

Mozambique's Megaproject-Based Economic Model: Still Struggling with Uneven Development?



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1 Introduction

It was certainly difficult to foresee at the end of the civil war in 1992 what Mozambique's situation would be like in 25 years' time, both in political and socio-economic terms. There is no doubt that plenty of achievements have been made. Yet, at the same time, the drawbacks and limits to Mozambique's current development model—with it lagging behind much of the rest of the world—are becoming more and more obvious. It has not been hard to enhance the satisfaction of basic needs, coming from a background of an armed conflict. For instance life expectancy increased from 43 years in 1990 to 58 in 2016, and the primary education completion rate rose from 27% to 48% in the same period. Something similar happened with per capita income levels: gross national income per capita (in purchasing power parity) increased from USD 240 in 1990 to USD 1190 in 2016 (World Bank 2017). Nevertheless, Mozambique ranks 181 out of 188 on the Human Development Index (HDI) (UNDP 2016), as an expression of its low levels of development—as measured by education, income and health indicators—in comparison with the rest of the world.

After long years of considerable financial dependence on the international donor community, as well as only limited economic activity until very recently, Mozambique has lately experienced high economic growth and increasing foreign direct investment (FDI)—closely linked to natural resources as well as to megaprojects in a number of sectors. Among others, the following should be mentioned in this regard:

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the discovery and exploitation of large reserves of coal and natural gas; investments in infrastructure for the enhancement of the country's hydropower capacity at Cahora Bassa (Tete Province) and other dams; and, the emergence of the country as one of the leading aluminium exporters across Africa due to the huge investments made in the smelter Mozal, located near Maputo. Megaprojects and the dynamics around them—with a high level of attraction of FDI—have become an essential feature of Mozambique's current economic model. This has been particularly noticeable since the year 2000, with the aluminium, coal and natural gas sectors becoming the country's industrial backbone (Almeida Santos et al. 2017). There is concern, however, regarding the effects of this development on the rest of the economy, in particular because of the low-value-added nature of mostly outward-oriented and geographically highly concentrated economic activities (Castel-Branco 2010, 2015; Massingue 2015). It begs the question of to what extent these megaprojects can really make a difference when it comes to the structural transformation of the economy through linkages with other sectors, moving up in global value chains (GVCs), the creation of higher value-added activities, more and better jobs, positive social change and, in short, better living conditions for the majority of Mozambicans.

In order to answer this question we first review different theoretical approaches regarding the possibility of economic diversification and transformation, focussing on GVCs and linkages. We then analyse the antecedents, recent developments and current as well as potential effects of the changes that have occurred due to megaprojects in Mozambique related to coal, hydropower and natural gas, as well as the aluminium industry. We show that remarkable transformations are taking place in all of these, including the expansion of production, the attraction of high levels of FDI and the emergence of new players from the Global South that now compete with transnational companies (TNCs) from traditional economic partner countries of Mozambique. Next, we apply the aforementioned approaches to the specificities of the Mozambican case. We highlight the potentials of, as well as the limits and drawbacks to, the country's current economic model. We finally draw conclusions, and provide recommendations for improving this model.

2 Conceptual and Theoretical Considerations

One of the dimensions of economic globalisation that has considerable implications for developing countries is the emergence of GVCs. The possibility of fragmenting the production process and offshoring parts of it has given opportunities to developing countries to join GVCs, as China and other Asian countries besides have done. In fact, Asian integration into GVCs is often cited as a model for promoting economic transformation in Africa. The abundance of labour and low-to-moderate requirements in terms of infrastructure, skills and technology in some industries potentially open the way for this (Gereffi 2014; Gereffi et al. 2005). The concept of backward integration serves to better assess a country's participation in GVCs. A

high backward integration level means that domestic industries add value at more complex stages. Reflecting its high dependence on resource exports, Africa's exports embed only 15% of foreign value added, whereas the figure is, on average, 20% for developing countries; so there is certainly room for the continent to move forwards. Regarding the specific situation of Mozambique, the corresponding figure stood at 13% between 2008 and 2012, down from 17% for the period from 1991 to 1995 (Allard et al. 2016).

Approaching value chains from a regional perspective offers interesting insights, since it is part of the regional integration debate. In Africa regional backward integration—that is, foreign value added coming from the continent as a percentage of total exported foreign value added—was 9% in 2011, and merely 6% in the case of Mozambique itself. The corresponding figure for Asia, meanwhile, was 39% (UNECA 2015), indicating a much higher share of manufactured exports. In short, Mozambique appears to have lots of potential to increase its participation in regional value chains (RVCs). Participating in global or regional value chains is regarded as a tool for creating linkages between different economic activities, and promoting economic diversification and structural transformation, a topic that has recently received particular attention from international institutions—especially when it comes to outward-oriented economies specialised in commodity production (UNCTAD 2012a, 2017; UNECA 2013, 2016). The World Bank, in particular, supports the idea of the insertion into GVCs by developing countries as a way to become more competitive, and as an alternative to inward-looking, protectionist strategies (Farole and Winkler 2014; Taglioni and Winkler 2016).

