasing the transport cost of commodities.
- Inconsistencies of weighbridges. Road authorities not accepting accredited weighbridge certificates. (This issue needs to be addressed by both the South Africa and Mozambican Governments).
- High rates and toll fees add to the cost of commodities, making it less competitive.
- Payloads on Mozambique roads not the same as in RSA. This limits the road freight operation (This issue needs to be addressed by the Mozambican Government).
- Mozambican hauliers are prevented from loading return loads favoured in South Africa – this represents an unacceptable degree of protectionism.

8.4.2 Opportunities

- The distance to the Maputo port from the MDC corridor area is shorter than to other SA ports making it more attractive given the possible transport cost (and time) savings.
- Possible E-tag system can be considered for frequent users reducing the need to stop at toll gates.
- The potential exists for forest products from Mpumalanga to utilise the port.

8.5. Rail transport

8.5.1 Constraints

(All items listed here are to be addressed with both the South African and Mozambican governments.)

- The condition of rail links between SA and Mozambique seen as problematic
- A shortage of wagons and locomotives to transport goods.
- Maintenance of rolling stock is not sufficient, which results in less rolling stock being available.
- Turn around time of trains is long, often forcing goods onto the road network.
- Inadequate equipment for fruit shipment limits the use of rail for transporting fruit products.
- Lack of return loads on rail to reduce cost of transport (similar to road transport).
- Rail transport rates are high and are also hard to obtain for transport budgeting purposes. Users perceive Spoornet as unable to react quickly to rate enquiries or being protective and or monopolistic.
- Lack of interest by Spoornet to support the Maputo Initiative and individual cargo.
- Current rail capacity is committed mainly to the transport of coal (80 percent) and there is not sufficient emphasis placed on other "Rail Friendly Cargo" to generate economies of scale, which in turn results in frequent shipping line calls.
- Security of cargo on rail is seen as risky, often discouraging users wanting to use rail.
- Spoornet appears to be more interested in transporting bulk cargo than containers.
- Spoornet is only interested in dealing through container (inter-modal) operators and not directly with lines or customers i.e. cargo owners. There is insufficient communication with cargo owners.

8.5.2 Opportunities

- The privatisation of the rail link seen as opportunity to increase rail efficiency.

8.6. Border post

8.6.1 Constraints

- Limited operating hours have resulted in long delays; this issue has recently been addressed by extending the operating hours at the Lebombo border to 18h00 for freight vehicles.
- The current space at the Lebombo border post is limited for trucks, and initiatives proposed by the private sector to alleviate current procedures are not being taken up by authorities.
- Delays result in the handling of documentation.
- Users of the border have identified a lack of trained staff as a major constraint in the effective processing of both people and freight.
- Custom officials seem to give preferential treatment to certain agents.
- No pre-clearance of cargo exists on the Mozambican side.

The situation at the border post remains one of infrastructure- and resource constraints. It is hoped that these issues will be resolved in 2004.

8.6.2 Opportunities

- The border post is seen as a "window to both countries". Apart from operational issues, the environments around the border need to be cleaned up.

8.7. Cost issues

8.7.1 Constraints

- Currently the light dues at the Maputo port are higher than in almost any other port in the world, strongly disadvantaging trade.
- Cost of feeder transport to SA ports is too high; in addition, South African ports are becoming more congested. The result: Other viable export ports (such as Maputo) are being considered.
- If transport is not cost effective the whole logistics chain will collapse. It is important to make all relevant efforts to ensure cost optimisation. This in turn will lead more freight customers to use Maputo.

8.7.2 Opportunities

- All port services are being privatised, which creates opportunities for negotiating with SA users wanting to use the port (attractive cost options).

8.8. Shipping lines

8.8.1 Constraints

- Currently the direct liners sailing from Maputo to worldwide destinations are limited and there is no direct sailing to the Far East.
- There are no regular liner services for reefer business.
- Empty container availability in Maputo.

- There is a need for direct sailings from Maputo to the rest of the world.
- Shipping should be regular; reliable and cost effective to all destinations – these are important limitations affecting the optimal use of the port.

8.8.2 Opportunities

- SA Cargo can be diverted from problematic congested South African ports to Maputo, which could result in cost savings for both shipping lines and cargo owners.

8.9. Other constraints

- There is an inability to react quickly to market changes – procedures and infrastructure limitations mean that the region cannot react quickly enough to meet the changing situations.
- There are perceived risks of cargo at Maputo not being shipped and received at destinations on time - with the associated additional costs involved.
- Current stricter Visa restrictions result in less cross border trade and business. Already the Nelspruit business community has been negatively affected by stricter SA visa requirements.

