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Investing in Transport Infrastructure in Developing Countries

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Abstract: The Standard Gauge Railway will offer Kenya positive effects on economic productivity, although effects on economic development remain ambiguous. Chinese firms' construction records are overall positive, although their financing and general practises are dubious at best. Transport investments should be characterised by meticulous planning, independent reviews, a competitive bidding process and careful selection to maximise return on investments. Excessively large projects should be avoided in developing countries due to corruption's detrimental impacts, and the focus should be on a multi-sided approach that targets a variety of sectors, rather than overinvesting in transport infrastructure. More research, supported by an empirical basis, would improve understanding of the challenges facing developing nations' socio-economic development, as well as the most effective tools to overcome them.

Author's Note

Having grown up in both developed and developing nations, the author was always curious as to the underlying reasons for these pronounced differences. Transport infrastructure was one of the most apparent differences between the nations of The Netherlands and Kenya, particularly for railroads which were renowned in one country and loathed in the other. When the SGR was first proposed, the author was living in Kenya, and therefore personally witnessed and engaged in discussions of the potential effects it would have. This curiosity persisted when the project was approved, initiated and finally completed. This curiosity – as well as the lack of research on infrastructure for developing countries - led to the idea for this dissertation. Two weeks after the paper was completed, the author will travel on the SGR to gain a first-hand account of weeks of research, writing and editing. This will add the final insight as to the SGR.

- R.V.

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1. Introduction

In combination with supplementary financial and economic policies, transport infrastructure – including roads, railways and ports - to facilitate the movement of goods has long been acknowledged as a crucial element of the supporting environment for economic growth (Garmendia 2004). Recently, the development community has emphasized that by fostering productivity and economic development, affordable and reliable transport infrastructure can reduce poverty and contribute to the Millennium Development Goals (MDGs) (World Bank 2010). Although there is adequate evidence to support this in developed countries, supporting research with regards to the effect on developing countries, particularly African nations, is severely lacking.

Railway infrastructure in developing countries is generally in poor condition or non-existent - and considerable investments are required to return it to an adequate state. This is particularly true for Sub-Saharan Africa (SSA) where railways lag behind those of other regions both in quality and quantity (African Development Bank 2016). In East Africa, the Kenyan Government has constructed the SGR (Standard Gauge Railway) that connects the port city of Mombasa with the capital, Nairobi. It should eventually continue onward to Uganda, Rwanda and South Sudan, reducing travel costs and simplifying transport operations across borders - as well as providing economic benefits to both Kenya and neighbouring countries. The World Bank has indicated that there are significant benefits that an efficient railway network could offer to both economic growth as well as trade unification in the East African Community (EAC) region (World Bank - Africa Transport Unit 2013).

The SGR is the flagship project of Kenya Vision 2030, a long-term vision of the nation's desired progress in economic growth and development. There is ongoing uncertainty as to the economic viability of the project, due to the huge capital costs and allegations of corruption. The main concern is that the projected benefits will fail to materialise as expected, and will not compensate for the high cost of the project.

This paper will attempt to provide a solution to this question, which also results in the research question, namely

What effects will Kenya's investment in the Standard Gauge Railway (SGR) have, particularly on achieving its socio-economic blueprint Kenya Vision 2030?

To answer this question, this paper will first conduct a literature review to assess the potential impacts that investment in transport infrastructure can have for developing countries. This will be followed by background information concerning the socio-economic blueprint of Kenya Vision 2030, particularly with regards to the economic, social and political environments. In addition, as both the financing and construction of the SGR was provided by Chinese firms, another section will be devoted to analysing the influence of and performance by Chinese firms in Africa.

Furthermore, as additional objections are due to the project's environmental impacts, a review on the trade-off between the economic and the environmental effects of major transport infrastructure investments (TII) will be presented. Hereafter the paper will be supplemented by a case study on a comparable project to the SGR, to assess its implementation and subsequent effects on economic growth and development.

Finally, an extensive analysis will be conducted for the SGR railway's ability to contribute to Kenya Vision 2030. This overall perspective of effects will answer the main research question, with subsequent conclusions and recommendations for the SGR project as well as for other transport infrastructure investments in the future.

2. Literature Review

2.1 Background

Africa's substantial population growth projections indicate that by 2040, transport volumes will increase by 6 to 8 times (and even up to 14 times in some nations) (African Union 2012). Faced with this increase in transport demand, as well as constraints on financing transport infrastructure, countries seek to allocate their resources in such a way that it maximises their net return to society. To enable this efficient allocation, the multi-faceted impacts of investments in transport infrastructure should be fully comprehended. This understanding is especially crucial for transport infrastructure investments, as what sets them apart from other investments are its long-term, capital-intensive nature as well as corresponding high risk and sunk costs (OECD 2002). Despite adequate existing evidence, the relationship between transport infrastructure and economic growth and development is still characterized by ongoing debate and uncertainty. This literature review will attempt to shed some light into this debate.

The proposed benefits of transport infrastructure are wide-ranging and display considerable variation across sectors and countries. The two main direct benefits however, are those of reduced transportation costs and increased accessibility (Jerome 2011). As well as having a direct impact on growth and productivity, these benefits can work through other important channels that may have additional benefits for a country's economy. They result in additional economic growth and productivity as they facilitate wider markets, reorganisation and optimisation of production, higher levels of (inwards and foreign direct) investment, increased specialisation, economies of scale and economics of agglomeration as well as positive effects on labour costs, labour productivity and labour market supply (World Bank 2010).

2.2 History

Johann Heinrich von Thünen provided the first empirical base for the effect of transportation infrastructure, by exploring the link between investments in transportation infrastructure and development in the agricultural sector (Chukwuemeka, Nyekachi and Ugondah 2013) Classical location theory strongly emphasized the influence that transport costs have on the location of economic activities; publications by Alfred Weber (1928) and Walter Christaller (1933) emphasized the role that minimizing transport costs had on the location of industry and subsequent economic growth (Melo, Graham and Brage-Ardao 2013). This focus on 'the cost of moving goods over space', or transport costs, in determining economic production and activity is also evident in New Economic Geography (NEG) laid out by Krugman and Fujita (Melo et. al 2013) These early studies played a crucial role in including

geographical factors, and the associated transport costs, in economic analysis – however they fall short in incorporating transport infrastructure in their models and subsequent analysis.

Since the late 1980's, economists have published hundreds of papers attempting to clarify the mechanisms between transport infrastructure and economic growth (Banister and Berechman 2000). David Aschauer (1989) was the first to attempt to establish an econometric link between aggregate productivity and infrastructure investment on a macro-economic level (Aschauer 1989). Macro-economic endogenous growth theory's findings showed that public infrastructure (and therefore transport infrastructure) can in fact be defined as a source of economic growth (Aschauer 1989). Paul Krugman's theoretical model (1991) built on these findings, arguing that infrastructure such as rail and road networks lowered transportation costs, allowing for an increase in returns (Ansar, Flyvbjerg, Budzier and Lunn 2016). Krugman therefore reinforced the intuition behind Aschauer's empirical work that transport infrastructure does facilitate economic growth (Ansar et. al 2016)

However, despite its allure the Aschauer and Krugman manner of thought was not wholly endorsed, even by other macroeconomic scholars. Despite a favourable disposition to the general arguments, papers published by Eisner (1991), Evans and Karras (1994) and Holtz-Eakin and Schwartz (1995) questioned the methods, design and reliability of causal mechanisms under the Aschauer line of thinking, as well as a lack of time-lagged effects (Ansar et al 2016). However, rather than overturning results found under earlier studies, macroeconomic scholars took a new approach. If direct productivity effects found were determined to be either weak or lacking, macroeconomic studies started to also examine indirect effects through spill overs (Garmendia 2014).

2.3 Economic Growth & Economic Development

Subsequent research on the direct and indirect effects of transport infrastructure investment has focused primarily on two areas – economic growth and economic development. Economic growth refers to 'an increase in the capacity of an economy to produce goods and services and is usually measured in terms of gross national product (GNP) or gross domestic product (GDP) (Banister and Berechman 2000) Economic development, however, refers to the process by which a nation improves the economic and social well-being of its people, and is often measured by a per capita income criterion as well as other human development indices (Banister and Berechman 2000). It is therefore evident that economic growth and development are closely linked, which elucidates why Amartya Sen (Nobel Prize Winner) stated that economic growth is one aspect of the process of economic development (Sen 1988).

This paper will maintain the focus of previous studies by analysing both the potential for economic growth as well as economic development arising due to transport infrastructure investment.

2.3.1 Economic Growth – Potential Positive Effects

Before Aschauer's work drew the attention of mainstream economists as well as policy personnel, Koichi Mera published research in 1973 that attempted to link regional production functions and social capital (Mera 1973). Social capital, which includes infrastructure, was found to have a significant positive growth effect for each sector examined. However, as the study focused on all types of infrastructure rather than focusing on transport, it is less valuable for the purposes of this paper. Nonetheless, it is still worthy to note as Mera's research laid the foundations for the hugely influential work by Aschauer and subsequent economists (Garmendia 2004). Output expansion and cost reductions resulting from investment in transport infrastructure was incorporated into the macroeconomic models of both Aschauer (1989) and Nadiri and Mamuneas (1996) (Lakshmanan 2011). Despite the general conclusions from over 100 macroeconomic models pointing to a modest and positive economic contribution of transport infrastructure, the usefulness of the results was called into question (Lakshmanan 2011). Two serious drawbacks were noted – the first of which being the striking differences between models on the magnitude and direction of economic impacts. The second drawback was that the macroeconomic models offered little insight into the actual mechanisms connecting transport improvements and the broader economy (Lakshmanan and Anderson, 2007).

