



**DEVELOPMENT
CORRIDORS
PARTNERSHIP**

IMPACT ASSESSMENT FOR CORRIDORS: FROM INFRASTRUCTURE TO DEVELOPMENT CORRIDORS

Edited by:
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2022

The Development Corridors Partnership

The Development Corridors Partnership (DCP) is a research and capacity development initiative. It is a collaboration between institutions from China, Kenya, Tanzania and the UK. The main objective is to deliver effective research and capacity-building to help improve corridor planning and management. It aims to ensure that development corridor decision-making is based on sound scientific evidence and effective use of available planning tools and procedures, to ensure that risks are

avoided and opportunities exploited. The DCP comprises partners from the University of York, the University of Cambridge, London School of Economics, Sokoine University of Agriculture, the University of Nairobi, as well as the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), African Conservation Centre, the World Wide Fund for Nature (WWF), the Chinese Academy of Agricultural Sciences and the Chinese Academy of International Trade and Economic Cooperation (CAITEC).

DCP Partners:



For the purposes of this publication, DCP collaboration was extended to experts representing Netherlands Commission for Environmental Assessment, the Centre for Energy, Petroleum and Mineral Law and Policy at the University of Dundee, the University of Queensland, the Columbia Centre on Sustainable Investment, the GOBI

Framework for Sustainable Infrastructure Initiative (comprising the University of Oxford, University of Central Asia and the Independent Research Institute of Mongolia), The Biodiversity Consultancy, the Wildlife Institute of India, the Endangered Wildlife Trust and Ecotecnia Ingenieros Consultores SRL.

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Foreword

In the course of a long and varied working life, I have been privileged to work with, or learn from, a stimulating panoply of individuals who are committed to contributing to the economic, social, and environmental development of all aspects of the United Nations Sustainable Development Goals.

Jon Hobbs and Diego Juffe-Bignoli are, thankfully, two of these individuals. I was delighted to learn that they had come together to produce, for the Development Corridors Partnership, a rich and stimulating collection of research reports, case studies and assessments relating to the array of efforts made under the rubric of 'development corridors'. They were determined to express the conviction that decisions made, primarily by governments, regarding the planning and building of Corridors, really must be informed by an evidence-based understanding of the consequences - positive or negative - of these decisions. And they have succeeded. But Jon Hobbs will never read these words. He was hospitalized after the bulk of the work was complete, and, to the deep sadness and regret of all who knew him, he passed away at the end of September, 2021.

Jon and Diego sought out and recruited a daunting array of researchers, scholars and stakeholders to shed light on the processes currently underlying the world of development corridors today. They certainly succeeded.

The work was initiated before the onset of the COVID-19 pandemic, and as governments turn to the formidable challenge of restoring

economic vitality without further damage to the climate, it becomes even more imperative that impact assessment be understood, embraced and improved. Jon and Diego have shown us the way forward for a journey which absolutely must be embarked upon.

They would be first to recognise that the Development Corridors Partnership as a whole must be commended for showing - in many different ways and places - that, not only is the need for impact assessment clear and present, but so are the skills and commitment of researchers, scholars and stakeholders. These are to be found in an impressive coming together of universities, civil society organizations and business groups, and communities.

All are part of an outstanding initiative, funded by the UK Research and Innovation Council, and managed by the UNEP-WCMC. This initiative has been embraced by some of the best minds that have been turned to the task of ensuring that - while we attempt to bring economic and social benefits to people, in line with the United Nations Sustainable Development Goals - we do not risk significant environmental and social costs, and thus actually undermine long-term development successes.

So, I urge you to read this book, and figure out how you might improve your own contribution to the challenges ahead. Jon and Diego have set out a case. It needs to be taken up, not set aside; acted on, not just talked about. It is in your hands.

John Harker

Chair of the Development Corridors Partnership Independent Advisory Board,
Nova Scotia, Canada.

Dedicated to the memory of Jon Hobbs
who was the architect and driving force of this book

Executive Summary

Driven by increasing globalisation, the development aspirations of nations, and the need to access resources, an infrastructure boom is impacting many regions of our planet. New infrastructure projects are traversing diverse landscapes over hundreds of kilometres, often crossing international borders and penetrating into remote areas previously unaffected by industrialisation and urbanisation. These large-scale projects, mostly spanning several regions in a same country, but often linear and transnational in nature, are generically called corridors. Depending on the nature and objectives, they can be transport, infrastructure, growth, resource or economic corridors.

The rapid development of corridors globally presents environmental planning professionals with numerous challenges. **The primary need is to ensure that decisions about these developments are informed by an evidence-based understanding of their consequences - both positive and negative.** This will enable infrastructure development to meet development needs without adversely impacting ecological systems or human welfare. Improving the quality of infrastructure policies, plans, programmes and projects, by ensuring they include the necessary environmental and social scrutiny, is urgently required now - and will be for the foreseeable future. This challenge is the unifying theme of this publication.