8.10. Other opportunities

Given the closer proximity of Maputo there exists substantial potential to utilise the port for imports/exports. Current constraints must be addressed to realise the full potential of the port. The Maputo Corridor Logistics Initiative is engaging business and government interests in both countries to address these issues. The initiative has substantial support from the business community in the region wanting to use the port and to increase regional trade. Some successes, such as changes to border post operating hours, has already been a positive outcome of this relatively recent private sector initiative.

9. CONCLUSIONS AND RECOMMENDATIONS

9.1. Conclusions

High logistics cost on the Maputo corridor
Although shipping charges through Maputo port compare favourably to South African ports, the combination of rail and road transport costs and toll fees makes this corridor substantially more expensive than other South African corridors. This situation is made worse by the limited backhaul and long clearing times at the border post.

Rail transport
The rail link between Gauteng and Maputo is another critical building block and enabling factor. At present a number of problems are being experienced mainly due to ongoing non-completion of the Ressano Garcia rail concession and ongoing efforts by Spoornet to constrain the transfer of business to the Maputo Lines. Spoornet's policy of directing and selecting specific cargo towards specific corridors and not providing sufficient capacity on the Maputo Corridor line for Maputo Corridor specific cargo aggravates this situation.

Road transport
There are a number of problems experienced in this regard especially bureaucracy constraints associated with the road corridor and border post.

Shipping lines
Shipping lines do not service Maputo port as they do other main ports due to a lack of sufficient cargo.

Border post
Problems at the border post are the main constrains for trade in the corridor. These seem to be mainly of an operational nature, such as limited operating hours, inappropriate operating procedures that lead to congestion, and a lack of focus on the core traffic, which is transit cargo.

Formal system and reliable data for monitoring impacts
At present there is a lack of a dedicated system (including selected performance indicators and reliable data) for monitoring project impacts. This makes it difficult, if not impossible, to monitor impacts in a consistent and ongoing manner.

Capacity and infrastructure constraints at Maputo port
The port is one of the main building blocks of the corridor and as such constitutes an important enabling factor. It has been a priority of the MDC that the port be substantially rehabilitated and that operational improvements occur. To achieve this objective the CFM initiated a process of privatisation (which now is complete – the port was concessioned to a public-private partnership on 14th April 2003 as a result of which a USD70 million investment programme has been initiated). Subsequent to this the following has been achieved:

- USD10 million handling equipment is now installed at the port

- New tug capacity has been introduced in the form of two 37-ton tugs
- A dredging to fully restore the channels to their design depths and widths by the end of January 2004
- The container terminal has seen an investment of USD12 million in rehabilitation of infrastructure and equipment.

A number of constraints are however still being experienced. They relate to an insufficient internal and access road network, and a limited facility for handling fruit exports.

Infrastructure and institutional constraints at terminals
Terminals at the port constitute another important enabling factor. A number of problems are however restricting their optimal utilisation. Examples are lack of covered storage areas for steel products, limited and expensive cold storage facilities, and limited storage space for bulk cargo handling.

Negative perceptions
Negatively perceptions exist and are largely based on a long history of non-completion of the founding concessions relating to the corridor, as well as a lack of efficient marketing and communication of developments in the corridor. It is also perceived that the current stricter visa requirements by South Africa have resulted in lower levels of cross-border trade and business.

9.2. Recommendations

Missing building blocks
It is critical that the missing building blocks should be put into place as a matter of urgency. These building blocks (interventions at an infrastructure and institutional level) are a prerequisite for a better transport system in the corridor resulting in lower transport cost, shorter transit times and increased reliability of the transport system and ultimately economic growth and development in the region.

Implementation agency
There is a need for an independent implementation agency, tasked with the responsibility of ensuring the timely (speedy) implementation of the missing elements of the corridor. This agency should also be tasked with facilitating communication between current and potential users of the corridor and the relevant government institutions.

Marketing
The MDC initiative should be marketed in a well-planned and ongoing manner and success stories publicised in order to communicate its benefits to potential users. Marketing to government organisations needs to be integrated with marketing by the core investors and service providers along the corridor, particularly the port, with full cognisance being taken of private sector recommendations and priorities.

Institutional arrangement
The objectives set out in the Agreement for the Co-ordination of the Maputo Investment Corridor between the Government of the Republic of Mozambique and

the Government of the Republic of *South* Africa, enumerated and highlighted above, are still valid today. But as Lindfield already sustained in 1998, the institutions currently charged with implementation of the agreement cannot adequately address the scope of the key objectives. It is worthwhile recalling Lindfield's conclusions regarding the review of the institutional structure for corridor implementation, including the Agreement:

- some industrial, social and environmental development objectives are difficult to achieve under the current institutional structure;
- there continues to be a need for a co-ordinating a mechanism with the corridor to achieve these objectives;
- the structure proposed in the early stages of implementation for that mechanism - a joint company encompassing both the South African and Mozambique Governments and South African and Mozambique private sectors with technical co-ordination by the Ministry of Transport and Communications - appears to be no longer appropriate for the changed institutional, political and economic contexts on both sides of the boarder; and
- a new structure is needed for this co-ordination mechanism, enabling it to meet the objectives set out above and to promote economic development, employment creation and poverty alleviation while reducing the environmental costs of this development - this structure should encompass both the Province and City of Maputo on the government side and a more focused approach to private sector participation.