Other studies have offered more insight into the linking mechanisms between transport infrastructure and the economy as a whole – Lakshmanan and Anderson state that 'sustained improvements in in transport infrastructure make possible agglomerations or large spatial clusters of firms and individuals' (Lakshmanan and Anderson 2007). These are followed by a diverse range of agglomeration economies and endogenous growth effects, which further augment the effects of transport infrastructure on the economy (OECD 2002). Seetanah Boopen (2006) analysed the contribution of transport capital to economic growth for a sample of developing states as well as for SSA countries, using a combination of cross-sectional and panel data (Boopen 2006). In both cases, transport capital was determined to be a contributor to the economic growth of both countries, particularly due to labour market effects (Boopen 2006). For SSA nations productivity of transport capital stock also outperformed the average productivity of overall stock (Boopen 2006). This positive effect of transport infrastructure on capital stock is supported by Banister and Berechman (2000), who found that increased investment in infrastructure (especially so for transport) increases the business sector's efficiency as well as profitability, which in turn stimulates business investment in private capital (Banister and Berechman 2000) In her meta-analysis of the productivity on transport infrastructure investment, Patricia Melo found that a 10% increase in public investment in transport infrastructure corresponded to a 0.5% increase in output (Melo et. al 2013). This indicates a positive, albeit minimal, effect of transport infrastructure on output. This favourable view is supported by Zhu's, whose contribution to the analysis of

transport-economy linkage was through a production function approach on panel data for both developed and developing countries (Kayode, Babatunde and Abiodun 2013). His results argued that physical units of transport infrastructure are positively and significantly correlated to economic growth for both categories of nations (Kayode et al 2013). Some argue for even larger effects - Chukwuemekas findings indicated a more significant effect of transport – indicating that transport was associated with a 9.7% increase in output (Chukwuemeka et al 2013)

2.3.2 Economic Development – Potential Positive Effects

In addition to the above positive impacts that transport infrastructure investment has on economic growth, many studies also focus on the economic development impacts it can offer. Economic development can be measured through a wide range of factors, the most common of which include poverty rate (reduction), education, healthcare and inequality (Cammack 2016)

One study by Datt and Ravallion (1998) examined the changes in rural poverty levels in Indian states between 1960 and 1990. Results indicated that those states that started with better infrastructure, saw more significant reductions in long-term poverty rates (Datt and Ravallion 1998). This focus on transport infrastructure investment's role in poverty reduction was maintained by Fan et. Al (2002), who researched changes in rural poverty levels in China between 1978 and 1997 (Fan, Zhang and Zhang 2002). The study highlighted the crucial role that infrastructure – particularly transport and telecommunications – had in reducing rural poverty rates across rural regions of China (Fan et al 2002) Similar results were acquired by Deininger and Okidi (2003), who examined underlying factors in poverty reduction for Uganda in the 1990s (Deininger and Okidi 2003). This study is particularly of use for this paper as it contains recent research with regards to transport infrastructure that focuses on a country that is involved with the SGR project. Furthermore, apart from sharing a physical border with Kenya, it is also comparable to Kenya from an economic, developmental and institutional perspective.

In addition to poverty rate reduction, transport infrastructure is argued to have other positive developmental effects. In 2002, Brenneman and Kerf conducted an extensive literature survey and found strong evidence indicating the beneficial impact that particularly transport infrastructure has on both education levels as well as health outcomes (Brenneman and Kerf 2002). Finally, Calderón and Servén (2004) conducted a study on the effects of transport infrastructure on developing nations between 1960 and 2000. Their results showed that income inequality decreased as transport infrastructure quality and quantity increased (Calderón and Servén 2004). In addition, their findings also indicated a positive correlation between transport infrastructure investment and overall economic growth, showing that Calderón and Servén argue TII facilitates both economic growth as well as economic development.

2.3.3 Economic Growth – Potential Negative Effects

Despite the plethora of evidence that display a favourable view of the effects that TII has on both economic growth and development, there are many who dismiss this view and indicate TII has very little, or even negative, effects on both economic growth and economic development.

Many early studies found that, contrary to work by Melo and Chukwuemeka, there is no clear evidence of the effects of (transport) infrastructure on economic growth. Studies to note include Gramlich (1994), Cook and Cook (1989), Tatom (1991), Levine and Renelt (1992) and Taylor-Lewis (1993), who all argued there was no significant increase in economic growth as a result of TII (Cohen 2010). Some of the earliest economists to support this viewpoint were Carter-Chadda and Schonfeld (1984) who proposed that developing countries over invested in transportation infrastructure, due to the overestimation of their economic benefits (Boopen 2006). One of the most vocal critics of the effects of transport infrastructure on economic growth and development is B. Flyvbjerg, who together with A. Ansar analysed whether TII resulted in economic growth or fragility in China (Ansar et al. 2016). Their results indicate that rather than being a source of economic growth, the 'typical infrastructure investment fails to deliver a positive risk-adjusted return' (Ansar et al. 2016 p360) Investment in these unproductive projects initially causes a boom, however when forecasted benefits fail to occur a bust occurs and these projects drag on the economy. Where investments are debt financed (as is the case for the SGR in Kenya), overinvesting in these projects will cause an accumulation of debt, instability in financial markets, monetary expansion and the economic fragility that is now evident in China's economy (Ansar et al. 2016)

Ansar and Flyvbjerg employed micro-level data from large datasets and case studies which indicated that the 'financial, social and environmental performance of infrastructure is, in fact, strikingly poor' (Flyvbjerg 2009). This was true for the Channel Tunnel built between the United Kingdom and the European mainland, where the cost overrun and benefit shortfall were so significant that Anguera (2006) argued that 'the British economy would have been better off had the Tunnel never been constructed' (Anguera 2006). Similarly, Flyvbjerg discusses that the 'Danish Great Belt rail tunnel proved financially non-viable even before it opened' (Flyvbjerg 2009)

The detrimental impacts of several large infrastructure projects led to Flyvbjerg publishing several works that explored the 'anatomy of risk' in large-scale infrastructure projects (Flyvbjerg 2009). Unlike previous studies, the research employed much larger datasets from 258 transport infrastructure projects that allowed for the rendering of statistically valid conclusions (Flyvbjerg 2009) Findings illustrated that cost estimates, which were instrumental in deciding whether to implement projects, were 'highly and

systematically misleading'; and that 'underestimation cannot be explained by error and is best explained by strategic misrepresentation, that is, lying' (Ansar et al. 2016 p364)

Therefore, Flyvbjerg proposed a 'Machiavellian formula' that plays a role in large infrastructure projects, that is conducted in order to get a project built. This was expressed as

(Underestimate costs) + (overestimate revenues) + (undervalue environmental and social costs) + (overvalue wider economic development effects) = (win project approval)

This is crucial for the purposes of this literature review, as the earlier arguments for economic growth and development occurring from TII may be sourced from faulty cost/benefit analyses. This is the underlying reason for Flyvbjerg's view that the benefit-to-cost ratio of major investments in infrastructure tends to fall below 1.0 (Ansar et al. 2016). These unproductive projects diminish economic prosperity, and therefore the theory that investment in infrastructure causes economic growth is rejected. This is primarily due to the pernicious macroeconomic consequences, as well as systematic misleading cost estimates resulting in the implementation of unsuitable infrastructure investments.

2.3.4 Economic Development – Potential Negative Effects

As previously discussed, work by Fan et. Al (2002), Calderon and Servén (2004), and Garmendia (2004) determined that transport infrastructure has a positive effect on economic development, and ameliorates the social welfare of society – particularly for the poor (Garmendia 2004). However, some studies have found that TII has either no or even a detrimental effect on the socio-economic welfare of the inhabitants of a country, particularly for those still labelled as developing.

A report by the Asian Development Bank (ADB) expresses that it is the non-poor who benefit more from these investments, because they are better endowed (Setboonsarng 2005). Large land and vehicle owners tend to disproportionately capture land value increases and cost reductions, while smallholders require additional assistance – this leads to a worsening of income distribution, in both the short and the medium term (Setboonsarng 2005). This inability to capture the benefits of TII due to constraints is corroborated by Cook (2005), who describes that 'a number of constraints, such as access to credit or land... prevent them from taking advantage of new opportunities' that TII can provide (Setboonsarng 2005 p5). Rayner (2005) emphasises that to ensure the benefits reach the poor, effective competition in the supply of transport services is required – however in developing countries it market entry and transport fare regulations are prevalent (Garmendia 2004). Furthermore, the poor in developing countries still inhabit a walking world, and this provides very limited opportunities to use roads or railways (Setboonsarng 2005). The report by the ADB suggests that establishing a network of tracks and paths, rather than highways and railways, would be a more effective strategy to ensure both growth and development (Setboonsarng 2005).

Furthermore, in addition to the inability of the poor to access the developmental effects TII can provide, research has shown that TII can produce negative effects on welfare and aggravate inequity. Cook offered a stark outlook by stating that ‘for some of the poorest of the poor, transport improvements may produce negative effects on welfare... including impacts on education, health, security and social interaction (Cook 2005). This pessimistic view is built upon by Melhuish (2005) who describes that TII in developing countries is generally not coupled with investments in improved road safety standards (Cook 2005). Therefore, increased traffic volumes can severely impact the security and safety of the population, and have significant socioeconomic impacts on poverty (Cook 2005) Furthermore, this increase in traffic volume and accessibility has also been implicated in increased trafficking of illicit goods as well as human trafficking, further highlighting the detrimental impacts that TII can have on development.

In conclusion, it is evident that the impacts of transport infrastructure investments on both economic growth as well as economic development are disputed amongst different studies. With regards to economic growth, direct productivity effects as well as indirect spill overs seem to have a positive, albeit overestimated, effect on economic growth. However, improper planning and implementation can lead to adverse macroeconomic effects such as economic fragility, monetary expansion and the accumulation of debt. In addition, the systematically misleading cost estimates emphasised by Flyvbjerg can often result in the implementation of unsuitable, financially unviable infrastructure investments. This is due to the numerous, complex and multi-faceted interactions that occur before, during and after the initiation of a transport infrastructure investment.

Transport infrastructure investments should therefore be characterised by meticulous planning, carefully sourced financing and effective establishment and maintenance. Ideally, these projects should be financed and constructed by domestic firms, to avoid the burden of debt repayments and to foster domestic employment and investment. Furthermore, to avoid a build-up of debt and excessive cost underestimation, large infrastructure projects should be avoided and the focus should be on regional, smaller-scale projects. This will also allow facilitate further research on TII, as the evidently wide-ranging effects of TII will be easier to determine with smaller-scale projects at the regional level.

The economic development effects resulting from TII are even more ambiguous – research by Calderón and Servén stating that income inequality decreases due to TII directly contradicts that of Setboonsarng’s report, which states that income inequality is exacerbated (Calderón and Servén 2004, Setboonsarng 2005). Furthermore, TII also seems to have both positive and negative effects on socio-economic welfare indicators including health, education, safety and security. However, the aforementioned negative effects on welfare often arise due to a lack of inclusion of the poorer parts of the population. Ideally, TII projects

should be aimed at assisting the poorest parts of the population, to allow an improvement of their socio-economic status and to reduce income inequality and poverty rates. They should also be complemented by other measures to address the economic development that major TII fail to offer. These include in particular educational and medical facilities.

Doing this will allow for economic growth and subsequently, referring back to A. Sen stating that 'economic growth is one aspect of the process of economic development', result in economic development.