Using insights from Africa, Asia and South America, this sourcebook compiles 24 contributed papers written in 2021, covering many facets of the

opportunities and challenges presented by the rapidly growing number of infrastructure and corridor developments around the world. Prevailing planning practices are reviewed through case studies along with the efficacy of some of the available tools to conduct systematic and comprehensive impact assessments. The latter includes Strategic Environmental Impact Assessment (SEA) and Environmental Impact Assessment (EIA).

As the title suggests the underlying thesis of this publication is that, where they are justified, **there are significant benefits in ensuring that corridors that contain single purpose infrastructure developments (utility, infrastructure or transport) progress through a carefully planned sequential process of diversification and expansion to ensure the maximisation of benefits in full-blown 'development corridors'.** In this book, development corridors are therefore aspirational. They comprise areas identified as priorities for investment to catalyse economic growth and development. They should be developed with multiple stakeholders and social, economic and environmental interests and interdependencies in mind. With the integration of sustainability principles and appropriate environmental and social standards, development corridors could become true '(sustainable) development corridors'. They should be planned to maximise positive opportunities and minimise negative risks. Without this, today's short-term successes will become tomorrow's challenges and long-term human welfare and ecosystem integrity will be undermined.

Overview of contents

This book brings together a wide range of perspectives from experts, researchers, and practitioners around the world with the purpose to foster greater collaboration and increase our global understanding of corridors and their benefits and potential negative impacts. 13 of the 24 chapters are written by independent experts and researchers from Australia, Bolivia, Brazil, China, India, Kenya, Mongolia, South Africa, Tanzania, UK, and the USA. The book also includes 11 chapters containing material gathered by the Development Corridors Partnership, a programme of work led by UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) and funded by the UK Government via their Global Challenges Research Fund.

The collection of papers in this sourcebook is divided into five sections. First an introductory section where we introduce some key terms and definitions that underpin this work ([Chapter 1](#)). We then explore some key principles and aspirations of corridors such as delivering the Sustainable Development Goals ([Chapter 2](#)), ensuring theory and practice align ([Chapter 3](#)), ensuring financial sustainability ([Chapter 4](#)), properly assessing environmental sensitivity ([Chapter 5](#)) respecting human

rights ([Chapter 6](#)), or maximising, co-benefits ([Chapter 7](#)).

In the next three sections, we present 15 case studies from three continents: Africa, Asia, and Latin America. These case studies explore key challenges and lessons learned from specific planned, ongoing, and already implemented developments. They are presented as individual stories that readers can explore.

The final and fifth section aims to summarise lessons learned from a 4-year research and capacity building programme specifically aiming to understand the key challenges and opportunities around corridors and that has been the major driving force of this work: The Development Corridors Partnership project (DCP). DCP is a collaborative partnership across UK, Kenya, Tanzania and China, funded by the UK Research and Innovation Global Challenges Research Fund (see [Chapter 23](#)).

The book finishes with an overview of the lessons learned from the contributed papers included in this book and develops ten principles for corridor planning and delivering a meaningful and comprehensive impact assessment ([Chapter 24](#)), which we summarise here as ten key messages.

Key messages

1

Corridors must seek to achieve positive sustainability outcomes:

The mindset underwriting environmental planning of most infrastructure developments has been to mitigate negative impacts. The planning of few existing corridors is based on their role in supporting a sustainability vision for a country or region in which they are situated. Corridor developments must therefore be based on sustainability principles and support progress towards national, regional and international sustainable development goals. A true development corridor will seek to do good, as well as to mitigate negative impacts.

2

Integrated and inter-disciplinary approaches are needed:

Corridor developments are extensive, complex, multifaceted features traversing many landscapes. They can bring about significant transformational change to physical, economic, social, and cultural systems, and serve as interconnecting features. Yet engagement in corridor planning is often constrained by limited disciplinary and institutional involvement, with projects often superimposed upon communities. Corridor developments need diverse expertise and experience in their planning and management, including local stakeholder knowledge, avoiding disciplinary, institutional, or sectoral silos, that can result in policy conflicts, contradictions, and inconsistencies.

3

Corridor proponents should clearly demonstrate consideration of alternatives:

Corridor options should not be limited to a preferred proposal favoured by an elite. Corridor developments must consider all feasible alternatives (including maintenance of the status quo and no corridor development) and make the risks and opportunities of each option explicit and transparent through meaningful consultation. An important requirement in all corridor planning is to justify the need for a wide choice of options and an explanation of the potential benefits it will bring and to whom, in comparison with the alternatives. Any necessary trade-offs and how any significant potential negative impacts will be effectively managed, and opportunities created must be explained.