This structure will match and complement developments taking place within South Africa in order to allow for more effective implementation of all of the above objectives.

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APPENDIX A:
TERMS OF REFERENCE

Terms of Reference

Introduction

In 1995, the governments of Mozambique and South Africa established an agreement to implement the MDC initiative. This agreement has the full support of the other countries of the South African Development Community (SADC). The two governments established in the agreement the main objectives for the MDC as follows:

- To improve and rehabilitate the Witbank to Maputo transport infrastructure, through partnership between the public and the private sectors;
- To maximize the investments made in the corridor area and ensure that the resulting growth and sustainable development is fully supported by integrated investment in infrastructure;
- To maximize the impact of MDC investment on social development, particularly for the most disadvantaged communities;
- To ensure the environmental sustainability of the project by adopting policies, strategies and mechanisms which take a political, participative and integrated approach to environmental management (such as the procedures and principles of integrated environmental management).

Strategically, the MDC was defined in its initial phase as follows:

- The primary corridor region – comprising the transport and communication infrastructure itself (roads, railways and communications) which link Witbank and Maputo, including the main urban centres in the area between Witbank and Maputo Port
- The secondary corridor region – comprising regions which, in administrative terms, are immediately adjacent to the primary region in the provinces of Maputo (Mozambique), Mpumalanga and Gauteng (South Africa) and Swaziland
- Resource nodes and tertiary roads linked to the principal corridor such as the Matutune District (included in the Lubombo Spatial Development Initiative).

The MDC has been initiated successfully. The key projects were started punctually: some have been completed and others are in an advantaged stage of implementation. Other anchor projects have also been completed or are progressing well. The corridor has provided a focused orientation for the promotion of investment, as well as building a framework for government effort on structural reforms.

On the South African side, a programme was defined for the MDC, based on the SDI approach that was being applied to other local initiatives. The MDC has become the most important SDI, and it encouraged the government of South Africa to expand the SDI programme to explore various development opportunities in the Southern Africa region, under the direction of the Department of Trade and Industry (DTI), and in full cooperation with the countries concerned.

In this regard, the governments of Mozambique and South Africa have established the SDI programme for four development corridors in Mozambique, namely Maputo,

Limpopo, Beira and Nacala, as well as the Zambezi Valley Development Initiative. The South African government plans to aid this process by transferring the lessons learned and the skills gained during the execution of its domestic SDIs. The expectation is to assist the government of Mozambique in the implementation of its development strategy, while benefiting south African companies by giving them the opportunity to take up the generated investment opportunities.

Objectives

The Maputo Development Corridor wishes to procure the services of a suitable, experienced contractor to assist the Project Manager on the evaluation of the First Phase Programme Impact and the establishment of a Tracking System.

There are two broad objectives to this study:

The *first* is to assist the MDC Project Manager on the evaluation of the first phase of the MDC programme, aiming to draw up strategic action plans for the second phase programme. The output for this objective (Output 1) will be an assessment referring to the impact of the MDC first phase programme and recommendations for the next phase in terms of strategy. In Table 1 below are listed some of the main indicators that the information should be reflecting in the assessment report. The contract can identify other appropriate indicators to be used in the assessment.

The *second* is to assist the MDC Project Manager in establishing a Tracking System that can monitor, evaluate and disseminate information related to the MDC, the impacts of key activities and investment and other information as may be deemed useful for public knowledge.

The MDC in Nelspruit started this process in 1999, conducting a study done by the University of the Witwatersrand in association with the CSIR, the IDT and the MYIN. In this study, the main indicators for monitoring and evaluating the MDC have been identified (see Table 1).

The MDC Technical Unit, based in Mozambique, wishes to proceed with the establishment of the Tracking System. There are two outputs for this objective, namely:

Output 1: Business Plan, containing relevant information for the Tracking System project, including the conceptualisation, the required resources, programming and implementation of the activities, previewing of technical assistance, etc.
Output 2: Capacity and system development, that will consist of the implementation of the Business Plan for the Tracking System, and the establishment of human resources capacity, as well as the administrative, financial and logistical systems required for the implementation of the tracking system.