3. Kenya Vision 2030

3.1 The Three Pillars

As of 2014, a statistical rebasing resulted in Kenya being reclassified as a lower middle-income country, in addition to being the largest economy in the East African Region (Oxford Business Group 2016). Over the last 7 years real GDP growth has averaged over 5%, and amounted to \$62.7 billion in 2015 (World Bank 2017). With the support of development partners such as the International Monetary Fund (IMF) and the World Bank, Kenya has experienced remarkable economic growth due to a combination of economic and organisational reforms (Deloitte 2016) The Kenya Economic Update (KEU) published by the World Bank in October 2016 predicted a 5.9% growth in 2016, which will rise to 6% in 2017 (Deloitte 2016)

The central drivers for this growth include a growing middle class with concomitant rising incomes, a vibrant services sector, low inflation, currency stability and increased investment in energy and transportation (World Bank 2017). However, Kenya still faces many challenges to its economy and development – these include but are not limited to poverty, inequality, climate change and the risk of internal and external shocks to the economy (World Bank 2017) In order to address these challenges, in June 2008 then-President Mwai Kibaki initiated the Kenya Vision 2030 project, with the aim of transforming Kenya into

...‘a newly industrialising, middle income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment’ (Kenya Vision 2030).

This vision, which will be implemented in successive 5 year plans, is based on three pillars – economic, social and political (Kenya Vision 2030). This vision – as well as the three pillars - is the result of an all-inclusive stakeholder consultative approach, with stakeholders from all levels of the private sector, the public service, the media, NGO’s and consultative forums involved in the process (World Bank 2017) Due to the meticulous and extensive research process supporting such a multi-party process, this thesis will continue the focus on these three pillars – namely economic, social and political. It will summarise both recent improvements as well as primary challenges for each pillar set forth in Kenya Vision 2030. The main focus will be on the economic and social pillars, as their respective development allows for overall economic development as defined in the literature review.

This overview of improvements and challenges will show what aspects of each pillar require most enhancement to bring the country closer to Kenya Vision 2030. The SGR’s ability to contribute to the development of each pillar will hereafter be demonstrated based on the literature review.

3.2 Economic Pillar

3.2.1 Economic Pillar – Improvements

As of 2016, Kenya's economy was ranked the 9th largest in Africa, with a GDP of \$62.7 billion resulting in a nominal GDP per capita of \$1,422 for its 46 million inhabitants (World Bank 2017). The largest contributor to this economic output was the services sector, which accounted for 49.3% of GDP as of 2016 (Deloitte 2017). Nonetheless, the most important sector to the economy remains agriculture, which contributes over 30% of GDP and employs as much as 80% of the country's labour force, while accounting for 50% of revenue from exports (CIA World Factbook 2017). Despite being the most industrially developed country in East Africa, manufacturing accounts for only 18% of GDP – although this has largely been attributed to Kenya's primary exports (tea and coffee) requiring little to no processing (Deloitte 2016). However, this lack of manufacturing has also been attributed to high energy costs as well as dilapidated transport infrastructure (Deloitte 2016). Furthermore, a concentration of industrial activity around the three largest urban centres – Nairobi, Mombasa and Kisumu – has resulted in uneven growth between these three centres and the rest of the country (World Bank 2016). Tourism also holds an important place in Kenya's economy, representing 9.8% of GDP and providing significant foreign reserve inflows, due to the diverse attractions that the country has to offer (Deloitte 2016). However, several terror attacks by Al-Shabaab, a Somalia-based group, had a hugely detrimental effect on international tourism earnings in 2013 and the years following (CIA World Factbook 2017). Fortunately, the sector is showing signs of recovery, as travel warnings imposed by Western governments are removed, and increases in visitor numbers as well as National Park revenues are apparent (Deloitte 2017).

Interventions by the Central Bank of Kenya (CBK) to smoothen foreign exchange markets and a declining of tourism receipts have led to a depreciation of the Kenyan Shilling (KES) (Oxford Business Group 2016). Nonetheless, the EIU (Economic Intelligence Unit) noted that compared to other emerging currencies, the KES is relatively more strong and stable due to the nation's low dependence on mineral and fuel for export purposes (Oxford Business Group 2016). In 2016, the Central Bank of Kenya's (CBK) Monetary Policy Committee (MPC) reduced the benchmark interest rate from 11.5% to 10.5% (Deloitte 2017). This was made possible by this relative stabilization of the Kenyan Shilling (KES) and reducing inflation. This has reduced the cost of credit in the country, allowing both individuals as well as small-to-medium sized businesses to borrow at more favourable rates and invest in themselves, spurring economic growth (Oxford Business Group 2016).

With this advantageous environment, Kenya's economy is expected to experience further growth due to supporting factors including increased consumption, a rise in FDI and strong performance in the agricultural, telecommunications, financial and transport sectors.

Furthermore, the East African region has experienced increasing regional integration which will ameliorate the ability of member countries to trade with each other as well as outside the region. Finally, discoveries of significant oil and gas reserves in the northern Turkana region will, when production starts, offer further prospects for economic growth and boost energy independence (Johannes 2014)

3.2.2 Economic Pillar - Challenges

However, despite these positive prospects Kenya's economy still faces several challenges to its economic stability and growth. Due to an increase in construction activity in infrastructure projects as well as other initiatives under the Kenya Vision 2030 project, an increase in imports has resulted in a widening current account deficit (World Bank 2016). Similarly to the Asian crisis of 1997, Kenya is attracting large foreign capital flows – however if confidence falls, this could lead to a rapid devaluation of the currency and a subsequent loss in confidence by foreign investors (Deloitte 2016). Furthermore, many of these large infrastructure investments are debt-financed and deemed as unsustainable in the long run, as any external shocks could result in an inability to pay off these loans, resulting in further devaluation and drop in economic stability (Deloitte 2016)

The World Bank's Senior Economist for Kenya, Jane Kiringai, has stressed the detrimental impact that external shocks may have on recent improvements in Kenya's economy - 'Another oil price shock, poor harvest, or contagion in the Euro zone could easily create renewed economic turbulence and reverse these recent gains' (World Bank 2012 p1). These external shocks have a particularly pronounced effect on both the agricultural and tourism industries – events to note include the global economic recession in 2008 and the Ebola outbreak of 2014. Furthermore, Al Shabab's attacks on the Westgate Shopping Mall (2013) and Garissa University College (2015) crippled the tourism sector (Deloitte 2016). Additionally, globally low tea prices, droughts and desertification of the northern regions, up and coming competition and lower demand from Europe all pose a threat to Kenya's agricultural sector. By extension these are also threats to Kenya's currency stability, as a sudden drop in foreign exchange inflows and demand for Kenya's exports could severely impact the KES.

As Kenya's economy depends primarily on these two sectors, it is crucial that the Government diversifies to make the economy more resilient against both internal and external shocks. This will also offer additional stability to the KES, which remains vulnerable to global market trends such as the uncertainty surrounding China's economy and the discussions concerning trade barriers and protectionism by the new U.S. President.

Finally, two of the most impending challenges to Kenya's economy will be discussed in the social and political pillars of this thesis but are still worth to note due to their direct and

indirect impacts on the economic pillar. The first of these is corruption, which is endemic in Kenya and impacts the economic, social and political pillars. Transparency International has ranked Kenya amongst the world's half-dozen most corrupt countries – in 2015, **one third** of the state's budget (equivalent to approximately \$6 billion) was 'unaccounted for', and the average Kenyan pays 16 bribes a month (Miriri 2016, Keuleers 2015) Corruption makes it expensive and more difficult to do business, while having a negative impact on growth and investment.

Second, high unemployment (and the resulting poverty and inequality) have limited the opportunities of most Kenyans to take advantage of economic growth. Although the economy's growth is resulting in more job creation than years past, these are mainly low productivity jobs in the informal services sector that often go untaxed (World Bank 2016). Strikingly, nine million youth will join the labour market over the next 10 years, and given the lack of current formal employment opportunities, many of these youths will carry on finding jobs in subsistence farming or small household enterprises.

3.3 Social Pillar

In combination with the substantial growth in the economic pillar, Kenya's social pillar has seen similar progress. Kenya ranks highest with regards to the Human Development Index (HDI) in the region (0.555), while its entrepreneurship and increase in FDI offer significant prospects for further economic growth, job creation and poverty alleviation (UNDP 2016) Nonetheless, despite a decline in the absolute poverty rate, Kenya remains a strikingly unequal nation, with the gains of economic prosperity and growth bypassing the majority of the population and only benefitting a small part (Oxford Business Group) Kenya's society is characterized by inequalities in income, gender and particularly geographical location (Oxford Business Group 2016) On the other hand, institutional reforms and the new constitution enacted in 2010 have resulted in significant improvements in other areas including healthcare and education. Both the challenges and improvements in the social pillar are instrumental in achieving the 'high quality of life to all its citizens' set forth under the Kenya Vision 2030 (Kenya Vision 2030). The most widely accepted measure to measure 'quality of life' is the HDI, based on the following three measures – an individual's ability to obtain a decent standard of living, live a healthy life and access knowledge (UNDP 2016). These three measures roughly correspond to (un)employment, healthcare and education respectively, and these will therefore be the primary aspects of the social pillar that are assessed.

3.3.1 Social Pillar – (un)Employment

The future of Kenya's status as economic powerhouse of East Africa, as well as its ability to remain competitive in the global market, is being threatened by the burden of unemployment (Sunday 2017) According to the '2012-13 Household Budget Survey'

conducted by the Kenya National Bureau of Statistics (KNBS), the nation's first official unemployment estimate stood at around 8.1% in 2012 - however World Bank data refuted this number, indicating an unemployment rate of almost 40% in 2012 (World Bank 2016) Of a working population of 24 million, one out of every six Kenyans is unemployed – a much higher rate than in Uganda and Tanzania where the figure is around one in every 20 (Sunday 2017) High rates of youth unemployment have persisted over the last 20 years, and a World Bank report stated that mass unemployment was inhibiting Kenya's ability to put its ever-growing labour force to productive use, 'denying the economy the demographic dividend from majority young population' (Otuki 2016 p1) The report argues that the country could be setting itself up for future failure in the marketplace' (Otuki 2016 p1)

The same World Bank report explains that the unemployment problem is exasperated by the fact that Kenya's population growth exceeds its ability to create new jobs (World Bank 2017) This results in extremely scarce formal job opportunities, and is part of the reason why the informal sector (mainly agriculture) employs up to 80% of the labour force (Sunday 2017) As nine million youth will be joining the labour market in the next 10 years, they will continue to find jobs in small household enterprises due to the scarcity of jobs in the formal sector (Deloitte 2017) However, the SME (Small and Micro Enterprises) sector's growth is impeded by inadequate knowledge and skills, rapid changes in technology, inadequate capital and poor infrastructure (Oxford Business Group 2016) This means that the SME sector will struggle to employ those entering the labour force in the future, and that the economy should develop other, more productive sectors to offer employment opportunities.