4

Public participation and stakeholder engagement should be at the core of corridor planning:

Corridor planning frequently fails to include meaningful participation of all stakeholders. Corridors can profoundly affect the lives and rights of indigenous peoples and local communities, potentially for generations. A common failing is that the first opportunity for local stakeholders to engage arises only after all strategic decisions have already been made and the only option remaining is for them to react negatively to a fait accompli. The meaningful engagement of all stakeholders is necessary to ensure their role is more than reactive. The way corridors are viewed by different stakeholders must be identified, understood, and addressed. Corridor developments must ensure that all interested and affected people are provided with adequate information about a proposal and have meaningful ways to engage in decision-making processes from the outset of strategic planning.

5

Mainstreaming and tiering are fundamental for corridor success:

Corridor planning requires a tiered assessment process, ensuring that environmental and social issues are considered alongside financial and technical considerations from the start of strategic planning or programme development, right through to project specifics. Conceptual corridor planning is frequently dominated by technical and financial suitability criteria with environmental, social, cultural, and human rights sensitivity issues being considered, at best, as externalities, retrospectively, once issues and problems arise. Strategic planning is important because it is when the full range of options is still open for discussion. It also establishes the parameters that will frame and implement a corridor plan or programme. Environmental and social considerations (and the interactions between them) should be considered early in strategic decision-making alongside (and to inform) technical, financial, and economic considerations.

6

An iterative process is needed:

Corridors exist in dynamic environments and need to be responsive to changing circumstances and priorities. Planning must adjust as circumstances and available information changes. The process should identify, map, and engage all interested and affected stakeholders from the earliest stage of corridor planning and throughout the planning and management of the corridor. New concerns and evidence will likely emerge as a corridor development progresses. Corridor planning frequently places undue emphasis on the production of a report (Environmental Impact Report) and its influence on the decision to proceed. The process may not be so linear in nature. It may involve many adjustments and decisions as new evidence emerges and predictions improve. A good-quality report and recommendations is necessary, but they are dependent upon a comprehensive process of ongoing dialogue and engagement with all stakeholders.

7

Corridors must ensure effective use of available tools:

Many corridor environmental impact assessments fail to meet required international standards. Corridor planning and management should make systematic and adequate use of available impact assessment procedures, methods, techniques, and tools to ensure good-quality decisions. The available procedures discussed in this publication (notably Strategic Environmental Assessment and Environmental Impact Assessment) and their associated methods, tools and techniques should be used when appropriate to help ensure that a systematic process identifies all significant potential benefits and development outcomes, and that they outweigh the costs and risks to affected people and their livelihoods and environments. The objectivity and quality of corridor decisions are dependent upon the effective use of the available tools.

8

Plan corridors with resilience and adaptability in mind:

Prevention will always be better than cure in addressing the negative impacts of corridors, and this should be the priority. However, some circumstances dictate an inevitability of negative impacts. Corridors, therefore, need to be designed to be made resilient to anticipated changes and adaptation measures may be necessary as 'coping' mechanisms or to offset unavoidable impacts, such as the impacts caused by climate change. The suitability of measures will require ongoing monitoring and adaptation as needs arise.

9

Seek impact, influence, and implementation capacity:

The decision to proceed with a corridor is ultimately the responsibility of decision makers. They are usually the representatives of all stakeholders' interests and custodians of their natural resources. Any impact assessment report must provide adequate information to ensure sufficiently good-quality decisions. If they are to be effectively implement the recommendations provided. Attempts to improve the performance of planning and associated assessment processes of corridors must tackle the ways in which outcomes are shaped by political contexts and institutional capacities. Approaches to working on assessment processes should integrate political economy analyses and institutional capacity assessment from the outset and on an ongoing basis. Resulting insights should inform the design and implementation of interventions intended to improve planning practice.

10

Evolve from Infrastructure to Development Corridors:

The prospects for linear infrastructure projects to evolve into comprehensive development corridors are often left to chance and spontaneity. Infrastructure projects are often developed in isolation and in an incremental way. For infrastructure projects to progress and become true development corridors, the transition must be systematically sequenced into planning from the start. Assessments must include consideration of potential induced, secondary, synergistic, transboundary, and cumulative impacts likely to result from the corridor development. The progression from infrastructure to development corridors must be based on a systematic, comprehensive, and integrated assessment of the potential positive environmental, social and economic opportunities and the rigorous avoidance or management of negative impacts.

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Lessons Learned from the Maputo Development Corridor: An Environmental and Social Perspective

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ABSTRACT

The Maputo development corridor (MDC) has been described as a successful transport corridor due to its positive economic impacts, but is perhaps less successful when viewed through an environmental, social and planning lens. In this chapter, I identify what lessons can be gleaned from the successes and failures of the MDC to achieve the target of a holistic development corridor. The linkages of the MDC with three areas: environmental, social and land-use planning are explored, with a view to creating an enabling environment for transport corridors to be true development corridors from the very outset. Through a literature review I explore the background, aims and practical implementation of the MDC. Shortcomings at the outset of corridor creation in the areas of environmental assessment, community and public participation and the prioritization of investment and infrastructure over other objectives, are some of the pitfalls that should be avoided when creating development corridors. There is a requirement to balance the need for investment and the fast-track approach, which is so inviting to investment with a suitably environmentally sustainable approach, so that the rapid implementation of development projects do not predominate over environmental and social issues. The key takeaway from this chapter is that a development corridor requires the adoption of a plan that is clearly communicated, the setting up of meaningful community engagement and the involvement of local government and people surrounding the proposed development corridor area at the early stages of corridor development. A holistic approach must be taken to ensure that a development, rather than simply an infrastructure or transport corridor, is the result.