Although the contractors can present proposals for all components of this tender, the Capacity and System Development component will be contracted separately after the

decision to be taken later concerning the suitability of the tracking system suggested and the institutional framework requirements.

Table A.1: Indicators for the Corridor Programme Impact Evaluation		
Criteria group	**Criteria**	**Indicators**
Group 1: Major within the corridor		
Impact of infrastructure project	Traffic numbers	Traffic number through toll gates
	Accidents	Numbers, cause, vehicles involved and deaths
	Congestion	Average length of road per vehicle
	Usage of port	Numbers of import/export through Maputo
	Border post mobility	Average time for different users to be processed; tourists, local, business Cross-border migration Time and cost per truck crossing
	Border post control	Number of illegal immigrants and criminals arrested Number of incidents and value of illegal imports Crossings into country - percent increase per year
Group 2: Economic indicators		
Macro-economic	Economic growth	GGP per capita Annual average growth rate Personal income per capita
Private sector investment		New investments Total investment Number of people employed Diversity/competitiveness Project development
Economic sectors	Mining, smelting, petro-chemical Energy Agriculture Forestry Tourism Manufacturing	Growth in sector Export oriented Competitiveness Variety/ability to adapt Linkages with other sectors
SMME development		Number of new SMMEs Turnover of existing SMMEs Diversity of SMME activities
Group 3: Social and quality of life indicators		
Health	Access to health services Notifiable medical conditions	Malaria TB HIV Viral hepatitis
Education	General	Human Development Index Levels of education Skills audit

Table A.1: Indicators for the Corridor Programme Impact Evaluation		
Criteria group	**Criteria**	**Indicators**
	Literacy	Literacy percent, male/female
	Schooling	Primary schools Senior schools
	Capacity building	Number of CB projects Number of people trained
Demography	Totals	Population by age and categories Population growth Life expectancy and birth Infant mortality Child mortality rate
	Density	Number of persons per square km, rural and urban
Socio-economics	Jobs	Unemployment rate Labour force according to sector of activities and categories, sex, migratory status Annual rate of growth in employment by sector
	Poverty	Head count index of poverty Poverty gap
Infrastructure	Social facilities	Spatial distribution and per population: schools, clinics, hospitals, recreational
	Access to services	Households with access to water, telecommunications, electricity and sanitation, rural and urban
Water supply and sanitation	Access and quality	Accessibility Service levels Quality
Crime		Crimes per category per 1 000 population
Group 4: Environmental indicators		
Land	Land use change	Nature and percent of land use change according to defined categories
	Bio-diversity	Threatened species as total of native species Plant and animal diversity Protected areas as a percentage of total land
Atmosphere	Climate change	CO2 emission per capita
	Atmospheric pollution	Emission inventories of criteria air pollution (CO, Pb, NO@, O3, PM10, SO2) Ambient concentration of pollutants in selected rural and urban areas Indicators of human health impacts from air pollution Regional atmospheric deposition sulphur and nitrogen Indicators of ecosystem impact from atmospheric deposition Measurements of visibility in key tourists areas

Table A.1: Indicators for the Corridor Programme Impact Evaluation		
Criteria group	**Criteria**	**Indicators**
Surface water	Water supply	Annual withdrawals of ground surface water per sector
	Water quality	Indicators or river ecosystem health
Natural resources use and management	Energy resources	Energy consumption by sector, by type of energy and per capita usage Renewable energy consumption by sector, by type and per capita usage
	Forest and woodland resources Soil resources Fisheries	
Group 5: Institutional indicators		
Local government		Transformation Existing delivery trends
Institutional arrangements	Cooperation between government departments for de-bottlenecking	Time from proposed submission to final decision
Borderland cooperation		Joint evaluation of police Joint projects
Legislation	Changes to legislation to facilitate export oriented growth	Name, nature and number of new laws passes
Capacity building and community employment		Community involvement and responsibility for the use and management of assets under their control Community control over the land The extent to which local community gain equity shares in tourism/forestry related enterprises The extent to which related SMME development opportunities are identified and supported (e.g. via capacity building) in the development process

Methodology

The contractor will prepare forms to be used on the information collection and, after discussion with the MDC Project Manager, will collect the information at the different institutions where it can be found. The form preparation process should be

done in two weeks. The contractor will proceed with the information collecting and data processing, study, etc, and he should present the Study Report Assessment in eight weeks to the Project Manager as described under "Output 1" above.

In interacting with the Project Manager and other relevant persons involved in the MDC programme, the contractor will develop alternative designs of the database system for the MDC that should consider interfacing with a Geographic Information System, to be built in the future. The contractor will give guidance regarding the decision of a suitable system. This, and the Tracking System Business Plan, should be presented to the Project Manager within eight weeks.