*Chapter 6*

# The economics of Southern Africa from a geopolitical perspective: why and how geography matters

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## 1. Introduction

South Africa's economic links to the rest of Southern Africa have always been very close. Since the first railway lines were built in the region, South Africa's harbours have served as gates to Southern Africa linking especially the landlocked countries to the global market. Labour migration to South African commercial farms and to the country's mining sector has marked entire nations southwards of the equator. Without calling into question that the end of the apartheid regime caused a boom in regional economic interaction, it is puzzling that economic links were close even at the climax of the confrontation between the Frontline States and the apartheid regime. Politics apparently cannot sufficiently explain the degree of economic interaction in Southern Africa. There appears to be a force that is more permanent than rapidly changing political alignments. I suggest that geography is this force and examine why and how it matters.

I propose a geopolitical approach to the economics of Southern Africa. Political scientists and journalists often use geopolitics as an umbrella term for national policies and strategies that they criticise as ruthless pursuit of power. Yet when geopolitics emerged as an academic discipline, it was not meant to be a tool of ruthless pursuit of power. My understanding of geopolitics is based on the fundaments laid by British geographers Halford Mackinder, James Fairgrieve and American political scientist Nicholas Spykman. They conceptualised geopolitics as a science that seeks to explain social phenomena by natural causes: geopolitics addresses the geographical roots of economics and politics by studying the impact of location and physical geography on mankind.[1] Such approaches are not pursued any more by political geographers. Hence, I do not only intend to contribute to empirical knowledge

[1] Using a strict terminology, one should call the perspective that I develop 'geoeconomic' because economics and not politics is explained by geography. However, I stick to the wider understanding of geopolitics following Mackinder, Fairgrieve and Spykman. Geopolitics is not limited to politics but deals with social phenomena (including economics) in general. With this terminology, I also avoid creating confusion given that the term 'geoeconomics' was coined by Edward Luttwak (1990) with a very different meaning.

about Southern Africa but I also seek to revitalise geopolitics and to show that a geopolitical perspective provides insights that cannot be gained from a social scientific viewpoint.

## 2. The geopolitical perspective: explaining economics by geography

Adherents of the classical version of geopolitics seek to explain social phenomena (e.g. economic interaction and regional integration) by material structures in space or, more narrowly, by location and physical geography. The purpose of Fairgrieve's main work *Geography and World Power* was to derive the course of world history from geography. Fairgrieve (1917: v) distinguished between the 'drama of world history' and the 'stage of world history'. His entire analysis can be summarised as showing how the stage shapes the drama. He argued that geography 'controls' history. This control does not mean a direct causal relation. Geography does not necessarily cause any human action. It does, however, provide opportunities and pose constraints. Human action is possible only within the limits set by geography and often takes paths implied as rational by geography (Fairgrieve 1917: 7-9). To put it in a very simple way: the presence of precious minerals in the northeast of South Africa does not control humans in the sense that it forces them industrialise the country. Only the human decision to use these minerals, which is as such not controlled by geography, leads to industrialisation. Nevertheless, the presence of the minerals is a necessary condition for industrialisation and it makes industrialisation likely because humans just have to act rationally within their geographical setting – their action is 'conditioned by their surroundings' (Fairgrieve 1917: 22).

Being more modest with regard to the range of geopolitical explanations, Spykman deduced the expansion of states from physical geography, which, according to him, provides directions of comparatively easy and economically and strategically beneficial expansion. Expansion into certain areas (e.g. regions with vast resources) and even specific small-scale arrangements to transport infrastructure (e.g. along navigable rivers) are, simply speaking, rational (Spykman & Rollins 1939). Spykman (1942: 90-91, 1944: 23, 28-33) derived the maritime orientation of the United States, for instance, from the location of its centres of economy and population on the Atlantic and Pacific. They guarantee, for topographical reasons (rivers connecting the coast to the hinterland and estuaries providing good locations for harbours), cheap and fast transport to East Asia and Europe. Hence, topography was essential to Spykman for its impact on transport and resources. Transport and resources indicate the trade orientation of a country, which can be either continental or maritime

(Spykman 1938: 229-236). In other words, geography induces economic patterns, which characterise a state and its spatial expansion. This impact of geography on mankind is almost constant. It does not change as frequently as governments or ideational guidelines because geography is constant. Spykman (1942: 41) thus famously wrote that 'ministers come and go, even dictators die, but mountain ranges stand unperturbed', meaning that we should examine the impact of mountain ranges on mankind in order to learn about the long-term guidelines of social processes.

In a speech entitled *The Physical Basis of Political Geography*, Mackinder rendered the concept that location and physical geography shape human action more precise. His central idea was that 'geographical features govern or, at least, guide history' (Mackinder 1890: 78). Referring to an analytical frame, he suggested starting with the impact of geography on human movement and human settlement. Travelling, he said, occurred along lines of least resistance. Settling was linked to geography-based productivity and security (Mackinder 1890: 78-79). The 'Great Trek' exemplifies this approach to studying how mankind interacts with geography: being primarily politically motivated, the eastwards movement of settlers from the Cape reflected geography in the sense that the Voortrekkers followed a geographical line of the least resistance. They moved along a plateau landscape that did not pose severe physical barriers. Moving northwards or southwards was hindered by the Kalahari and the Great Escarpment. The places where the Voortrekkers finally settled were those most suitable to agriculture because of the fertility of soils and relatively high and reliable precipitation – productivity determines settlement. Moving further eastwards was a means to put distance between them and the British in order to stay out of British influence – security determines settlement.

I do not maintain that geography is the only explanation for the Great Trek and for the present-day phenomena analysed below. Yet a geopolitical perspective promises insights that cannot be gained by the standard approaches in social science. Scholars of geopolitics tended to demonstrate the use of their approach by selectively examining certain historical and contemporary phenomena. Reading the works of Mackinder, Fairgrieve and Spykman, one easily gets the impression that they chose phenomena that suited their theory, and then deduced that geography had an overall guiding power on mankind. In order to overcome this weakness in geopolitics, I intend to turn the perspective around: in the following chapter, I will provide an overview of relevant geographical features of Southern Africa and conclude

why and how economic interaction is rational following geography. The relevant features are (1) geomorphology, which reveals obstacles to transport, (2) geology, which shows where key mineral resources are located, as well as (3) climate and soils, which determine the conditions for agriculture. Finally, the question whether economic interaction in Southern Africa reflects what geography implies will be investigated and the limits of a geopolitical perspective highlighted.