15.1 Introduction

The MDC is an international transport corridor connecting the landlocked Gauteng Province in the Republic of South Africa (South Africa) to the port at Maputo in the Republic of Mozambique (Mozambique). These countries are both located at the southern part of the African

continent. The MDC constitutes the shortest road and rail linkage between the provinces of the Gauteng, Northwest, Limpopo and Mpumalanga in South Africa, and a deep-water port located in Maputo, Mozambique (Mtegha *et al.* 2012). The MDC can be said to be the most prominent project of South

African's Spatial Development Initiative (SDI) programme (Mtegha *et al.* 2012). This SDI programme, developed by the government of South Africa in 1995, aims to generate investment in key areas of the country, with a view to facilitating economic growth and employment (Rogerson 2001).

It is generally agreed that transport infrastructure is vital for economic development and human well-being (Quium 2019) and that development corridors have the potential to promote trade competitiveness, economic diversification and local economic development, as well as providing opportunities for those communities and persons living in the vicinity of the corridor. Transport corridors focus on the enhancement of the flow of goods and people from one area to another, while development corridors focus on wider social and

economic development growth (Cox and Hope 2015), as well as looking at the corridor development more holistically, without a focus on a specific area, such as transportation. Development corridors often start as transport or trade corridors and then evolve to support broader socioeconomic development, and to consider more holistically their social, environmental and economic effects and benefits (Cox and Hope 2015). While the MDC is widely regarded as successful from an economic development perspective, the same may not necessarily be said when evaluating it through an environmental and social lens. Therefore, while the MDC is known as a development corridor, the word development even being in its name, it could be said that, in practice, it has not yet evolved into one.



The timing of the MDC is notable, and assists in contextualizing the MDC. In 1994, South Africa celebrated the end of the apartheid system⁷⁹. The apartheid government had made use of planning laws and policies in order to underpin segregationist policies. These planning laws and policies were used to create an unequal dispersal of facilities, infrastructure and even accessibility, with difficult transportation routes and large distances between the areas in which the poor and rich lived (Berrisford 2011). Mozambique had also, in 1992, come out of a period of civil war, which had ravaged the country for nearly 16 years. Both governments were eager to stimulate economic growth, as well as to re-establish the historic trade between the two countries (World Bank 2014). The MDC was revived in 1995 pursuant to South Africa's post-apartheid SDI programme, intended to create a conducive environment for investors. The inception of the SDI programme was therefore inherently economic (Jourdan 1998). The SDI's aim was to bring together spatial planning and development projects to grow areas of unrealized economic potential (Cox and Hope 2015). The MDC can be said to be a part of, as well as the prototype for, the SDI system (Roodt 2008).

The MDC was planned against an existing route that had previously linked South Africa's economic hub with the Maputo Port. The route had subsequently become unused and deteriorated due to neglect caused by geopolitical factors such as the civil war in Mozambique and the sanctions placed on South Africa during apartheid (Dzumbira *et al.* 2019). The focus of the MDC included infrastructure development, namely the revamping of the Witbank Maputo N4 toll road, the upgrading of the Maputo port, construction and revamping of electricity infrastructure and the railway line, as well as the establishment and development of the Mozal aluminium smelter, the Maputo Iron and Steel Project and the Pande/Temane gas fields (Roodt 2008; Dzumbira, Geyer Jr, H.S., Geyer, H.S. 2017). This focus on physical infrastructure development and

investment was due in some part to the drivers of the MDC initially being the transport ministries of both countries (Roodt 2008). Although the MDC was planned on an existing route, drivers for the geographic location of anchor projects were the availability of cheap electricity for Mozal and the availability of gas in Southern Mozambique for the Sasol petrochemical complex in South Africa (IMF 2014).

The characteristics central to the SDI concept are transport infrastructure and logistics consisting of primary and feeder roads, railway facilities, infrastructure at ports and borders between countries, if applicable. Key anchor projects in the mining, agricultural and other sectors with high demand for transport and logistics services, which have the ability to unlock the economic potential of the targeted corridor area are also integral to the SDI concept (Sequeira, Hartmann and Kunka 2014). The placement of these large-scale anchor developments, and the ancillary infrastructural developments may add to the environmental controversies surrounding development corridors, such as the MDC. For example, the Mozal smelter is estimated to consume some 564,000 tons of water per year, to generate 153,000 tons per year of waste water and it is one of the largest consumers of electricity in the whole of Mozambique (Jenkins 2000).