3.3.2 Social Pillar - Employment Productivity

'Kenya is not short of jobs; it is short of high productivity jobs' according to Jane Kiringai, World Bank senior country economist for Kenya (World Bank 2016 – Economic Update) This was evident in the 2017 Global Talent Competitiveness Index, where Kenya was ranked 97th out of 118 economies (INSEAD 2017) The study indicated that Kenya is falling behind the sub-Saharan average in several crucial indicators, including 'vocational and technical skills, retention of skilled talent and opportunities for growth and development of talent'(INSEAD 2017)

The World Bank's lead economist for Kenya, Apurya Sanghi, highlights two manners in which the Government can assist in job creation. The first is offering a propitious business environment, allowing companies to flourish and create jobs. Second, Kenya must direct more resources to developing human capital, which will allow for an increase in productivity and particularly, the 'high productivity jobs' that Jane Kiringai described as lacking (World Bank 2016 - outlook) To allow for this, 'there is the need to step up the quality of education to align it with market needs and to keep the growth engine running', said Mr. Sanghi (World Bank 2017) Alongside proper management of Turkana's oil reserves as well as urbanisation,

human productivity has been identified as a long-term growth driver for the Kenyan economy. Economic policy, from the local to the national level, must focus on the creation of high-value jobs.

To facilitate the creation of new jobs, the government has established several different programs to increase opportunities and employment. It has also increased the amount of direct hiring, especially in the education sector and at county level, as there is a shortage of teachers as well as local government staff (Deloitte 2017) Technical education and training is one of the central schemes under Kenya Vision 2030, creating a labour force prepared for both the private and public sector (Kenya Vision 2030) In the 2016/2017 budget, the Government has allocated KES 2.5 billion to technical education and training institutions (Deloitte 2016) There has also been increased funds for initiatives like the Uwezo Fund, and the Youth and Women Enterprise Fund, which provide financial support for smaller firms and SME's to acquire small industrial plants and facilitate value creation – addressing the 'inadequate capital' issue that was previously described in the SME sector (Deloitte 2016).

Additional support should also be provided for activities in the agricultural sector, as this would not only support job creation but also improve the country's overall quality of life due to the huge percentage of people working in the sector. The primary focus should be on improving human capital to increase the amount of high value, high productivity jobs employing Kenyans. Technical education and training should therefore be a priority.

3.3.3 Social Pillar - Healthcare

Access to, and quality of healthcare are decisive factors in determining a 'high quality of life' (under Kenya Vision 2030) as well as improving 'the economic and social well-being' of the population (WHO 2014). Better health is crucial to human well-being and happiness – while 'it also makes an important contribution to economic progress, as healthy populations live longer, are more productive and save more' (WHO 2014)

Kenya has seen significant progress in healthcare, as the Government has been providing free and discounted vaccines to bring down disease rates (Deloitte 2016) Additional clinics and hospitals have been constructed, particularly in rural areas around the country, for the improvement of nation-wide health (World Bank 2017)

In order to further ameliorate the nation's healthcare, the government is expanding voluntary health insurance, to offer all Kenyans the possibility of proper health care services (Deloitte 2016) In addition, a new package offered by the National Health Insurance Fund will offer coverage to patients suffering from chronic diseases such as cancer, diabetes and hypertension, which are prevalent and when untreated (as they often are) can be fatal (WHO 2014) Finally, private hospitals in Kenya are undergoing extensive expansions in order to meet the ever-growing demand for high-quality healthcare by a growing middle class (Deloitte 2016). However, a large part of Kenyans still fall into a lower income bracket that does not

allow them to afford private health care, exasperating inequalities already present in society. In addition, many of these expansions and funds are focused on urban regions, while being severely lacking in the regions that are most in need.

Nonetheless, despite reforms implemented and progress made, Kenya still faces a myriad of health problems. The aforementioned measures will improve the health of the overall population, contributing to human capital development and economic development. However, various health issues have the opposite effect, and inhibit Kenya's economic growth and development.

As Kenya remains a relatively low-income country with a tropical climate, a myriad of health issues faces the nation, particularly the 42% of the population (!) that is living in poverty (UNICEF 2013). The dominant issue is that of diseases such as HIV/AIDS, malaria, tuberculosis, and even pneumonia and diarrhoea, that claim thousands of lives each year (UNICEF 2013) According to the UN, over 3 million Kenyans suffer from HIV/AIDS, with 700 lives claimed every day due to complications arising from the disease (UNICEF 2013) Although some of these cases are preventable and/or curable, a lack of doctors, low access to medical resources and a lack of health education results in fatalities. The lack of doctors is particularly pronounced – Kenya has only 1 doctor for every 10,000 people, over half of whom are based in the capital Nairobi (WHO 2014). They therefore provide for only a small percentage of the population, while rural areas particularly in the north face severe shortages and lack of access to resources, that causes Kenya's overall health to deteriorate (WHO 2014).

This lack of access to healthcare is also a reason for Kenya's high child mortality rate – the under-five mortality rate is 49 deaths for every 1000 births, while 26% of children under 5 suffer from either moderate or severe stunting (WHO 2014). The rates are even higher for rural areas, and extensive reform and investment is needed to alleviate some of the health concerns facing the most remote and poverty-stricken regions.

It is evident that despite progress being made with vaccines and health insurance, Kenya's population still faces extensive health issues that limit the population's ability to live, produce and save. Disease, lack of access to medical facilities and shortages in supplies result in a significant barrier to Kenya's development. Investments in health infrastructure should focus on facilitating the movement of medical personnel and resources to all regions in the country.

3.3.4 Social Pillar – Education

An annual report by Deloitte described Kenya's education system as a 'mixed bag' (Deloitte 2017) Free primary education is offered to all, and parents are legally obliged to send their children to school – this has resulted in a 85% (initial) enrolment rate, which puts

Kenya ahead of many of its SSA neighbours (Deloitte 2017) The literacy rate is subsequently also high – 78% of the population above the age of 15 is literate, considerably higher than its neighbours Uganda (73%) and particularly Ethiopia (49%) (CIA World Factbook 2017) Kenya is displaying continued commitment to improving both the quality and quantity of education on offer.

According to the National Treasury, KES 324 billion was spent by the Government in 2015/2016 on education, up from 308 billion the previous year (Deloitte 2016) This has resulted in an increase in total enrolment in primary schools, from 10 million to 10.1 million from 2014 to 2015 (KNBS 2017) Similar positive increases were found for secondary schools, which saw an increase from 2.3 million in 2014 to 2.6 million in 2015 (KNBS 2017) Furthermore, the number of public primary schools also saw an increase, with 585 new schools established across the country in 2015 (KNBS 2017) In order to improve the quality of teaching, 150 primary schools in of Kenya's 47 counties received 240,000 digital learning devices, while 66,000 teachers were trained in the use of the new technology (Deloitte 2017)

Despite being above SSA averages for both educational rates as well as enrolment rates, Kenya's education system faces significant issues that hamper its ability to function and operate. One of the primary issues is the quality of primary school education – according to UNESCO, the schooling is not of adequate quality to allow for all children to learn the basics (UNESCO 2015) After six years of schooling, of young men between the ages of 15 and 29 years 6% were illiterate and 26% were semi-literate (Deloitte 2016) In addition, although primary schools are free, parents are sometimes incapable of affording uniforms, textbooks and other school supplies, resulting in withdrawals from the education system (UNESCO 2015)

Furthermore, teacher strikes are extremely common as teachers are often extremely poorly paid – in 2016 a nation-wide, 2 week strike resulted in teachers' wages increasing from a (measly) minimum of \$210 per month to \$263 a month (Oduor and Gitonga 2016) Teachers are additionally poorly trained and face massive staff shortages – the average ratio of students to teachers is 40:1, significantly higher than the UNESCO benchmark of 24:1 (Otieno 2015) These staff shortages are particularly pronounced in the northern regions, where ratios can reach up to 60:1 (Otieno 2015)

Schools at all levels also must deal with extremely unreliable funding that comes in at different times each month/year, and the funding that does come in is often insufficient (Oduor 2016) Of these insufficient funds, another part is lost due to embezzlement, either at the local, regional, or national level (sometimes even a combination) which further hampers the ability of schools to provide adequate staff and equipment to their students (Oduor 2016) 'Every year we send billions to schools, but more than 30 per cent of the resources have never been audited', describes Fred Matiang'i, the Education Cabinet Secretary (Oduor 2016 p1) 'Primary school heads issue wrong enrolment figures, flout procurement procedures, bribe

and hide crucial audit documents to steal free education billion' (Oduor 2016 p1) As is the recurring theme of this thesis, despite being a national trend the issues of embezzlement and insufficient funds are most pronounced in the arid, rural regions of Northern Kenya – and again the issues seem most pronounced in the regions most in need.

Finally, a point to note is that as Kenya's secondary schooling compromises both public and private schools, the rich afford private schools while the poor divide themselves amongst the public schools, which are overcrowded, understaffed and underfunded (Deloitte 2016) This enforces a level of disparity which unfortunately continues to characterise Kenya's economy and society.

In conclusion, it is evident that despite positive characteristics and statistics, including literacy rate and primary and secondary school enrolment, Kenya's education system struggles to bear the burden of unreliable and inadequate funding, understaffed classrooms, embezzlement and education inequalities that diminish the value it could offer. Reforms should focus on regions where these insufficiencies are most pronounced, with careful auditing and accountability mechanisms put in place for those that siphon money out of the education system. These funds could be used to pay a part of children's educational expenses (uniforms and textbooks, for example) in order to improve the quality of education, while also hiring extra teachers to be able to offer more spots in schools that have a student-to-teacher ratio closer to the UNESCO benchmark of 24:1.