## 3. The geography of Southern Africa: implications for regional economics

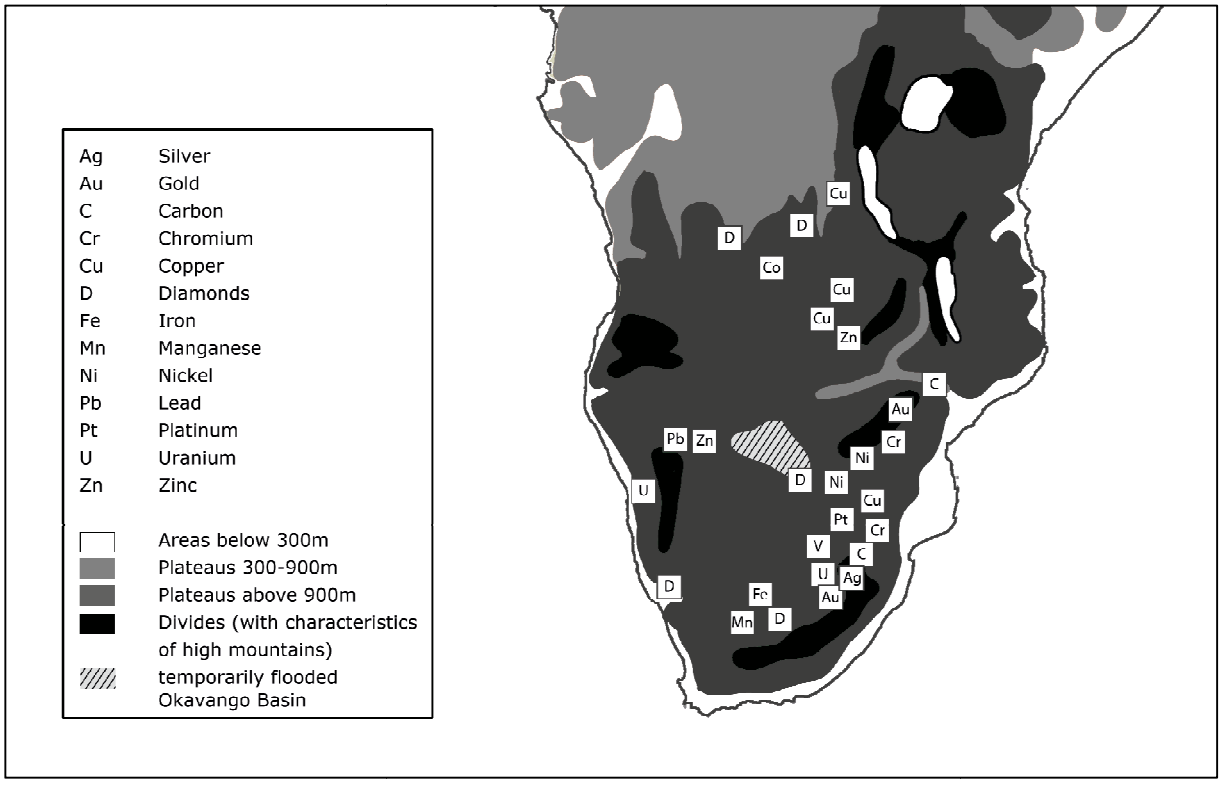
*Geomorphology and geology*

Looking at a map of Africa, one easily notes that there are no pronounced lowlands. Especially in Southern Africa, the coastal areas are narrow. They are moreover sharply separated from the interior parts of the continent by the Great Escarpment, which forms a semi-circle from Angola to Mozambique and poses a severe obstacle to transport infrastructure. The rivers that pass the Escarpment – many on the eastern and few on the western side for climatic reasons – are useless as waterways because they usually contain waterfalls. The river mouths are often deltaic. Sand bars, mangroves and shallow inshore waters are frequent. Large parts of the coasts are backed by lagoons and swamps. Only South Africa's coasts provide steep cliffs suitable for harbours (Yaw Osei & Aryeetey-Attoh 1997: 7-8). The geomorphology of Southern Africa's coastal zone therefore implies that the subcontinent is hard to link to overseas trading partners. The first problem is the lack of suitable places for harbours. Compared to its neighbour countries, South Africa, however, is in an advantageous position in this regard. The second problem is the close-to-shore barrier posed by the Great Escarpment. Southern Africa is disconnected from the rest of the world on account of its geomorphology. This disconnectedness increases the need and the probability for economic integration within the region.

The second striking feature of Africa's large-scale geomorphology is that, with a few exceptions, the entire continent lacks larger high-mountain regions. Africa's Precambrian basement complex, formed up to 3.5 billion years ago, has been vastly eroded and planed. On top of the basement complex, there are younger sediments. They form modestly waved plateau landscapes at an average altitude of 1,200m. Within this plateau, large basins occur. Southwards of the equator, the Congo and the Kalahari Basin are such formations. The landscape of the dry southern plateau is sometimes altered by cuestas and tectonic ridges.

Otherwise it is marked by monotonous peneplains and inselberge (Mountjoy & Hilling 1988: 14-16). Whilst this plateau landscape creates ideal conditions for transport infrastructure – there are almost no physical barriers to cross – some of the basins pose severe barriers for human movement because they coincide with certain bio- and hydro-geographical features. This becomes apparent by a comparison of the Congo and the Kalahari Basin. The former is marked, because of high precipitation, by a vast river network and a dense rain forest. It is almost impossible to cross the Congo Basin. The Kalahari Basin can, in most parts, hardly be distinguished from its surrounding plateau landscape because it neither contains dense vegetation nor significant rivers. Only in its very north does the Kalahari Basin pose an obstacle to transport because it is flooded by the Okavango River at the end of the rainy season. In addition to these barriers to human movement, tectonic activity has created the East African Rift Valley with steep slopes, which sometimes link areas at the sea level to areas of an altitude of 2,000m on a horizontal distance of 40 to 60km (Best & de Blij 1977: 7-10). It reaches from Eritrea to Kenya to Lake Victoria, Lake Tanganyika and Lake Malawi and cuts the very east of Southern Africa from the interior plateaux. Map 1 shows these geomorphological features of Southern Africa.

**Map 1: Geomorphology and Geology of Southern Africa**



Because of geomorphology, Southern Africa consists of (1) a vast core area, which includes the interior plateau and the Kalahari Basin. It is cut off from (2) the narrow coastal strip by the Great Escarpment. In the northeast, there is (3) another detached area. It consists of the plateau of Kenya and Tanzania, which is separated from the region's core area by the East African Rift Valley. Lastly (4) the Congo Basin constitutes the key barrier of Southern Africa ashore because of its bio- and hydro-geography. With regard to economic interaction, one may assume dense links in the core area, difficulties to connect the core area with the East African plateau and the coastal strip, almost no interaction with areas northwards of the Congo Basin and stagnation or outward orientation of the coastal strip. Using Spykman's terminology, South Africa, whose centre of economic activity and population, Gauteng, is located beyond the Great Escarpment, fulfils the key criterion of a continental power: geography favours trade ashore and severely hampers trade afloat.