The MDC had four stated objectives (Mitchell 1998; Söderbaum and Taylor 2001):

1. The rehabilitation of primary infrastructure along the corridor, together with the participation of the private sector.
2. The maximization of investment in inherent corridor potential, including access to global capital and the facilitation of regional economic integration.
3. Social development, creation of employment opportunities, economic growth and increased participation of historically disadvantaged communities.
4. Environmental sustainability through the

79 Apartheid was a legislated system and policy delineated along racial lines from the years 1948 – 1994. The spatial effects of apartheid fall outside of the scope of this article. For more on this topic, read the article Berrisford, S. Unravelling Apartheid Spatial Planning Legislation in South Africa. *Urban Forum* 22, 247–263 (2011). <https://doi.org/10.1007/s12132-011-9119-8>.

development of policy, strategies and frameworks encompassing a holistic, participatory and integrated approach to environmental management.

Despite environmental sustainability being listed as one of the four objectives to the MDC, there is a substantial lacuna in the literature addressing this objective, with much of the literature surrounding the MDC focused on the economic and physical infrastructural developments and effects. The aim of environmental sustainability, although progressive, was perhaps premature given that the legislative tools that would today be considered to ensure environmental sustainability were not yet promulgated at the time of the MDC. As an illustration, in South

Africa the National Environmental Management Act No.107 of 1998 (NEMA), which promoted the concept of sustainable development, was only promulgated in 1998. While there had been environmental legislation prior to this, it was not as extensive as NEMA. Furthermore, the apartheid structures that in effect disaffected the majority of South Africans from land, had the effect of cultivating negative and hostile attitudes towards environmental issues and policies (Sowman, Fuggkle and Preston 1995). Despite the goal of environmental sustainability, until September 1997 the provincial government in South Africa was not legally empowered to require Environmental Impact Assessments (EIAs) for major projects such as roads, railway lines and power infrastructure (Mitchell 1998).



15.2 Problem statement

Despite many successes, the MDC has garnered criticism for various failures, such as:

- » The top-down management structure of the MDC and its implementation did not consider the priorities of local stakeholders. The institutional approach to the MDC of facilitating GDP growth through export projects does not necessarily result in a community and people-orientated development (Dzumbira et al. 2019). This highlights the importance of planning and engagement at different structures of government to avoid a deficit at the community and local government level.
- » The goal of attracting transnational private investment and empowering local communities has been said to be contradictory (Söderbaum and Taylor 2003). The focus on large-scale anchor projects and infrastructure has left socioeconomic development at a community level and environmental issues that have not been effectively explored as part of the MDC. As stated above, the focus on infrastructure and investment was largely due to the fact that the MDC process was conceived of and driven by the transport ministries of South Africa and Mozambique (Roodt 2008).
- » Despite environmental stability featuring as one of four key objectives of the MDC, there was very little legislative basis for the requirement of EIAs for projects such as railway lines and the construction of roads in 1996, at the time of the inception of the MDC and the construction of much of the infrastructure flowing therefrom (Mitchell 1998).

The MDC could be said to suffer from being a transport or infrastructure corridor centred around central key infrastructure development and investment, rather than a sustainable development corridor in a holistic sense, that maximizes development opportunities (including, but not limited to, transport and infrastructural development) in an environmentally sustainable manner.

The aim of this article is to examine what lessons can be learned from the MDC to maximize the potential positive outcomes of a corridor through early planning. Specifically, it looks at the linkages of the MDC with three areas: environmental, social and land-use planning, to ascertain how to create an enabling environment for corridors to be true development corridors.

This has become even more important in recent years, with the concept and implementation of development corridors becoming more widespread, especially within Africa. SDI's have, since 1995, gained the most attention in Africa, aided by their promotion by the New Partnership for Africa's Development. In 2002, the Southern African Development Community took up the idea of SDIs for the region, creating the Regional SDI Program, adapted in line with various southern African countries. Development corridors are also integral to African Mining Vision (AMV). Indeed, Annex 2 to the AMV is dedicated to development corridors, with mining activities and infrastructure constituting the anchor projects, and the MDC as exemplary of the successes of development corridors (African Mining Vision 2009).

15.3 Linkages with environmental and social environmental assessment in planning and management of corridors

15.3.1 The environmental link

At the time of the development of the MDC in 1996, the issues of sustainability and an integrated view towards environmental assessment were arguably not as predominant as they are today. This, together with the fast-tracked SDI system, saw the development of a corridor that did not effectively consider environmental factors. Mitchell (1998) sets out three weaknesses of the SDI process of the MDC in respect of environmental impacts and assessment, namely:

The MDC focused on a project-based approach, which was very useful in fast-tracking implementation, but which fragments the assessment process and does not allow for a holistic view of the impact of the entire corridor.

An extremely narrow deadline was set by the Mpumalanga provincial government for conducting and producing the EIA of a toll road. This resulted in an EIA that was deficient in many respects, and in conflict within communities affected by the toll road. This was due in large part to the time demands of project implementation as well as the driver of the project being the Department of Transport in South Africa, as opposed to a collaborative approach between the ministry and the provincial government.

