GROWTH WITHOUT BORDERS
A REGIONAL GROWTH POLE DIAGNOSTIC FOR SOUTHERN AFRICA

Finance and Private Sector Development Department
Africa Region

THE WORLD BANK
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# Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AICD</td>
<td>Africa Infrastructure Country Diagnostic</td>
</tr>
<tr>
<td>APEI</td>
<td>Accelerated Program for Economic Integration</td>
</tr>
<tr>
<td>COMESA</td>
<td>Common Market for Eastern and Southern Africa</td>
</tr>
<tr>
<td>CPI</td>
<td>Centro de Promoção de Investimentos (Mozambique Investment Promotion Center)</td>
</tr>
<tr>
<td>DANIDA</td>
<td>Danish International Development Agency</td>
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<tr>
<td>DFID</td>
<td>UK Development Fund for International Development</td>
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<tr>
<td>DRC</td>
<td>Democratic Republic of Congo</td>
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<tr>
<td>EAC</td>
<td>East African Community</td>
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<tr>
<td>FDI</td>
<td>Foreign direct investment</td>
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<tr>
<td>GDP</td>
<td>Gross domestic product</td>
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<tr>
<td>GIS</td>
<td>Geographic information systems</td>
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<td>GIZ</td>
<td>German Technical Assistance Cooperation</td>
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<tr>
<td>ICT</td>
<td>Information and communications technology</td>
</tr>
<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>Km</td>
<td>Kilometer</td>
</tr>
<tr>
<td>Kph</td>
<td>Kilometer per hour</td>
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<tr>
<td>MDGs</td>
<td>Millennium Development Goals</td>
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<tr>
<td>MICE</td>
<td>Meetings, incentives, conventions, events</td>
</tr>
<tr>
<td>NEPAD</td>
<td>New Partnership for Africa’s Development</td>
</tr>
<tr>
<td>NTBs</td>
<td>Non-tariff barriers</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
</tr>
<tr>
<td>PPPs</td>
<td>Public-private partnerships</td>
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<tr>
<td>SADC</td>
<td>Southern Africa Development Community</td>
</tr>
<tr>
<td>SMEs</td>
<td>Small-medium enterprises</td>
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<tr>
<td>TMSA</td>
<td>TradeMark Southern Africa</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Program</td>
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<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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<td>UNWTO</td>
<td>United Nations World Tourism Organization</td>
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<td>WB</td>
<td>World Bank</td>
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FOREWORD

This economic sector work is a geospatial analysis of the endowments of Angola, Malawi, Mozambique, Zambia, and Zimbabwe. In the process of preparing this report several unexpected benefits were realized. Foremost, this initiative proposed a quantitative and transparent method for identifying potential growth poles, a concept often requiring repeated explanation. Geographic information systems (GIS) enable visual explanations that reduce this burden. Because the method for selection is transparent, it can and should be further refined and improved with additional inputs from subject matter experts. In fact, the report authors hope that this will be the real value added of the analysis and that this new spatial approach will benefit future growth pole initiatives. Going forward, newer and better data will strengthen the findings and yield even more insights. The advantage that a spatial approach provides is that justification for prioritizing one area over another is transparent, the method of selection is explicit, and the output is visual.

Additionally, this effort resulted in an impressive compilation of a great deal of data from over 20 sources. Given that spatial data for the Southern Africa region is often poor and not comparable for one reason or another, this collection should prove valuable for other analytical efforts that overlap the geographic focus area. Those interested can now benefit from the sharing and gradual improvement of a multinational and multi-sector geodatabase and related maps. These maps highlight areas of interest to a given sector, estimate relative travel times to the nearest market, and show the distribution of GDP as well as the distribution and sequencing of foreign direct investment and non-tariff barriers (NTBs) to trade in the five-country study area.

The World Bank team also established a strong information sharing relationship with TradeMark Southern Africa (TMSA, a DFID funded regional organization) to coordinate spatial data efforts. TMSA provided un-located data on NTBs which the report team then geolocated. This enabled TMSA’s online GIS tool to show the distribution, frequency, classification, status, and location of trade related complaints. (www.tripartitegis.org) NTB reporting is now on the map and linked to individual complaints that any internet user can read. Stakeholders—private sector, citizens, policy makers—all now have the ability to put those complaints about trade restrictions in a broader context: How many other people reported the same or different problems in the same area or on the same route in different jurisdictions? How many NTBs might they face along a single multinational route? How will the situation change over time? Are the interventions targeted to this area effective? Which areas should be prioritized? This is how GIS helps policy and people by providing the medium for this conversation.
I. INTRODUCTION

Objective

Several countries in Southern Africa have enormous potential to expand trade and mutually benefit from regional integration, and thus truly achieve ‘Growth Without Borders’. At the same time, several African countries are adopting growth pole strategies in order to deepen the economic linkages around the development of their natural resources and improve their competitiveness and connectivity to domestic and international markets. This report stems from economic sector work whose purpose was to identify potential growth poles across Angola, Malawi, Mozambique, Zambia, and Zimbabwe in three industries—agribusiness, mining, and tourism—that might benefit from improved regional integration.

The objective was to visualize relevant spatial data, spanning activities across borders in order to see beyond nationally defined silos. This required going beyond simply displaying the geospatial data; a framework was constructed to identify potential places suitable for a growth pole strategy. This report, therefore, aims to address such initial questions as: What is the spatial definition of a growth pole? Where are these potential agricultural, mining, and tourism regional growth poles across Angola, Malawi, Mozambique, Zambia, and Zimbabwe? The answers will form the basis for the next phase of inquiry: How can these geographic areas benefit from regional integration policies and growth pole strategies?

This report used geographic information systems (GIS) to identify potential growth poles based on the spatial distribution of foreign direct investment (FDI), market connectivity, revenue sources, and other input factors and then selected from that list those areas which might benefit from regional cooperation. This report provides background information, elaborates the concepts, details the spatial analysis framework, selects specific areas for a rapid assessment, summarizes findings, and outlines future work. The overarching purpose is not to explain or quantify the links between identified factors, but rather to find spatial correlation between factors in order to begin a discussion about defining a data driven way of finding suitable regional growth poles.

Context

The United Nations (UN) estimates that the global population will reach 9.6 billion people in 2050, an increase of approximately 37 percent from 2010. This population growth will not happen uniformly across the Earth. Angola, Malawi, Mozambique, Zambia, and Zimbabwe each expect their populations to at least double over that time; while population growth in developed countries will be relatively modest (the United States expects 27 percent, for example). Therefore, while it is true that all countries face political, economic, demographic, environmental, fiscal, public health, and many other challenges, it is also true that these obstacles are not distributed uniformly.

Similarly, natural resource and other endowments are not uniformly distributed. Zambia, for instance, holds large mineral deposits and Angola and Mozambique are in the process of developing or exploiting natural gas deposits, and the extraction of huge coal reserves is underway in Mozambique. In the past, the spillovers of the mining industries boom have, unfortunately, remained limited. Long term resource exploitation can make an economy less competitive. In
In the developing world, foreign firms outperform domestic producers on several indicators, but have fewer linkages with the local economy and offer less supplier assistance, resulting in offsetting effects on the spillover potential. [2]

Malawi’s population is two million more than Zambia’s, despite being only one-sixth of its size. [3] However, Malawi is well located geographically between the two resource rich areas of Zambia and Mozambique and access to the global market via the Indian Ocean. All five countries contain national parks and the area is home to seven UNESCO World Heritage Sites, which are attracting increasing interest from tourists. Zambia and Zimbabwe share one of the world’s most renowned natural tourist attractions: Victoria Falls. Coast to coast, agriculture is the main employer with significant land area as seen in staple crop production. Therefore, each country has some level of specific natural endowment that can be sustainably exploited.

Despite this, private investment in the region is not a certainty. Agricultural investment since 2005, for instance, has been uneven across the five countries, with greatest investments in Zambia and Mozambique. Therefore, each country could benefit from an improved business environment. With the exception of Angola and Zimbabwe, the fundamentals for establishing foreign businesses in the countries are generally strong. In Malawi, Mozambique, and Zambia, foreign companies are allowed 100 percent equity ownership in mining, agriculture, and tourism industries. (See Annex 1) Zambia and Mozambique have made significant progress in regulations related to doing business in the last few years, but Angola and Zimbabwe are especially difficult places for foreign investors and the domestic private sector to operate. All five countries could improve regulations that affect leasing or ownership of industrial land, availability of land information, and legal protection of foreign investments.

The trade logistics of each country also needs significant improvement, as indicated by their rankings in the Logistics Performance Index. (See Annex 1) It is widely known that tariff and non-tariff barriers (NTBs), aggravated by inadequate infrastructure, impede the growth of trade in primary goods and value added goods, as well as hinder regional economic integration. These challenges compound the negative effects of distance and market access for local businesses. Proximity, therefore, is all the more important when considering the comparative advantages of an anchor investment’s localized activities and the potential for cross border linkages to that anchor. Hence, part of the challenge to increasing a country’s competitiveness is spatial in nature.

Despite these challenges, four out of the five-country set enjoyed GDP growth rates of over 5 percent in 2012. Angola grew at 6.8 percent, Mozambique at 7.4 percent, Zambia at 7.3 percent, and Zimbabwe at 5 percent. Malawi’s growth was at 1.9 percent, fueled by foreign exchange shortages and devaluation of the local currency. Notwithstanding high growth rates and increasing FDI inflows for Angola and Mozambique, poverty reduction has stagnated. These countries seek a development path that is environmentally, socially, and politically sustainable and takes these contextual challenges and comparative advantages into account. (See Annex 2 for regional maps of productive factors)

Trade is one obvious path to economic growth, but has not always worked in the past and creates other challenges. Trade in natural resources can boost GDP in the short term, but
BOX 1 World Bank Support to Growth Pole Projects in Africa

Ghana Gateway Project (1999–2009, US$50 million): This project used an economic cluster approach by creating a transport hub and industrial center integrated into local value chains and the national economy in general. This led to a reduction in the cost of manufacturing, transportation, and administration through facilities, infrastructure ICT improvements, service enhancements for exporters, and the establishment of transport and supply chain linkages with suppliers and exporters beyond the territory of the zone itself. The results included approximately 3,214 projects valued at US$12.6 billion registered between 1999 and 2009, with a FDI component of US$12 billion. Integrated investment and trade promotion resulted in 305,874 jobs for Ghanaians and 10,994 for non-Ghanaians.

Madagascar Integrated Growth Poles Project (2004–2012, US$100 million): This project supported the creation of a tourism pole around Port Dauphin and of a light manufacturing pole around Antananarivo. The approach was to support the marginal investment necessary to turn the originally planned mineral port (financed as a public-private partnership between Rio Tinto and the Madagascar government) into a multipurpose port. Today large cruise ships stop in Fort Dauphin to unload hundreds of tourists at a time to visit the lemur park and century old French experimental farm in the area, boosting tourism activity. The Bank also supported a series of investments in roads, power, water, and vocational training to create an attractive investment environment. The number of hotel rooms in the vicinity has since more than doubled.

Burkina Faso Growth Pole (2011–2017, US$115 million): The objective is to increase economic activity in the project area, increase private investment, generate employment, and expand agricultural production. There are three components to the project: improvement of institutional capacity for better zone management and investment climate in the project area; the development of critical infrastructure; and the development of critical services and direct support to smallholders and SMEs.

May undermine long term development goals if exploitation of these resources does not assist in the diversification of the local economy, create local input-output linkages, or boost opportunity for local inhabitants. Many in the development community argue that countries should leave their assets unexploited until such time as local groups are in a position to use the endowment to improve public health, education, and economic opportunity. Indeed, when governments fail to promote a fair distribution of the benefits, they risk political, economic, and social instability. [4]

A growth pole development strategy seeks to mitigate these risks by creating deep economic linkages around these resources to foster economic diversification and promote local labor employment and the local sourcing of inputs to production. Regional integration policies can reinforce the effectiveness of growth pole strategies by reducing trade burdens, making it easier to achieve economies of scale and agglomeration in areas more proximate to a neighboring country’s source of inputs than domestic sources. [5] In some circumstances, agglomeration economies in one part of a
Growth without Borders

A country can also reduce congestion economies in the capital or other primary cities. [6] [7] [8] [9] [10]

**Growth Poles**

Growth poles are geographic areas with the potential to increase investments, jobs, and income growth. It is a place where productive economic activities rapidly expand due to the presence of economies of scale and agglomeration, competition and cooperation, innovation, and backward/forward linkages. The critical component is a localized inherent revenue producer with significant economic potential. Mineral deposits, tourist attractions, underexploited agricultural lands, large labor pools, or other geographic advantage could each serve as the foundation for localized growth. Growth poles also require the presence of a basic infrastructure platform (roads, railroads, river transport, and electricity). And, particularly in Africa, proximity to markets or trade corridors to establish economic linkages with the wider economy.

While one aspect of a growth pole approach involves improving the “hard” infrastructure (e.g., roads and ports), infrastructure is not by itself sufficient to make an economy competitive. The “soft” infrastructure, the regulations and policies that enhance or inhibit business formation and competitiveness, also require consideration. A growth pole strategy takes both the hard and soft actors into account through a spatially aware, proactive, multi-stakeholder approach. It looks to enhance local competitiveness and economic opportunity through strategic interventions such as capital infusion, public-private partnerships (PPPs) to build and upgrade infrastructure, and/or policy reforms that have the potential to attract further investment in such a way that it provides present stakeholders reason to buy-in to the reform process. [11]

As indicated in the IMF/World Bank 2013 Global Monitoring Report, a spatially aware approach supports efforts to reduce poverty. Successful growth poles draw in FDI and create a virtuous circle. The increased investment encourages the formation of new firms and local industry. In certain types of labor intensive work, increased investment results in more jobs. This creates local wealth and increases the tax base for governments, which can use this revenue to expand access to critical services, such as health care, clean water, and education. For the purposes of this report, growth poles are locations with productive factors (raw materials, labor, electricity), above average investment, and relative market accessibility.

Growth poles are not, however, a panacea. They do not help everyone, everywhere, all at once. Growth poles do not address rural education gaps, for instance. To some extent, they can bias government investment into urban or other areas where the expected efficiency of investment is greater. Yet they hold the potential to improve a country’s economic circumstances to a point at which they would have the internally generated resources to address policy challenges less directly spatial in nature.

Another concern is that growth poles amount to “picking winners.” While a single company may provide the anchor for the growth pole concept, it could just as easily be composed of several firms in the same industry, as the concept centers on making the industry and related suppliers and buyers more integrated and competitive. It aims to remove constraints to an existing independent investment driven
It might be more accurate to characterize growth poles as “picking ripe fruit”.

The World Bank has supported nationally focused spatially targeted projects in Ghana, Madagascar, Mozambique, the Democratic Republic of Congo (DRC), and Burkina Faso. In addition, the Bank Group conducted in-depth spatial analysis using GIS on private sector development along regional transport corridors, such as the North – South Corridor, and on crop production and road connectivity in Sub-Saharan Africa. This list is not comprehensive, but merely illustrates that this is not a new concept and that it is one that is gaining support among client governments.

Regional Integration

National economic development does not occur in a vacuum; it evolves in a regional and global context. The domestic markets of Malawi, Mozambique, Zambia, Zimbabwe, and Angola are relatively small and have both weak investment climates and high transportation costs (tariff and non-tariff). With globalization, these factors and others combined to limit past investment and left these countries to trade in primary goods consumed by value chains outside Africa. This created a curious situation in which the bulk of each country’s trade goes outside Africa to the rest of the world, as opposed to their neighbors. For example, Zambia’s exports to South Korea are nearly double its exports to its neighbor Malawi, and even its exports to the nearest regional powerhouse, South Africa are only 16 percent of its exports to China.

Elsewhere in the world, governments find that regional integration, the mutual reduction of barriers to trade, and the

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**BOX 2 Other Spatial Development Initiatives in the Region**

The New Partnership for Africa’s Development (NEPAD) Spatial Development Initiative provides for clearly defined trade and investment corridors across the region. These corridors support transport infrastructure development with emphasis on interconnectivity, building a reliable cost effective network, and facilitating the development of legal frameworks for regional infrastructure programs and projects. These corridors span multiple countries and they link markets and resources throughout the region with international markets and each other. The regional strategy seeks to tap the full range of development tools to enhance competitiveness and employment at specific nodes along these corridors.