The importance of creating linkages—a proposal first put forward by Hirschmann (1958), and recently applied to the specifically African context by Morris et al. (2012) and Morris and Fessehaie (2014)—to some extent shows the return to structuralist economics after three decades of neoclassical dominance in the field of development economics. In our reading of this literature, this implies that promoting competitiveness and setting up a sound macro-economic framework is not necessarily a priority. Development is rather about balancing the sectoral structure of the economy through diversification. This would create productive employment in higher value-added economic activities—that is, transforming low-productivity activities into more productive ones. Most research on GVCs accordingly focusses on the manufacturing sector and on the success stories of emerging economies in Asia and Latin America, as well as on the competitiveness of companies in particular sub-sectors such as the apparel industry. Those examples are not relevant for countries like Mozambique, given that manufacturing is still in its infancy there and general levels of competitiveness displayed by local firms are low (World Economic Forum 2017); problems that are, at least partly, due to megaprojects, for example through 'Dutch disease' effects (more on this later). The services sector has recently grown, but essentially only for the provision of the domestic market and disconnected from GVCs (UNCTAD 2012b).

Given these differences between Mozambique, on the one side, and typical cases in GVC studies, on the other, for those countries in which outward-oriented commodity or energy production is the norm—with a high degree of participation therein

of TNCs—other theoretical contributions can also be appealing. By this we mean the literature about enclave economies, starting with Singer (1950). Also significant is Bair (2005) and her critical view of the GVC approach, especially when it comes to recognising structural factors such as the international political economy of dependency and uneven development.

3 Mining Megaprojects: Emerging Coal and Natural Gas Extraction

Coal and natural gas are the mining sub-sectors that have been most radically transformed in the last two decades, with potential for further expansion in the foreseeable future too. All this has come as a consequence of the discovery of immense reserves of coal and natural gas in the central and northern provinces, and the subsequent attraction of large-scale FDI from some of the largest TNCs in the mining sector. Although the extractive sector holds a share of gross domestic product of only 4%, it grew by 11% in 2016 and is believed to be the main driver of economic growth in Mozambique now (Almeida Santos et al. 2017).

3.1 Coal

Coal has traditionally been exploited in north-western Tete Province in the form of small-scale mining, for both domestic consumption and export purposes. Production levels were very low during the civil war (1977–1992). Later on, small amounts of coal were mined and exported to Malawi by the state-owned Carbomoc Company. All that began to change in 2004, when the Brazilian conglomerate Vale won the right to exploit the Moatize Coal Field, considered to hold one of the largest untapped reserves of this resource anywhere in the world. After a major investment of USD 1.7 billion by Vale in an open-cast mining project, it commenced production and exportation via the Sena Railway Line to the port of Beira in 2011. Vale's production in Moatize went from 3.7 million tonnes in 2012 to 5.5 million in 2016, still far from the estimated maximum capacity of 11 million tonnes a year (US Geological Survey 2012; Vale 2017a). Following the increasing trend of previous years, production reached 2.4 million tonnes in the first quarter of 2017—setting a quarterly record in the process (Vale 2017b).

The other main company involved in coal extraction in Mozambique was initially United Kingdom-based Rio Tinto, since it bought the Australian company Riversdale some months after the latter had opened a mine near the village of Benga with its Indian joint venture partner Tata Steel, in 2011. Rio Tinto, which owned 65% of the project, sold it to the Indian state-owned consortium International Coal Ventures (ICVL) in 2014. ICVL also bought the Zambeze Coal Project from

Rio Tinto in the same year, thus becoming the second major player involved in coal mining in Mozambique alongside Vale. By now, an increasing number of other firms such as Anglo American from South Africa, the Eurasian Natural Resources Corporation from Kazakhstan, Jindal Steel & Power from India and the Nippon Steel & Sumitomo Metal Corporation are also involved. As a result of the spread of coal mining in Tete Province in recent years, production would grow from almost one million tonnes in 2011 to eight million in 2016 (Deloitte 2016). It is believed that further expansion of local coal mining will take place in the near future, in order to satisfy the demand of the emerging Asian markets. Furthermore there seems to be high potential for the discovery of new coal reserves in other provinces, especially in Niassa and, to a lesser extent, in Cabo Delgado and Manica (Selemane 2013).