3.4 Political Pillar

The political pillar is more difficult to tie to economic growth and development, as it is harder to implement change as well as measure the impact that politics or politicians have on economic growth and development. Nonetheless, the political pillar is crucial to the visions set forth and being implemented under Kenya Vision 2030. Despite positive projects and initiatives set forth by the Kenyan Government, corruption remains endemic in Kenya and detracts nearly every aspect of economic growth and development – as exemplified by the previously described issue of embezzlement of education funds. This corruption is most pronounced in the political pillar - although apparent throughout society – as corrupt practises by leading politicians filter down into the courts, security forces and businesses (Manson 2015) When then-US President Barack Obama visited his native Kenya, he spoke of the cancer of corruption that plagued the nation (Manson 2015)

Publication of an official audit in 2015 found that only one per cent of Kenya's government spending, and merely a quarter of the whole \$16 billion budget was properly accounted for (AFP 2015) Despite claims by the Government, and particularly President Uhuru Kenyatta, that it is battling fraud, 'the current level of corruption outstrips anything seen' according to Mr. John Githongo, anti-corruption activist and whistle-blower (AFP 2015 p1) This viewpoint is supported by John Ohaga, managing partner at a law firm based in

Nairobi. He insists that government processes must improve to facilitate investment and economic activity. 'Bureaucracy is by far the biggest obstacle to investors and doing business in the country. While some progress has been made, there is room for improvement (Oxford Business Group) This has led to Transparency International ranking Kenya amongst the world's half-dozen most corrupt countries, due to ongoing corruption across the nation (Keuleers 2015)

Mr. Githongo, criticises what he sees as the 'deepening and widening' of corruption in Kenya (AFP 2015) 'That only 1.2 percent of government expenditure can be properly accounted for is a stinging indictment of the management of public resources. The entire system is either in a state of failure or has been captured by corrupt elites' (AFP 2015) This corruption is arguably the biggest impediment to Kenya's economy, as it increases the cost of business, reduces investor confidence, distorts market mechanisms and results in misallocation of funds.

This is one of the reasons why there has been so much controversy concerning the new \$3.4 billion Nairobi-Mombasa railway line. Githongo stated that there are suspicions the railway was 'from the very beginning engineered as a corrupt project' (AFP 2015) Kenyan news agency Tuko even labelled the SGR project as 'a grand corruption scheme', as the amount of funds, people and phases involved in the project make it easier to embezzle or misappropriate funds (Tuko 2016)

Transparency International and the UNDP have stressed the importance of investing in transport infrastructure in developing countries. The OECD predicts that over the next 10 years, emerging economies will require \$22 trillion of infrastructure investment (UNDP report) However, according to Transparency International up to one third of this required investment may be lost to corruption (UNDP) According to the Construction Sector Transparency Initiative (CoST), a comparable amount could also be lost through inefficiency and mismanagement (Keuleers 2015) Together, over half of funds invested could therefore be misplaced. This astronomical number should be instrumental in determining the need for, and usefulness of, transport infrastructure investments, particularly in developing countries that face corruption and mismanagement issues.

Overall, despite (attempts at) progress in reducing corruption, it remains an everyday part of life in Kenya, from individual citizens to the Jubilee Government. This should be taken into account whenever implementing projects or directing funds. This is particularly so for large infrastructure projects, which are prone to cost underestimation as well as facilitating embezzlement. If the decision to construct transport infrastructure is taken, then meticulous planning, independent reviews, accountability measures and the accounting of funds must be implemented in order for them to deliver positive effects on economic growth.

4. Chinese Infrastructure in Africa – Economic Diplomacy

In recent years, China's presence in SSA has expanded swiftly, and Chinese firms are engaged in a variety of projects across the region - particularly for infrastructure and construction. According to data from international law firm Baker & McKenzie, China signed over \$328 billion worth of construction projects across Africa between 2009 and 2014 - equating to around \$54 billion a year (World Bank & Public-Private Infrastructure Advisory Facility (PPIAF) 2009) Beijing has shifted its focus to a policy of economic diplomacy, financing and constructing projects that result in Chinese firms building highways, airports, hospitals, schools and stadiums across the continent (World Bank and PPIAF 2009) Much of the financing has been through organisations such as the Asian Infrastructure Investment Bank (AIIB), a development bank proposed by China that has pumped billions of dollars into African governments and infrastructure (Pilling 2017) The UN hailed the AIIB's potential for 'scaling up financing for sustainable development', as well as the positive impacts it can offer global economic governance (UNDP 2016) Another similar institution is The Export-Import Bank of China, or China Eximbank, which is chartered to 'implement the state policies in industry, foreign trade, diplomacy, economy and financial support', to promote the export of both Chinese products and services (Export-Import (Exim) Bank of China 2016) Although Exim itself does not publish figures for overseas loans, U.S. officials have estimated that its total export financing exceeds that of all of the Group of Seven (G7) nations combined (Pilling 2017) In 2009 and 2010, China Eximbank signed loans of over \$110 billion to governments and companies in developing countries – more than the World Bank over the same period (Exim Bank of China 2016)

China Eximbank is also financing the SGR, providing 90% of the funding with the remaining 10% coming from the Kenyan Government (Freytas-Tamura 2017) The multibillion dollar tender was won by a Chinese company, China Road and Bridge Corporation (CRBC), as a condition of the loan (Obulutsa and Lough 2014) However, the process has been widely criticised inside and outside Kenya due to the apparent lack of transparency of the process – Kenyan officials have acknowledged that there was no public bidding, while legislators have protested against overpricing of the project (Freytas-Tamura 2017) Furthermore, despite the contribution the Chinese are making to Africa's infrastructure development, there is still a prevalent predisposition that infrastructure built by the Chinese is of low quality, fails to promote good governance and human rights and alienates local labour (World Bank and PPIAF 2009) An additional critique is that Chinese companies will approve projects without sufficient return, as long as it will provide and export base for Chinese products and services. Nonetheless, the Chinese have built a reputation – unlike the West - of 'getting the job done' (Pilling 2017 p1)

As Beijing is involved in both the financing as well as the construction of the SGR, it is important to paint an unbiased picture of Chinese companies' successes as well as failures in

developing the infrastructure and economy of the African continent. This will be of added value to this thesis as it will focus on infrastructure investments undertaken in developing countries - an area that is extremely lacking in research.

4.1 Getting Things Done - Leadership

African leadership is usually welcoming of China's differing approach to the West when it comes to development assistance – the emphasis is on solidarity and cooperation between developing nations, avoiding interference in domestic affairs and offering a more prominent role to the state (World Bank and PPIAF 2009) Particularly the emphasis on eschewing in domestic interference is particularly attractive – especially for nations with rulers with dubious human rights records who have been in power for decades, such as Angola and Zimbabwe. According to Apurya Sanghu, leading economist of the World Bank in Kenya, Beijing's rise to prominence as a valuable trade partner is partially because 'it was not interested in local politics' and was prepared to offer financing in sectors that others overlooked (Sanghi and Johnson 2016 p1) One project that other donors and investors had been unwilling to finance was the \$3.23 billion SGR project. In his research paper titled 'Deal or No deal: Strictly Business for China in Kenya', Sanghi explained that 'China's loans compete with loans from traditional donors that attach conditions of good governance and transparency' (Mungai 2016 p6)

David Pilling, of the Financial Times, has criticised the negative perceptions of China's infrastructure investment in Africa – claiming that 'this version of events – if it was ever valid – is woefully out of date' (Pilling 2017 p2) Complaints against China range from wiping out local manufacturing, environmental havoc, enriching dictators and entrapping governments in mountains of debt – however another perspective is gaining momentum. This is that China has a positive (albeit imperfect) record of 'getting things done' (Pilling 2017 p1)

One supporter of this is former Senegalese President Abdoulaye Wade, who in 2008 praised the benefits of Chinese investment for his country's growth (Xinhua 2009) China is also a member of Africa's major development banks, such as the African Development Bank, the Eastern and Southern African Trade and Development Bank and the West African Development Bank (Information Office of the State Council 2013) In addition, between 2000 and 2009 China cancelled 312 debts from 35 African nations, while capacity-augmenting initiatives were undertaken in agricultural, economic, medical and public sectors (Information Office of the State Council 2013)

4.2 Getting Things Done – For the Population

It is important to address Chinese investment in Africa at not only a national level but at a local level – in order to generate economic development, the population itself must also reap any benefits that arise from China's TII. In 2016, Pan-African research group Afrobarometer conducted opinion surveys in 36 African countries to determine African's view

on China's economic and political influence (Mungai 2016) Results showed that the majority of Africans held positive views on China's influence as well as its contribution to economic development - on average 63% perceived it as either somewhat or very positive (Geerts, Xinwa and Rossouw 2014) For Kenyans specifically, 56% were positive about Chinese businesses' impacts, while 49% stated Chinese businesses had a good reputation in the country (Geerts et al. 2014)

Another survey, the China Quarterly Study of African Perception on China Africa Links was conducted in nine countries across Africa in 2009 (Sautman and Hairong 2009) This study discovered that 74.2% of respondents found that their countries' economic growth was synonymous with that of China's development (Sautman and Hairong 2009) This survey indicated that Africans are in fact, on average, happy with Chinese investment due to its contribution to economic development. In 2012, Kenya opened the Thika Superhighway, a 8-lane highway aimed at easing congesting around Nairobi, funded by Eximbank China as well as the AfDB (Business Daily Africa 2011) Apart from easing traffic flows, Chinese road contractors implemented a localisation strategy that employed more than 3,000 Kenyans (Business Daily Africa 2011) Kenyan employees received an average monthly wage above the usual average for unskilled labour, and were eligible to be employed in further projects (Business Daily Africa 2011) For a country with an unemployment rate estimated around 30%, the Chinese helped many households.

However, China's interests seem to be placed in African leaders rather than its citizens – this prevents the economic benefits from being enjoyed by ordinary citizens. Africa's inequalities are ever-increasing, while per capita incomes and employment remain low. As Mr. Sanghi previously described, China's loans come free of conditions of good governance and responsibility (Sanghi and Johnson 2016) This is evident in Angola, China's largest oil partner – the government had a budget of \$69 billion in 2013 that predominantly came from Chinese oil revenues, however 70% of the local population was living under the absolute poverty line of \$2 a day (Sanghi and Johnson 2016) Therefore, projects seem to be approved based on the potential for exports of products and services by China – this is particularly so for Eximbank China, whose primary function is to promote exports.

Due to situations such as in Angola, China has faced criticism from both Western and African governments, as well as from civil society and environmental groups, over the negative repercussions its activities may have on the economic, social and environmental welfare of the regions it operates.

4.3 Controversial Practises

Despite the positive views held by both African leaders as well as citizens on China's role in Africa, there are many that hold a predominantly negative view on China's role in Africa,

particularly with regards to transparency and governance. One of these critics is Alfred Keter, a Kenyan member of parliament who alleges that 'the CRBC inflated the cost of the project threefold' (Mungai 2016) The quoted price for the SGR stood at \$5.38 million per km, while a railway line built by a Chinese firm in Tanzania cost \$3.18 million per km (Mungai 2016) p2 'I wonder where this disparity is coming from, if not corruption' he told members of the Public Investment Committee (Mungai 2016 p2).