Yet not only the surface of Southern Africa can be expected to have a significant influence on regional economics, but also what lies below the surface, i.e. geology, plays a key role. As already mentioned, the geological core of Africa, the Precambrian basement complex, is one of the oldest formations on earth. It can be divided into cratons: the Kaapvaal and the Zimbabwe Craton are marked by vast quantities of precious minerals. Further southwards, the Bushveld Complex is one of the richest mineral deposits in the world. It contains coal, chromium, copper, diamonds, iron, fluorspar, platinum and vanadium. Antimony, chromium, copper, iron, platinum, vanadium and zinc are also found in the northeast of South Africa (Eriksson 2000: 267-271, 280-281). The Witwatersrand is rich in deposits of gold, manganese and uranium. In the area near Postmasburg, diamonds, iron, manganese and zinc are found. South Africa's border region with Namibia comprises deposits of copper and zinc (Clark 1997: 205-207). The Congo, Kalahari and Tanzania Cratons are also rich in minerals. The Copperbelt in Congo and Zambia has an extension of 200km from east to west and 60 to 80km from north to south. Zimbabwe's 'Great Dyke', which spreads 480km from north to south, contains asbestos, chromium, gold, nickel, platinum and silver (Jürgens & Bähr 2002: 91). In Angola, Botswana and Congo, diamonds can be found in alluvial deposits. They are also located in the Namib Desert in vast quantities. More recent geological processes, dating back to the Carboniferous (280 to 345 million years ago), caused the formation of coal deposits in the Free State, Mpumalanga and KwaZulu-Natal. The area around Hwange and the Zambezi valley are also rich in coal. Most of it can be gained by

surface mining (Jürgens & Bähr 2002: 91). Map 1 shows the key mineral deposits in Southern Africa.

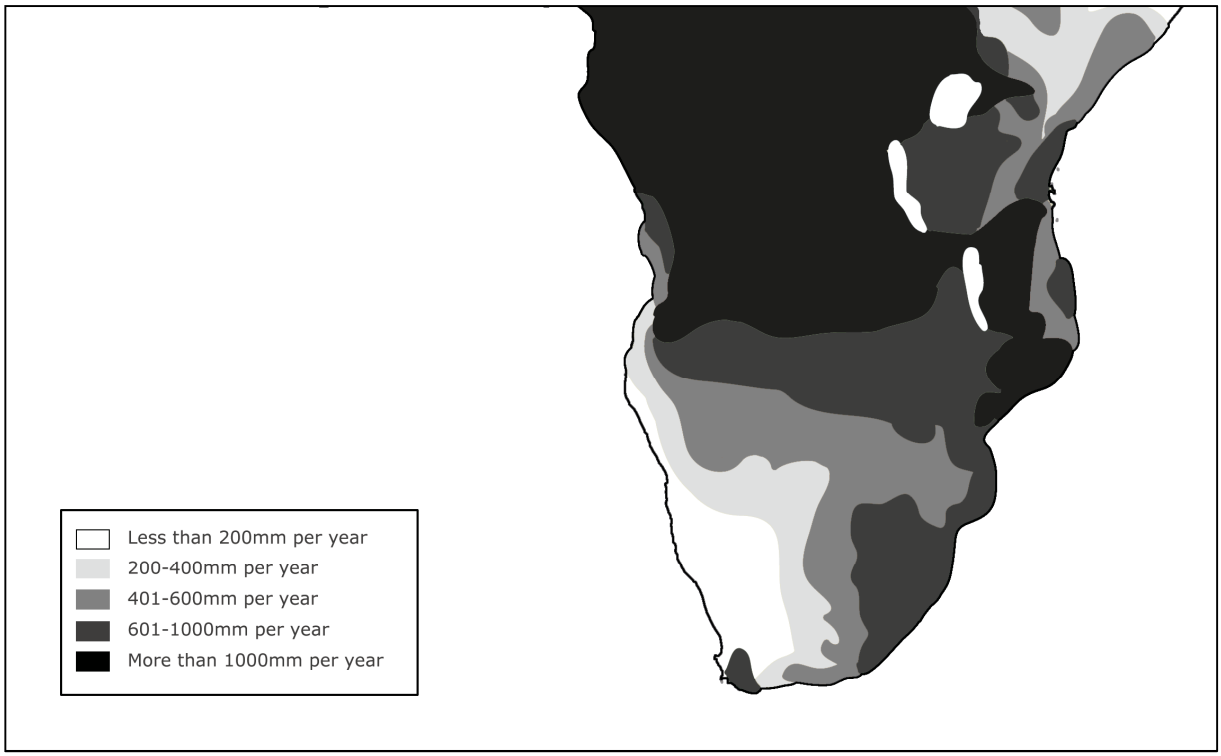
With the exception of cobalt, which is predominantly found in Congo and Zambia, South Africa possesses the greatest variety of mineral resources in Southern Africa. Since the other countries in the region are less diverse regarding their mineral resources, which can often only be used in combination with minerals from South Africa, their mining and industrial activities should, following geography, be linked to the ones of South Africa. The location of the mineral deposits therefore indicates a geographically-induced pattern of economic integration in Southern Africa. In other words, geology enforces the hypotheses derived from geomorphology: the geography of Southern Africa does not only favour a continental orientation of South Africa because of conditions for transport but also because of precious minerals which should, following geography, be the fundament of a regional mining-and-industry complex.