Apart from the large volume of reserves discovered, which amount to around 23 billion tonnes, the other factor that explains the rapid expansion of coal mining is its high quality. This is particularly noticeable in the case of metallurgical coal, which is more abundant in Mozambique and also of higher quality than that of competitors such as Australia, South Africa and the United States. Among all the reserves found so far, around 70% are made up of metallurgical coal and the remaining 30% of thermal coal. Most of this coal extracted—and especially the type used for the aluminium, iron and steel industries—will be oriented towards the export market. The location of the Mozambican ports on the Indian Ocean makes its coal even more suitable for the supplying of Asian markets, China and India in particular. Mozambique can become, in that way, a suitable alternative to established large exporters like Canada and the US. Lately though, the expansion of coal mining has been affected by the decreasing prices for coking coal in international markets, due to the slowdown in China's and India's demand for it. In consequence Beacon Hill Resources, for example, suspended production in 2013.

In any case the most restrictive factor for the further expansion of coal production in Mozambique has been transport infrastructure, limited for some years to the Sena Railway Line (Scholvin and Plagemann 2014). That has changed very recently due to some massive investments made: after 3 years of works and prior to Beira's seaport coal terminal upgrade, the expansion on the Sena Railway Line was completed in 2016. It has increased its annual capacity from 6 million to 20 million tonnes (Macauhub 2016). Also in 2016, work on the Nacala–Tete Railway Line—which had begun in 2012—was finally completed. This new transport infrastructure is now capable of handling 22 million tonnes of cargo a year (Almeida Santos et al. 2017). The construction of the Nacala–Tete Railway Line, through Malawi, has been led by Vale and by Mozambique's state port and railway operator, Caminhos de Ferro de Moçambique. The project also includes a new export terminal at Nacala-a-Velha, able to store around one million tonnes of coal and reaching a capacity of approximately 150 ships a year (Railway Gazette 2017). Despite these significant improvements, there is still talk of building a new railway line, rehabilitating the port of Quelimane and constructing a new offshore floating terminal in Macuze, north of Quelimane, a plan initially proposed by Rio Tinto (Hanlon 2015; Macauhub 2016; Selemane 2013). Map 1 provides an overview of Mozambique's resources and related transport infrastructure:



Map 1 Megaprojects, resources and transport infrastructure in mozambique. Source: Compilation by Sören Scholvin

What is more, the expansion of coal production is going to be extremely welcome—not only in terms of increasing export capacity but also in order to satisfy the increasing demand that results from new coal-fired power stations in Mozambique, likely to commence operations between 2018 and 2025. These are projects such as ICVL's 300-megawatt (MW) plant, which could be expanded to 2000 MW later on, Jindal Africa's 150-MW power station, with a possible capacity of more than 2500 MW in the future, Ncondezi Energy's 300-MW plant, which could expand to 1800 MW, a 300-MW plant to be built by the Saudi Arabian firm ACWA Power and the government's planned 1200-MW plant in Nacala (Deloitte 2016; US Geological Survey 2014). Considering the rather low electricity demand in Mozambique, it appears, however, that not all of these projects will eventually become reality. They rather constitute alternatives to one another.

3.2 *Natural Gas*

Extraction of natural gas in Mozambique is not new either. It began with the discovery of reserves in the provinces of Inhambane and Sofala in the 1960s, but large-scale production had to wait for several decades until the South African firm Sasol started extracting natural gas from the Pande and Temane Fields in Inhambane in 2004. Since then, about 90% of production has been exported through a pipeline to South Africa in order to satisfy the demand of the industrial complex around and close to Johannesburg, in particular of the chemical plant of Secunda (Amanam 2017; Chambal 2010). Later on, intensive exploration took place in the north of Mozambique and, since 2010, it has become clear that reserves discovered in the province of Cabo Delgado are far larger than those in Inhambane and Sofala—indeed, among the largest in the world.

In fact, since the government contracted exploration and production agreements with several overseas partners in 2006, the extensive offshore reserves found in the Rovuma Basin have significantly transformed the hydrocarbon sector in Mozambique. Two companies have played a leading role: US-based Anadarko and ENI from Italy, the latter holding the rights to the offshore areas where most of the recoverable reserves have been found so far. Many other firms from a variety of different countries are involved, having obtained smaller concessions. Especially significant in this regard is the increasing presence of companies from emerging economies—and from Asia in particular, as a reflection of the importance of those large reserves to meeting the future needs of Asian markets (Frühauf 2014; Gqada 2012; Selemene 2013). The state-owned Empresa Nacional de Hidrocarbonetos (ENH) holds a share of between 10 and 15% in all concessions granted to these TNCs.