4.3.1 Controversial Practises - Costs & Corruption

It is argued that due to its policy of non-intervention, China does in fact intervene in domestic affairs. The Chinese facilitate corruption and illegal trade (such as poaching) as their non-interference policy means African leaders cannot hold the Chinese accountable with regards to social and environmental issues (Sanghi and Johnson 2016) This can be viewed as a sort of 'you stay out of our dirty business, we stay out of yours' approach, which is detrimental to the economic development of both Africa as well as China. This corruption is a large part of the controversy over the SGR project. The initial costs were underestimated, as proposed by Flyvberg's Machiavellian Formula, in order to win project approval, whereas once the project was accepted cost overruns arose in order to facilitate embezzlement. This is why Tuko news agency described the SGR as 'one grand corruption scheme' (Tuko 2016)

According to Transparency International, up to one third of funds intended for TII in emerging economies may be lost to corruption, indicating the huge losses the SGR project has, and is, likely suffering (Keuleers 2015). This issue is further exasperated by the fact that despite improvements, the quality of Chinese construction is considered sub-standard and therefore warrants even less of the high costs arising due to non-competitive bidding and corruption (Albert 2017) Poor execution and low quality of infrastructure are issues that arise all too often – in Botswana a Chinese-built power plant was closed 3 years after opening due to persistent technical problems, while in Angola a hospital also built by the Chinese was closed after 4 years of operation due to safety concerns, as cracks started appearing in the walls (Brock 2016; Albert 2017) This is why researchers at Oxford University found that over half of Chinese infrastructure investments 'destroyed, not generated' economic value as costs were much larger than the benefits (Wildau 2016)

4.3.2 Controversial Practises - Labour

Furthermore, workers across African countries have accused Chinese companies of unfair labour practises, and disputes over working conditions and wages have resulted in protests in countries including Kenya, Angola and Cameroon (Mungai 2016) In Zambia, home to as many as 100,000 Chinese, Beijing has been accused of violating immigration laws and bringing in unskilled labour (Pilling 2017) In Kenya, CRBC brought in 5000 Chinese workers for the SGR project, while promising over 30,000 jobs to local (Business Daily Africa 2011)

However according to locals, the jobs have not appeared – on the second of August, residents of Kenya's Narok county stormed a CRBC construction site, attacking Chinese workers with knives while chanting '*haki yetu*' (our rights) (Kuo 2016) Having been promised jobs as plant operators and drivers, the workers claimed 'the job opportunities we have been given are negligible' (Kuo 2016) In a more extreme case of disregard for labour unions and workers' rights, in 2013 Chinese managers shot protestors at a coal mine in southern Zambia (Sanghi and Johnson 2016)

Controversial Practises - Environmental Standards

Finally, China's operations in Africa have long been accused of blatantly violating environmental standards, concerns voiced at the local, national and international level alike (China FT) A lack of resource transparency, minimal efforts to guarantee animal and environmental protection and outright pollution have characterised many of the nation's projects, with direct and indirect impacts felt in many places where Chinese investment is taking place (Mungai 2016) Chinese businesses often set their own environmental 'standards', however these environmental standards are often lacking (Pilling 2017) When environmentally degrading activities increase in frequency due to Chinese companies' presence, local and national governments do not intervene for fear of interfering in Chinese business practises.

In Kenya, this was also apparent when, unlike western development institutions, a Chinese company signed a \$2 billion deal to construct a coal plant next to a UNESCO world heritage site and a major tourist attraction – Lamu Island (Kazungu 2017) Despite an ongoing court case over the environmental and social impacts, construction went ahead despite the predicted increase in emission and detrimental impact on the health of the population as well as nearby bodies of water. This indicates that Chinese companies seem to be indifferent of, or completely ignore, environmental standards. This is especially problematic for a project like the SGR, that passes through so many urban and rural regions, and even national parks.

The Management Chairman of the Kenya Coalition for Wildlife Conservation, Sidney Quantai, said 'we are wondering if the Kenyan government has been coerced by China to carry on with the project regardless of the damage it may cause' (Mungai 2016) According to the Kenya Wildlife Service, an increase in elephant poaching and ivory smuggling has been linked to the influx of Chinese workers (Elephant Action League 2016) As discussed in the 'economic pillar' section, tourism is a crucial sector for Kenya, and much of this tourism revolves around the abundant, majestic wildlife. If this wildlife were to become more scarce or even disappear, the potential repercussions for the tourist industry would be far greater than the economic benefits the SGR is argued to have.

As much of the environmental controversy of the SGR revolves around constructing the railway through national parks, it is crucial to consider the history of Chinese (non)-compliance to environmental standards. It is evident the Chinese companies do not generally hold very high environmental standards, nor weigh them in decisions in which projects to implement. However, it is also important to note that many African countries themselves attach lower priority to environmental protection than China' and 'have even worse records for countering corruption', writes D. Shinn, former U.S. ambassador to Ethiopia and Burkina Faso (Albert 2017 p2) It is therefore difficult to dismiss projects or demand improvements in areas where the nations themselves lag behind those they are making demands of.

Nonetheless, governments of developing countries must be vigilant and critical of any loan-financed infrastructure constructed by the Chinese. If the loans are not granted by international institutions but are offered by Chinese, then the project must be carefully scrutinized for its direct and indirect impacts on the economic, social and environmental situation in the country. This is especially so for the China Eximbank, as it will accept most projects that are favourable for Chinese exports – even though they may not benefit the receiving nation. In the future, if a project is approved then there must be a transparent bidding process, with emphasis on worker's rights and environmental protection, to ensure that the argued benefits are in fact realised.

'Africa must recognise that China is in Africa not for African interests but its own,' then-governor of Nigeria's Central Bank, Sanui Lamido stated in 2013 (Albert 2017 p3) The future of Sino-African economic relations is uncertain; however China would do well in adopting a more efficient, transparent and sustainable business model to investment. This would improve the reputation and performance of Chinese businesses on the continent, while also ameliorating the impact that investments will have on economic growth and development. Evidence from China itself shows trends of building a green economy while lifting its population out of poverty. For the Chinese to truly 'win' in Africa as D. Pilling stated, it should assist Africans in building a green economy, that will be a 'win-win' for both sides (Pilling 2017 p2)'.

5. Economy and the Environment

In recent years, controversy on the human impacts on global climate change have been designated to a broader debate concerning sustainability. The multi-dimensional challenge of diminishing the negative human impacts on the planet while simultaneously tackling inequality and poverty have been labelled as ‘sustainable development’ (UNDP 2017) This concept of sustainability is crucial to the interaction between the environment and economic development, and therefore also to the way that governments, international organisations and businesses respond to these challenges.

Already in 1992, the World Bank initiated the *World Development Report* with the proclamation that ‘the achievement of sustained and equitable development remains the greatest challenge facing the human race’ (World Bank 1992 p1) When the Millennium Development Goal’s (MDGs) 2015 deadline passed, the United Nations adopted a new set of goals aimed at ending poverty and protecting the planet– these are the Sustainable Development Goals (UNDP 2017)

Target number 9 of the SDG’s is to ‘integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources’ (UNDP 2017) This challenge is also true for the Kenyan Government – the Kenya Vision 2030 project envisions ‘a newly industrialising, middle income country providing a high quality of life to all its citizens by 2030, in a **clean and secure environment**’ (Kenya Vision 2030) Sustainable TII entails assuring that the design, implementation and operation of a project considers the environmental damage it will cause.

The original focus of this paper was on the economic benefits of the SGR against the environmental degradation it would cause. However, it is extremely difficult to accurately measure the cost of environmental degradation, and even more complex to weigh these against economic growth and development effects.

Nonetheless the environmental aspect is crucial for this paper – the topic originated from the author witnessing the debate on construction of railway tracks and bridges being built through National Parks and other environmental assets. These would have had a hugely detrimental aspect on tourism in the parks, which in the ‘economic pillar’ chapter was described as a huge contributor to Kenya’s revenue and foreign exchange earnings.

Despite the difficult in measuring and weighing these costs and benefits that arise from economic progress and environmental degradation, governments looking to implement projects should carefully scrutinise projects in sectors such as energy, transport, and agriculture. Long-term economic analysis of infrastructure, energy use, material selection,

locations aspects and emissions should all be incorporated into analysis, in addition to traditional elements such as revenue generation.

TII particularly encroaches on landscape and natural assets, and may reduce or even eradicate irreplaceable value. Investments that seek to develop areas may therefore impede the very growth they are trying to foster – much like the negative impact of the SGR in Nairobi National Park. The only National Park in the world that borders a capital city, a railroad running through the park would devastate natural fauna and flora, and therefore park revenues and visitor appeal. The future of the Nairobi National Park with regards to the SGR is still undecided at the time of writing this paper. The author has personally seen bridges encroaching on the park – however resistance from environmentalist groups has seen construction temporarily halted.

However it is also important to note that environmental degradation has been found to be correlated by an inverse U shape with income per capita – also known as the Environmental Kuznets Curve (Stern 1996). As Kenya is still a lower to middle income country, it is expected that environmental factors are weighed less heavily than those that affect the population. When people have limited access to clean drinking water and housing, they do not prioritise the environment. Although it is not an excuse to not engage in environmental sustainability, it is at least an explanation. Nations should however, not wait until they consider themselves developed enough to start weighing the environment in their decisions – by then it may be too late.

6. Analysis

The ability of the SGR to contribute to achieving each pillar under the Kenya Vision 2030 will now be assessed based on the Literature Review. Kenya Vision 2030 aims to transform Kenya into a 'middle income country providing a high quality of life to all its citizens by 2030'. The economic pillar is fundamental in achieving the 'middle income country' aspect, while the social pillar is fundamental in achieving the 'high quality of life' aspect.

Although the pillars do overlap somewhat, for the purpose of the analysis both aspects will be isolated with regards to their most appropriate pillar. The political pillar is more difficult to tie with both the Vision 2030 as well as TII, and will therefore not receive as much focus.

6.1 Analysis – Economic Pillar

One of the main challenges for Kenya's Government is to diversify its economy, in order to make it more resilient to shocks and to sustain its economic growth. Due to this Lakshmanan and Anderson (2007) would argue in favour of constructing the SGR due to TII's ability to make agglomerations possible – which would spur the flow of innovative ideas among firms, allow for increasing returns to scale and increased efficiency. These increases in efficiency and returns would for example allow Kenya's manufacturing sector to improve and contribute more to GDP – while also offering employment opportunities to assist in economic development. This increased efficiency arising from TII is supported by Bannister & Berechman, who argue that increases in TII increases the efficiency and profitability of the business sector which in turn stimulates business investment in private capital (Bannister & Berechman 2000)

Furthermore, TII will also contribute to Kenya's ability to sustain and facilitate economic growth, as is supported by extensive research that positively associates TII with economic growth (Aschauer, 1989; Boopen 2006; Melo, 2013; Chukwuemeka 2013) The staunchest supporter of this is S. Boopen, who found that transport capital is on average more productive than other forms of capital, especially for SSA countries (Boopen 2006) This is an additional argument for investment in TII over other types of capital. This is especially relevant for the SGR, as opposition to the project indicated funds should have been implemented elsewhere. However according to Boopen, this is erroneous and funds invested in transport infrastructure are more productive than other sectors.