*Climate and soils*

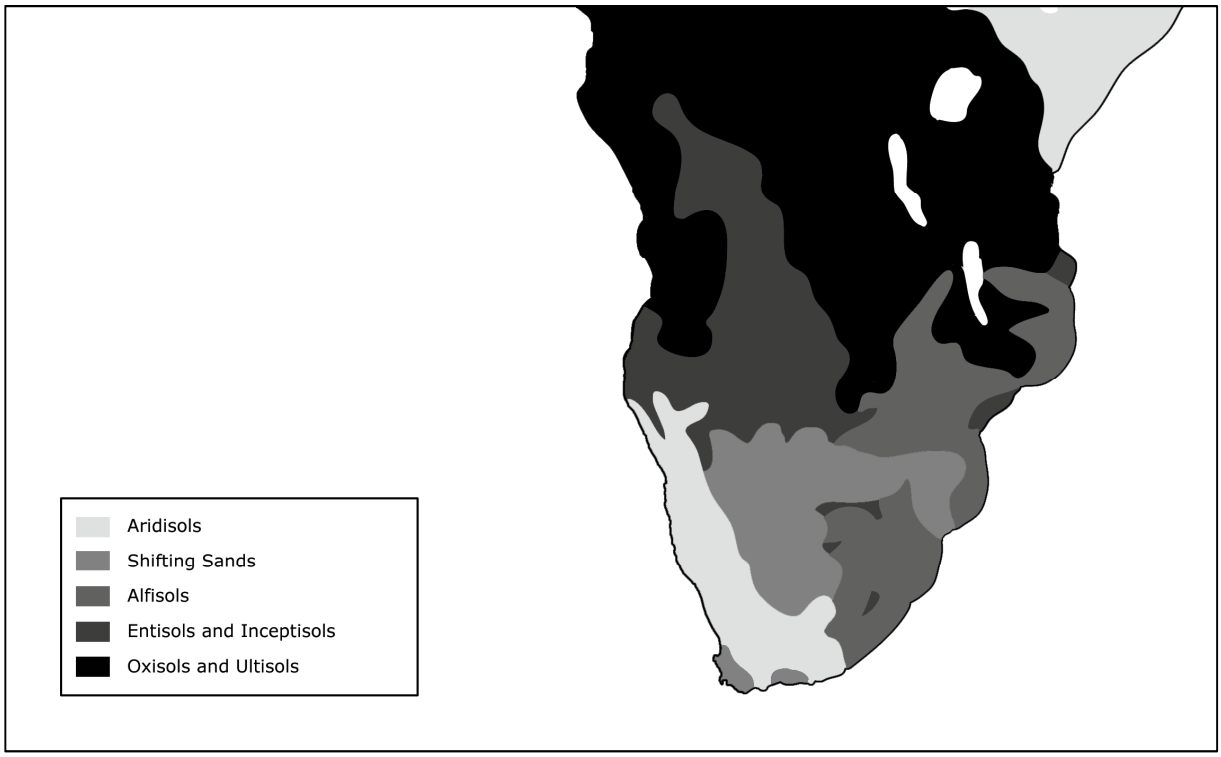
Besides geology and geomorphology, climate is highly relevant for economics in Africa. The first decisive feature is the shift of the Inner Tropical Convergence Zone (ITC) between the Tropic of Cancer and the Tropic of Capricorn. Inside the ITC, upwards air movement causes intense rainfall. Having lost its humidity, this air moves downwards outside the ITC causing aridity. The air movement in higher altitudes from the centre of the ITC to its edges leads to comparatively low pressure near the surface in the centre of ITC and attracts winds from subtropical regions. These winds converge in the ITC and lead to even higher rainfall. Whilst the Congo Basin thus receives more than 1,500mm of rain per year, summers are rainy but winters dry further north- and southwards. Greater distance to the equator means less rainfall: subtropical savannahs (more than 750mm precipitation per year, i.e. a seasonal lack of water) line up with deserts such as the Kalahari (less than 250mm precipitation, i.e. a permanent lack of water). The extreme southwest of the African continent is influenced by westerlies in winter. The westerlies cause a special climate, almost identical to the one of the Mediterranean area. Annual precipitation is about 600 to 800mm. Rainfall, however, varies strongly in the Cape region for topographical reasons. The Great Karoo, which is encircled by the South African Highveld and the Cape Ranges, is one of the driest parts of South Africa.

In the tropics, where temperatures and precipitation are high all year long, chemical weathering is a permanent process. It is not interrupted in winter like outside the tropics. Permanent chemical weathering reduces the quality of soils significantly because it leaves neither humus nor fresh minerals for the plants. German geographer Wolfgang Weischet (1977: 18-24) famously deduced the 'ecological disadvantage' of the tropics from this phenomenon. Exceptions from this edaphic disadvantage only occur in higher altitudes. Around the Great Lakes, temperatures are lower and fresh volcanic minerals are available near the surface (Weischet 1977: 25-26). This region is thus highly favourable to intense agriculture. Outside the tropics, the quality of soils increases. However, the subtropics suffer from a seasonal lack of water. Moreover, the variability of rainfall becomes a serious problem: in Botswana, the annual variability of rainfall sharply increases south-westwards from 25% at the border with Zambia to 80% in the extreme southwest. In western and southern Namibia, the variability reaches 50% to 70%. Around Windhoek, it is still 30% to 40%. Rainfall varies around 15% from the mean value at Angola's border with Congo. The variability reaches more than 50% at the coast southwards of Luanda, 30% to 50% in the far southeast and 100% in the far southwest. Even in humid Mozambique, there is a variability of 20% to 40%. In addition to these annual shifts, Southern Africa is marked by a natural, roughly 20-year long cycle of drier and rainier periods (Vogel 2000: 290-292). To cut a long story short: most parts of the tropics receive enough rainfall but lack the edaphic conditions for intense agriculture, whereas the subtropics possess sufficiently good soils but suffer from a high variability of rainfall. Map 2 shows the average annual precipitation in Southern Africa. Map 3 provides an overview of the soils in Southern Africa.

**Map 2: Precipitation in Southern Africa**




**Map 3: Soils in Southern Africa**



The second climatic feature that shapes Southern Africa is the sharp contrast between the east and west sides of the continent. As explained above, the comparatively low pressure in the ITC attracts air from the subtropics. Some of the resulting trade winds, those which are directed from land to sea, cause coastal deserts (e.g. the Namib) on the west side. They are hostile to human settlement because agriculture is practically impossible there. Other trade winds, those which are directed from sea to land, lead to high rainfall on the east side. The tropical climate, typical for the equatorial zone, thus reaches far southwards in Mozambique and KwaZulu-Natal. KwaZulu-Natal is marked by an average temperature of 20°C and annual precipitation of 1,000mm. Heavy rain and flooding is frequent in the coastal strip of Mozambique. This further decreases the aptitude of this part of Southern Africa for transport. Whilst the western coast is practically useless for agriculture and depends on fishing and mining activities, the eastern coast provides the opportunity to cultivate tropical crops in subtropical locations. The warm Agulhas Current and the cold Benguela Current enforce the characteristics of the very different climates on the eastern and western sides of Southern Africa.

Finally, Southern Africa's plateau serves as heating surface and thus poses another exception from the latitude-oriented climatic regions. In summer, the heated air on the plateau moves upwards. Air movement in higher altitudes causes, similar to what happens in the ITC, a comparatively low pressure on the ground. This attracts moist easterlies. The upward air movement and the easterlies cause precipitation of annually 500mm to 1,000mm. Rainfall declines sharply in the west to less than 450mm per year. Temperatures moreover decline with altitude, which means that evaporation decreases and at least the 500mm to 1,000mm annual rainfall in the east are sufficient for intense farming. The aridity of the west does not allow much more than extensive cattle grazing. South Africa's best soils are also found in the eastern interior for climatic reasons (Laker 2000: 343-347, 350-351). In short, with the exception of the Great Lakes region, the eastern interior of South Africa, extending partly to Zimbabwe, possesses the best conditions for intense agricultural use in Southern Africa. This area has the geographical potential to produce more than enough food for the entire region and may serve as a buffer to the shifting output of the subtropics, which results from the variability of rainfall.