Initially, Anadarko and ENI had plans to jointly build a large liquefied natural gas (LNG) plant at Palma in Cabo Delgado. The original plans also included shipping LNG by 2018. However these deadlines have been postponed for a number of reasons, including a scandal related to the disclosure of government-hidden debts in 2016 as well as the downward trend of hydrocarbon commodity prices in recent

years (Deloitte 2016; US Geological Survey 2014). Both companies have finally decided to work separately on two different megaprojects, considered to be among the most ambitious of their respective type worldwide: Anadarko plans to develop Mozambique's first onshore LNG plant at the Afungi Peninsula in the district of Palma. This will consist of two initial LNG trains, with a total capacity of 12 million tonnes a year (*Oil and Gas Journal* 2017a). ENI is developing, meanwhile, a floating LNG facility that will be fed by six subsea wells and is expected to produce 3.4 million tonnes of LNG a year (*Oil and Gas Journal* 2017b).

Given these circumstances, the first shipping of LNG from the Rovuma Basin is unlikely to become reality before 2022, as at least 5 years will be need to build the necessary infrastructure after the final investment decisions are made. Once these major infrastructure undertakings are concluded and production reaches its maximum output (probably around 2025), optimistic estimates suggest that Mozambique will become the third-largest LNG exporter in the world, after Qatar and Australia (Deloitte 2016). Additionally, apart from the above-mentioned onshore Pande and Temane Fields, Sasol holds interests in several other offshore fields both in Inhambane and Sofala (Selemane 2013). The South African company recently discovered new oil and gas deposits—both off- and onshore—in Inhambane, whose exact sizes are still unknown (Club of Mozambique 2016; *Oil Review Africa* 2017). The related drilling is the first phase of a megaproject that includes 13 wells and a liquefied petroleum gas facility that is expected to produce, among other outputs, 20,000 tonnes of cooking gas a year (Amanam 2017; Export.gov 2017).

Beyond export opportunities, the Mozambican government has, in recent years, tried to improve the currently poor access to electricity throughout the country and to reduce energy imports by making use of its abundant natural gas reserves. The most significant natural gas-fired, power-plant projects are a 120-MW power station in Ressano Garcia (Maputo Province), which has been in operation since 2016, a 100-MW plant close to Maputo, whose construction began in 2016 and has been funded by the Japan International Cooperation Agency, a 400-MW power station proposed by Sasol to be built in Inhambane in the near future as well as two other smaller power plants proposed for Kavaninga (Gaza Province) and Palma (Amanam 2017; Deloitte 2016).

4 Non-mining Megaprojects: Hydropower and Aluminium Smelting

The dynamics of megaprojects are also remarkable beyond the mining sector too, mainly in hydroelectricity generation and aluminium production. The former has a long tradition that began with the construction of the Cahora Bassa Dam during the last years of colonial rule. As for industrial megaprojects, Mozal, a world-class aluminium smelter, commenced production in the year 2000. Both the Cahora Bassa

Dam and Mozal were designed to be outward-oriented, and used to be the main exporters until the mining boom arrived.

4.1 *Cahora Bassa*

The first megaproject undertaken in Mozambique was the Cahora Bassa Dam, which first began to operate in the mid-1970s, turning the country into one of the main producers of hydro-energy in Africa. Today, the Cahora Bassa Power Plant is still one of the largest on the continent—with a generation capacity of 2025 MW. Hidroelétrica de Cahora Bassa (HCB), the company exploiting the dam, was jointly owned by Mozambique and Portugal—with 18% and 82% shares therein respectively—until 2007, when Mozambique took control of the dam by increasing its share to 85%. In 2012 Mozambique increased its holding in HCB up to 92.5%, while Portugal retained the remaining 7.5%. Up to 65% of the electricity produced at Cahora Bassa is exported to South Africa. The rest either goes to Zimbabwe or is sold domestically. In 2015 electricity ranked third on Mozambique's exports list, only behind aluminium and coal, with a value of USD 317 million, equivalent to 9.9% of total exports (Banco de Moçambique 2015).

As noted, domestic electricity demand has been growing and Mozambique is trying to increase its energy capacity to meet the needs of industrial activities—especially aluminium production. On top of this, an increasing number of households in the country's main towns and rural communities are now being connected to the national grid. The electrification rate increased from 12% in 2005 to 21% in 2014 (World Bank 2017). It is expected to grow even further in the coming years. Due to these developments, there are plans to increase the current power capacity of Cahora Bassa by 850 MW, as part of a continuing project for further expansion via the construction of another unit on the north bank of the dam. A project to build a further hydropower scheme in Mphanda Nkuwa, downstream from Cahora Bassa, is also moving ahead. It is expected to reach a capacity of more than 2400 MW by the end of its second phase of implementation (Chambal 2010). On top of all this, the Ministry of Energy has identified unused potential for hydropower generation—for both medium-sized and large plants, as well as for micro-hydro schemes in the central and northern provinces.