However, some would also argue against major transport infrastructure projects such as the SGR. Ansar & Flyvbjerg (2016) point to the fact that major TII's often fail to deliver a risk-adjusted return, despite their positive effect on economic growth. This is also due to the anatomy of risk found with major TII, where misrepresenting costs and benefits results in unsuitable projects. This risk is particularly pronounced for the SGR, due to the non-

transparent bidding process, endemic corruption in Kenya and China's history of malpractices with regards to costs estimation.

Furthermore, with debt-financed projects like the SGR, debt repayments that come with these projects can cause economic fragility, that eventually result in currency instability. The stability of the KES was identified not only as an advantage for Kenya, but also as a potential future risk due to uncertainties in global markets – this constitutes another reason why Ansar & Flyvbjerg would have argued against constructing the SGR. They argue that particularly large TII such as the SGR should not be constructed. They would recommend smaller projects, that have smaller debt repayment requirements and are therefore less of a (potential) burden on the economy.

As Ansar & Flyvbjerg's findings pre-dated this paper by only a year, they are more applicable than many studies analysed in this paper – modern-day research methods and data analysis will be more reliable now than when David Aschauer published his work in 1989. Furthermore, Ansar & Flyvbjerg employed large datasets from 258 TII's across the globe in order to render their conclusions, further enhancing their research. As this paper focuses on Kenya but also looks to offer general conclusions for developing countries across the globe, the variety of Ansar & Flyvbjerg's research offers additional insight for this paper.

Therefore, based on the literature review it is evident that the SGR will assist Kenya in achieving the economic pillar under Kenya Vision 2030, namely due to increases in output and facilitation of innovation and investment.

However, the SGR will likely not deliver a risk-adjusted return in the short run. Funds should therefore have been used in financing focused, small-scale projects in a variety of sectors that would diversify Kenya's economy and render economic growth across the nation. Also, these smaller-scale projects could be financed and constructed by Kenyan firms, avoiding debt accumulation and currency instability that comes with foreign-funded projects. Competition between firms would reduce costs and allow for bidding processes that would hamper corruption. These projects would generate additional formal and informal employment opportunities reserved only for Kenyans – not Chinese workers.

One such project could be constructing a road to the northern Turkana region, one of the most isolated regions. Roads would be constructed by local companies, employ local skilled and unskilled labour and would require far fewer funds than the SGR. This would also limit the scope for fraud and embezzlement. This road would offer improved accessibility to the region as well as to recently discovered oil reserves in Turkana - improving trade and energy independence as well as potentially opening up a new export, diversifying Kenya's economy.

6.2 Analysis – Social Pillar

To achieve the social pillar, the primary challenges facing Kenya include improving access to education and healthcare, poverty and unemployment. Inequality is also a major challenge – however addressing deficiencies in the three aforementioned factors will alleviate issues with regards to inequality.

The findings on TII's ability to improve access to healthcare and education are ambiguous, with studies arguing there is a positive (Brenneman and Kerf) and a negative effect (Cook). According to the literature review the SGR should therefore not be implemented on grounds of improving access to healthcare and education – even though there may be positive effects, it may also exacerbate issues as the poor fall behind, due to their inability to access the benefits TII provides as argued by Rayner (Garmendia, 2004).

Additionally, shortcomings in healthcare and education were found to be most pronounced in remote regions far away from the SGR – therefore TII should be focused more on these regions to improve their access to both healthcare and education. Otherwise these regions run the risk of falling further behind those regions through which the SGR passes, exacerbating current issues with regards to regional inequality in education, healthcare and infrastructure.

However, TII has been found to reduce poverty rates across differing nations – studies to note include Datt and Ravallion (1998) in India, Fan et. Al (2002) in China and Deininger and Okidi (2003) in Uganda. This last study, along with the general trend of the three studies, is particularly of use as it indicates poverty reduction was achieved in Uganda – a country that neighbours Kenya and extremely that is similar from an economic and social perspective. Therefore, the SGR's construction is supported, by basis of previous study as well as this paper, on the basis that it will reduce the average poverty rate in Kenya.

Finally, Kenya's growing unemployment issue, especially amongst the youth, is a serious obstacle to achieving Kenya Vision 2030. This unemployment is one of the root causes of other social issues such as poverty, crime, inequality and lack of healthcare and education. Literature regarding TII's effect on employment is scarce, and based on the Literature Review it is only possible to gauge indirect effects – such as increases in demand for labour arising from increases in output (Aschauer 1989), increased investment (Bannister & Berechman 2004) and other labour market effects (Boopen 2006). However, direct employment opportunities on the SGR are limited in number, and are diminished even further by the influx of Chinese workers that have accompanied the SGR. Furthermore, a large part of unemployment is due to deficiencies in human capital, indicating the need for improved educational and training initiatives rather than major infrastructure projects.

In conclusion, based on the literature review the SGR will not provide adequate contributions to achieving the social pillar of the Kenya Vision 2030. Ambiguous effects on healthcare, education and inequality are minimally positive at best, and detrimental at worst. There are positive effects on poverty reduction; however these do not validate the \$3.4 billion invested in the SGR. Funds allocated to the SGR should therefore have been spread out to supplement TII with investments in healthcare and education- particularly in rural regions and not in the already-developing areas the SGR currently passes through. This would allow for the poverty reduction as found by Deninger and Okidi, while also improving the overall healthcare and education of the country that was not found to arise from only implementing TII.

6.3 Analysis – Political Pillar

As previously discussed, it is very difficult to render a meaningful connection between politics and TII. Literature on the area is practically non-existent and is also unlikely to exhibit a meaningful relationship. However indirectly it is crucial, due to the impact that corruption at the political level has on not only the effects of TII, but economic activity, growth and development in general.

In order to prevent the extensive losses to corruption and embezzlement described by Transparency International and the Construction Sector Transparency Initiative, developing countries in particular should address the issue of corruption before engaging in more high capital cost projects like the SGR. To fully realise TII's benefits, corruption should ideally be completely eliminated – however this is unlikely to ever fully occur. Therefore, countries should fight corruption every step of the way, from the bidding process to the construction and operation of any projects implemented, to ensure minimal funds are lost and the 'anatomy of risk' set forth by Flyvbjerg is minimized. A more transparent bidding process, competition between firms and independent reviews of projects should minimise the disparity between projected and realised costs and benefits.

7. Case Study – Ethiopia

Assessing the economic growth and developmental impacts of the SGR is extremely difficult – if not impossible - as the railway was opened only a few weeks before the publishing of this paper. The economic impact can therefore only be predicted, rather than measured, as the costs and benefits are just starting to materialise. Studies can only speculate on the projected costs and benefits, and as has been demonstrated these predictions are subject to considerable variation, debate and uncertainty. Therefore, it is of added value to conduct a case study on a previously completed project similar in nature to the SGR, to assist in predicting eventual outcomes and impacts.

To the north of Kenya, the Addis Ababa – Djibouti railway links the landlocked nation of Ethiopia to the Red Sea Port of Djibouti. Like the SGR, it was a major recipient of Chinese financing as well as being constructed by Chinese construction firms. The railway is part of Ethiopia's Growth and Transformation Plan (GTP) that aims at boosting economic growth and elevating the country to a middle-income status by 2025 – similar to Kenya Vision 2030 (AFP 2016). The railway cuts the journey time for container cargo from around 3 days by road to just 12 hours. Like the SGR, a significant part (70%) of the \$3 billion project was funded by the China Eximbank, and construction was undertaken by the China Railway Group (AFP 2016)

Completed in 2016, the railway was subject to considerable scrutiny with regards to cost overrun and projected benefits - allegations of non-transparent bidding processes, corruption and poor execution plagued the project from its inception. (citation) Furthermore, Ethiopia is a country that is comparable to Kenya not only from a geographical perspective (they share a border and similar geography) but also from a socio-economic aspect. The construction of the railroad was defended on the grounds that it would alleviate poverty, upgrade dilapidated transport infrastructure, diversify the economy, make it more resilient to external shocks and generate employment opportunities.

In 2007, a pre-feasibility study undertaken by Hifab International highlighted the economic and financial incentives to construct the railway (Mohapatra 2016) Hifab International is an experienced partner in infrastructure development and has close ties to institutions such as the World Bank, UN, Regional Development Banks and the European Union. This is indicative of its level of influence, resources and expertise – meaning the pre-feasibility study it carried out likely have been conducted meticulously and impartially.

Supplementing this study, the Ethiopian Railways Corporation (ERC) emphasized the multiple benefits that the railway would provide (ERC) Similar to the benefits proposed in the Literature Review section, these included time saving, generating employment opportunities and revenue, savings in fuel costs, road maintenance costs and increases in foreign exchange reserves (Xiangjiang, Shanggang and Yuan 2016). Nonetheless, opposition groups deemed these

benefits as overstated or non-existent, and pointed to the large costs and debt burden that came with the project – again very similar to issues arising with the SGR in Kenya.

Due to this uncertainty, Dr. Dipti Mohapatra conducted an economic viability analysis in 2016 in order to empirically measure the economic benefits that the project would offer against the cost streams over a period of 25 years (Mohapatra 2016). With regards to economic benefits, a 'with' and 'without' method was determined in assessing costs and benefits that would result both if the railway was constructed. These effects were then used to determine an Economic Internal Rate of Return (EIRR) by employing the discounted cash flow technique, which was then compared to the costs and benefits that arose without implementing the project.

With regards to benefits, the analysis was restricted to direct benefits of (1) revenue tariff from freight, (2) revenue tariff from passenger fares and (3) generation of employment for both skilled and unskilled labour. The costs were restricted to (1) the capital cost of the project as well as (2) the operational costs of the railway. Mohapatra's study concluded that the project is economically viable - the EIRR on investments would be 18.90 percent, well above the minimum requirement (Mohapatra 2016).

Dr. Mohapatra's study does not take economic development into account, as it would be extremely difficult to conduct a cost benefit analysis concerning development. This is due to the difficulty in measuring factors such as HDI, literacy level or access to healthcare with a 'with' and 'without' method like that employed for economic viability. Furthermore, as demonstrated in the literature review the effect of TII on economic development is characterised by ambiguity – the focus of the case study and recommendations will therefore be on economic viability, rather than economic development.