The Zambia-Malawi-Mozambique Growth Triangle was an initiative of the United Nations Development Program (UNDP) in the early 2000’s modeled on the East Asian Growth Triangle. This regional integration effort received high level interest from the national governments and development partners including the World Bank Group. A coordinating secretariat was established, conferences were held, and public statements made. However, interest in the initiative faded and the project did not attract investment, public or private, suffering from a lack of resources and long term buy-in from national and local stakeholders. As the World Bank noted at the time, proponents could have more clearly defined the economic case. In the wake of new mining investment, members revived the initiative in 2012. Perhaps, with a more clearly defined economic case built around a spatially aware, industry based approach and renewed political commitment, this forum will accelerate local integration and attract further FDI to the Growth Triangle.
creation of institutional coordination and dispute settlement mechanisms, improved growth beyond levels that any one government could achieve on its own. Reduced burdens from customs procedures, expanded sourcing of production inputs, improved access to markets (particularly for landlocked countries), and increased investor confidence improves value chain integration and trade. [15] [16] [17]

Deeper trading relationships improve the likelihood of cross border value chain integration, fostering national export diversification. Through a variety of means, a diverse export base lowers the uncertainty in export earnings and increases the added value of national exports. This leads to increased employment, GDP growth, and access to foreign exchange. The benefits of export diversification help governments to mitigate risk of political, financial, and social instability. Overall, a broader export base helps make for a more stable, more predictable economy. [18]

While it is not directly comparable to the five-country study area, the European Union example suggests that successful integration involves piloting narrow projects through functional economic industries, such as coal and steel, to manage them separately from the larger economy with generally positive results for participants. [16] Similarly, the Cambodia-Laos-Vietnam Development Triangle Area example suggests that defining a geographic space across multiple sectors of cooperation can also improve outcomes. [19]

Unlike trading blocs and other higher levels of institutional arrangements that require fundamental changes across an entire economy, identifying a more defined geographic area can reduce political and economic risks. A more focused approach may also reduce the initial high cost of harmonizing administrative and trade policy across the entire economy. This would involve, amongst others, simplifying border procedures, reducing non-tariff trade barriers, harmonizing regulatory and immigration policies around cross border business linkages, and tackling transport and other infrastructure bottlenecks.

Such strategies should, to the extent possible, build upon existing agreements. While Malawi, Zambia, and Zimbabwe are members of the Common Market for East and Southern Africa (COMESA), these three plus Angola and Mozambique are all members of the Southern Africa Development Community (SADC). Indeed, SADC member countries already trade in more sophisticated products than they do with the rest of the world. Additionally, in SADC both regional and global exporters are larger, have higher labor productivity, and pay higher wages compared

\[ \text{FIGURE I.1 Zambia Export Comparison (2012)} \]

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{zambia_export_comparison.png}
\caption{Zambia Export Comparison (2012)}
\end{figure}

\text{Source: IMF Direction of Trade Statistics.}
BOX 3 Regional Integration in Southern Africa

According to the World Economic Forum’s competitiveness indicators, Zambia, Zimbabwe, Malawi, and Mozambique all made progress in reducing the burdens of customs procedures over the last five years.

In June 2011, the heads of state of the member countries of COMESA, SADC, and the East African Community (EAC), signed a declaration for a COMESA-EAC-SADC Free Trade Area. The COMESA-EAC-SADC free trade area comprises 26 countries, with a total population of 600 million and combined GDP of over US$1 trillion. The objective is the economic integration and regional coordination of the countries of eastern and southern Africa through harmonization of trade, customs, and infrastructure development.

Eager to push ahead, Malawi, Mozambique, Zambia, Madagascar, Mauritius, and the Seychelles go beyond the COMESA-EAC-SADC tripartite arrangements to fast-track regional economic integration through trade policy harmonization through the Accelerated Program for Economic Integration (APEI). Past spatial development initiatives and regional integration efforts are discussed in more detail in Section II.

Regional integration does involve tradeoffs; some firms will gain and others will lose. Recent trade analysis from the Organization for Economic Cooperation and Development (OECD) suggests that a fully integrated SADC-wide market would be a neutral proposition for Malawi in total exports, but involve significant shifts on which products it trades, implying that some Malawi firms and industries may resist complete SADC-wide integration. Successful regional integration always entails cooperation between stakeholders along multiple dimensions to tackle these challenges collectively. Developing a regional growth pole strategy through coordination of infrastructure and policy interventions creates an opportunity to bring policymakers and stakeholders on two sides of a border together around a specific set of issues and industries. A locally targeted (but also international) synchronized agenda of interventions and investments may yield significant cost reductions and reduce uncertainty for producers and
consumers on either side of the border. For instance, an integrated multimodal transport infrastructure combined with border policy that allows producers on one side of the border to access a second mode of transport already available on the other side could enhance the efficiency of investment in regional transport infrastructure. This is the essence of a regional growth pole strategy.

The circumstances in Angola, Malawi, Mozambique, Zambia, and Zimbabwe appear ripe for this kind of innovation. The Accelerated Program for Economic Integration (APEI) shows increased political momentum toward regional integration between these countries. [21] The World Economic Forum’s competitiveness indicators indicate that customs procedures have become less burdensome over the past five years in every country except Angola (for which no data was available). [22] Additionally, average levels of FDI in the region are on the rise. While levels in the region peaked in 2008 and fell in 2009, they are still higher than the five years preceding 2008 and this trend is set to continue in 2013. Furthermore, a growing body of evidence points to the growth potential in the African agricultural, mining, and tourism sectors. Regional integration and agglomeration economies can no doubt have a key role in unlocking that potential.

For example, Zambia has 10.4 million hectares of suitable land for maize within six hours of a market town, less than half of which is cultivated and those areas that are cultivated produce less than 40 percent of their potential. [23] The recent report *Growing Africa: Unlocking the Potential of Agribusiness* identified regional integration and transport infrastructure as key factors limiting Zambia farmers’ access to inputs and markets and thus holding Zambia back from fully exploiting this potential. [24]

Just because a policy innovation works well in one part of the world, however, does not mean it will work for another. Context matters. Can Angola, Malawi, Mozambique, Zambia, and Zimbabwe also create such ‘Growth Without Borders’? Put more specifically: Do these countries have both the means and motivation to develop regionally integrated growth poles?

Identifying potential locations for regional growth poles is only the first step. There are several related questions: What is the potential for economic complementarity in these places? If the potential exists, what is stopping it from developing...
or why has it not already developed? What is the political economy of the major actors in local industry? What steps are required of whom to achieve the potential gains? What can the World Bank Group and other development partners do to support such efforts? These questions outline the next phase of this effort, discussed in Section IV. But this is not an academic exercise. This work will inform an engagement strategy resulting in client led development strategies that are spatially focused, broad in perspective, cooperatively designed, yet specific, realistic, and results oriented.

**BOX 4 Signs of Success in Asian Growth Triangle**

**The Cambodia Laos Vietnam Development Triangle Area**

Royal Cambodian Prime Minister Hun Sen raised the idea of a Development Triangle Area at a meeting of the three Prime Ministers of Cambodia, Laos, and Vietnam in 1999. They agreed and in a 2002 meeting in Ho Chi Minh City pledged to prioritize the implementation of cooperation in the Development Triangle Area in transportation, trade, electricity, tourism, human resource training, and public health. At the 10th ASEAN Summit in Vientiane (November, 2004), the three Prime Ministers approved the socio-economic development master plan for the Development Triangle Area.

Located around a border junction encompassing 13 provinces, four provinces in eastern Cambodia; four in southern Laos; and five in the Central Highlands of Vietnam, the Triangle Area attracted significant, if somewhat lopsided investment. Laos and Cambodia invested in seven projects in Vietnam with a total investment capital of nearly US$200 million, while Vietnamese businesses invested in 25 projects worth US$1.4 billion in the four Cambodian provinces and 50 projects in Laos worth a combined registered capital of US$1.65 billion. According to the partner governments, the Development Triangle Area averaged 10 percent growth in 2011, compared to 6 percent for Vietnam as a whole, 7 percent for Cambodia, and 8 percent for Laos. [3]

The Development Triangle Area served to increase trade integration and improve national infrastructure. Total trade between Vietnam and Cambodia increased 17 percent in 2012, reaching US$3.3 billion and appears to be on track to beat those gains in 2013, according to the Vietnamese Trade Office in Cambodia. At the end of 2012, Laos integrated the hydroelectric power plant Sekaman 3 (250 MW) into the Laos National electric grid, a direct result of licensed Vietnamese enterprises operating in Laos. Vietnam also invested US$26 million in a 70 km road in Cambodia. This cooperation extends beyond infrastructure. Vietnam received around 50 Lao students to study in the Development Triangle Area and is investing in the construction of student dormitories at the University of Highlands for more Lao and Cambodian students. While much work remains, the partner countries continue to reap gains from this spatial approach to regional integration.
II. REVEALING GROWTH POLES

Criteria

Identifying potential growth poles that would benefit from regional cooperation is not easy. While experts and policymakers quite familiar with the region could probably readily name such growth poles, their observations are likely to be anecdotal. To them the answers may be obvious, even if they do not have comprehensive data to support their choices. The task of this report is to identify potential regional growth poles in a clear, data driven, and repeatable manner, whose results are accessible to a wide non-expert audience, visually and thereby intuitively.

As the core of this report’s analysis is spatial, and the underpinning for this and future work is quantitative, the team used GIS to analyze available data and arrive at a set of areas of interest. (Details on methodology, data constraints, and sources used are noted in Annex 3 and the reference section) In particular, the GIS methodology involved mapping 790 districts in the five-country study area which have economic links to the agriculture, mining, and tourism industries, and thus were growth poles candidates. This required specifying which aspects of these sector activities manifest themselves spatially in the districts, based on desk research, a review of relevant literature, and the gathering of available data (spatially enabled or not) from several sources. The result revealed growth poles by creating a large geodatabase, managed and analyzed in GIS, and visualized through maps presented in this report. These maps show multiple dimensions and the place based relationships between those dimensions.

To identify the specific location of potential growth poles across the given set of countries and then to identify those that might be interesting from a regional integration perspective, the available information was sorted along four themes:

- Productive factors: raw materials, labor, electricity
- Investments: value and in number of sectors
- Market access: estimated transit time to market
- Regional integration potential: presence of trade activity or border proximity (evaluated after the initial growth pole identification)

These criteria were applied to the five-country study area for three sectors: agriculture, mining, tourism. The analysis highlighted seventeen clusters of districts with growth pole potential, several being directly adjacent to another country’s cluster. (See Map II.1) The GIS analysis also shows the growth pole potential for agriculture (Map II.2), mining (Map II.3), and tourism (Map II.4).
MAP II.1 POTENTIAL REGIONAL GROWTH POLES

Legend
Cities
Population
- < 25,000
- 25,000 - 50,000
- 50,000 - 100,000
- 100,000 - 1,000,000
- > 1,000,000
- Transportation and trade corridors: Africa Infrastructure Country Diagnostic (AICD), OpenStreetMap, TradeMark Southern Africa (TMSA)

Sources
- Regions selected for further study

Legend:
- Regional Trade Corridors
  - Rail
  - Road
  - Water
  - Lake
  - Province
  - International Border
  - District

Sources:
- Transportation and trade corridors: Africa Infrastructure Country Diagnostic (AICD), OpenStreetMap, TradeMark Southern Africa (TMSA)
The areas highlighted in Map II.1 are those which satisfied the selection criteria of a growth pole in one of the identified industries. It is worth emphasizing that there are limitations in the underlying data, the availability of data, its variation between countries, and the scale and unit of analysis.

(See Annex 3 discussion on methodological challenges) Therefore, it is important to read these maps as a guide for targeting more detailed analysis over a much narrower geographic area.
MAP II.2 AGRIBUSINESS GROWTH POLE POTENTIAL

Legend
Cities
Population
- < 25,000
- 25,000 - 50,000
- 50,000 - 100,000
- 100,000 - 1,000,000
- > 1,000,000

Agribusiness Growth Pole Index
- Few GP factors present
- Some GP factors present
- Revenue Source OR another factor is present
- Revenue Source OR other factors present
- Revenue Source AND other factors present
- Nominated for Growth Pole

Sources
Map II.2 illustrates the spatial distribution of agribusiness based on the four criteria applied: productive factors, investments, market access, and regional integration potential. Those areas with the lowest potential are in light yellow and those with high potential are in dark green (of which those with the highest potential are outlined in orange). Central and Eastern Provinces of Zambia, Southern Province of Malawi, western Mozambique around Tete and Chimoio, and southern Mozambique around Maputo, as well as northeastern Zimbabwe all contain multiple districts that show high potential. From a regional integration perspective this makes the Eastern Province of Zambia, Central and Southern Provinces in Malawi, and Tete province in Mozambique, and the road connecting Harare to Beira all interesting. It is also worth noting that while outside the five-country focus area, Katanga province in DRC and the adjacent Copperbelt province of Zambia also merit further study. Generally, the governments are aware of the agribusiness potential. The Zambia government, for instance, intends to promote agribusiness through its Farm Block initiative, although not apparent on the map since farm blocks are not yet operational.
Map II.3 illustrates the potential of mining activities. This pattern’s distribution is much less uniform than for agribusiness. This results from the more localized nature of economic activities surrounding mining and from the subset of mining activities that require significant infrastructure. Gold and diamond mines hold less potential as growth poles because mining of these minerals tends to require less local infrastructure and related transportation is less costly.

The Copperbelt, Northwestern, and Central Provinces in Zambia show a high level of mining activity as a result of copper, gold, and zinc mining. Tete and Manica provinces in Mozambique also reveal high activity thanks to coal mining. While other clusters exist because other mines exist, the results discussed above (those with the most factors present) benefit from greater investment, access to electricity, labor, and/or estimated access to markets.
MAP II.4 TOURISM GROWTH POLE POTENTIAL

Legend
- Cities
- Population:
  - < 25,000
  - 25,000 - 50,000
  - 50,000 - 100,000
  - 100,000 - 1,000,000
  - > 1,000,000
- Tourism Growth Pole Index:
  - Few GP factors present
  - Some GP factors present
  - Revenue Source OR another factor is present
  - Revenue Source OR other factors present
  - Revenue Source AND other factors present
- Airports (ESRI)
- UNESCO World Heritage Sites
- Provincial Boundaries

Sources
Map II.4 shows the distribution of tourism activities and potential. The Zambia – Zimbabwe border, as well as areas within each of these countries, and the border between Zambia – Malawi, reveal high potential. Hotel presence improves the potential of the capital cities, while parks, nature reserves, and UNESCO World Heritage Sites boost the potential of the outlying districts. Unfortunately, the uneven nature of available data severely biases the results. City level data in Africa is difficult to obtain. (See Annex 3) Nevertheless, the Livingstone – Victoria Falls area, Chipata – Lilongwe – Blantyre corridor (given its proximity to the Mozambique border), and the Northwestern and Copperbelt Provinces of Zambia all warrant closer examination regarding the tourism sector, due to their proximity to air and ground transportation networks, tourist attractions, and the availability of hotels. The southern coast of Mozambique received significant tourism investment since 2003, but the map does not highlight this area due to uneven accessibility, lack of specified tourist attractions and border crossings, and a dearth of known hotels.
Map 11.5a Marketsheds of Cities Larger than 500,000 people (Closed Borders)
In considering which sectors in which places warrant further investigation, policymakers may choose to look for where they can make gains quickly. These ‘marketshed’ maps may help in selecting from a long list of priorities. These compare local trade scenarios based on travel time, given that roads do not change between scenarios, but the amount of delay at the border does change. These next three maps demonstrate that relatively minor changes in trade policy might have a greater positive effect toward reducing trade costs, than long term expensive infrastructure projects could achieve on their own. At least for certain parts of a country.

If each of these large cities were thought of as the drain in a bathroom sink, then the colored areas are analogous the bowl or basin from which water flow (in this case, instead of water, the flow is of goods, labor and other inputs to production or where producers might seek to sell their goods). This first map estimates the nearest regional city with a metro area population greater than 500,000 and no ability to cross a border or each location on the map. It considers road types and obstacles, such as rivers and bodies of water to determine which city a trader (in any given location) would choose to travel in the least amount of time.

While essentially product neutral—it estimates a generic traveler, as opposed to a direct estimate of how long it takes to move a particular commodity (such as, maize) from one place in country A to a city in country B—these maps nevertheless reveals some interesting relationships between places that warrant further investigation and should give trade readers something to think about.