In 2011, the Mozambican government launched an ambitious project called 'Centre South' (CESUL in Portuguese) to connect the hydroelectric stations to the grids of neighbouring countries and domestic rural areas on the way to Maputo (African Development Bank et al. 2012). Aside from their importance for Mozambique and the neighbouring countries, these projects initially appeared of great importance for South Africa too, since a significant proportion of their future output was likely to be sold to Eskom—the state-owned electricity provider of that country—to alleviate its own national electricity shortages. Nowadays, South Africa no longer suffers from electricity shortages however. Eskom has even blocked renewable energy projects at home, indicating that this once-lucrative market for Mozambique

is, at present, off limits. This situation may, of course, change if the South African economy recovers.

4.2 *Mozal*

The first industrial megaproject established in Mozambique was Mozal, a world-class, export-oriented aluminium smelter located 20 km west of Maputo near the port of Matola. Mozal commenced operations, as noted, in the year 2000. It was a key part of the post-war recovery programme, which included attracting FDI to strategic sectors. Mozal is the outcome of an initial USD 2.4 billion investment made in a joint venture by the Australian company BHP Billiton (47.1% ownership), Mitsubishi (25%), the Industrial Development Corporation from South Africa (24%) and the government of Mozambique (3.9%). Interestingly enough, the availability of cheap electricity from South Africa, which is compensated for by exports from Cahora Bassa, was instrumental to convincing investors to establish Mozal—and later expand it. It is estimated that the aluminium smelting megaproject uses the equivalent of around 45% of all the electricity produced in Mozambique, and is responsible for 65% of overall domestic electricity consumption (Justiça Ambiental 2012). Due to the lack of domestic transmission capacities Mozal paradoxically uses electricity from South Africa, even though Mozambique is a net electricity exporter—turning Eskom into a key player. So, to some extent, we can take Mozal as a linkage produced by the Cahora Bassa Dam.

Mozal holds major relevance in the economic structure of Mozambique, accounting for almost 36% of total exports and 39% of total industrial production in 2015 (Banco de Moçambique 2015). The plant works essentially as an enclave economy, using imported inputs and exporting the output. Although the company directly employs 1150 mostly local workers, it displays limited linkages with the rest of the economy—in spite of efforts to promote them. A set of policies focussing on linkage creation around Mozal emerged as early as 1997, even before the actual investment in it. At that point, a study supported by the World Bank across a pool of 370 selected Mozambican companies that could potentially participate in the construction of Mozal found weak capabilities among them. As a consequence, it is not surprising that the participation of local companies in the construction phase fell short of earlier expectations (Buur 2014). Another programme was set up in order to encourage local participation in the procurement of Mozal's enlargement: the Small and Medium Enterprises Empowerment Linkages Programme ran between 2001 and 2003, and was slightly more successful because it involved technical training and Mozal standards were redesigned to fit better the actual capabilities of Mozambican firms. Mozlink I, the continuation of the programme, concentrated on getting local firms into the regular operations of the smelter. It included the establishment of the Beluluane Industrial Park. An extension of this programme, Mozlink II, also included firms not directly tied to Mozal, like those from the natural gas sector for example (International Finance Corporation 2011).

The achievements of all these efforts have remained limited, because the structural impediments were and are significant. A missing stepping stone has been identified in terms of firm size in Mozambique: most potentially available firms are too small to cope with Mozal's requirements. On the other hand, large firms are not flexible enough to adapt to these requirements. Apart from technical problems, corruption and vested interests have constituted another major bottleneck—as firms awarded contracts are often linked to the ruling party (Buur 2014).

5 From Megaprojects to Structural Transformation and Diversification

Since colonial rule many developing countries have long specialised in the production of commodities to supply the markets of industrialised countries, usually former metropolises. Nevertheless, in recent decades, some of them—particularly in Asia and Latin America—have managed to transform and diversify their economic structure and scale up in the process of fostering and creating higher value-added, domestic economic activities. Mozambique, like other African countries, has not been part of this kind of structural transformation. This situation should not be interpreted without considering the neoliberal policies applied in previous decades, mainly promoted by international financial institutions and major donors. The first structural adjustment programme in Mozambique was put in place in 1987, even as the civil war continued to rage on. Since then, restrictive monetary and fiscal policies, a pro-market approach, outward orientation and the promotion of FDI as the main means to foster development have been the norm.