Yet South Africa also suffers from a significant variability of rainfall. The mean value for the entire country has a 10% variance from the annual long-term average. On the subnational

scale, the problems of varying precipitation become even more apparent: the medium variation is lowest (less than 20%) in Gauteng and in the coastal areas, excluding the far northwest. Near the border with Mozambique and Zimbabwe, it reaches 20% to 30%. In the western interior and the northwest, it increases in semicircles from 20% to 30% in Bloemfontein and north of Cape Town to 40% to 50% near Upington (Wiese 1999: 44-46). Moreover, evaporation is extremely high with up to 2,800mm in the west. In the north, run-off of rivers (the amount of water which reaches the sea) is sometimes as low as 2% because of evaporation. Even in the eastern interior, evaporation, combined with low precipitation, can become problematic for farmers. The flow conditions of rivers are always irregular regardless of around 700mm rainfall in Gauteng (Jürgens & Bähr 2002: 66).

These climatic features are enforced by man-made climate change: man-made climate change is expected to be more intense in Africa than in the rest of the world. It will presumably lead to more rainfall in the tropical parts of Southern Africa in summer and less rainfall throughout the entire year further southwards. On the Southern African plateau, rainfall may decrease by 50%. Temperatures are projected to rise by up to 5°C during the next 75 years. The Sahara and Southern Africa will suffer from a comparatively high increase of temperatures. The Southern African plateau will be most strongly affected (Müller 2009: 21-25), apparently increasing evaporation significantly. In short, the contrast between the lack of water in the subtropics and abundance of water in the tropics will become more pronounced and cereal production will decline by up to 50% in the semi-arid parts of Southern Africa and the eastern parts of South Africa until 2080 (Fischer et al. 2005: 2077). Angola, Botswana, Namibia and Zambia are therefore expected to suffer from 20% shorter growing seasons. In some rather advantageous scenarios, small sections of the Great Lakes Region, southern Mozambique and south-eastern Zimbabwe will experience slightly longer growing seasons (Thornton et al. 2006: 33-38). Moreover, extreme events such as the El Niño Southern Oscillation will become more frequent. This will cause more droughts and more floods (Dollar & Goudie 2000: 52-53). In a wider sense, the natural shifts between drier and wetter periods in Southern Africa will become more pronounced, i.e. the difference between dry and wet periods, in terms of temperature and precipitation, will increase (Müller 2009: 20).

In sum, most parts of South Africa, including its economic core Gauteng, are marked by a lack of water, although Gauteng and its surrounding areas are the most suitable parts for

agriculture in Southern Africa. This natural shortness of water is increased by the fact that South Africa already has the most intense agriculture, the most advanced industrial sectors and the most consuming private household of the entire region: South Africa possesses only 10% of all water resources in Southern Africa. However, it accounts for 80% of the consumption. Following the definition used by the United Nations, South Africa was already on the threshold from a water-stressed to a water-scarce country 12 years ago (Wiese 1999: 53-60). In about 40 years, all of South Africa, the neighbouring parts of Botswana, Mozambique and Zimbabwe as well as the Angolan-Namibian border region will suffer from severe water stress, i.e. more than 40% of all locally available water resources will be withdrawn for human use and accordingly be degraded and depleted (Alcamo et al. 2007: 251). National programmes and the inclusion of tiny Lesotho will not be sufficient in the future. Given the abundance of water in the tropical part of Southern Africa, especially in the Democratic Republic of Congo (DRC), South Africa will depend on its continental neighbours, either as providers of water or as transit countries, in the near future in order to meet its water demands. Taking a broader perspective, the countries located in subtropical Southern Africa should be even more interested in regional integration in order to gain access to the water resources of the DRC. Provided sufficient pipelines are built, the DRC has the potential to balance the variability of rainfall in its subtropical neighbouring countries and contribute to increasing and stable agricultural yields there.

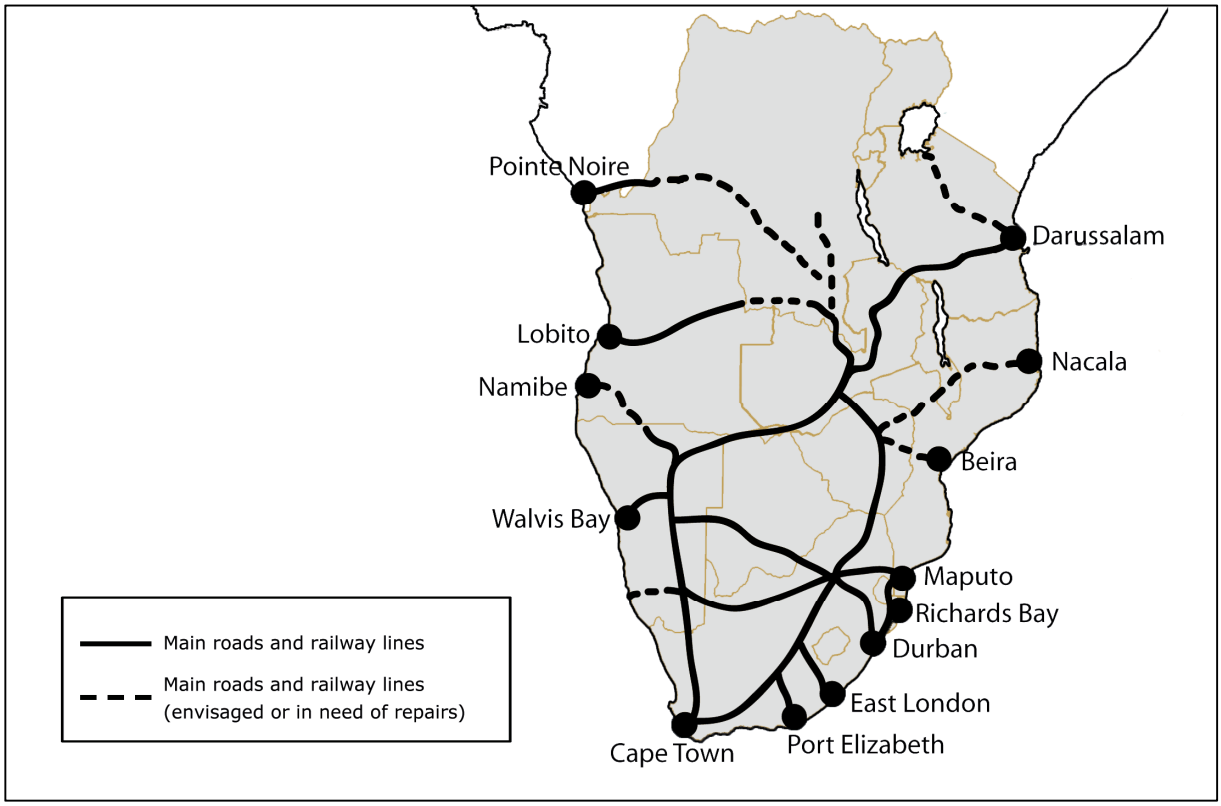
## 3. The impact of geography on economics: transport, trade and integration