As travel time can be a useful proxy for sourcing costs to production, such as fertilizer, then border delays may show where producers source fertilizer from. When those are locations are more distant locations within the country, rather than across the border, we can see visually where trade policy may be imposing higher costs to farmers. Note the two main differences between the map 11.5a on page 20 and the map 11.5b shown on page 22 (for comparative trade scenarios). Then compare the second scenario with the last scenario, map 11.5c on page 24. In the first two cases, Luanda is the closest market for the most of Angola. Such a stark relationship between Luanda and the rest of the country likely leads to congestion economies in the capital. It also suggests that modest improvements in border delays would have little effect for Angola. Whereas the in the third map, which assumes no border dealy, Angola’s trade picture completely.

Malawi is the other interesting comparison. Lilongwe and Blantyre both have severely constrained markets and producers in northern Mozambique now must pay much higher transport costs to source inputs from as far afield as Biera. This illustrates who and how much trade policy affects producers in a given area. Continued improvement in the implementation or regional integration agreements and further agreements would substantially improve options for and competitiveness of producers and consumers in Malawi, Mozambique and Zambia.
Map 11.5b Marketsheds of Cities Larger than 500,000 people (1-day Delay at Borders)
This map estimates for each location on the map, the nearest regional city when travelers must wait 24 hours to cross any border. It assumes that lakes can be crossed at the slightly reduced speed of the ferry. The delay at the border is assumed to be 24 hours. This was based on recent information from Trademark Southern Africa (TMSA) given recent drops in wait times at several border crossings down to 24 hours. Note: the only real change from a completely closed scenario concerns the Caprivi and extreme northeastern Angola.

This suggests that even modest border delays may provide significant disincentive to trade regionally, given high transport costs.

Continued improvement in the implementation of regional integration agreements and further agreement on rules of origin, bonds, and other NTBs would substantially improve sourcing and selling options and reduce costs for producers and consumers the region, particularly for Malawi and Mozambique and Angola.
Map 11.5c Marketsheds (Assuming No Border Delay)
MAP 11.5c

Nearest Regional Market Larger Than 500,000 People

This map estimates for each location on the map, the nearest regional city with a metro area population greater than 500,000 with no time delay at the border.

When compared to the results from the earlier look at productive factors, investments, and market connectivity, the shapes of these marketsheds reveal relationships between places of interest. Note that smaller potential growth poles, such as Livingstone and Quelimane, are located at the intersection of two large marketsheds. It is also worth noting that several places within one country, may find their nearest large market in another country, such as the case with Tete, Pemba, and Nacala (all in Mozambique) which all fall within the marketshed of Blantyre (in Malawi).

Malawi and its neighbors are another interesting comparison. Lilongwe and Blantyre both have severely constrained marketsheds as do producers in northern Mozambique, who currently must pay much higher transport costs to source inputs from as far afield as Biera. This illustrates who and how much trade policy affects producers in a discrete area. Continued improvement in the implementation or regional integration agreements and further agreements would substantially improve options for and competitiveness of producers and consumers in Malawi, Mozambique and Zambia.

Luanda, the national economic powerhouse, due to long distances, the directionality and shape of its road network and the population distribution of its cities along them is only the nearest market for 50% of the country. For places in eastern Angola, without border constraints, the closer large markets to be found in the Democratic Republic of the Congo (DRC). For parts of southern Angola, places as far afield as Zimbabwe may take less time to reach in the absence of delays at the border. The eastern portion of Angola may find it easier to sell their products in Kolwezi also in DRC, rather than Solwezi or Mongu in Zambia or even Luanda. Ondjiva, Cunene, Angola finds itself not only on the border of Namibia and near pockets of productive agricultural land, it is also near the meeting point of three large marketsheds, Luanda, Bulowayo, and Gaborone. It is also at roughly equal distance to ports at Walvis Bay in Namibia and Benguela in Angola. This is a very interesting result for the small town and could have implications for its potential as a logistical hub.

These maps suggest that in addition to the broader economic benefits of free trade, greater integration may reduce the need for large, expensive infrastructure designed to reduce congestion, or to connect producers to distant national markets, where a large regional market is just across the border, and a change in trade policy implementation may be just as effective.
These illustrative scenarios do not take into account the multitude of factors that affect price and/or influence a vendor’s choice of market or buyer’s source of inputs. However, absent a similarly scaled uniform dataset about prices, this analysis does serve as a useful proxy for relative transportation costs, an important factor in investment and location decisions. It is also a useful starting point for asking more detailed, commodity and industry specific questions about particular places and related determinants of price, quality, and other differentials. Such an analysis would help uncover what infrastructure constraints, institutional capacity issues, policy choices, and bilateral and multilateral trade issues directly affect the viability of a particular industry in a specific area.
III. OBSERVATIONS

The results of the index analysis and review of the trade scenarios yields several clusters of districts that are of interest and warrant further examination for growth pole development strategies.

Areas of Interest

Angola

Luanda – National capitals are natural growth poles in many ways and Luanda is a good example of this. Since 2008, the Luanda metro area received FDI totaling at least US$11 billion in everything from retail banking to manufacturing to construction to agribusiness. It is a relatively large market with a deep labor pool and links to international markets. With Chinese assistance, the government has spent US$300 million a year for the last two years rebuilding the two main rail lines out of the capital in an effort to relieve road congestion from trucking. Research suggests that effective implementation of regional integration agreements that reduce trade barriers and allow businesses to relocate throughout the country more efficiently, will further reduce this congestion as firms relocate to take advantage of agglomeration economies closer to their inputs or customers.

Lucapa – Lucapa and Saurumo are in northeastern Angola and are connected by major roads to Luanda, as well as in the north to the DRC. The economic activity in this region is dominated by diamond mining, and the modest construction and agricultural industries exist in the region to support the diamond extraction activities. Generally, the mining of precious stones does not imply significant growth pole potential as valuable quantities can be moved with relatively little infrastructure and is profitable with relatively little capital investment. However, agricultural production potential is high and near term diamond production and agricultural trade may increase with the reconstruction of National Road 180 and the Benguela Railroad, which may in turn boost employment and create demand for related secondary activity and non-tradables.

Benguela – Angola is the second largest oil exporter in Africa. The nearby port of Lobito is one of the biggest commercial ports on Africa’s Atlantic seaboard and the Benguela area will soon reap benefits from the restoration of rail connection to the rich mineral sources to the northeast in DRC. “The City of the Crimson Acacia” also has splendid beaches and has received US$1.5 billion of FDI since 2008. Economic links to Zambia are still largely moderated by distance and the most accessible routes are through DRC.

Ondjiva – Despite its relatively small population, its distance from other economic centers, and a dearth of other endowments, Ondjiva sits atop a primary overland link between Namibia and Angola. The scarcity of alternative north-south overland transport options to Windhoek and Walvis Bay from Angola and the relative distance to Benguela and Luanda, as well as the surrounding pockets of agricultural production, give Ondjiva unexpected opportunity. Wholesalers over the southern border in Oshikango, Namibia have leveraged their access to Walvis Bay to provide a wide range of goods, from furniture, to electronics to candy, to Cunene based retailers in Angola. While the population is small and the data on this part of Angola is limited, British, Spanish, and Portuguese investment in logistics, beverage production, and retail banking in Cunene over the past five years indicates that
this area holds some commercial attraction. Greater public investment in both the area’s soft and hard infrastructure may help it become a more significant hub for logistic, tourism, and agroprocessing activities.

**Namibe** – 200 miles southwest of Benguela and 270 miles northwest of Ondjiva, Namibe is an attractive location that holds many advantages for further development of the agricultural and tourism industries and is home to at least 80,000 people. It is the interface for a railway that penetrates into the interior as far as Menongue. In the last five years the port of Namibe received several million dollars in support of a refurbishment strategy and as of 2011 was moving upwards of 1 million tons of cargo in 18,000 containers. It has also seen relatively modest foreign investment in retail banking, but little else.

**Zambia**

**Lusaka** – The Lusaka metro area’s more than two million inhabitants are engaged in a number of value added industries – manufacturing, food processing, beverages, textiles and leather goods to name a few. The majority of the nearly US$900 million FDI over the past decade has gone into manufacturing, services, and construction sectors. As a transport hub in the Lobito-Beira and the Cairo-Gaborone corridors, Lusaka is well located to build upon its location as a transit point for goods, a characteristic it shares with Kabwe to the north. Notwithstanding its potential, underdeveloped linkages to the ports in Angola to the west, and long distances to ports in Mozambique to the east, represent a significant constraint to exports. In addition to infrastructure improvements, reduction in NTBs would enhance Lusaka’s attractiveness to firms and entrepreneurs.

**Kabwe** – Kabwe is in the Central Province of Zambia just north of Lusaka and is a major transportation hub for the region, hosting a key node in the Lusaka-Copperbelt railway line. This central position in the rail network makes Kabwe important to any growth pole strategy. The area produces zinc, cobalt, and other minerals and over the past four years, according to the Financial Times, it has attracted US$115 million in FDI for manufacturing, mining, and agriculture. The area is also home to pharmaceuticals, milling and cotton ginning, leather tanning, hydropower stations, and a multitude of potential tourist attractions. Unfortunately, however, there are serious concerns related to pollution, especially from mining. The transport infrastructure, its key advantage, would benefit from significant investment to repair and updates.

**Ndola** – In the past, Ndola was a major commercial and industrial center of the country, with a large clothing manufacturing industry. But with the decline of that industry, reflecting global market trends, Ndola’s largest industry is cement production and copper refinement, with three major cement production plants in operation. While copper refining and cement plants account for the largest source of employment, Ndola also has zinc and copper mines. As the third largest city in the country, its proximity to DRC and multiple rail export routes make Ndola an important point of interest.

**Chipata** – Chipata’s 100,000 residents live along the Great East Road, which connects Lusaka (550 km to the southwest) to Lilongwe, Malawi (130 km to the east). This provides not only local trading opportunities but also an entry point to regional and global markets. A rail link from Malawi (via Mchinji) to Chipata opened in August 2011 creating more trading opportunities. Chipata alone
accounts for 10.4 percent of Zambia’s urban market for maize. Chipata also produced other crops such as cotton, legumes (cowpeas, common beans, groundnuts) and the Chipata-China Cotton Company processes raw cotton locally. Its proximity to the Malawi border, as well as the Nacala Corridor in Mozambique, makes Chipata an important area of interest from a regional growth pole perspective. The rail link from Mchinji to Nacala, currently being negotiated, would provide a way for lower cost transit of goods and services from Chipata. The Zambia government has also expressed interest in creating a dry port in Chipata. The city’s economic development will depend, to a large extent, upon how successful regional integration initiatives are between Zambia, Malawi, and Mozambique.

**Livingstone** – Livingstone is one of the most visited tourist attractions in Africa, drawing a large number of domestic, regional, and international visitors. UNESCO added Victoria Falls to the World Heritage Site list in 1989 as a transboundary site shared between Zambia and Zimbabwe. The paired cities Livingstone and Victoria Falls, Zimbabwe are analyzed in more detail in the following section.

**Zimbabwe**

**Harare** – Harare enjoys a central location with a diverse set of firms operating in many value added and service industries. The city’s 1.4 million population is surrounded by arable farmland, outstanding mineral resources, and numerous cultural and historical attractions for tourists. Harare, like most of Zimbabwe, is still recovering from the deep economic, financial, and political crises of recent years. It received roughly only one-tenth the FDI that Luanda received over the same five year period and city services deteriorated significantly in recent years. The economic potential for Harare, and indeed for the rest of Zimbabwe, will depend on improved investor confidence.

**Masvingo** – Masvingo has potential to boost agricultural output and take advantage of the 2010 discovery of additional gold deposits. These gold mines are situated next to cattle ranching and sugarcane and citrus farms, hopefully laying the foundation for clear linkages to develop between these two sectors. In 2005 the sugar industry of Masvingo province accounted for 1.4 percent of Zimbabwe’s GDP. The area’s potential to be a regional source for ethanol and other biofuels production is receiving investor attention. However, input market inefficiencies, the lack of rural finance and credit, the high costs of transport and infrastructure maintenance, serve as major constraints.

**Mutare** – Mutare, the third largest city in Zimbabwe, rests along the Harare-Beira agricultural corridor. Citrus fruits agriculture, cattle ranching, and gold mining are major economic activities. Less than 4 km from the Mozambique border, Mutare is located close to Chimoio in Mozambique. It is just over 50 km from Mutarazi Falls in Nyanga National Park, making Mutare a natural way point for tourists and goods to cross the border.

**Bulawayo** – Bulawayo, the second largest city in Zimbabwe at just over 600,000 residents, was an industrial manufacturing hub. Bulawayo is also the closest large city to Matopo National Park, Victoria Falls, and Hwange National Park. The surrounding distribution of population and the directionality of its roads give it a very large marketshed that reaches into all five neighboring countries.
Malawi

Lilongwe – Lilongwe’s major industry is tobacco processing although much of the population is involved in informal trade. Around 25 percent of the approximately 800,000 residents fall below the poverty line. New transport links with Zambia, its proximity to numerous tourist attractions, and its size relative to the surrounding productive areas to the north, west and east, make Lilongwe a natural hub for agricultural processing and distribution, either by air, rail, or road.

Blantyre – Blantyre is a national center of economic activity thanks to its population density, history, and location. Given its high population density and struggling economy, Blantyre, Malawi and the immediate surrounding area is home to a great number of urban and rural poor. Its strategic location between several agriculture, aquaculture, mining, and tourist endowments gives Blantyre the opportunity to increase employment and improve agricultural production. Becoming a regional powerhouse will require hard infrastructure and social investments along with improvements in the trade regime. Blantyre is discussed in more detail, alongside Tete, Mozambique in the following section. Blantyre is a strong candidate for a detailed growth pole diagnostic analysis.

Karonga – The Kayelekera uranium mine in Karonga is an interesting example of how the viability of a growth pole opportunity begins with its location, endowments, and investments, but is nonetheless still subject to global economic headwinds. The Fukushima reactor meltdown in Japan hit uranium markets hard at a time when the industry was already under pressure. The mine is owned (85 percent) and operated by the Australian firm Paladin Energy and began production in mid-2008. The Malawi government received US$9.6 million dollars in 2012 from the mine, with nearly US$2 million in royalties and the balance in taxes, despite depressed uranium prices. About one-third of the company’s goods, materials, and services during 2011 - 2012 went to Malawi businesses (US$50 million out of US$150 million in 2012; US$65 million of US$180 million in 2011). They have a local purchasing procedure, and tender for food locally. Eighty-four percent of employees are Malawi nationals and the company has made investments in the local water supply, airport, hospital, fire engines, charities, and HIV/AIDS and malaria education. The uncertainty in the global uranium market will affect the ability of Karonga farmers and miners to benefit from their natural endowment.

Mozambique [25]

Maputo – As with all national capitals, Maputo is a natural growth pole that has been the traditional center of growth and employment for the country. It is home to the largest port in the country and is the export point for coal, cotton, sugar, chromite, sisal, copra, and hardwood. There is also a light manufacturing industry around furniture, shoes, and rubber products. Between 1990 and 2003, Maputo received 75 percent of FDI coming to Mozambique, and it has long benefited from relatively high levels of public investment. This began to change in the past 10 years. After 2005, the Center for Investment Promotion (CPI) began to focus large projects to areas outside Maputo, such as Tete and Nampula. [25] With further institutional capacity building efforts and hard and soft infrastructure investment, Maputo has the potential to leverage prior and ongoing investment, its proximity to local and regional markets and suppliers,
and its relative size to boost employment and diversify the export basket. Despite its advantages, according to the UN the majority of its 1.3 million inhabitants do not have access to basic sanitation and other public services and many observers point to dramatic increases in inequality.

**Tete** – The Tete region holds significant growth potential across a diversity of sectors from agribusiness to electrical generation to coal extraction. It also hosts transport links to three landlocked neighboring countries—Malawi, Mozambique, and Zambia. Over the past decade it attracted significant public investment and the recent World Bank financed Integrated Growth Pole Project provides US$35 million in financing for transportation and US$8 million in capacity building activities. Vale, the Brazilian mining company, has committed over US$1.5 billion for coal extraction to the area. [25] These endowments, capital inflows, clear international interest, and investment in transport infrastructure will facilitate trade and boost employment and access to services.

The local population will benefit from continued efforts to deepen economic linkages with neighboring economic centers, especially related to the flow of goods and services through Tete. For instance, new transit procedures intended to prevent false transit declarations for goods resulted in reports of significant delays in cargo transit through Mozambique borders and ports. Malawi truckers report that they cannot clear borders because of delays, which the Mozambique government indicates results from a lack of licensed clearing agents. [26] Efforts to address these types of institutional capacity gaps and related NTBs would benefit firms on both sides of the border. Tete is analyzed in more detail in the following section.