The MDC was launched at a time when there was very little legislative basis for the requirement of EIAs at a provincial level for projects such as railway lines and the construction of roads. It would only be in 1997 and 1998 that enabling legislation was promulgated.

Perhaps the first notable issue that must be tackled from an environmental sustainability perspective, with respect to development corridors, could be said to be the choice

of anchor project. Anchor projects have been crucial in supplying the economic rationale for the MDC. Particularly emblematic is the anchor on the Mozambiquan side of the MDC namely the Mozal smelter and the Pande/Temane gas fields. The aluminium smelter constituted Mozambique's first megaproject since the end of its civil war, and aimed to attract investors through financial incentives and access to low-cost energy (IMF 2014). This access to relatively low-cost energy was provided by the importing of electricity from Eskom (a mainly coal-fired energy provider in South Africa), and to a smaller extent electricity from Cahora Bassa (a hydropower station in Mozambique) (IMF 2014; Sequeira Hartmann and Kunaka 2014; World Bank 2014).

In a post-Paris Agreement world, there has been a substantial move away from coal as an energy source. Future corridor developments should look holistically at the anchor projects and the requirements, such as its electrical, spatial and water needs. While anchor projects may have their own legislated EIA requirements (for example, the Mozal smelter has an EIA), this project-based approach is one of Mitchell's criticisms of the MDC (Mitchell 1998). There must be an overarching environmental strategy and assessment to ascertain what the impacts of the corridor in its entirety will be, rather than on a project-by-project approach. This approach must take place at the policy cross-sectoral level, and can be achieved through a Strategic Environmental Assessment.

The tightened timeframes and fast-track approach of the SDI model perhaps exacerbated the lack of focus on thorough EIAs. A balance must be struck between creating an enabling regulatory environment for investment in a corridor, while ensuring that EIAs are prioritized. However, South Africa

and Mozambique's legislative environmental frameworks have evolved considerably since 1996⁸⁰. The EIA requirements for the N4 toll road in South Africa without the astrophes and other infrastructure developments would be constructed pursuant to far stricter legislative requirements. Exemplary of this is the upgrading of the N13 road forming part of the Nacala development corridor, which was classified as a Category A development, requiring a full EIA pursuant to Mozambique's EIA Regulations of 2004. The scoping study was subsequently approved in January 2008, and a full environmental and social impact assessment study was undertaken in 2009 for the African Development Bank, which funded the project. The last two decades have seen environmental and social assessments form part of funding decisions⁸¹ and the creation of frameworks such as the Equator Principles, which have guided the thinking around financing towards a more ecologically sustainable framework⁸².

Cox and Hope (2015) argue that the political buy-in to a low carbon strategy paired with the will and the capability to implement and enforce it are necessary in ensuring the reduction of the environmental impact of any infrastructural development or upgrade pursuant to a corridor initiative. Indeed, the MDC – which was publicly supported by the presidents of both Mozambique and South Africa, and championed by some provincial leaders – is exemplary of the success that political support can attain (Söderbaum 2001; Mtegha *et al.* 2012). However, at the time of the MDC, the low carbon agenda was not predominant and was not a feature of political support for the MDC. The MDC does have some minor environmental successes; for example, the upgrading of the N4 toll saw a greatly improved

vertical and horizontal alignment of the road and the construction of either dual carriageways or overtaking lanes. These allow passing of slower vehicles, which results in less fuel and lower emissions (Cox and Hope 2015).

The current legislative framework, guided by international soft law principles of environmental sustainability, is vastly different from that of 1996. An important takeaway from the MDC is that, before a corridor project is launched, there must be an effective national environmental legislative framework and a regulator with teeth to ensure sustainable outcomes or, at the very least, to ensure that the full impacts have been evaluated and considered. A further takeaway is that, although the SDI process is characterized by its short-term and targeted approaches to growth, there must be a balance between fast-tracking and streamlining processes and ensuring a thorough holistic analysis of the entire corridor, as opposed to a project-based approach.

At the early planning and implementation stages of the MDC, the holistic and environmentally sustainable approach to the MDC was undermined by the requirement to achieve the rapid implementation of development projects (Mitchell 1998). The social environmental assessment for the electricity grid infrastructure and gas pipeline extension programme, a major gas transmission route that is currently undergoing an assessment process in South Africa, states that it takes on average between one to two years for an EIA to be completed, in terms of the NEMA. This period is long and there must be a balance struck between thorough environmental analysis and allowing for public consultation and appeal processes, as well as providing for a shortened timeframe, in keeping with the streamlined SDI methodology. Setting

80 In 1996, the environmental impact process was largely regulated in South Africa by the Environment Conservation Act (No. 73 of 1989) and there were EIA Regulations (GN R 1182 – 1184 in GG 18261 of 5 September 1997) published pursuant to this Act in 1997. The National Environmental Management Act (No. 107 of 1998) (NEMA) was then promulgated in 1998 (with effect from 1 January 1999) and espoused the concept of sustainable development. There have been a series of EIA Regulations which have since been published pursuant to NEMA with far more stringent EIA requirements related to activities such as roads and railways. In Mozambique, Law Decree No 20/97: Environment Law was published in October 1997. With respect to roads, the Mozambiquan Environmental Guidelines for the Road Sector were prepared in January 2002.