Since Southern Africa was first connected to the European economy via harbours and railway lines in the colonial era, most of the region has been highly dependent on South Africa as direct trading partner – also because of South Africa's advanced manufacturing sector – and as gate for extra-regional trade. Railway lines and roads connect the landlocked countries, and even some countries that possess long coast lines, to South African harbours. Capacities for inland transport and for shipping are only sufficient in South Africa (Odén 2000: 246-247). Economist and political scientists explain this role of of South Africa as regional node of transport and trade by advantages of scale and by contemporary and past policies: shipping goods from Malawi via Durban is cheaper than via Beira because of the total quantity of goods shipped via Durban (Ahwireng-Obeng & McGowan 1998: 14). South Africa possesses a central position in most of today's regional 'Spatial Development Initiatives' (Plagemann & Scholvin 2010) and military force was used by

the apartheid regime to destroy alternative gateways such as the railway line from Harare to Beira (Gibb 1991: 28-33). I do not claim that these explanations are wrong. On the contrary, the economic and political scientific perspectives are essential if one wants to understand why South Africa serves as gateway to Southern Africa. Yet geography offers a different perspective, which contributes to obtaining the entire picture.

It is evident that transport infrastructure (i.e. railway lines and roads) is easier to build in plain areas. Whenever physical barriers such as mountain ranges, vast rivers or dense forests occur, the costs of building transport infrastructure will rise significantly. Given the geomorphology of Southern Africa, it is plausible to assume that transport infrastructure will primarily connect places located on the interior plateau. Connections to the coasts are difficult because of the Great Escarpment. The East African Rift Valley and the Congo Basin delineate the Southern African plateau as an area with dense transport interlinks. A map of existing transport infrastructure in Southern Africa shows this structure.

**Map 4: Transport infrastructure in Southern Africa**



Interviews with local experts support this delineation of Southern Africa: according to Transnet's Senior Accounts Executive for Africa Trade (Mogale 2010), railway links to Zambia and Zimbabwe are comparatively good. Transport to the DRC suffers from management problems of the DRC's national railway system but is, at least regarding infrastructure, possible to the Katanga Province. With regard to road infrastructure, the Trans-Kalahari Corridor provides an efficient link from Gauteng to central Namibia. South Namibia is connected to the Cape region via the Trans-Oranje Corridor. Links to Zambia and the DRC's Katanga Province are provided by the Trans-Caprivi Corridor. The Trans-Cunene Corridor will connect Namibia, and therefore also South Africa, to Angola. Sufficient transport infrastructure, however, ends a few kilometres before the Angolan border (Plagemann & Scholvin 2010: 4-5). In contrast to what geography suggests, Angola is hardly linked to South Africa by transport infrastructure (Smith 2010). North-eastwards connections from South Africa are provided by the Maputo Development Corridor and the North-South Corridor (direction: Zambia). Connections to Malawi and especially to Tanzania, e.g. via TAZARA, are hampered by the East African Rift Valley: mudslides are frequent on the TAZARA line, and east-to-west transport in Malawi also suffers from the steepness of the terrain (Plagemann & Scholvin 2010: 6-7).

Quantitative data – South Africa's share of the exports to and imports from its neighbours – further supports the thesis that geography matters. Table 1 shows the major trading partners of all member countries of the Southern African Development Community (SADC). South Africa is a key trading partner, especially in terms of imports, for Botswana, the DRC, Lesotho, Malawi, Mozambique, Namibia, Swaziland, Zambia and Zimbabwe. With the exception of Angola, these nine countries are the ones that should, following geography, be most intensively linked to South Africa. The fact that Tanzania, the most distant country, which is also located beyond the African Rift Valley, and the island countries, separated from South Africa by the Indian Ocean, do not possess significant trade links with South Africa can be explained by the fact that geography discourages transport between them and South Africa. Angola's trade relations clearly contradict what geography suggests.

**Table 1: Major trading partners of the SADC countries**

| | Imports | Exports |
|---|---|---|
| Angola | 1. Portugal 19.7%<br>5. South Africa 6.6% | 1. US 32.1%<br>5. South Africa 4.5% |
| **Botswana** | **1. South Africa 78.6%**<br>2. UK 5.8% | 1. 56.8% UK<br>**2. South Africa 20.3%** |
| **DRC** | **1. South Africa 22.5%**<br>2. Belgium 10.3% | 1. Belgium 23.6%<br>- |
| **Lesotho** | **1. South Africa 78.2%**<br>2. China 9.8% | 1. US 68.5%<br>**2. South Africa 17.6%** |
| Madagascar | 1. France 13.6%<br>4. South Africa 6.4% | 1. France 31.8%<br>- |
| **Malawi** | **1. South Africa 36.1%**<br>2. India 8.5% | 1. Germany 11.7%<br>**2. South Africa 10.0%** |
| Mauritius | 1. India 21.2%<br>4. South Africa 7.4% | 1. UK 35.1%<br>- |
| **Mozambique** | **1. South Africa 36.7%**<br>2. Australia 8.5% | 1. Italy 19.4%<br>**4. South Africa 12.3%** |
| **Namibia** | **1. South Africa 67.8%**<br>2. UK 8.0% | **1. South Africa 31.8%**<br>2. UK 15.0% |
| Seychelles | 1. Saudi Arabia 17.6%<br>5. South Africa 6.4% | 1. UK 23.7%<br>- |
| **Swaziland** | **1. South Africa 95.6%**<br>2. Japan 0.9% | **1. South Africa 59.7%**<br>2. US 8.8% |
| Tanzania | 1. China 12.0%<br>3. South Africa 7.7% | 1. China 10.3%<br>- |
| **Zambia** | **1. South Africa 47.4%**<br>2. UAE 6.3% | 1. Switzerland 41.8%<br>**2. South Africa 12.0%** |
| **Zimbabwe** | **1. South Africa 50.7%**<br>2. China 8.4% | **1. South Africa 33.8%**<br>2. DRC 8.3% |