In that context economic growth has had more to do with the promotion of an outward-oriented, megaproject-based economic model, restricted to the energy sector and to the aluminium smelting industry. On that note, the main fears and criticisms have been with respect to the establishment of enclave economies, with few connections to—let alone positive effects for—the rest of the economic activities in the country. In general, it appears that industrialised countries such as Australia, Norway and the US have managed to establish links between manufacturing and the commodities sector, which is less common in developing countries (Morris et al. 2012). In addition, the high dependence of Mozambique's economy on these sectors makes it vulnerable to international price volatility—which ends up affecting the performance of the economy as a whole.

The positive effects of megaproject-driven dynamics on economic growth, attraction of FDI and expansion of exports have proven to be significant in Mozambique in recent years (Almeida Santos et al. 2017; Deloitte 2016). Nevertheless, beyond macro-economic effects, megaprojects have certain limitations and drawbacks that should be considered when it comes to participating in global or regional value chains or to creating linkages. First of all, megaprojects tend to become enclave economies, severely limiting the creation of backward linkages with small and

medium enterprises (SMEs) as a result of the high requirements imposed on suppliers. The conditions established for the provision of goods and services to the TNCs involved in megaprojects are usually difficult for Mozambican SMEs to meet, both in terms of quality and quantity, with the exception of some very basic services such as security or cleaning (UNCTAD 2012b). Evidence given above for Mozal shows these limitations clearly in terms of the creation of linkages with SMEs. Thus, most goods and services for foreign companies come from their own countries of origin or from more developed and diversified regional neighbours. In the case of coal mining in Tete Province, for example, Brazilian and South African sub-contractors predominate. This reinforces Mozambique's strong dependence on manufactured imports (Castel-Branco 2015; Southern Africa Resource Watch 2012).

This does not mean that domestic backward and forward linkages from megaprojects are entirely absent, though. Despite their weakness in comparison with other countries, there are examples of local SMEs integrating into the dynamics of megaprojects through outsourcing. Soradio, a domestically owned electric contractor, is an example of this. It has supplied services to foreign investors, initially at Mozal and then later on in the agricultural and mining sectors too. Some other Mozambican SMEs have also managed to benefit from megaprojects, such as Ilulifemo Construções and Malacha Construções in the area of civil engineering and also Ferro & Ferro Comunicações, as a marketing and communication company (SAPO 2018). However, lack of financing for further expansion and the need to learn English hint at limits to SMEs trying to integrate with the outsourcing networks of TNCs (Farole and Winkler 2014).

What is more, some linkages that go beyond the sectors benefitting from FDI can be developed, as in the case of the aforementioned enhancement and rehabilitation of transport infrastructure for the mining industry. In principle, local SMEs benefit from better transport infrastructure—decreasing their logistics costs and offering their products and services to a wider geographical area. The new coal- and natural gas-fired power stations are also representative of forward linkages, as the electricity that they will produce constitutes a basic precondition for local companies to become competitive. However, transport infrastructure projects primarily serve the mining companies (Scholvin and Plagemann 2014). The yet-to-be-built power stations are still oriented at the regional market, and have only recently started to link to domestic customers as well (Amanam 2017).

Investments in energy infrastructure so as to provide better access to electricity is central to development processes, as this could enable the structural transformation of the Mozambican economy. With electricity being largely available, the spectrum of economic activities attractive to local and foreign investors alike would increase—leading to economic diversification. This could help Mozambican firms to shift from lower to higher productivity and to value-added activities. At the same time, such a development would increase domestic demand for electricity, enhancing—in a best-case scenario—the viability of further investments in electricity generation. That is why coordination between energy and development strategies is so important, in order to make energy supply and demand match (UNCTAD

2017). However the facts that Mozambique already exports electricity and that Mozal, which is based on cheap electricity, heavily depends on public subsidies somewhat call an electricity-based development path into question.

On another note, megaprojects usually involve very capital-intensive activities, ones that have scarce capacity for job creation—and particularly for women—in comparison to their relative size in the economy: megaprojects licensed in Mozambique between 1992 and 2010 are estimated to represent only 5% of total formal employment, while accumulating 70% of total capital (UNCTAD 2012b). Formal employment is only a fraction of total employment, further weakening the per capita job-creation effects of megaprojects. In a country in which unemployment and a lack of formal forms thereof are serious issues, the aforementioned projects—especially Mozal, but also the investments made by Sasol, Vale and other TNCs—appear to be off target. They miss the actual needs of the country, and of the majority of Mozambican citizens. What is more, as skilled labour is scarce in Mozambique then the demand for qualified foreign workers in megaprojects tends to be too high—with the local economy unable to meet the corresponding demand (at least immediately). However, this problem can be handled partly by proper legislation. In fact Mozambique's law regulating the recruitment of foreign workers was revised in 2007, establishing maximum shares of foreign workers based on the size of the respective company: 10% for small companies and 5% for large ones (UNCTAD 2012b).