**Beira and the Beira Growth Corridor** – The Beira corridor is one of the most productive agricultural areas in Mozambique. The governments of Mozambique and Norway, together with private sector investors and donors are supporting the Beira Agricultural Growth Corridor initiative which aims to stimulate and revive agricultural production in the region. The area itself has high potential for the production of maize, sorghum, wheat, millet, rice, oil seeds, nuts, legumes, fruits and livestock. Large anchor investments in the agricultural sector, namely in sugar and cotton production, and investments in coal and infrastructure are reviving the economic activity in the area.

The city of Beira is the natural port for the agricultural corridor, and agricultural produce from the rest of the country as well as from neighbors, especially Zimbabwe exits through the Beira port. The port of Beira is also the natural port for extractive industries in the region. The port is being upgraded with the help of the European Investment Bank and the governments of the Netherlands and Denmark. DANIDA is helping to rehabilitate the Beira airport, the World Bank is supporting an urban water project and GIZ is sponsoring a business environment reform program. Beira has also been successful in attracting foreign direct investments in construction, food processing, and transport. The Beira corridor is analyzed in more detail in the following section.

**Chimoio** – Chimoio’s 200,000 residents make it the country’s fifth largest city and the largest city between the two ends of the Harare-Beira corridor, the transport route of much regional produce bound for international markets. It has many of the factors characteristic of potential growth poles -- population density, proximity, concentrations of investments across multiple sectors, and being conveniently located.
to deposits of gold to the northwest and rare earth to the southeast. Chimoio may become an attractive location for firms seeking easy access to these mines, access to Zimbabwe (Mutare and Harare), and access to Beira yet without having to be in any of those locations. Efforts to reduce lengthy border crossing procedures and tackling the corruption and arbitrariness reported at the border crossing at nearby Mutare, should prove to benefit economies in Chimoio and Beira. Doing so will make it easier for manufacturing and agroprocessing firms that locate along the corridor to source inputs from Zimbabwe as well as from nearby farms, making them more competitive.

**Quelimane** – Quelimane, located in Zambezi province, attracts numerous investments in agriculture, fishing, and agroprocessing. It also shows potential of becoming a growth pole for tourism. The major economic activities are in the fishing industry and the export of goods from the port. The main agricultural product that is traded is coconuts, which is either sold fresh in the markets or dried into copra, which is used for oil and soap production.

**Nacala** – Nacala is located in Nampula province and is part of the Nacala-Moatize growth corridor, about 620 km from the Malawi border. Its proximity to Malawi and its deep water port has determined the economic character of this city. The port is also the exit point for the coal that is produced in Tete province. The Zambia government expressed its interest in exporting the copper produced in Zambia through the port in Nacala. The Nacala Special Economic Zone, established in 2009, attracted investments in the tourism, services, agriculture, and biofuels industries. An oil refinery was established in the Nacala-al-Velha district. The success of the special economic zone, as well as the economic activity in the region is highly dependent upon the upgrading of the Nacala port and the supporting infrastructure. This includes the Nacala airport and the rail line from Moatize in Tete province, through Malawi to the port in Nacala. The cost of infrastructure upgrades is formidable. Moreover, coordination between the mining companies and the governments of Malawi and Mozambique pose other challenges of coordination, accountability and risk sharing.

The identified areas are not all the same and while some may have many of the spatial characteristics, a regional growth pole approach may be more suited to one place than another. Table III.1 provides an overview of key attributes of the identified areas to help prioritize further diagnostic efforts.

**Cross Border Pairs**

Drawing on Table III.1, this section analyzes the endowments, opportunities, constraints, and challenges for three of the identified cross border growth pole areas. (Given the scope of this report only three of the identified potential growth poles are assessed in more detail.) Agglomeration economies in these locations would likely be directly affected by enhanced trade integration efforts. The analysis is preliminary and will need to be validated through in-country consultations with local stakeholders and additional research. Nevertheless, there is a strong basis for assuming that most of the other identified areas would also benefit from a growth pole strategy. Similarly, there are likely to be other potential locations for growth poles not identified by this report since they are outside the five-country study area such as in DRC, Tanzania, South Africa, and Botswana.
<table>
<thead>
<tr>
<th>Country</th>
<th>District</th>
<th>Sectors</th>
<th>FDI 2012–2013</th>
<th>‘Marketshed’ crosses borders</th>
<th>Another Growth Pole across the Border</th>
<th>Population</th>
<th>Further Study?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>Luanda</td>
<td>Agriculture, Tourism, Logistics</td>
<td>✓</td>
<td></td>
<td></td>
<td>2.6 million w/in city &gt; 4.5 million w/in metro area</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27,000</td>
<td></td>
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<tr>
<td></td>
<td>Lucapa</td>
<td>Agriculture, Mining</td>
<td></td>
<td>✓</td>
<td></td>
<td>150,000+ w/in city 350,000 w/in metro area</td>
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</tr>
<tr>
<td></td>
<td>Ondjiva</td>
<td>Agriculture, Tourism, Logistics</td>
<td></td>
<td>✓</td>
<td></td>
<td>20,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benguela</td>
<td>Agriculture, Mining, Tourism, Logistics</td>
<td>✓</td>
<td>✓</td>
<td>Chipata</td>
<td>866,000 w/in metro area</td>
<td>✓</td>
</tr>
<tr>
<td>Malawi</td>
<td>Lilongwe</td>
<td>Agriculture, Tourism</td>
<td>✓</td>
<td>✓</td>
<td>Tete</td>
<td>732,000 w/in metro area</td>
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<tr>
<td></td>
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<td>Tanzania</td>
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<td>Maputo</td>
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<td>✓</td>
<td>S. Africa</td>
<td>1.9 million w/in metro area</td>
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<td></td>
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<td>✓</td>
<td>Blantyre</td>
<td>152,000</td>
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<td></td>
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<td>✓</td>
<td>Blantyre – International Markets</td>
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<td>✓</td>
<td>Blantyre – International Markets</td>
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<td></td>
</tr>
<tr>
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<td>Nacala</td>
<td>Agriculture, Tourism, Logistics</td>
<td>✓</td>
<td>✓</td>
<td>Blantyre – International Markets</td>
<td>200,000</td>
<td></td>
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<td>Lusaka</td>
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<td></td>
<td>DRC – Lumbumbashi</td>
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<td></td>
<td>Ndola</td>
<td>Agriculture, Mining, Tourism</td>
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<td></td>
<td></td>
<td>830,000 w/in metro area</td>
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<td></td>
<td>Chipata</td>
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<td>✓</td>
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<td>Lilongwe</td>
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<td></td>
<td>Kabwe</td>
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<td>✓</td>
<td></td>
<td></td>
<td>200,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Livingstone</td>
<td>Tourism, Agriculture, Mining</td>
<td>✓</td>
<td></td>
<td>Victoria Falls</td>
<td>110,000</td>
<td></td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>Harare</td>
<td>Agriculture, Mining, Tourism</td>
<td>✓</td>
<td></td>
<td></td>
<td>2.9 million w/in metro area</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Mutare</td>
<td>Tourism, Mining, Logistics</td>
<td>✓</td>
<td></td>
<td>Chimoio</td>
<td>185,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bulawayo</td>
<td>Agriculture, Tourism</td>
<td>✓</td>
<td></td>
<td></td>
<td>731,000 w/in metro area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Masvingo</td>
<td>Agriculture</td>
<td>✓</td>
<td></td>
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<td>76,000</td>
<td></td>
</tr>
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</table>
MAP III.1 REGIONAL GROWTH POLE 1: TETE (MOZAMBIQUE) – BLANTYRE (MALAWI)
Anchor Investor Sector: Mining  
Primary Sub-Sector: Agriculture

The area comprising Tete province of Mozambique and around Blantyre in the Southern Province of Malawi has many of the markers of national growth poles, each on the opposite side of a national border. The World Bank assesses the prospects for a growth pole in Tete province in its August 2010 report *Prospects for Growth Poles in Mozambique.* Through the Mozambique Integrated Growth Poles Project the agribusiness sector will receive significant support. Similarly, the Malawi side of the border in the area around Blantyre is home to a number of development initiatives. Analysis of the complementarities and gaps between these development programs and the economic complementarities between the two juxtaposed growth poles may reveal opportunities for regional partnership and coordination in support of enhancing the competitiveness of industry on both sides of the border.

The area has good soils, access to water, and a climate that is amenable to large scale production of a variety of staple food crops, as well as crops suitable for biofuel production. Tete province has the potential for large commercial farming in staple crops, while Malawi’s Southern Province has large sugar plantations, with some agroprocessing plants already operational for the production of refined sugar. Although agricultural potential of Malawi’s Southern Province is evident, large investments in commercial agriculture have not been recorded. The rural population is almost entirely dependent on subsistence agriculture and remains poor. Despite the boom in extractive industries sector, there are limited linkages between the mining and agricultural industries in the area. Table III.2 highlights the key endowments and opportunities for the development of commercial agriculture with linkages to the mining industry in the area. The table also identifies the key constraints and challenges to a successful regional growth pole strategy.

FDI in industrial mining has been significant in the region. Vale’s US$1.5 billion and Rio Tinto’s US$0.8 billion mining investments in Tete province have the potential to be anchor investments for innovative multimodal transport infrastructure projects. Vale and Rio Tinto are also interested in local procurement of their agricultural needs and have initiated agriculture support programs in the area. There is significant potential for extending the value chains and creating linkages between the extractive industry and agricultural sectors. The World Bank financed Mozambique Integrated Growth Poles Project (FY13; US$100 million) to create market access for smallholder farmers within Tete province, is expected to lead to more commercial farming investment that will support the development of an agricultural growth pole.

Anchor investors are interested in local procurement of agricultural products required to feed their staff, but commercial farmers operating in the area are not able to
supply the volumes needed nor to the standards required. Major scaling up of domestic investments to create subsectors will be needed. This will require investments to stimulate agricultural production, processing, and manufacturing, involving enhancing agricultural supply chain businesses such as farm equipment, fertilizers, and seeds.

The major constraint for crop production in the area is poor access to supporting infrastructure (irrigation, grid connected electricity, all-weather feeder roads). In addition, road connectivity and access to regional urban markets also constrains agricultural production. Upgrading of transport infrastructure would foster investments from domestic and foreign investors in the commercial agriculture and agribusiness sectors. By emulating successful experiences in transport infrastructure design (such as the Mali mango value chain transportation innovation) [11] aimed at addressing the bottlenecks in the agricultural value chain, this region can benefit from a common transport network.

Multimodal infrastructure that connects smallholder and commercial farmers to major markets in Malawi, Mozambique, and along the North – South Corridor is the crucial market access factor that could unlock the agricultural potential of this area. The major railway infrastructure in the area is currently receiving upgrades from the mining industry. The Nacala rail corridor upgrade, which connects the port of Nacala to Tete province through the Southern Province of Malawi, is one such example. Vale is upgrading the railway line and according to its 2012 Annual Report, 12 percent of the railway infrastructure is complete, and the government expects the project to be concluded by 2015. However, the multimodality of this railway line to benefit local smallholder and commercial farmers is limited. This infrastructure upgrade represents a current opportunity for stakeholders in the commercial farming industry to increase their access to markets in Malawi, Mozambique, and Zambia and along the North – South Corridor.

In addition, rural feeder roads in the area are in poor condition and require significant upgrades. The main trunk roads in the area are in relatively good condition to be able to handle increased flows of trucks if agricultural production were to significantly expand. But secondary and tertiary roads in all three countries, especially all-weather feeder roads, are in critical need of upgrades. The World Bank financed Mozambique Integrated Growth Poles project includes feeder roads upgrades in Mozambique, and similar upgrades are needed in the areas within Zambia and Malawi to connect agricultural production areas to trunk roads.

Although the area has a high supply of low skilled labor, insufficient experience with commercial farming and lack of agricultural entrepreneurs and senior managers means that there is a lack of requisite skills for large scale commercial ventures. Existing commercial farmers have to rely on expatriate supervisory skills that add significant operating costs.

Farmers’ access to market information is another crucial factor that determines the competitiveness of suppliers in the agricultural value chain. Due to a lack of an integrated and reliable agricultural market information system, farmers are often unaware of the prices of their commodities in the local and regional markets. In addition, high costs of inputs, such as fertilizers and farming equipment, are affecting the competitiveness of farmers and other businesses in the agricultural value chain.
The governments of Malawi, Mozambique, and Zambia show significant interest in opening up regional markets through trade harmonization and infrastructure financing and coordination initiatives. Under the Tripartite Free Trade Area initiative of EAC-SADC-COMESA, as well as through the APEI, there are numerous institutional arrangements seeking to promote easier trade flows. Despite political interest, regional integration initiatives still suffer significant implementation challenges. Doing business across borders of these three countries has seen significant improvements in the last few years. But uneven border harmonization, inconsistent trade policies, and lack of a truly uniform customs documentation system still hinder cross border business activity. At the border level, large number of stamp and signature requirements also creates opportunities for corrupt behavior. Furthermore, because cross border trade involves a large number of documents for import and export, logistical operations are highly complex. Innovative platforms such as the online NTB reporting mechanisms undertaken by the governments under the Tripartite Free Trade Area are being implemented to address these issues (for a geographic rendering of these NTBs, see Annex 2, Map 2.1).
### TABLE III.2: Tete (Mozambique) – Blantyre (Malawi)

#### Endowments / Opportunities

**Productive Factors**
- Large potential for agricultural production
  - Maize and cassava in Tete province (Mozambique)
  - Sugar in Southern Province (Malawi)
  - Maize, cotton, groundnuts in Eastern Province (Zambia)
- Major investment in Angonia, Tsangano, and Macanga districts in Tete province to promote market access for smallholder farmers to growing markets in the region
- Presence of agriculture/agribusiness sectors (sugar processing in southeastern Malawi, cattle raising in Zambia)
- Large supply of low skilled labor

**Investments**
- Anchor investors in the mining sector in Tete province, with major mines in Moatize and Benga districts operational
- Increasing public investments (and donor support) in commercial agriculture production and agribusiness sectors
- Anchor investors upgrading transportation infrastructure; opportunity for commercial agricultural production to utilize upgrades in railroads
- Mining companies showing interest in local procurement, have initiated agricultural support programs in Tete province
- Foreign and domestic investments in light manufacturing, agricultural processing, and services sectors also increasing

**Market Access**
- Nacala rail corridor (Tete-Nacala via Malawi) being upgraded by Vale; 12% of railway infrastructure completed as of March 2013
- Reasonable provision of trunk infrastructure, with trunk roads in good condition and national road funds generally healthy
- Proximity to growing markets in Zambia, Malawi, Mozambique, and the area along the North-South Corridor
- Multimodal transport infrastructure could produce cost savings for both mining and agriculture sectors

**Regional Integration**
- Political interest in regional trade, logistics, and investment harmonization (APEI)
  - Focus on transit management, facilitation, integrated border management, and elimination of NTBs
- Establishment of Project Preparation and Implementation Unit for regional harmonization in financing infrastructure under the COMESA-EAC-SADC tripartite
- South African Power Pool provides ability to substitute large national investments in power infrastructure

#### Constraints / Challenges

**Productive Factors**
- Employment generation not proportionate to increasing FDI
- Agriculture entrepreneurs have limited access to finance
- Labor demand from anchor investors does not match skills of local labor force
- Labor productivity low
- Competitiveness of local SMEs low
- Local procurement from SMEs by anchor investors not yet realized

**Investments**
- Investments not reaching full potential due to lack of needed infrastructure in power, transport, and irrigation
- Major focus on mining supported infrastructure; multimodal infrastructure investments limited
- Weak forward/backward linkages between sectors
- Private investment needs to be scaled up to create secondary sectors (agricultural processing, services, manufacturing)

**Market Access**
- Limited multimodality of rail infrastructure causing high cost of transport for agricultural producers
- Lack of all-weather rural feeder roads
- Road funds focus on trunk roads at expense of secondary and tertiary network
- Corridors link economic centers to ports but not to each other
- Farmers’ access to market information is limited
- Imported input, transportation, and licensing and inspection costs high leading to low margins for agricultural producers

**Regional Integration**
- Political leaders committed to regional integration but not operationalized
- Inconsistent trade policies, lack of truly uniform customs documentation
- Large number of stamp/signature requirements for freight clearance contributes to corrupt behavior
- Trade transactions inefficient and burdensome
- Coordination, risk management, and accountability related to regional projects weak
MAP III.2 REGIONAL GROWTH POLE 2: LIVINGSTONE (ZAMBIA) – VICTORIA FALLS (ZIMBABWE)
Anchor Investor Sector: Tourism

The Victoria Falls UNESCO World Heritage Site is the main tourist destination in Southern Africa, renowned worldwide for its exceptional geomorphological features and outstanding natural beauty. It is one of the most visited tourist attractions in Africa, attracting a large number of domestic, regional, and international tourists. UNESCO added Victoria Falls to the World Heritage Site list in 1989 as a transboundary site shared between Zambia and Zimbabwe. The Falls is also at the center of the The Kavango Zambezi Transfrontier Conservation Area the world’s biggest conservation zones which will eventually span an area of approximately 520,000 square km (similar in size to France). Plans include 36 national parks, game reserves, community conservancies, and game management areas -- such as Botswana’s Chobe National Park, Namibia’s Caprivi area, and Kafue National Park in Central Zambia -- making it an ideal tourism growth pole. The cross border nature of the tourism site, the unique opportunity for collaboration between the two countries, and the immense attractiveness of the Falls makes this area a prime site for a regional tourism growth pole.