Source: CIA World Factbook and United Nations

The dominance of South Africa as source of imports for most countries in continental Southern Africa correlates with the expansion of South African private business there. The goods that companies such as Pick n Pay or Shoprite acquire for the South African market

can easily be transported to the rest of continental Southern Africa. Given that South Africa's neighbours possess comparatively weak national markets but favourable conditions for transport to South Africa, many overseas goods available in these countries are imported via South African retailers, who mainly sell their goods on the South African market. Without the strong South African demand, most overseas goods would hardly be available at reasonable prices in countries like Botswana, Namibia or Zambia (Hoffmann 2010). Other businesses from the tertiary sector, however, transcend geography because they are hardly limited by physical barriers: South African telecommunication firms, tourism companies and financial service providers had already gained dominant positions not only in Southern Africa but also in the most lucrative markets of East and West Africa (e.g. Ghana, Kenya and Nigeria) in the second half of the 1990s (Halbach & Röhm 1998: 78-80, 84-89).

Other economic links are created by South Africa's mining companies, which use the strength they gained from exploiting the vast mineral reserves in South Africa in order to expand throughout Sub-Saharan Africa. South Africa is the world's leading producer of chrome, diamonds, gold and platinum. Only a few years after reliable statistics on South African investment in Africa became available, the expansion of South African companies included gold mining in West Africa, diamond mining in Angola, Congo, Namibia and West Africa as well as coal mining in Nigeria, Zambia and Zimbabwe (Halbach & Röhm 1998: 78-80, 84-89). Even more importantly, South African companies possess the expertise and knowledge necessary to evaluate the feasibility of mining projects in Africa and are thus necessary partners for overseas companies which invest in African mining.[2] The fact that leading mining companies from South Africa, such as AngloGold Ashanti, are globalised in their activities and that the mining sectors of South Africa's neighbours are not dominated by South African mining companies but divided amongst firms from all over the world, however, requires an adjustment regarding the impact of geology on Southern African economics: since investment in mining activities does not require the transport of mass goods but primarily expertise and knowledge, the strength of South Africa's mining sector can rather be explained by geography than by its patterns of investment. South Africa is, as shown, very rich in resources (both quantity and variety). Its mining companies have therefore acquired a significant amount of expertise and knowledge. Going back to Mackinder, I conclude that geography guided history in Southern Africa in the sense that the quantity and quality of mineral resources in South Africa laid the foundation for the rise of

[2] Interview with an economic advisor at the American embassy in Pretoria, August 2010.

South African mining companies. More generally, geology explains why South Africa was able to develop a manufacturing sector and export its products to the rest of continental Southern Africa. I acknowledge that this path was only taken because of political factors (e.g. the strong support for the national industry by the apartheid regime) but as Fairgrieve argued, geography provided the necessary material basis for this path and induced it. A leading mining sector could only develop in South Africa because the mineral resources of the neighbouring countries are limited and mining companies are highly dependent on advantages of scale. The abundance of resources in South Africa induced the rise of a mining-and-industry complex there.

Lastly, climate contributes to understanding economic and political integration in Southern Africa. In 1997, the DRC joined SADC. The DRC does not share historical and political features with the other members of SADC to explain its membership. It neither belonged to the Frontline States nor was it a member of the Southern African Development Coordination Conference (SADCC). I suggest that the admission of the DRC to SADC results from the fact that the DRC is of high economic value to SADC for geographical reasons. As elaborated above, the subtropical countries in Southern Africa suffer from a temporal lack of water and a high variability of rainfall. Man-made climate change severely increases these problems. What the subtropical countries need in order to stabilise and increase their agricultural production and provide enough fresh water to private households and industries is a stable source from which they can acquire water especially in winter. South Africa also suffers from a lack of water. Its agricultural sector will hardly sustain its current output and productivity if South Africa does not find a way to gain access to a stable source of water. Given this background, the admission of the DRC to SADC makes perfect sense. Being located in the inner tropics, the DRC is marked by an abundance of water. It has what its southern neighbours urgently need. Moreover, the potential for hydroelectricity is enormous in the DRC: the Inga Dam alone can generate 50,000 megawatts. The Congo and Zambezi Rivers are expected to be able to generate 150,000 megawatts altogether. Yet given that the countries that possess this vast potential for hydroelectricity are economically too weak to invest sufficiently, regional integration and investment from South Africa are the key to generate enough electricity for Southern Africa. South Africa's energy giant Eskom has already realised this potential and therefore guarantees to buy a certain quantity of electricity from future power plants in the region so that South Africa's neighbouring countries can build these plants (Bredenkamp 2010). The integration in Southern Africa,

driven by South Africa's need for electricity and its neighbours' need for investment in their potential to generate electricity, follows a path implied by geography.

## 4. Outlook

As shown in the previous sections, geography offers significant contributions to understanding the economics of Southern Africa. A geopolitical perspective reveals what economists and political scientists do not see. The ideas that I outlined above may be used for two purposes. The first is an analysis of the geography of Southern Africa in order to advise economic and political decision makers. The fact that transport on the core plateau of Southern Africa is easy and that South Africa is therefore already today a key trading partner for most of the countries south of the Congo Basin implies that it is sensible to concentrate on economic integration in this region. Accordingly steps (e.g. the admission of Zambia and Zimbabwe to SACU) are far more likely to be successful than projects such as the Common Market for Eastern and Southern Africa (COMESA) because they have a geographical basis. Moreover, the geography of Southern Africa indicates why the region is of outstanding relevance to South Africa. The region possesses the resources (energy and water) that South Africa needs in order to overcome its deficits and meet its socio-economic goals. Efforts to become a member of the (Brazil, Russia, India and China) BRIC network may be politically reasonable but geography indicates that South Africa's economic needs ought to be met in Southern Africa. The subtropical countries of Southern Africa should stick to regional integration for the same reasons.

Second, further research may be carried out in order to tackle some scientific shortcomings of my analysis. Strictly speaking, my geographical explanations for regional economics are only plausible. They are not intersubjectively verifiable. I did not prove that geography is the central or even the only factor that explains certain economic patterns in Southern Africa. Correlations, such as the one between trade and the geographical conditions for transport, are not causal relations. Causal relations are very difficult to track. Quantitative methods are hardly helpful in this context. They may only render the causal relation more plausible by using additional or more sophisticated data. Interviews with representatives of companies involved in regional trade and transport as well as representatives of ministries of transport, however, provide a way to trace processes of decision making. These processes of decision making can be shown by cognitive maps, which are an interpretative scheme used by actors to filter events and structures (e.g. the geography of Southern Africa) and connect them with

their goals and options for action (Axelrod 1976, Shapiro & Bonham 1973). Cognitive maps show whether geography is considered relevant and whether key decision makers act accordingly.