Another factor to take into account when assessing the effects of megaprojects is fiscal linkages. Tax incentives granted to those large companies involved in certain megaprojects have been controversial, as they are widely considered to be far too generous. They are offered on the understanding that their investments will bring almost automatic spillover effects, and therefore benefit the rest of the economy. Given that these effects hardly ever become reality, the controversy about the insufficient tax revenue collected by the government is certainly pertinent. Fiscal linkages have remained weak in the case of Mozal too. The initial scheme—settled in 1997 by the government and encouraged by the Bretton Woods institutions—provided tax exemptions to virtually everything relating to the company, except a miniscule 1% tax levied on gross revenues. Even Mozal's foreign suppliers, accounting for more than 70% of its externalised services, are also exempt, preventing the taxation of the now-increasing economic activity in these sectors (Castel-Branco 2015; *Mozambique Mining Journal* 2017).

Tax incentives do not apply in a similar way to mining activities in Mozambique, apart from the 5-year tax exemption period granted at the start of exploration activities. Royalties are charged at a low 3% of sales for coal and other mineral products. For natural gas, they stand at 6%. To give a comparison here, the corresponding rates are 12.5% in Chad and 18% in Bolivia. In Mozambique, foreign investors are also allowed to import certain products—mainly equipment and spare parts—without paying either import duties or sales tax (UNCTAD 2012b). While the reason for this generous treatment is the low quality of local suppliers, it ultimately undermines policies seeking to foster backward linkages (Morris and Fessehaie 2014). Higher tax revenues would also be very welcome to channel additional

funds to the promotion of economic activities that are, at the moment, either almost non-existent—such as manufacturing—or of only low productivity—such as agriculture and fisheries. These sectors have higher potential for job creation in general, and among women in particular.

Another well-known economic risk linked to the exploitation of natural resources is the so-called Dutch disease. This refers to a situation in which massive inflows of foreign currency lead to the over-appreciation of the national currency, damaging the competitiveness of domestic economic activities in tradable goods and services. This problem can be properly handled with the help of a stabilisation or sovereign wealth fund, introduced by some resource exporting countries such as Chile, Kazakhstan, Norway and Oman. Mozambique's government is also considering the creation of such a fund. As an alternative, the income from resource exports may be channelled into the sectors damaged by currency over-appreciation and into more advanced, higher value-added and/or more job-creating activities—which would require a suitable strategy and an appropriate set of policy measures (Saad-Filho and Weeks 2013).

Therefore, a well-designed and active industrial policy is very much needed in order to diversify the Mozambican economy and generate positive spillover effects. Measures such as rehabilitating important infrastructures for the industrial sector, in particular energy, transport and water supply, easing access to financial resources and evolving local content policies—ones that also comprise vocational training and skills upgrading in new or insufficiently advanced sectors—will help to foster the development of productive capacities, diversification and employment (Castel-Branco 2015; Morris and Fessehaie 2014; UNCTAD 2017). Significant barriers to success exist though, since the starting level for Mozambique in general and for local SMEs specifically is low in many respects. Some researchers conclude that industrial policy will not be successful in the short term in Mozambique—or in other resource-rich African countries such as Ghana, Tanzania and Uganda alike (Whitfield et al. 2015).

As indicated above, it is important to note that constraints to development within GVCs are not only domestic—as the international political economy also constitutes a barrier to resource-based economic development. The current outward-oriented policies and pro-market international arrangements give limited policy space to poor developing economies like Mozambique when it comes to making efforts to diversify the domestic economy, promote manufacturing and investments by local firms, and move up within GVCs into higher value-added activities. Emerging trade regimes like the Economic Partnership Agreements that the European Union and various African states, including Mozambique, have signed erode the traditional advantage that developing countries have under preferential trade agreements with the Global North. On top of that, regional integration—which may create markets for products and services with local content made in Mozambique—is now being pursued in Southern Africa and beyond, but results so far are hardly satisfying from a perspective of economic development through RVCs.