81 See for example the Environmental and Social Assessment Procedures, 2015 (revised from 2001 version) of the African Development Bank. A copy of which can be obtained at <https://www.afdb.org/en/news-and-events/afdb-launches-revised-version-of-its-environmental-and-social-assessment-procedures-for-2015-15013>.

82 FirstRand Bank included its financing of the Nacala Railway and Port Corridor in its 2018-2019 Equator Principles Report. See <https://equator-principles.com/reporting-firstrand-limited-2017-2018/>.

realistic and manageable timeframes as well as specific task teams for corridor projects could assist with this.

15.3.2 The social link

The speed of the SDI process could be said to be contradictory to a consultative and bottom-up approach (Bek and Taylor 2001). The MDC has been said to have had a deficiency in community engagement at the planning stage and a lack of will in creating local capacity to manage the MDC process, or to involve the broader community and local levels of governance (Roodt 2008). A national-provincial relationship characterizes the MDC with a governance deficit of actors at the local level.

In Mpumalanga, there has been limited communication about the MDC between the provincial government and local government, communities, the private sector and organized labour. In some part caused by changes in political leadership, with the previous premier of Mpumalanga being a political champion for the MDC, and future leaders not sharing this view (Roodt 2008). Many local communities, which have been directly affected by it, have very little information on the project (Mitchell 1998).

There also existed the creation of unrealistic expectations to the local community in the marketing of the MDC (Bek and Taylor 2001). There was also no genuine debate on the MDC prior to its public launch (Bek and Taylor 2001), which added to the high expectations of local benefits, as there was no opportunity for the project to be critiqued and discussed.

The SDI programme underlying the MDC was heavily centralized, with a focus on speed and large infrastructure projects. This situation was heightened by the nature of the process of engagement with the local community (Bek and Taylor 2001). This inadequate involvement of the affected local communities was not only on the South African side, illustrated by residents in the Matola area having lodged grievances regarding the lack of consultation by the government in respect of the N4 toll road (Mtegha *et al.* 2012). Some

of the grievances by the local South African populations have been that certain taxi associations were not invited to consultations regarding tolls, despite the direct effect that it would have on this industry, which conveys a large part of the informal economy. There was also a general perception by Mozambiquans that the MDC created a shortage of water and energy (Bek and Taylor 2001). This is not to say that there was no community engagement. There were bodies set up that were mandated to conduct some engagement at different levels. Indeed, there have been complaints by government that the lack of consultation is also due in part to organizations not taking part in consultations and complaining in retrospect (Bek and Taylor 2001).

The takeaway is that a development corridor requires the adoption of a clear plan that is clearly communicated, the setting up of processes of meaningful community engagement, and the involvement of local government and people surrounding the proposed development corridor area at early stages of the corridor development. This requires that, at the early planning stages of corridor development, there must be an assessment made of all the relevant stakeholders and municipalities, and civil society groups should be included in such a list. There should also be a publication and public comment system. This public participation should follow the tenets of meaningful engagement and should be seen as a material part of the corridor development process, rather than a tick-box exercise, which has no real effect on the outcome of the process. A reasonable opportunity must be made available to the public and relevant stakeholders, with sufficient information provided, to know about the proposed issues and to have a say.

The MDC did have well-organized and meaningful involvement from the private sector. The South African side of the MDC has had some success in creating opportunities for small-, micro- and medium-sized entrepreneurs (SMMEs) by taking deliberate actions to create these opportunities (Mtegha *et al.* 2012). For example, the Mpumalanga Provincial Inter-departmental Technical

Committee (established early in the MDC process in 1996) developed a programme to make possible several projects aimed at maximizing development opportunities along the corridor (Roodt 2008). This was largely because of the political leadership in Mpumalanga at the time. When planning the anchor projects, linkages with provincial and local economies must be considered. There must be a consideration of how to densify and deepen the development corridor, such as through ancillary infrastructure to the anchor project. This must be done early on, as anchor projects may need to be reconfigured slightly in reaction to the modes of densification identified (Mtegha *et al.* 2012). These must be assessed through a social and environmental lens, as well as through an economic one. The MDC was not capable of generating densification activities on the Mozambican side, for a variety of reasons, including time constraints, and therefore needed supplementary efforts of the International Finance Corporation to stimulate SMMEs in the Matola area (Mtegha *et al.* 2012; Thomas 2009).