The United Nations World Tourism Organization’s (UNWTO) General Assembly was held in Victoria Falls in August 2013, jointly hosted by the Zambia and Zimbabwe governments. This was the first time the event was hosted in Sub-Saharan Africa. The choice of the Victoria Falls indicates its status as an iconic tourism resource and the potential it has to become a global destination. The UNWTO event was also the pilot for a long awaited visa facilitation initiative between the two countries, the so-called UNIVISA. In support of the UNIVISA the World Bank has funded The Southern African Development Community Visa Facilitation Initiative. This initiative helps SADC member countries to streamline visa processes as part of a broader liberalization of the travel and tourism sectors. In addition, SADC has created a tourism regional master plan to promote regional tourism as a basis for deeper integration and growth, but implementation has not yet started.

The cities of Victoria Falls in Zimbabwe and Livingstone in Zambia are the nearest access points for tourists visiting the Falls. The two countries increasingly appreciate tourism for its wealth and job creating potential, including spillovers across the border. Table III.2 outlines the major endowments and opportunities for a regional tourism growth pole, with linkages to other tourism attractions within the area that could be fostered. The table also outlines the major constraints and challenges related to a successful tourism growth pole development strategy.

Currently, however, the destinations at either side of the Falls are competing for a limited tourist consumer base for those visiting the destination as a two day add-on to travel to South Africa. Because of limited time and border crossing bureaucracy and associated costs, tourists generally just visit one side of Victoria Falls. But the diverse range of attractions would easily justify a weeklong vacation if tourists could experience a “borderless destination”. Despite the potential, neither country appears to have integrated regional destination planning, tourism management, and tourism branding and marketing strategies.
Tourism was historically concentrated on the Zimbabwe side, which is widely considered to have better views of the waterfall. Due to political turmoil and negative international media attention on Zimbabwe, the tourism industry in the town of Victoria Falls has significantly diminished over the past decade. [28] Although tourist arrivals have been increasing since 2008, the industry has not completely recovered; a concerted effort at destination branding and promotion is thus required. In response, the Zimbabwe government has initiated the promotion of Tourism Development Zones to attract tourism investments.

In contrast, tourists have flocked to Zambia, hotel construction there has increased, and hotel occupancy rates remain high. As a major policy focus, the Zambia government’s Poverty Reduction Strategy includes tourism related incentives for private investors and marketing and branding of destinations. Livingstone was also able to create a robust MICE (meetings, incentives, conventions, events) industry catering to international high end consumers. There is also ongoing work to further promote activities within the Kavango Zambezi Transfrontier Conservation Area, thus creating a regional itinerary for international tourists.

Despite these efforts, longstanding problems related to lack of a predictable and stable regulatory environment in both countries continue to pose risks for investors and operators. The tourism sector is highly sensitive to political instability at the country, regional, and global levels. The sector is especially sensitive to fluctuations in the regulatory environment and sudden changes can have drastic consequences for profitability and the investment climate. For example, in June 2010 the Zambia authorities enacted a rule that imposed a US$15,000 helicopter license fee for operators in the Victoria Falls area with only three days notice. Regulatory changes such as these often occur without sufficient communication between different governing bodies, significantly affecting tourism and investment attractiveness in the Falls area.

Limited access to finance and high costs related to establishing and operating tourist facilities hinder operators’ ability to establish and scale up their businesses. Despite FDI, the tourism industry in the area is not competitive nor fully meeting its high potential. Expensive construction material in both Zambia and Zimbabwe and high duty and costs of items demanded by tourists, add to the costs of operating a business. In both countries, access to finance for small tourism businesses, especially those that are owned locally, is extremely limited. There is also a lack of understanding by the banking sector about the structure of the tourism sector where large upfront costs are required to set up facilities, but which have a long payback period. Where loans are available, the tourism industry faces high interest rates and collateral requirements that are difficult for operators to secure.

Major international hotel chains, such as Intercontinental (Livingstone) and Protea Hotels and Southern Sun (both Livingstone and Victoria Falls) operate in the area. And there are a number of small lodges (mostly foreign owned) and many small informal enterprises (locally owned). The larger, foreign owned anchor investors have not been able to build sustainable linkages with the local economy, mainly due to the need to source items demanded by tourists, such as wine, outside of the area. Local agricultural production is also unable to meet these hotels’ procurement requirements and standards. There is also a lack of knowledge among the small-scale tourism operators about regional and international markets.
A large labor pool is employed by the locally owned tourism operators, lodges, guesthouses, and activity and transport providers. Labor costs account for up to one-third of total operating costs for hotels and safari lodges. [29] Since tourism is a labor intensive industry, productivity is crucial for lowering operating costs. Labor productivity relates to cost per task completed, and is typically low for local operators with staff that lack exposure to international service standards. A disconnect between employee remuneration and service standards also contributes to low labor productivity. For example, Zambia’s law that guarantees 10 percent hospitality service tax be passed on to employees leads to higher prices but not necessarily better service.

The major hub airport for international travelers from source markets in Europe and the United States that serves the area is in Johannesburg, South Africa. Significant upgrades for the area airport in Livingstone were concluded for the UNWTO General Assembly and upgrades are also taking place in the Victoria Falls Airport and are expected to be concluded by March 2014, enabling it to cater to 1.5 million visitors per year. Access to the area from international source markets is thus adequate, although long haul travel times do discourage many potential tourists. This bodes well for creating regional tourism packages that could include different destinations within the area and could be sold as bundles in the major source markets of the US, Europe, and China.
### TABLE III.3: Livingstone (Zambia) – Victoria Falls (Zimbabwe)

#### Endowments / Opportunities

<table>
<thead>
<tr>
<th>Productive Factors</th>
<th>Investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Victoria Falls, a UNESCO World Heritage Site, and the Zambezi River are major international tourism attractions.</td>
<td>• Governments incentivizing investments in tourism, evidenced by recent policy announcements by the two governments</td>
</tr>
<tr>
<td>• Other tourism attractions in nearby countries have potential to be part of a regional tourism itinerary package.</td>
<td>• Zimbabwe Ministry of Tourism pursuing a Tourism Development Zone strategy (no levy, license or lease taxes for a five year period)</td>
</tr>
<tr>
<td>• Livingstone has a robust MICE (meetings, incentives, conventions, events) tourism industry catered to business travelers; tourist day activities concentrated on Zambia side.</td>
<td>• Zambia government’s Poverty Reduction Strategy focuses on attracting investments for tourism growth</td>
</tr>
<tr>
<td>• Accommodation for leisure travelers is more competitive in Victoria Falls (Zimbabwe)</td>
<td>• Hotel investments on the rise in the area, in response to the UNWTO General Assembly held in August 2013</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Investments</th>
<th>Constraints / Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Governments incentivizing investments in tourism, evidenced by recent policy announcements by the two governments</td>
<td>• High cost of supplies for establishing and operating tourist facilities (e.g., price of cement in Zambia is 80% higher than in Kenya) deterring investments in tourism</td>
</tr>
<tr>
<td>• Zimbabwe Ministry of Tourism pursuing a Tourism Development Zone strategy (no levy, license or lease taxes for a five year period)</td>
<td>• Improved labor productivity could lead to lower operating costs</td>
</tr>
<tr>
<td>• Zambia government’s Poverty Reduction Strategy focuses on attracting investments for tourism growth</td>
<td>• Lack of exposure of labor to international level services standards and training, especially for small operators, contributing to low quality of tourists’ experience</td>
</tr>
<tr>
<td>• Hotel investments on the rise in the area, in response to the UNWTO General Assembly held in August 2013</td>
<td>• Zambia’s law that guarantees 10% service tax on all hospitality products to be passed on to employees may contribute to low motivation and increased prices</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Market Access</th>
<th>Investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Major international hub airport in Johannesburg</td>
<td>• FDI investment in tourism low in relation to potential, especially in Zimbabwe due to political economy</td>
</tr>
<tr>
<td>• New airport in Livingstone opened in 2013 for UNWTO event and Victoria Falls Airport undergoing expansion to become a regional hub airport able to cater to 1.5 million visitors per year, to be completed March 2014</td>
<td>• International hotel chains do not procure agricultural products locally; capacity of local suppliers to supply international hotel chains are limited</td>
</tr>
<tr>
<td>• High potential for diversified tourism across tourism value chain</td>
<td>• Low levels of domestic investment in hotels, lodges, restaurants, tour operators, mainly due to difficulty in accessing finance</td>
</tr>
<tr>
<td>• Opportunities for tourism SMEs to pursue collective marketing, promotion, operational, and flexible labor strategies</td>
<td>• High levels of inflation in Zimbabwe, and the unpredictable legal, political, and economic environment is disincentive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Constraints / Challenges</th>
<th>Investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lack of knowledge of international/regional market limits the success of small scale and community based tourism products</td>
<td>• Lack of a predictable regulatory environment directed towards fostering cross border synergies in tourism</td>
</tr>
<tr>
<td>• High level of competition with global and other regional tourism destinations</td>
<td>• Lack of a harmonized regional labor law regime to ensure flow of skills and labor across borders</td>
</tr>
<tr>
<td>• Travel to and within the countries is expensive, with low level of competition among airlines</td>
<td>• Limited management, destination planning, and marketing skills at the institutional level</td>
</tr>
<tr>
<td>• Key items demanded by high end tourists face high import taxes (e.g., excise duty on wine at 125%)</td>
<td>• Need to promote dialogue between stakeholders to chart an effective way forward for business promotion and job creation on both sides of Falls</td>
</tr>
<tr>
<td>• Zimbabwe political image hinders its attractiveness and deters private sector growth</td>
<td></td>
</tr>
</tbody>
</table>
MAP III.3 REGIONAL GROWTH POLE 3: HARARE (ZIMBABWE) – BEIRA (MOZAMBIQUE)
Anchor Investor Sector: Mining
Sub Sector: Agriculture

The Beira Development Corridor that connects Harare with the port of Beira is an important area with potential for linkages between the mining industry in Zimbabwe and the agriculture/horticulture sectors in Mozambique. Mozambique already has a high volume of trade with Zimbabwe. There are commercial agricultural activities taking place on the Mozambique side of the corridor, such as the production of ethanol from sugarcane and biodiesel from jatropha in Cheringoma (Sofala province) and in Chimoio (Manica province). There are also plans for a large fertilizer terminal in the port of Beira, which will speed delivery and provide fertilizer all year round. The area has high potential for agricultural production, building a link between the agricultural sectors in the area with the mining industry across the border in Zimbabwe.

Foreign investors have not paid as much attention to Zimbabwe’s mining industry as to its neighbors, despite Zimbabwe’s vast deposits of minerals including gold, platinum, and rare earth metals. Few mining companies are operating to capacity. The uncertain political climate is the primary constraint to investments in Zimbabwe’s extractive industry. Any successful regional growth pole strategy based on anchor investments in Zimbabwe (and linked to commercial agriculture and horticultural farming activities in Mozambique) will require a major improvement in Zimbabwe’s investment environment. Table III.4 outlines the opportunities for a regional growth pole in the Harare-Beira corridor and related challenges.

In contrast, the investment climate for commercial agriculture in Mozambique is attractive, with various companies currently operating in the area. There is great interest from the international commercial farming industry in the Beira corridor. And there are numerous commercial farmers currently operational in Mozambique. Mozbife in Manica province is expanding its cattle production with a US$5.1 million investment seeking to increase the head of cattle from 750 to 10,000 by 2014. Principle Energy invested US$400 million towards ethanol production from sugar cane in Dombe, Manica province. Enerterra aims to invest US$53 million in Cheringoma in Sofala province to produce biodiesel from jatropha. And Sun Biofuels invested US$5.5 million for biofuels from jatropha in Chimoio, Manica province. International commercial farming in Mozambique is also established, with the potential to be scaled up.

Land tenure security and other political factors pose constraints for investments, both in Mozambique and Zimbabwe. The uncertain nature of land tenure rights in each country increases the business risk for commercial agriculture investors in Mozambique. In Zimbabwe, the Indigenization and Economic Empowerment Act that requires at least 51 percent divestment of equity interest in
favor of Zimbabwe nationals in the mining sector, continues to seriously constrain FDI.

Access to finance for commercial farmers in Mozambique limits agricultural production. The volume of loans directed towards financing commercial and smallholder agriculture is low, affecting the ability of small and middle sized commercial farmers to increase production. Moreover, poor access to supporting infrastructure (irrigation, grid connected electricity, and all-weather feeder roads) is a major constraint to commercial agriculture.

The area is well connected to the backbone infrastructure in road and rail. The railway line connecting Beira to the Zimbabwe border is operational. Beira port itself is undergoing major overhaul to be completed in 2015. Vale has announced that 15 percent of the Beira port infrastructure overhaul has been completed. However, transport costs in the corridor are very high at around US$0.10 per ton per km (compared to US$0.03 in Brazil, for example). The area is connected to markets in the north of Africa through the Gabarone-Cairo highway corridor and to the east through the Beira-Lobito trans-Africa highway.

NTBs pose significant challenges to trade in agricultural and other products between Zimbabwe and Mozambique and other neighboring countries. Issues such as import and export licensing, delays in classification of items crossing borders, as well as delays due to weak infrastructure capacity of the border posts are constraints to regional trade. Numerous checkpoints on the borders and highways in Zimbabwe foster rent seeking from transport officials, as well as cause delays in the delivery of goods and raise transportation costs. The need to handle numerous customs regulations manually, in the absence of automated or semi-automated systems, add further delays in border processing.