Apart from the effects related to macro-economic developments, to GVCs and to linkages, some incidental issues should also be mentioned. Megaprojects increase the risk of over-indebtedness as a consequence of the need for public investment in infrastructure and for the participation of government-owned companies (Castel-Branco 2017; Melina and Xiong 2013). Mozambique's total debt service rose from 0.34% of GDP in 2007 to 4.54% thereof in 2016, while gross public debt grew from 37.5% of GDP in 2011 to 120% thereof 5 years later (World Bank 2017). The resulting problems are reinforced by Mozambique's notorious traditional lack of transparency and poor accountability in government spending, related to corruption and nepotism (Deloitte 2016; Mosca and Selemene 2012). In 2016, it became public knowledge that three state-owned companies had received loans of more than USD 2 billion from the government without the national parliament, the International Monetary Fund or major donors even being aware of their existence (Castel-Branco 2017; *Financial Times* 2017). These nefarious activities often serve to consolidate the capture of resource rents by the elite, and prevent the fair distribution of the benefits resulting from megaprojects (Buur and Monjane 2017).

Most megaprojects in Mozambique, furthermore, come along with serious environmental risks. The exploitation of fossil fuels means a firm commitment to unsustainable sources of energy that account, to a large degree, for climate change. On the local scale, the destruction and radical transformation of the landscape, the impact of megaprojects on water quality—especially in the case of open-pit mining in Tete Province—as well as the dangers to human health that ensue from air pollution produced by fossil fuel-fired power plants are serious issues of concern (Justiça Ambiental 2016). In recent years, the occurrence of forced displacements and resettlements has been very controversial too. Mostly related to coal mining, these events have prompted demonstrations and even riots by local people. Critics argue that resettlement processes lack consultation and local participation, and hence are considered grossly unfair. They fail to provide an adequate voice to those who have to leave their homes. Compensation appears to be too low as well (Human Rights Watch 2013; Southern Africa Resource Watch 2012). As for natural gas, the situation for the inhabitants of the Afungi Peninsula, where Anadarko's aforementioned LNG plant will be built, has not been free of conflict either. A plan to relocate 5000 people has been strongly contested by local communities and civil society organisations, which claim to have had their activists harassed by both Anadarko and the police (Simons 2016).

6 Conclusion

Since the end of the civil war 25 years ago, Mozambique's economy has gone through a number of major transformations. Megaprojects in aluminium smelting, hydropower generation and coal and natural gas mining have been key drivers of FDI and GDP growth. However, the effects of these megaprojects on the economy as a whole remain limited. It appears that expectations about upgrading within GVCs,

creating linkages with other sectors, job-creation effects and the improvement of living conditions for the majority of citizens have been overly optimistic. In this chapter, we have assessed the impacts of megaprojects on the Mozambican economy and their potential role in economic transformation:

- The massive coal reserves in Tete Province have prompted large investments that are fostering the expansion of transport infrastructure as well as of power stations.
- Tremendous deposits of natural gas have recently been found in the provinces of Cabo Delgado and Inhambane. They have ignited plans to carry out major investments. As this is an activity with enclave characteristics, the creation of linkages that would lead to economic transformation is limited. However, as in the case of coal, several power plants are under consideration at least. Tax incomes could be channelled into other sectors. Both in coal and natural gas mining, TNCs from the Global North and from some emerging economies dominate—with Mozambican state-owned entities being smaller shareholders.
- The Cahora Bassa Dam is Mozambique's main source of electricity. Its output is mostly exported, though. The ongoing planning to increase the capacity of the dam or to build new ones along the Zambezi River is linked to an expansion of the national electricity grid, aiming to create linkages with other economic activities.
- In the case of Mozal, despite some explicit policies that encourage the participation of local SMEs, results in terms of economic linkages are still scarce. Effects are also limited with regard to fiscal linkages, which is less so for mining megaprojects.

In sum, this chapter has shown that there is plenty of room for policies aimed at creating conditions favourable to fostering economic and social inclusion in megaprojects. Such policies should focus on more and better-paid jobs, economic diversification—especially through opportunities for SMEs to integrate into GVCs—and on domestic value-addition in activities other than resource extraction. In that respect the most important factor appears to be the development of economic linkages, still restricted to only a few sectors and SMEs. In other words, the megaproject-based development model of Mozambique is far from ideal. It involves serious economic, political and social problems (the latter two were only addressed as a side issue in this chapter). However, these afflictions are not necessarily an insurmountable curse. Under favourable conditions, which can only partly be brought about by improved governance, megaprojects may be instrumental to transforming the economy. For that to happen in Mozambique there is still a long way to go—and it will also require appropriate conditions at the international level too. Furthermore, the better distribution of economic and social costs, as well as of the benefits of megaprojects and of resource exports, is a necessary condition to lift Mozambique out of its currently unbalanced development model.

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