Such an approach is, at first glance, at odds with the understanding of geography elaborated above – material structures in space matter and what humans think is irrelevant. It does, however, match Fairgrieve's highly disputed idea that geography has an impact on the strategic thinking of humans. Fairgrieve (1917: 66, 102-103, 117) argues that geography favours certain courses of action which then became patterns guiding human action. Colin Gray (1988: 193) uses the term 'strategic culture' for this concept. This way, human thinking is not totally free anymore. It unconsciously reflects geography, which tends to determine, hence control, human decision making despite Fairgrieve's initial statement that humans are free in their choice of action. With regard to Southern Africa, geography has induced economic links on the plateau delimited by the Congo Basin and the East African Rift Valley for centuries. One may assume that this geographical inducement has become a self-sustaining pattern in the minds of key decision makers because they are socialised within a strategic culture that says that geography favours economic interaction in the delineated region. Process tracing and cognitive maps can reveal whether geography has such a strong impact – an impact on the minds of people.

**References**

Ahwireng-Obeng, F. & McGowan, P. 1998. Partner or Hegemon? South Africa in Africa I. *Journal of Contemporary African Studies* 16.1: 5-38.

Alcamo, J. et al. 2007. Future Long-Term Changes in Global Water Resources Driven by Socio-Economic and Climatic Changes. *Hydrological Sciences Journal* 52.2: 247-275.

Axelrod, R. (ed.). 1976. *Structure of Decision: The Cognitive Maps of Political Elites*. Princeton: Princeton University Press.

Best, A. & De Blij, H. 1977. *African Survey*. New York: John Wiley and Sons.

Bredenkamp, N. 2010. Interview with Trade and Regional Development Department of Eskom, 12 August 2010. Johannesburg.

Clark, N. 1997. The Economy. *In* Byrnes, R. (ed.), *South Africa: A Country Study*. Washington: Library of Congress (third edition). pp. 171-246.

Dollar, E. & Goudie, A. 2000. Environmental Change. *In* Fox, R. & Rowntree, K. (eds.), *The Geography of South Africa in a Changing World*. Oxford: Oxford University Press. pp. 31-59.

Eriksson, P. 2000. The Geological Template. *In* Fox, R. & Rowntree, K. (eds.), *The Geography of South Africa in a Changing World*. Oxford: Oxford University Press. pp. 257-283

Fairgrieve, J. 1917 [1915]). *Geography and World Power*. London: University of London Press.

Fischer, G. et al. 2005. Socio-Economic and Climate Change Impacts on Agriculture: An Integrated Assessment, 1990-2080. *Philosophical Transactions of the Royal Society B-Biological Sciences* 1463: 2067-2083.

Gibb, R. 1991. Imposing Dependence: South Africa's Manipulation of Regional Railways. *Transport Reviews* 11.1: 19-39.

Gray, C. 1988. *The Geopolitics of Super Power*. Lexington: University Press of Kentucky.

Halbach, A. & Röhm, T. 1998. *Das neue Südafrika: Wachstumsimpulse für den Schwarzen Kontinent?* München: Weltforum-Verlag.

Hoffmann, J. 2010. Interview with Special Trade Advisor at the Namibian Agricultural Trade Forum, 2 August. Windhoek.

Jürgens, U. & Bähr, J. 2002. *Das Südliche Afrika: Geschichtliche Umbrüche zu Beginn des 21. Jahrhunderts: Zusammenwachsen einer Region im Schatten Südafrikas*. Gotha: Klett-Perthes.

Laker, M. 2000. Soil Resources: Distribution, Utilization, and Degradation. *In* Fox, R. & Rowntree, K. (eds.), *The Geography of South Africa in a Changing World*. Oxford: Oxford University Press. pp. 326-360

Luttwak, E.N. 1990. From Geopolitics to Geo-Economics: Logic of Conflict, Grammar of Commerce. *The National Interest* 20: 17-23.

Mackinder, H.J. 1890. The Physical Basis of Political Geography. *Scottish Geographical Magazine* 6.2: 78-84.

Mogale, D. 2010. Interview with Senior Accounts Executive for Africa Trade of Transnet, 16 August. Johannesburg.

Mountjoy, A. & Hilling, D. 1988. *Africa: Geography and Development*. London: Hutchinson.

Müller, C. 2009. *Climate-Change Impact on Sub-Saharan Africa?: An Overview and Analysis of Scenarios and Models*. DIE Discussion Paper 3 / 2009. Bonn: Deutsches Institut für Entwicklungspolitik (DIE).

Odén, B. 2000. The Southern Africa Region and the Regional Hegemon. *In* Hettne, B. et al. (eds.), *National Perspectives on the New Regionalism in the South*. New York, : Machmillan. pp. 242-264.

Plagemann, J. & Scholvin, S. 2010. Transportkorridore im südlichen Afrika: Entwicklungsmotoren und „weiße Elefanten". *GIGA Focus Afrika* 11 / 2010, Hamburg.

Shapiro, M.J. & Bonham, M.G. 1973. Cognitive Process and Foreign Policy Decision-Making. *International Studies Quarterly* 17.2: 147-174.

Smith, J. 2010. Interview with Chief Executive Officer of the Walvis Bay Corridor Group, 25 July. Windhoek.

Spykman, N. 1938. Geography and Foreign Policy II. *American Political Science Review* 32.2: 213-236.

Spykman, N. 1942. America's Strategy in World Politics: The United States and the Balance of Power. New York: Harcourt Brace.

Spykman, N. 1944. *The Geography of the Peace*. Hamden: Archon Books.

Spykman, N. & Rollins, A. 1939. Geographic Objectives in Foreign Policy II. *American Political Science Review* 33.4: 591-614.

Thornton, P.K. et al. 2006. *Mapping Climate Vulnerability and Poverty in Africa*. Nairobi: Department for International Development (DFID).

Vogel, C. 2000. Climate and Climatic Change: Causes and Consequences. *In* Fox, R. & Rowntree, K. (eds.), *The Geography of South Africa in a Changing World*. Oxford: Oxford University Press. pp. 284-303.

Weischet, W. 1977. *Die ökologische Benachteiligung der Tropen*. Stuttgart: Teubner.

Wiese, B. 1999. *Südafrika, mit Lesotho und Swasiland*. Gotha: Klett-Perthes.

Yaw Osei, W. & Aryeetey-Attoh, S. 1997. The Physical Environment. *In* Aryeetey-Attoh, S. (ed.), *Geography of Sub-Saharan Africa*. New Jersey: Prentice Hall.. pp. 1-34.