Formal tariff barriers in place in Zimbabwe also pose another constraint to regional trade. Successful rounds of multi and bilateral trade negotiations have reduced the number of formal trade tariffs between Mozambique and Zimbabwe, but complete liberalization of trade in major commodities has not been achieved. Maize, the major agricultural commodity is a controlled product in Zimbabwe, and only the Grain Marketing Board is empowered by act of parliament to import and export maize. In addition, Zimbabwe is subject to high levels of government intervention in trade policies, unpredictable fiscal environment, and a fragile macro-economic policy environment. These conditions are affecting its neighbors’ confidence in a stable and predictable regional trade regime, which consequently has effects on efforts at regional integration.
### TABLE III.4: Harare (Zimbabwe) – Beira (Mozambique)

#### Endowments / Opportunities

**Productive Factors**
- Prime fertile land suitable for agriculture products (maize, wheat, soya, rice) in Mozambique
- Availability of water for irrigation from the Zambezi, Pungwe, and Buzi river basins
- Potential for increased output of diamonds, gold, and platinum-group metals such as platinum, palladium, and rhodium in Zimbabwe

**Investments**
- High interest from foreign commercial farming investors already operating in the area to scale up their production
- FDI increasing in agricultural production in Mozambique, with major investments in biofuels, livestock, sugar refining
- International commercial farming in horticultural products is established, with potential to scale up

**Market Access**
- Area has good access to backbone infrastructure in road, rail
  - Machipanda rail line from Beira to the Zimbabwe border is operational
  - Beira port is undergoing major upgrade with channel dredging and port overhaul, to be completed 2015
- Wheat, maize, soya, and rice are not demand constrained, and scaled up production could find regional (Egypt) and international markets (Brazil)
- Scaled up agricultural production would also supply the extractive industry in Mozambique and Zimbabwe

**Regional Integration**
- Area is connected to markets in north of Africa through the Gabarone-Cairo highway corridor and to the east through the Beira-Lobito trans-Africa highway
- Zimbabwe’s membership in SADC and COMESA provide a platform to engage in institutional arrangements for infrastructure financing, trade liberalization, and other regional integration issues
- Mozambique government has shown interest in regional cooperation through SADC-COMESA-EAC tripartite, reflected by engagement in various high profile institutional arrangements

#### Constraints / Challenges

**Productive Factors**
- Limited domestically sourced funding for the agricultural activities in Mozambique and for the extractive industry in Zimbabwe
- Absence of comprehensive mining regulatory system in Zimbabwe with ad hoc and onerous multiple taxes on mining creating uncertainty for long-term capital investors
- Cost of agricultural inputs high due to lack of demand and lack of scale for suppliers
- Commercial farmers unable to connect to electricity grid, need to rely on expensive diesel powered irrigation
- High interest rate for agricultural loans in Mozambique
- Commercial farmers unable to hire senior managers and local skilled; need to rely on expatriate managers adding to cost

**Investments**
- Security of land tenure and investments is low due to uncertainty of land ownership and leasing rights in both countries
- Banking system in both countries not fully developed, coupled with low volume of loans to finance commercial or smallholder agriculture
- Extractive industry activity in Zimbabwe is subject to continued political uncertainty

**Market Access**
- Transport costs for the Beira corridor are significantly high at around US$0.10 per ton per km
- Poor access to agriculture supporting infrastructure (particularly irrigation, grid connected electricity and all-weather feeder roads) in both countries
- Beira port operating at 40% capacity due to delays in infrastructure upgrading
- Lack of knowledge of the international/regional market limits the success of smallholder farmers
- Custom delays a major constraint in the transport of agricultural and horticultural products

**Regional Integration**
- High level of government intervention in trade policies in Zimbabwe is a constraint for free flow of goods and services between the two countries
- Unpredictable fiscal policies, high levels of inflation, and a fragile macro-economic environment in Zimbabwe contribute to the continuing uncertainty of its participation in regional integration initiatives
IV. CONCLUSIONS AND NEXT STEPS

This report outlines a geospatial framework for identifying suitable places for growth pole strategies within and across Angola, Malawi, Mozambique, Zambia, and Zimbabwe. This involved spatial analysis of the economic endowments of agribusiness, mining, and tourism using GIS data collection and analytical methods. Specifically the analysis showed where features related to productive factors, investment, market access, and regional integration potential are co-located. While several areas in the five countries examined possess many of the ingredients for a successful growth pole, a few places stand out. Growth pole potential is comparatively high for:

- Mining and agriculture in the Tete province of Mozambique with the area around Blantyre in the Southern Province of Malawi.
- Tourism on both the Zambia and Zimbabwe sides of Victoria Falls.
- Mining and agricultural integration between nodes along the corridor between Harare, Zimbabwe and Beira, Mozambique, such as Mutare and Chimoio.
- Agricultural and tourism integration between Chipata, Zambia and Lilongwe, Malawi.
- Agribusiness and tourism potential near the northern Mozambique coastal port at Nacala. While relatively small and not on an international border, Nacala’s port is on average deeper than ports to the south; with infrastructure improvements it may prove to be a needed link to global markets for landlocked areas in eastern Zambia, southern Malawi, and Tete, Mozambique.

This initial insight is useful in highlighting those areas which merit more detailed analysis across a physically smaller geographic area (larger scale) and considering more precisely defined sector and industry activities. Accordingly, subsequent work will seek to validate and deepen the findings related to a specific growth pole area. This will involve targeted assessments to identify economic complementarities and specific barriers to competitiveness, investment, and trade.

Fundamental to this work will be in-depth consultations with a range of stakeholders—domestic and foreign businesses, national government officials, regional economic communities, donor agencies, among others—to discover specific issues and priorities. The aim will be to highlight constraints, opportunities, stakeholder interests and, where possible, comparisons between idealized “borderless” scenarios and the status quo. This will entail the identification and consideration of mechanisms that can effectively address the coordination, accountability, and risk management issues inherent in any growth pole strategy. It is anticipated that this follow-on, larger scale spatial analysis will be web enabled to encourage broader stakeholder involvement. Other outputs may include background reports, action plans, geocoded databases, and communication materials (e.g., websites, videos) to build consensus for growth pole interventions. Given the multi-sector nature of such strategies, expertise and insights will be drawn from practice groups across the World Bank Group. In particular, this analysis will be supported by ongoing research on trade infrastructure linkages, geospatial analysis of extractive industry linkages to local economies, as well as geospatial and quantitative analysis to support the prioritization of infrastructure investments.
## TABLE 1.1 Factors Affecting Foreign Investor Attractiveness

<table>
<thead>
<tr>
<th>Mining, Oil and Gas</th>
<th>Agriculture &amp; Forestry</th>
<th>Tourism, Construction, Retail</th>
<th>Access to Industrial Land Information Index</th>
<th>Protection of Investors</th>
<th>Ease of Establishing Foreign Business</th>
<th>Ease of Doing Business Rank/185</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>74.5</td>
<td>100</td>
<td>100</td>
<td>36.8</td>
<td>5.7</td>
<td>39.5</td>
</tr>
<tr>
<td>Malawi</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>5.3</td>
<td>n/a</td>
</tr>
<tr>
<td>Mozambique</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>33.3</td>
<td>6</td>
<td>65.8</td>
</tr>
<tr>
<td>Zambia</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>37.5</td>
<td>5.3</td>
<td>47.4</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>4.3</td>
<td>n/a</td>
</tr>
</tbody>
</table>


## TABLE 1.2 Factors Affecting Trade Across Borders

<table>
<thead>
<tr>
<th>Prevalence of Trade Barriers</th>
<th>Logistics Competence/Quality</th>
<th>Logistic Performance</th>
<th>Time to Export</th>
<th>Cost to Export</th>
<th>Time to Import</th>
<th>Cost to Import</th>
<th>Trading Across Borders Rank/185</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range 1–7</td>
<td>Range 1–5</td>
<td>Days</td>
<td>US$ per Container</td>
<td>Days</td>
<td>US$ per Container</td>
<td>Days</td>
<td>Rank/185</td>
</tr>
<tr>
<td>Angola</td>
<td>3.7</td>
<td>2</td>
<td>2.28</td>
<td>48</td>
<td>1850</td>
<td>45</td>
<td>2690</td>
</tr>
<tr>
<td>Malawi</td>
<td>4.1</td>
<td>2.85</td>
<td>2.81</td>
<td>34</td>
<td>2175</td>
<td>43</td>
<td>2870</td>
</tr>
<tr>
<td>Mozambique</td>
<td>4.2</td>
<td>2.2</td>
<td>2.29</td>
<td>23</td>
<td>1100</td>
<td>28</td>
<td>1545</td>
</tr>
<tr>
<td>Zambia</td>
<td>4.3</td>
<td>2.01</td>
<td>2.28</td>
<td>44</td>
<td>2765</td>
<td>56</td>
<td>3560</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>4.8</td>
<td>2.27</td>
<td>2.55</td>
<td>52</td>
<td>3280</td>
<td>73</td>
<td>5200</td>
</tr>
</tbody>
</table>

### TABLE 1.3 Factors Affecting Competitiveness of SMEs

<table>
<thead>
<tr>
<th></th>
<th>Labor Market</th>
<th>Goods Market</th>
<th>Financial Market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Higher Education/Training</td>
<td>Cooperation in Labor-Employer Relations</td>
<td>Cooperation in Labor-Employer Relations</td>
</tr>
<tr>
<td>Angola</td>
<td>2.1</td>
<td>3.1</td>
<td>2.2</td>
</tr>
<tr>
<td>Malawi</td>
<td>2.6</td>
<td>4.1</td>
<td>4.2</td>
</tr>
<tr>
<td>Mozambique</td>
<td>2.3</td>
<td>3.6</td>
<td>3.4</td>
</tr>
<tr>
<td>Zambia</td>
<td>3.1</td>
<td>4.3</td>
<td>4.6</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>3</td>
<td>3.7</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Global Competitiveness Index 2013 -2014.

### TABLE 1.4 Effectiveness of the Public Sector

<table>
<thead>
<tr>
<th></th>
<th>Economic Management</th>
<th>Public Sector Management and Institutions</th>
<th>Regulatory Quality</th>
<th>Government Effectiveness</th>
<th>Political Stability/Absence of Violence</th>
<th>Control of Corruption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range 1–6 (6 = Highest)</td>
<td>Range 1–6 (6 = Highest)</td>
<td>Range –2.5 to +2.5 (+2.5 = Highest)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angola</td>
<td>3</td>
<td>2.3</td>
<td>–1.1</td>
<td>–1.15</td>
<td>–0.33</td>
<td>–1.36</td>
</tr>
<tr>
<td>Malawi</td>
<td>3.2</td>
<td>3.3</td>
<td>–0.7</td>
<td>–0.43</td>
<td>–0.07</td>
<td>–0.36</td>
</tr>
<tr>
<td>Mozambique</td>
<td>4.5</td>
<td>3.4</td>
<td>–0.4</td>
<td>–0.55</td>
<td>0.27</td>
<td>–0.41</td>
</tr>
<tr>
<td>Zambia</td>
<td>3.7</td>
<td>3.1</td>
<td>–0.43</td>
<td>–0.65</td>
<td>0.47</td>
<td>–0.51</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>1.8</td>
<td>2.2</td>
<td>–1.9</td>
<td>–1.4</td>
<td>–1.04</td>
<td>–1.3</td>
</tr>
</tbody>
</table>

Source: Country Policy and Institutional Assessment 2012; World Governance Indicators 2012.
ANNEX 2 REGIONAL MAPS OF PRODUCTIVE FACTORS
MAP 2.1 POPULATION DENSITY (2010)

Legend
- International Border
- Lake

Population Density in 2010
People / Km²
- 0
- 1
- 1 - 2
- 2 - 4
- 4 - 18
- 18 - 536

Elevation: Natural Earth Basemap (www.naturalearthdata.com/)
Map 2.1

Future sustainable urban growth depends on an individual’s capacity to relocate, the relative level of economic opportunity, and other attractiveness factors and to some degree on the initial population distribution. Approximately 85 million people live in the five-country study area, averaging 26.5 people per square km. However, as this map shows, the region’s population is not uniformly distributed. In 2011, Malawi’s average population density was 164 people per square km, while Angola is at 16.2 and Zambia at 18.3 people per square km. For Mozambique, the number is at 31.3 and for Zimbabwe 34.5 per square km. The countries’ rates of urbanization show large variation as well. In 2012, Zambia and Zimbabwe’s urban population was around 40 percent of their total. Mozambique’s urban population is 31 percent of its total. Meanwhile 60 percent of Angola’s population lives in cities. Despite having the highest population density among the five-country study area, Malawi still has the lowest rate of urbanization, only 15 percent of Malawi’s 16 million people live in its cities.
MAP 2.2 STAPLE CROP PRODUCTION (2000)

Legend
Cities
Population
- < 25,000
- 25,000 - 50,000
- 50,000 - 100,000
- 100,000 - 1,000,000
- > 1,000,000

International Border
> 10,000 tons/ha of Cassava or Maize produced in 2000
< 10,000 tons/ha of Cassava or Maize produced in 2000

Sources
Crop Production: International Food Policy Research Institute (IFPRI), Population: WB Africa Cities Diagnostic,
Basemap: Natural Earth Basemap (www.naturalearthdata.com/)
While one country may be physically larger than another, it does not always follow that the land itself is equally productive, or potentially productive. The five-country study area contains 179,000 square km of arable land, with Zambia containing two-and-one-half times as much as Malawi. While countries in the study area all produce maize, Malawi and Angola produce large quantities of cassava as well. Angola captures four times as much fish as Mozambique captures and farms, while Malawi and Mozambique each raised twice as many pigs as Zimbabwe.
MAP 2.3 AGRICULTURAL INVESTMENT (SINCE 2005)

Number of Investments

- ▲ < 4
- ▲ 5 - 9
- ▲ 10 - 15
- ▲ > 15

Total Investment

- > $500 Million
- < $160,000

Sources
Caveat: Data was only available for Zambia and Mozambique.
While the agricultural investment dataset is incomplete (only Zambia and Mozambique are available), some places stand out. For instance, agribusiness investment in Mozambique is distributed across the country even though most of the investment is in the south. In Zambia, by contrast, it appears confined to population and transport corridors. Mozambique distribution tends to mirror the distribution of maize and cassava production (see previous map) more so than in Zambia. This may reflect differences in data collection by the responsible agencies, but it may also reflect differentiation in the investment (investment in processing plants versus land purchases, infrastructure, or production improvements). In Mozambique between 2005 and 2010, 190 agribusiness investments totaled US$4.8 billion, averaging US$25.6 million with the largest single investment of US$1.6 billion in Ile (north of Quelimane, east of Blantyre). In Zambia between 2007 and 2011, 105 agribusiness investments were undertaken, averaging US$9.3 million and which were expected to create an average of 137 jobs. The largest single investment totaled US$250 million from an Anglo-American company recorded in Lusaka in 2009.
Coal deposits in the north of Mozambique near Tete, and copper deposits in the central north of Zambia drive much of the mineral extractive wealth of the region. Zimbabwe shows the greatest diversity and dispersion of its mineral wealth.
MAP 2.5 MINING INVESTMENT (2003–2013)

Legend

Cities
Population
- < 25,000
- 25,000 - 50,000
- 50,000 - 100,000
- 100,000 - 1,000,000
- > 1,000,000

International Border
Lake

Botswana

Number of Investments
- < 4
- 5 - 9
- 10 - 15
- > 15

Total Investment
- < $160,000
- $160,000 - $500 Million
- > $500 Million

Sources
Cities: WB Africa Cities Diagnostic, Investments: Financial Times Foreign Direct Investment (FDI) and the respective national development agencies
Basemap: Natural Earth Basemap (www.naturalearthdata.com/)

62 | GROWTH WITHOUT BORDERS
MAP 2.5

This Financial Times FDI markets data provides insight as to the major actors, where and how much they are investing, and in which commodities. While Zimbabwe has more diversity in mineral deposits, Zambia received a greater volume and frequency of investment in mining since 2003.
MAP 2.6 HOTELS AND TOURIST ATTRACTIONS (2012)

Legend
- Hotels
- UNESCO World Heritage Sites
- Cities
  - Population
    - < 25,000
    - 25,000 - 50,000
    - 50,000 - 100,000
    - 100,000 - 1,000,000
    - > 1,000,000
- International Border
- Lake
- Protected Areas
- Other Protected Areas
- DESIG
  - Safari Area
  - Game Reserve
  - Forest Reserve
  - Nature Reserve
  - National Park

Sources
Tourism: UNECSO World Heritage Sites and National Parks, Hotels: WBG staff research,
Cities: WB Africa Cities Diagnostic, Investment: Financial Times FDI database, Zambian Development Agency, Mozambique CPI,
WBG staff field collection, Basemap: Natural Earth Basemap (www.naturalearthdata.com/)
In addition to multiple game and safari parks and the spectacular Victoria Falls on the border between Zambia and Zimbabwe, the region boasts eight UNESCO World Heritage Sites: one in Mozambique, two in Malawi, and five in Zimbabwe. Unfortunately, available disaggregated information about hotels in the region varies greatly from one country to another. This is evidenced by the concentration of hotels in Malawi yet a dearth of hotels in Angola.
MAP 2.7 TOURIST INVESTMENT (2003–2013)

Legend
Cities
- < 25,000
- 25,000 - 50,000
- 50,000 - 100,000
- 100,000 - 1,000,000
- > 1,000,000
International Border
Lake

Number of Investments
- < 4
- 5 - 9
- 10 - 15
- > 15
Total Investment
- < $160,000
- $160,000 - $300,000
- $300,000 - $400,000
- $400,000 - $500,000
- > $500 Million

Sources

66 | GROWTH WITHOUT BORDERS
Zimbabwe and the northeastern quadrant of the study area appear to have a greater quantity of tourism natural endowments (see previous map) and the southeastern coast of Mozambique appears to receive the most investment. This result is somewhat biased by the greater availability of investment data for Mozambique and Zambia. But the dearth of investment shown in Zimbabwe likely reflects the country’s political and economic turmoil over the past decade.
MAP 2.8 INVESTMENTS IN SERVICES: INFRASTRUCTURE OR CONSTRUCTION (2003–2013)