Despite the nationally driven focus on infrastructure and investment from the MDC, there has been a few efforts to integrate it with provincial and local development planning initiatives. On the South African side, the provincial government was involved on a technical level in the MDC process. In 1996, a technical unit was constituted in Mpumalanga, with the assistance of national government. The South African government also set up a joint technical committee, which was a forum allowing national departments to inform provinces about the processes and progress in relation to the MDC. Mozambique did not pursue a similar process (Roodt 2008). The establishment of the Maputo Corridor Company in mid-1997, albeit short-lived, gave additional impetus to involving local government and communities. However, the business of the corridor as an investment and infrastructure initiative continued to dominate.

The focus on anchor projects and big investments in the MDC resulted in a lack of consideration of the informal sector, in which

many people, especially women, living along the corridor were involved. Rather than have this initially included in the planning stages, the company assigned the concession of the toll roads acted reactively, with some success, in building some permanent roadside stalls in a lay-by for these traders (Cox and Hope 2015).

15.3.3 The land-use planning link

In South Africa, the corridor concept is widely used as a development instrument at the national, regional and local levels of planning. For this reason, the South African Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA), which came into effect in 2015, allows the use of urban corridors as a planning tool (Dzumbira, Geyer Jr, H.S. and Geyer, H.S. 2017). The Constitution of the Republic of South Africa, 1996 coupled with the local elections in 2000, saw the creation of wall-to-wall municipalities, so that all land in the country falls within the jurisdiction of a municipality and must be included in its spatial development plan. This regulatory shift also strengthens the public consultation and local community requirements, as many changes in land use are subject to a rezoning requirement.

SPLUMA was not promulgated at the time of the MDC, rather a more fragmented land-use system was in place. To promote sustainability, however, a thorough conceptualization for the structural and content classification of development corridors should be incorporated into national, provincial and local planning process to ensure that the correct type of development corridor is planned according to different areas' properties to ensure maximum socioeconomic benefits for the proposed corridor development area (Dzumbira, Geyer Jr, H.S. and Geyer, H.S. 2017). Given that SPLUMA provides for each municipality to have a spatial development framework (which is reviewed every five years) and that provision is made for a National Spatial Development

Framework⁸³, this has provided the national government with a document that it can consult at the very early planning stages to ascertain the spatial makeup of any municipal area, including the dominant industries. This can assist in creating very high-level ideas for synergies with anchor projects.

The sustainability of the public-private partnership arrangement underpinning the MDC

has been challenged by the lack of responsiveness of the Mozambiquan authorities to locate land for the expansion of the highway road. Long-term planning for different phases of a corridor must be considered and having a holistic plan, which feeds into a national spatial framework while being alive to the position locally, is a way of ensuring the longevity and sustainability of a corridor.

15.4 Conclusion

As the MDC was the first SDI process in southern Africa, it is worthwhile to reflect on its evolution over the past almost three decades and learn from its achievements and apparent shortcomings. The following lessons can be learned from the MDC to create truly sustainable development corridors, rather than mere transport or infrastructure corridors focused on infrastructure and economics (see [Chapter 1](#) for these definitions).

There must be engagement at a national, provincial and local level at the early planning stages of a corridor development. This should include:

1. Ascertaining the relevant stakeholders and local governance structures, including municipalities and civil society groups.
2. The adoption of a plan that is clearly communicated and setting up processes of meaningful community engagement.
3. The importance of political champions but also creating sustainable institutions and bodies so that a change in leadership or weak leadership will not have the effect of dismantling these institutions.
4. A consideration at the very early planning stages of how to densify and deepen the development corridor, such as through ancillary infrastructure to the anchor project.

5. Consideration of how to incorporate current informal trades into the corridor design so that the corridor can assist in the growth of these jobs.

In terms of environmental impacts, the most notable lesson from the MDC is that a strong legislative environmental framework must exist prior to corridor development. Planning a corridor before this being in place can lead to a lack of focus on environmental assessments. The requirement to achieve the rapid implementation of development projects must be balanced with the need to have thorough EIA processes. Importantly, there must be a holistic EIA process undertaken, rather than on a project-by-project basis (although individual projects may still require separate environmental processes and authorizations). This will allow for the holistic effect of the anchor projects and the corridor to be assessed. Political buy-in to a low carbon strategy is necessary and this message must be clearly articulated and marketed. The importance of political champions is demonstrated by the MDC.

A strong legislative land-use planning framework that considers land uses at all levels of governance will assist in creating socioeconomic linkages and in the involvement of communities in land-use planning. It will also allow for long-term planning and for a sustainable vision for the corridor, taking in to account current land uses.

83 A draft 2019 National Spatial Development Framework has been published for comment.

In conclusion, corridor development must be holistic, considering a variety of factors and placing issues of local participation and environment at the same level as infrastructure development and investment. While SDI's are short term, corridors have long-term effects, and

this long-term thinking must be adopted from the very outset of corridor development. Fragmented approaches to any area of corridor development cause deficits in the environmental and social effects of the corridor.



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