Legend
- Cities
- Population
  - < 25,000
  - 25,000 - 50,000
  - 50,000 - 100,000
  - 100,000 - 1,000,000
  - > 1,000,000
- International Border
- Lake

Number of Investments
- < 4
- 5 - 9
- 10 - 15
- > 15

Total Investment
- < $160,000
- < $500 Million

Sources
Investment: Financial Times FDI database, Zambian Development Agency, Mozambique CPI, WB staff field collection,
Population: WB Africa Cities Diagnostic, Basemap (www.naturalearthdata.com/)

68 | GROWTH WITHOUT BORDERS
MAP 2.8

Investment in infrastructure, facility construction, and the electrical grid is more dispersed than investment in other sectors. The majority of such investment since 2003 has ended up in the capital cities and near extractive industry centers.
MAP 2.9 DISTRICTS CATEGORIZED BY ELECTRICAL GRID ACCESS (2006)
MAP 2.9

District level data about access to electricity was not available for several of the countries studied, so this report drew on ad hoc inferred measures of electrical availability. This map color codes districts based on the presence of electrical transmission lines and power plants as reflected in the AICD data from 2006. It does appear to reflect the distribution of population at this scale; larger scale analysis will require an improved dataset.
MAP 2.10 REGIONAL TRADE CORRIDORS

Legend
- Airport
- Port
Cities
Population
- < 25,000
- 25,000 - 50,000
- 50,000 - 100,000
- 100,000 - 1,000,000
- > 1,000,000

Sources

South Africa

Sources
The roads highlighted in this map are designated trade corridors. This information was made available courtesy Trademark Southern Africa. [The data can be examined in more detail by going to http://www.tmsagis.co.za/ and selecting the “Click to see all tripartite corridors” button at the bottom of the screen.] As noted, the road, rail, and air network in the eastern half of the five-country study area is more complete and integrated than the western half. Angola’s corridors travel northeast and connect to DRC. Only one major corridor connects it to Zambia. Every other country in the region enjoys at least two overland connections with each of its neighbors.
MAP 2.11 MARKET ACCESS: ESTIMATED TIME TO MARKET

Legend

- Cities
- Population:
  - < 25,000
  - 25,000 - 50,000
  - 50,000 - 100,000
  - 100,000 - 1,000,000
  - > 1,000,000
- Port
- Airport
- International Border
- Roads
- TIME TO MARKET
  - 6 - 12 hours
  - Less than 6 hours
  - Lake
- Within 100 km of an Airport

Legend Notes:
- Assuming 60kph on road, 4 kph off road and 180 minute border wait.

Sources

Cities: WB Africa Cities Diagnostic, Transport: Africa Infrastructure Country Diagnostic (AICD), OpenStreetMap, Basemap: Natural Earth Basemap (www.naturalearthdata.com)
This map shows small scale categorization of the relative cumulative time it would take to reach the nearest mid-size city or port. Several patterns emerge: Angola's road network and population distribution mean that its integration potential (from a market access perspective) lies to the north and east with DRC or south to Namibia, rather than to the east with Zambia over the Lungwebungu River. Zimbabwe’s accessibility is well dispersed and Malawi benefits from its small size resulting in both countries having relatively high levels of accessibility. Zambia and Mozambique appear to have multiple poles of accessibility, while large stretches of their respective area remains less easily accessed.
MAP 2.12 NON-TARIFF BARRIERS TO TRADE – NTBs (2013)
This map reflects the trade relationships of the five countries studied in this report. Trademark Southern Africa provided the underlying data which was then mapped for this report. Every country in the study area is a member of SADC, although Zambia, Zimbabwe, and Malawi are also members of the COMESA; Angola and Mozambique are not members of COMESA. The purple dots of varying size indicate reports of NTBs along the region’s regional trade corridors. At first glance, the cross border issues between Zambia and Zimbabwe seem to be generating the most reports. Reports in Mozambique occur not only at the border but also along the corridor. This data is very new and warrants further investigation.
MAP 2.13 WORLD BANK FINANCED PROJECTS

Legend
- Agriculture, fishing and forestry
- Energy and mining
- Industry and Trade
- Public Administration, Law, and Justice
- Transportation
- Regional Trade Corridors

Sources
Bank Projects: WBI Mapping for Results

[Map of World Bank Financed Projects in Africa, showing countries like Angola, Malawi, Mozambique, Namibia, South Africa, and Zambia.]
**MAP 2.13**

This map shows World Bank financed projects across the five-country study area in selected sectors, up to 2011. Spatial rendering of World Bank financed projects in the region provide some interesting insights. For example, the map reflects that: transportation projects are implemented countrywide in Zambia and Mozambique; projects related to justice, law, and administration investments are concentrated in northeast Mozambique; and central and southern Mozambique are being targeted for agriculture, fishing, and forestry projects. The map also reveals that the World Bank is currently not financing projects in Zimbabwe but that there is a cluster of agricultural interventions in Angola. There appears to only be one industry and trade project in the entire region (in Zambia). It also shows a high concentration of several sector interventions in Maputo. This also reflects a similar concentration of projects in most of the other capital cities.
MAP 2.14 ANGOLA EXPORT VOLUME IN US$ (2012)

Legend
Export Volume 2012 (IMF)
Volume
- < $3 million USD
- $3 million USD - $6 million USD
- $6 million USD - $12 million USD
- $12 million USD - $25 million USD
- $25 million USD - $75 million USD
- $75 million USD - $100 million USD
- > $100 million USD

Sources
Export Value: IMF Direction of Trade Statistics database
Cities: WB Africa Cities Diagnostic, Transport; Africa Infrastructure Country Diagnostic (AICD), OpenStreetMap,
Trademark Southern Africa TMSA, Basemap: Natural Earth Basemap (www.naturalearthdata.com/)

80 | GROWTH WITHOUT BORDERS
MAP 2.14

The data on Angola exports is a challenge. It seems clear that it has little to no formal export relationship with the other four countries evaluated. While the UN COMTRADE data on the composition of trade was incomplete, the IMF data indicate significant exports to South Africa.
MAP 2.15 MALAWI EXPORT VOLUME IN US$ (2012)

Legend
- Malawian Export 2012 (IMF)
  - Volume
  - < $3 million USD
  - $3 million USD - $6 million USD
  - $6 million USD - $12 million USD
  - $12 million USD - $25 million USD
  - $25 million USD - $75 million USD
  - $75 million USD - $100 million USD
  - > $100 million USD

- Regional Trade Corridors
  - Rail
  - Road
  - Water
  - International Border

- Cities
  - Population
  - < 25,000
  - 25,000 - 50,000
  - 50,000 - 100,000
  - 100,000 - 1,000,000
  - > 1,000,000

- Population
  - Lake

Sources
- Export Value: IMF Direction of Trade Statistics database

82 | GROWTH WITHOUT BORDERS
MAP 2.15

Taken from the IMF Direction of Trade Statistics, this cartographic representation of export flows illustrates the relative importance of a regional trading partner to Malawi exporters. Agricultural exports dominate Malawi exports, and UN COMTRADE data suggest that tobacco, sugar, and maize compose the majority exports to Zimbabwe. Malawi follows a pattern similar to its neighbors in that its main customer is to the south, although it is unusual in that it is the only one of the five countries examined whose largest export relationship is not with South Africa.
MAP 2.16 MOZAMBIQUE EXPORT VOLUME IN US$ (2012)

Legend
Export Volume 2012 (IMF)
Volume
- < $3 million USD
- $3 million USD - $6 million USD
- $6 million USD - $12 million USD
- $12 million USD - $25 million USD
- $25 million USD - $75 million USD
- $75 million USD - $100 million USD
- > $100 million USD

Regional Trade Corridors
Rail
Road
Water
International Border

Cities
Population
- < 25,000
- 25,000 - 50,000
- 50,000 - 100,000
- 100,000 - 1,000,000
- > 1,000,000

Sources
Export Value: IMF Direction of Trade Statistics database
Cities: WB Africa Cities Diagnostic, Transport: Africa Infrastructure Country Diagnostic (AICD), OpenStreetMap,
Trademark Southern Africa TMSA, Basemap: Natural Earth Basemap (www.naturalearthdata.com)

84 | GROWTH WITHOUT BORDERS
Electricity and flour compose the majority of Mozambique exports to Zimbabwe, while oil and fertilizer are the main exports to Malawi, according to UN COMTRADE data.
MAP 2.17 ZAMBIA EXPORT VOLUME IN US$ (2012)

Sources
Export Value: IMF Direction of Trade Statistics database
Zambia’s exports are more directionally diverse. While little goes directly to Angola or Mozambique, it is generally in the form of copper. Exports to its other neighbors are agricultural products such as maize, seed, and tobacco.
MAP 2.18 ZIMBABWE EXPORT VOLUME IN US$ (2012)
MAP 2.18

Zimbabwe has significant export relationships to the north and south and exports little to the Lusophone countries to the east and west. Sugar, tobacco, and other agricultural products dominate Zimbabwe exports according to UN COMTRADE. This reflects a pattern of trade of other countries in the region which appear to trade in the same type of goods (imported and exported). Perhaps this is the result of a difference in unit prices, but will provide an interesting question for more localized study.
MAP 2.19 ESTIMATE OF DENSITY OF GROSS DOMESTIC PRODUCT (2008)

Legend:
- Lake
- International Border

Estimated GDP Density (2008)

<table>
<thead>
<tr>
<th>Range</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$2,500</td>
<td>Light Green</td>
</tr>
<tr>
<td>$2,500 - $100,000</td>
<td>Green</td>
</tr>
<tr>
<td>$100,000 - $1,000,000</td>
<td>Dark Green</td>
</tr>
<tr>
<td>$1,000,000 - $15,000,000</td>
<td>Blue</td>
</tr>
<tr>
<td>$15,000,000 - $300,000,000</td>
<td>Red</td>
</tr>
</tbody>
</table>

Source:
MAP 2.19

The colors in this map estimate the annual amount of GDP of a given square km in both the formal and informal sector, by calibrating the amount of light detectable from space to national statistics in a sample set of countries. Interesting discrepancies appear between the expected distribution of population and the estimated distribution of income generating areas. [30]
FIGURE 2.1 GDP Growth Rate of Selected Countries

Source: World Development Indicators, 2013

FIGURE 2.2 FDI by Sector to Angola

Source: Financial Times FDI database, 2013

FIGURE 2.3 FDI by Sector to Malawi

Source: Financial Times FDI database, 2013

FIGURE 2.4 FDI by Sector to Mozambique

Source: Financial Times FDI database, 2013
FIGURE 2.5 FDI by Sector to Zambia

Source: Financial Times FDI database, 2013

FIGURE 2.6 FDI by Sector to Zimbabwe

Source: Financial Times FDI database, 2013

Figure 2.7: Expected Job Creation by Sector: Tourism, Services, Manufacturing, Mining, and Other

Source: Financial Times FDI database, 2013
**Annex 3: Spatial Analysis Method**

**Where are the Growth Poles?**

At the request of the two World Bank Country Management Units covering the five countries, this report sought to identify and visualize potential regional growth poles. The challenge was to do this in a data driven, repeatable, transparent way and for that, the team used Geographic Information Systems (GIS). This annex describes the spatial analysis techniques used to overcome the broad scope and data challenges of this work. The model is simplified and the number of variables limited in order to answer the requirement in a timely fashion. The goal is to ensure that readers understand the method, and so can contribute to improving the model over time.

It did this by first geo-locating investments and endowments, and correlating that information with proximity to markets, active cross-border trade and international borders. This process aimed to put information into its regional context. However, this is only a first step. In geographic analysis, as in most types of analysis, the scale and unit of analysis affects the results. Therefore the scope of this analysis is limited to identification of places of interest. The economic viability of the proposed Regional Growth Poles a single coherent economic unit will be evaluated in a subsequent analysis.

**Why Use GIS?**

Why not conduct a simple panel analysis? The advantage of maps is the ability to visualize patterns or relationships that are often not apparent in other formats or when there is simply too much data to view in a table or panel. GIS expands panel upon analysis by providing powerful tools for the visualization, quantification and evaluation of spatial relationships between features, such as distance, pattern of distribution, level of interaction, and colocation. To do this, GIS companies and users developed a series of tools and standards that enable the rapid collection, management and comparison of enormous datasets, which can reduce the amount of time it takes to complete such a project.

**Analytical Approach Using GIS**

The first step was to identify a scale of analysis. Finding a common unit of analysis is useful way of comparing data points of different scale, purpose, or accuracy. (In this report, district boundaries are used). While districts are not of a uniform size and shape, they do provide this common unit. This constraint leads to findings that while correct in a broad sense, may breakdown in the specifics (when one zooms in). Therefore, it is important to read these maps as a guide for more detailed analysis of a much narrower geographic area, guided by a more specific trade and competitiveness question can be examined. This more focused view allows higher resolution data to be considered alongside context specific datasets.

The growth pole concept points to the need for an inherent revenue producer to be present in order to build upon existing economies of scale or agglomeration. Given that such a revenue producer source is often immobile (such as the locations of mines), the identification process would create three sets, those with a revenue producer, those without and those nearby. The concept also looks for variables whose location is mobile or fungible (such as the worker’s location).
In this analysis, the initial selection of a district depends more on the immobile than the mobile. This dependence on immobile factors also means that certain areas are unlikely candidates for development of a mining growth pole no matter the enabling environment. Therefore, it seems logical to sort locations based on membership in sets representing the characteristics of the area, i.e. on the presence of immobile factors or aspects of the enabling environment, immobile versus mobile, accessible versus inaccessible and to bias the results toward areas with immobile assets. [10]

“Everything relates to everything else, near things are more related than distant things”. [31] With this in mind, the analysis involved three stages. The first stage narrowed the list of candidate growth poles through an overlay analysis of available data to assign membership to the aforementioned sets. Each of the 790 districts in the five-country study region received a rating based to the presence or proximity to agriculture, mining, and tourism sites, the presence and volume of foreign direct investment, and the location’s relative connectivity to markets. It then establishes relative suitability based on the intersection of those sets. This identifies the sites in close proximity to economic inputs, activity and enabling environment factors. It then examines that final set of highly suitable places in context to one another and to international borders and trade corridors.

This required specifying which aspects of these sector activities manifest themselves spatially in the districts, based on desk research, literature review, and gathering of available data (spatially enabled or not) from several sources or finding usable proxies. The resulting output from the initial data collection effort was a large large geodatabase. Table 3.1: outlines the criteria used for rating sites according to each theme. In the third stage, the identified growth poles are selected for their appropriateness for agglomeration as an economic unit for analysis in phase two.

In all, data was gathered from over 20 different organizations and World Bank country offices to create the geodatabase. In an ideal scenario, analytic questions drive the analysis, rather than by data availability. However, despite tremendous data availability, it varied greatly in resolution and quality between countries and information type.

Furthermore, World Bank analysts often needed to add location data to a non-spatial dataset in order to fill gaps in data between countries. Other datasets (hotels, for instance) had to be triangulated data from different sources to develop a common analytical baseline that aggregated data to at least the district level, given that the data was high resolution in Malawi and Zimbabwe, but less readily available in the remaining three countries. This data gathering, processing, and triangulation effort consumed much time and effort, yet had the benefit of collating data that is useful for several other types of analyses at various scales.

1 A geodatabase organizes data by its location on Earth. This enables users to visualize, analyze, and manage vast amounts of information based on where and when known facts apply. This makes it ideal for analysis requiring the interaction of traditionally discrete datasets. It also provides insights to questions that have multiple dimensions or considerations, relationships between those dimensions and across space and time, but also apparent in the same place. Later, maps generated from the GIS analysis become an effective and persuasive tool for stakeholders at country and sub-regional levels. Finally, through online data sharing and “mash-ups” with data from other service providers these maps hold the potential to democratize data creation and analysis, potentially enabling a truly comprehensive situational awareness to emerge that enhances transparency, accountability and communication between business, civil society, government and the public.
<table>
<thead>
<tr>
<th>Theme</th>
<th>Criteria</th>
<th>Justification</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productive Factors</strong></td>
<td><strong>Sector based immobile factors</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Agriculture   | - Maize AND Cassava production greater than 10,000 tons/ha AND bordering a lake or river = 3  
- Production greater than 10,000 tons/ha = 2  
- Production less than 10,000 = 1 | 1. Producers want to locate close to their suppliers / inputs and their customers.  
2. The immobility of certain resources constrains the location choices of those resource suppliers. [10]  
3. Growth Poles are built around revenue sources which must produce significant volumes of goods for profitable exploitation. Traditional diamond and gold mines are excluded as individuals can move valuable quantities without much infrastructure.  
4. Tourist attractions only succeed when tourism related infrastructure is sufficient: connectivity to international transport networks, the ratio of high-end to low-end overnight accommodation. Ground transport connectivity is captured in the Access Theme and therefore not included in the primary selection. Other factors are required however the data for those facture for the region are limited.  
5. District level data on access to electricity was not available across the study area.  
6. Population distribution serves as a proxy for the easy availability of labor. This effect diminishes with distance.  
7. The presence of electrical infrastructure (for which data is available) serves as a proxy. The presence of nearby power generation or transmission lines indicates that if access to electricity in a highly rated district is in fact limited, the relative costs of improving access would be lower when compared to areas without any infrastructure whatsoever. | Crop Production: International Food Policy Research Institute (IFPRI)  
United States Government LandCover 2009  
Location of mines: Mining Atlas, Commodity and other attribution of mines  
Protected Areas: UNECSO World Heritage Sites and National Parks  
Hotels: World Bank Group staff research  
Population: AfriPop, World Bank Africa Cities Diagnostic  
Electricity: Afric Infrastructures Country Diagnostic (AICD) |
|                | Extractive | - Districts with Mining sites of heavy resources = 3  
- Districts with Mining sites of other resources = 2  
- Districts that are neither = 1 |                                                                                                                                                                                                             |                                                                                                                                 |
|                | Tourism    | - Districts w/in 50 km of UNESCO sites OR Wildlife OR Safari Area OR Coastline OR Lake = 3  
- Districts with Hotels or Airports w/in 100km of the attractive sites = 2  
- Districts without either = 1 |                                                                                                                                                                                                             |                                                                                                                                 |
|                | Sector based changeable factors |                                                                                                                                                                                                              |                                                                                                                                 |
| Population Density | - Districts containing Cities with more than 500,000 = 3  
- Districts with Cities less than 500,000 but more than 50,000 OR w/in 50 km of Category 3 city = 2  
- Districts town populations less than 50,000 or none at all = 1 |                                                                                                                                                                                                             |                                                                                                                                 |
| Electrical     | - Districts with Electrical Generation plant = 3  
- Districts with Transmission lines only = 2  
- Districts without either = 1 |                                                                                                                                                                                                             |                                                                                                                                 |
Despite these challenges, the data was sorted into two categories and four spatial themes of growth pole relevant factors. The four themes were: productive factors, investment, regional integration potential, and market access were further divided by mobility—it is either “immobile” or “mobile” (or subject to change). The analysis then rated districts on a scale of 1 to 3 (1 as lowest, 3 as highest) based on the presence of growth pole factors in that theme in that district. The criteria used for this rating is outlined in the Table 2.

The analysis averaged the fungible, or mobile, factor maps, to find those areas with high correlation of enabling environment. Those areas in turn were averaged with immobile factor ratings, resulting in an overall rating for

<table>
<thead>
<tr>
<th>Theme</th>
<th>Criteria</th>
<th>Justification</th>
<th>Data Source</th>
</tr>
</thead>
</table>
| Investment 2008 - 2012 | Districts with recent above average* investment or expected job creation in Agriculture, Mining, Tourism AND recent Manufacturing or Services investment = 3  
   - Districts with recent above average* investment or expected job creation in Agriculture, Mining, Tourism = 2  
   - Districts without investment = 1  
   *recent refers to investments after 2008  
   *mean calculated for each industry and country | 1. Indicates recent investor interest in location / industry pairs  
   2. Multi-sector investments indicate diversity of local economy and may indicate greater potential for stronger input-output linkages in a given location.  
   3. May indicate presence of perceived resource value or comparative advantage.  
   4. Reduces the likelihood that the overall model will highlight districts whose investment levels are unknown.  
| Market Access | Assuming 60 kph average on road (variable regional road condition, stops, traffic, etc), 4 kph off road (on foot), 3 hour wait at the border  
   - Half day travel to nearest market (city > 50,000 or port) = 3  
   - Full day travel to nearest market (city > 50,000 or port) = 2  
   - Greater than a full day travel = 1 | 1. Shorter distances can translate to lower prices as transport costs are significant portion of trade costs (particularly in the region). [10] [32] [33]  
   2. This approach incorporates two types of cost (transport and border delay) across three cost producing media (on-road, off-road, and borders) resulting in one cumulative cost to the proximate local market (Cities) or global market access point (Ports). | Author’s calculation  
   Doing Business Indicators |
| Regional Integration Potential (2nd Iteration) | Districts with reports of Non-Tariff Barriers to trade = 3  
   - Districts with International Border = 2  
   - Districts without either = 1 | 1. Non Tariff Barrier reporting is indicative of trade activity and the presence of reporting mechanisms and a willingness to make reports. Tradebarriers.org | Non-Tariff Barriers to Trade : Trademark Southern Africa |
each district that biases the result toward districts with an “immobile” revenue source in said sector (such as a gold mine, UNESCO world heritage site, or productive arable land) over other fungible factor such as present population distribution.

This explicit process for nominating areas of interest allows adjustment of the selection model criteria and relative importance of any given theme, based on expert input, or changes in circumstances or priority. The formula below determined a district’s rating:

$$R_k = \frac{R_{ik} + \left( \frac{R_{mk} + R_{pk} + R_{ck} + R_{ek}}{4} \right)}{2}$$

Where the calculated rating of district $k$ is $R_k$, $R_{ik}$ is a rating of those with immobile inherent revenue source (areas of production, i.e. mines, productive land, natural tourist attractions). The parenthetical variables are ratings of districts with factors that are either mobile or subject to policy intervention, investment, or other dynamic process or circumstance. $R_{mk}$ is market access category, $R_{pk}$ is population density, $R_{ck}$ is financial investment assessment, $R_{ek}$ is electrical access. This selection process identifies candidate growth poles at national level, industry by industry.

Three explanations for why the maps may not match expectations present themselves: the analytical criteria need refinement, the initial set of countries did not match the context, or weaknesses in the data. Initially, the report’s broad scope made specifying a selection model that correctly accounts for sector specific growth pole linkages across several countries, difficult. The team sought to simplify the problem, by reducing the number of variables. The team welcomes subject matter or regional expert inputs on how to better specify this model. Second, several potential cross border growth poles may fail to show up in the analysis due because relevant details are located across the border with a country not represented in the initial selection set (South Africa, Tanzania, DRC). Finally, the broad geographic context resulted in an uneven level of data availability, quality and comparability between countries. For instance, FDI data was available for each country in every sector except agriculture (only available for Zambia and Mozambique); however the database used records only four investments for Malawi that could be geo-located within the past 10 years.

To address the question of identifying the potential role of regional integration would require the analysis of a given area in two separate scenarios, one in which the local economy is divided between participants, and a second scenario in which barriers are removed and coordinating institutions are effective. In order to examine this question at a subnational scale requires three criteria are met; the first that the new region is spatially contiguous or highly connected, the second is that some measureable level of trade already takes place between the market’s spatial components; the third is that these areas operate in similar or complimentary markets. The third criterion will be evaluated in the next phase of analysis. The first to criteria however will allow us to identify specific growth poles candidates from within the set established above to create and new fictional spatial economic unit for a regional integration “what if” scenario.

Non-Tariff Barrier reporting is indicative of trade activity and the presence of reporting mechanisms and a willingness to make reports. We use this data from the tradebarriers.org and proximity to international borders to create a suitability
criterion for regional integration $R_b$ where Districts with reports of Non-Tariff Barriers to trade = 3, Districts with International Border = 2 and Districts without either = 1. When then average this with our above rating of growth poles from all three industries.

$$R_{kRI} = \frac{R_k + R_b}{2}$$

This approach allows for later adjustment of the relative weighting to test for which of the six factors, endowment, labor, electrical connectivity, market access, or border/corridor proximity most reduced or improved a given districts result. For instance, this calculation could be rerun considering only endowment, market access, and population distribution. Subtracting one result from the other will identify which districts overall rating changes given the new relative importance and indicating how important the removed factors were to the output.

The first iteration of the above process nominated some areas and excluded others and thereby provided the basis for the second stage: more detailed spatial, economic, and political economy analysis given the local context. This initial evaluation should provide the basis for further investigation of local trade and competitiveness issues as well as an engagement strategy for the World Bank.

**Estimating Market Access Using a Cost Distance Model and creating “Marketsheds”**

Many academic papers discuss various ways to measure the accessibility of markets, usually through calculation of transport costs or using trade flows as a proxy. For this report the ESRI (Environmental Sciences Research Institute, 2013) cost distance model was used to estimate a time to nearest market, based on a series of assumptions spelled out above, as a proxy for market access. This model applies graph theory’s node\link representation method, where the center of each cell is a node and multiple direct links connect it to its adjacent nodes. These links have mathematical values that represent the degree to which they impede movement from one cell to another. So the links represent the cost of movement between cells.

When a cell represents one square kilometer of the Earth’s surface, one can calculate the implied cost of movement (or impedance) between two locations in which ever units the cell represents; distance, time, money, etc. For example, it takes $X$ amount of time or $Y$ to go from cell A to cell B, which in this case is 1 km. This model calculates the impedance from both the value of the cell and the direction of movement through the cells. The value of the cell is derived from the per unit distance for moving through the cell, such that the final value of the cell is its size times its cost value. If the raster’s cell size 10 and a cost value of 20, then the final cost of that cell is 200. Travel times accumulate as a hypothetical traveler moves away from designated sources, in our case cities with populations greater than 50,000 and maritime ports. This number is a quantitative value for how accessible the nearest “market” is to a given location in the study region.

The cost value depends on the orientation of the nodes and how they are connected, so that movement to directly neighboring cells across links is cell 1 plus cell 2, divided by the number of cells (in this case two).

$$a1 = (c1 + c2)/2$$
where:
\[ c_1 \text{— the cost of cell 1} \]
\[ c_2 \text{— the cost of cell 2} \]
\[ a_1 \text{— the total cost of the link from cell 1 to cell 2} \]

This initial calculation repeats for every adjacent cell that is not an origin cell (where the calculation starts) and not already calculated, resulting in an accumulated cost estimate:

\[ acc \text{ cost} = a_1 = (c_1 + c_2)/2 \]

\[ acc\_cost = a_1 = (c_1 + c_2)/2 \]

where:
\[ c_2 \text{— the cost of cell 2} \]
\[ c_3 \text{— the cost of cell 3} \]
\[ a_2 \text{— the cost of moving from cell 2 to 3} \]
\[ acc\_cost \text{— the accumulative cost to move into cell 3 from cell 1} \]

For this analysis three levels of cost to move between cells was assumed; on road cost, off road cost, and border cost. The calculation makes the following conservative assumptions:

While on road an individual can travel at 60kph (this is a concession the scale of the study region, a great deal of variation that exists in the quality of roads (and the data about the roads), the levels of congestion, the non-monetary costs such border and police stops. On road cost assumes that travelers can maintain 60 kph on average between cells connected by a road.

While off road, travelers average 4kph. Off road cost assumes that travelers do not have access to a vehicle, or that their vehicle will not easily cross this terrain, and is therefore assumed to be 4 kph, this cost applies to cells without roads.

Border cost is a three hour (180 minute) penalty paid by travelers for crossing an international boundary. In this calculation travelers can only cross borders where the borders intersect a road. Th s model could adopt less conservative assumptions, but at this scale would only improve accuracy in some areas while distorting the aggregate picture, therefore it is recommended to adapt the model to less conservative assumptions when examining a smaller area with higher quality data.

The result is a grid where each 1 km square cell receives a value equivalent to the number of minutes it would take to get to the nearest city or port under these assumptions. To incorporate this accessibility estimate into the growth pole identification model, the resulting values were reclassified from the cost distance calculation into three categories: less than 6 hours from a city or port, 6 to 12 hours from a city or port, and greater than 12 hours from city or port. The logic is that areas at a distance greater than 12 hours from any city or port are less attractive places to locate a firm and or invest given the resulting increase in uncertainty that accompanies that distance. If a district’s centroid (mathematical center) intersected category market access category 3, the model classifies the district as a category 3 (563/790), likewise for category 2 (161/790). All others received category 1 (108). [34] [35]
Marketshed

Once we establish the relative accumulated travel time from one location to another, we can derive multiple other forms of insight. For the marketshed maps, these travel times are analyzed in the same manner one would analyze topographic elevation to understand a hydrological network. If a high travel cost (in terms of time or money) is equated to elevation in the real world, then one can analyze choices about directional flow of people and goods (services is another matter) just as one would determine the flow rainfall on a mountain as it flows through a watershed basin toward the mouth of a river. Assuming travelers always seek minimum travel time, always know the best route and are only slowed by the included factors, then defining a “service area” or “marketshed” is possible by identifying which places, face the least accumulated cost to each potential outlet, or market.

Buffer Analysis

For estimates of tourism locations, preference was applied to tourist attractions within 50km and 100km of airports, using a buffer analysis to determine which areas met these criteria. A buffer assigns a value to places based on proximity to a predefined feature, either a point, such as an airport, a line, such as a road, or a polygon, a two or three dimensional feature such as a lake. Buffers are normally straight-line distance calculations and do not account for any other factors. This is useful in determining “as the crow flies” distance from a given locations.

Data Challenges and Caveats

Several tremendous challenges presented themselves in finding usable data sources. These challenges breakdown along five lines: data scale, quality/consistency, availability, age, and geo-locating data.

Scale: Data producers, knowingly or unknowingly, choose a scale when they create data. They create information to support a narrow purpose and because it is time consuming to generate, they break it down into manageable packages according to sometimes arbitrary breakpoints that do not necessarily reflect the phenomenon under measurement. For instance, many statistics agencies aggregate tourism data to the national level. This makes uncovering and analyzing the economic linkages of the industry in a given city quite difficult.

Quality / Consistency: In other cases, the data may be sub-national and quite detailed, however the methodology for its collection or the level of detail may change substantially at a national border, as is often the case when looking at ground transportation data, such as the Africa Infrastructure Country Diagnostic (AICD) from 2006. [35]

Data availability: To track investment, the Financial Times Foreign Direct Investment database was used. This database contains data on the place, amount, source and year of money moving into a country for a specific purpose. This data was available for each country, but did not include information about the agricultural sector. The national economic development agencies track investments in order to maintain situational awareness and to prioritize investment. This data filled the gap in agricultural investment, but was only available for Zambia and Mozambique, thus skewing the agricultural results toward these countries.

Data age: To find data that is of an appropriate scale, quality and consistency, one sometimes must use data that
is significantly older than other datasets and this becomes a source of error. To determine those areas where agribusiness could serve as the inherent revenue producer, it was necessary to find areas with relatively high agricultural output. Unfortunately, the readily available data on agricultural production varied greatly in quality from one country to another. Therefore, the analysis relied on a high quality dataset that estimated production in a uniform fashion across the entire study region, distributed by the International Food Policy Research Institute (IFPRI). This dataset has several advantages but one severe disadvantage: it estimates production for the year 2000. A new estimate for the year 2012 should be available soon, but is currently still a work in progress.

**Geo-locating data:** In order to symbolize non-spatially enabled information (spreadsheets, word documents, PDFs) one must find information either intrinsic to the data or relate the data to known locations already in the database. If data contains a latitude and longitude, then one can directly plot data on the map. If only a place name is available, then users can locate a gazetteer database to associates coordinates with those place names. If no database exists or is incomplete, as is often the case in Africa, then each data point must be individually researched to in order to plot it on the map. This is a tedious and time consuming process, particularly when accuracy is a concern. In order to speed up this process in the future, two tutorial documents were produced. These guide novice users in the transformation of raw data into spatially enabled data, allowing staff with little experience in GIS the ability to contribute to spatially enabling the data.

FDI data provided the greatest challenge in geo-locating the data. The cross-nationally comparable data set from Financial Times Foreign Direct Investment database covers green and brownfield investment from 2003 - 2013. It only provides a location down to the city level 69 percent of the time on average across the study region (431 investments of 620 provided enough details to identify a particular location). There are concerns about the accuracy of the data, as certain records values appeared to be duplicates and employment estimates did not always display clear connection to the investment itself. It is recommended that the data points themselves be further researched to verify the activities in a given area.

Given these challenges the reader is advised to treat this analysis as a prototype to be refined with better data and more expert input.
REFERENCES


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FURTHER READING