Despite positive projections, TII is subject to considerable cost underestimation and benefit overestimation as highlighted by Flyvbjerg with his 'Machiavellian Formula'. Aware of such unpredictability, the author decided to implement a sensitivity analysis that accounted for uncertainties in freight forecasts and changes in costs. These variations were incorporated by adding parameters that included (1) increase in cost by 15 percent, (2) decrease in benefits by 15 percent and finally (3) increase in cost by 15 percent as well as decrease in benefits by 15 percent (Mohapatra 2016). Results obtained from this sensitivity analysis showed that the project is economically viable even in the worst of scenarios (3). Therefore, even after taking uncertainties in predictions into account that characterise TII, research showed the Addis Ababa – Djibouti railway line is economically viable.

However, the long-run economic benefits from the project will likely be higher than those estimated in the paper by Mohapatra. Other benefits that were not included in the analysis but will have an impact include time savings, regional integration, increases in inter-regional

and international trade, decrease in emissions, earnings from foreign exchange reserves, positive impacts on (foreign) direct investment and reduction in road maintenance costs. The author indicated these were not taken into account due to the complexity of analysis as well as time-lagged effects – however this shows that the benefit estimation may have actually been conservative, and that the true EIRR on investment is above the stated 18.90%.

Nonetheless, concerns remain as to the influence China wields over the recipients of its financing and construction. This is particularly true for Djibouti, for which the debt obligation arising due to the railway amounts to 60% of its GDP. However, Djibouti's Finance Minister Moussa Dawaleh argued that the country's 6.7% growth rate will allow the nation to meet its debt repayments. Furthermore, he argues that 'if we don't take this risk now and develop our infrastructure, we will remain stuck in poverty' (Jacobs 2017 p2)

Finally, both the financing and construction parts of the project have been marred by allegations of pervasive corruption. Mohamed Chehem, a former presidential candidate and leader of the opposition, criticised the complete opacity that accompanied billions of dollar's worth of investment (Jacobs 2017).

It is extremely difficult, if not impossible, to measure the costs of this corruption or how these funds may have been implemented without the railroad. Furthermore, it has been shown that most major TII's suffer from an extent of corruption, particularly in developing countries, and that this is nearly impossible to prevent. Therefore although a crucial factor for this paper, the corruption aspect will be excluded from the economic viability of the railway.

In conclusion, the Addis Ababa – Djibouti railway is an economically viable TII, despite the high costs and accusations of corruption that accompanied the project from start to finish. Although Chinese financing and construction may not have been very transparent nor characterised by competitive bidding, it was extremely effective and efficient – as was argued in 'China in Africa – Economic Diplomacy'. This bodes well for the SGR, as a Chinese debt-financed and Chinese constructed railroad has proven to be economically viable despite the debate surrounding costs.

Developmental effects of a railroad are extremely difficult to measure, especially as both the SGR and the Addis Ababa – Djibouti railways were only completed a year before this paper was published. Furthermore, the literature review showed the difficulty in assessing the effects TII have on economic development.

However like Kenya, Ethiopia's economy is not only in need but also of development. Socio-economic issues are pervasive and continue to impede sustained, equal economic growth that will eventually allow countries to achieve their long-term visions (Kenya Vision 2030 and Ethiopia's GTP) for their respective countries.

Therefore, TII should be accompanied and supplemented by investments in education and healthcare that improve the nation's human capital, which will allow it to be more competitive in the long term. This human capital can then be employed in a larger variety of sectors in more productive jobs for longer periods of time – resulting in the economic development that TII has not yet been proven to provide.

Finally, corruption has also shown to be a serious hindrance, not only to TII but in many aspects and sectors of developing nations' economies. As was displayed in Kenya, where corruption was evident in healthcare, education, politics, as well as being an aspect of everyday life. To realise the full benefits of TII and other investments, sweeping reforms should be implemented to tackle corruption at all levels, in both the public and private sector. These could include but are not limited to; judicial reforms, accountability measures and improved salaries for public servants, and harsher sentencing for those found guilty of corrupt practises.

However in the short run it is unrealistic to expect these reforms to be executed, namely because those primarily responsible for these changes are often accused of corruption themselves. Only in the long run, through education and progress, can the cancer of corruption be effectively dealt with. This is yet another argument that supports the additional investments in education and administration, rather than solely in TII.

8. Conclusion

In conclusion, the SGR project is an economically viable project, and positive effects that will impact economic growth will compensate for the significant investment required. The literature review displayed numerous works from a variety of different time periods that support the idea that TII facilitates economic growth (Mera 1973; Aschauer 1984; Bannister & Berechman 2000; Boopen 2006; Lakshmanan & Anderson 2007). This is particularly so for developing countries, particularly in SSA, that are characterised by deficiencies in transport infrastructure and where the average productivity of transport capital is superior to that of other types of capital (Boopen 2006). These increases in output and subsequent elevations in investment, innovation and employment will generate a positive return- however the period required to see this positive return remains to be seen. Nonetheless, even with uncertainties in revenue generation (as examined by Dr. Mohapatra for the Addis Ababa – Djibouti railroad), a positive EIRR is expected. Therefore the SGR will contribute to the ‘newly industrialising, middle income country’ aspect of Kenya Vision 2030.

However the \$3.4 billion would have been more productive if invested in road networks and more small-scale, focused infrastructure projects across the nation. There are also more studies on road infrastructure’s ability to contribute economic growth and development than rail infrastructure, so there would have been more certainty with regards to economic benefits. This would also have allowed a more equal distribution of economic growth and development effects. However a comparison between the economic impact of roads and railroads is beyond the scope of this paper.

Conclusions with regards to TII’s ability to contribute to economic development remain uncertain. Existing literature goes both ways, in arguing for both positive and negative effects with regards to healthcare, education and inequality. Although a positive effect on poverty eradication was found, the general ambiguity of developmental effects means this paper cannot conclude with certainty whether positive developmental effects arise.

Therefore, any major TII should be accompanied by simultaneous investments, in healthcare but particularly in education. Developing countries should not overinvest in transport infrastructure while disregarding other sectors and areas in need – a combined approach will see the greatest and fastest positive effects in achieving socio-economic development. Some of the funds used for the SGR should have been designated to other sectors, particularly to educational institutions across the country. This will build on human capital and improve Kenya’s competitiveness in the region. Increases in both the number of teachers as well as their salaries would result in improved educational results. Training schemes, specialised programs and higher education will offer more Kenyans the chance to gain meaningful employment –generating the economic development effects that the literature could not ascertain from TII. These increases in educational investments, combined with the SGR, would

result in greater positive effects on both economic growth and development that will bring Kenya closer to the blueprint of Kenya Vision 2030.

Although Chinese firms have an increasingly positive reputation with regards to quality and speed of TII constructed, their financing of these projects is characterised by controversy and uncertainty. When major institutions like the World Bank, IMF and other Development Banks refuse to finance a project and the Eximbank offers the financing, the projects should be careful scrutinised not only for their projected benefits, but also for the possible repercussions on debt accumulation, employment of the local population and on the environment. These loans amounting to billions of dollars should not be taken lightly, and avoided whenever possible.

On a broader scale, research showed that the crucial impediment to realisation of economic benefits of both investments in both transport as well as other sectors is corruption. This impedes nearly every aspect of both economic growth and economic development, and intensifies issues like inequality (in economic as well as social terms) and poverty. This is exemplified by Transparency International's report that over a third of funds for TII in developing countries is lost to corruption (Keuleers 2015) Although not the focus of this paper, it is still important to note that a radical change, at a societal and political level, is required to reduce the negative repercussions of corruption. These changes would prevent the loss of funds through embezzlement, cost manipulations and fraudulent deals that regrettably accompany TII across developing nations. This is particularly true for projects whose costs run into the hundreds of millions or even billions of dollars like the SGR. The desire for and scope of corruption increases as more funds are available, as it is more difficult to account for costs overruns with such vast projects. Accountability measures and independent reviews are also made more difficult by the vastness of these projects, both financially as well as in geographical size. These recommendations hold not only for Kenya and SSA nations, but developing countries across the world where corruption continues to hamper prosperity and equality.

This corruption is crucial to the critical research on TII carried out by Ansar & Flyvbjerg, who pointed to the 'Machiavellian Formula' where TII is characterised by overstated benefits and understated costs to win project approval. They argue that TII fails to deliver a positive return – however this paper has shown that it will deliver, over time, this positive return. These misrepresentation of costs and benefits is facilitated by corruption. If, as Transparency International stated, one third of TII funds go missing, over \$1 billion has been lost during construction of the SGR. Therefore, if corruption was minimised then so too would be the debt requirements that came with the SGR.

Additional scrutiny was placed by Ansar & Flyvbjerg on debt-financed projects (much like the SGR – 90%), as these can cause accumulation of debt, currency instability and economic

fragility. If corruption was tackled, not only would there be less funds required (and therefore smaller loans), but the recovery of funds in other sectors could allow both Kenya as well as other nations to fund the majority of TII themselves. This would minimise the pernicious macroeconomic impacts of debt-financed projects as proposed by Ansar & Flyvbjerg. It would also increase the likelihood other institutions, such as the World Bank or African Development Bank, to offer competitive financing, due to lower requirements and improved accountability of funds.

A long-term recommendation is for the Kenyan Government to support the establishment a Kenyan-based company that constructs TII across both Kenya and SSA. This would develop many employment opportunities especially for Kenyans, and avoid the potential issue of Chinese firms importing Chinese labour. These local businesses would operate on their own terms and conditions, instead of conditions imposed by foreign institutions, and use local knowledge to implement suitable projects from an economic, social and environmental perspective. These projects would be aimed directly at the primary impediments to achieving the Kenya Vision 2030, as discussed in each of the three pillars. They would not be gauged on the basis of their ability to contribute to a foreign nations exports, disregarding the true impact on the receiving nation.

This firm could also expand beyond Kenya's borders and offer construction of railroads and other infrastructure across the region – improving trade integration for SSA. This expansion would offer additional employment as well as result in increased demand for manufacturing jobs in Kenya to construct the materials required for TII. This would diversify Kenya's economy, as manufacturing was found to be an underdeveloped sector, offering increased security against the threat of external shocks, while also likely increasing the value of the KES.

9. Limitations & Further Research

Despite several meaningful conclusions arising from this dissertation, there were also several limitations that hindered the research and subsequent conclusions. The primary flaw affected not only this study but nearly all other research on developing countries is the issues of data scarcity. Due to either lacking, inaccurate or non-existent data, it was not possible to conduct an empirical analysis that would draw meaningful conclusions as the focus of this paper was on TII for developing countries. Although the extensive literature review and research did offer valid conclusions and recommendations, these would have been further enhanced with the availability and analysis of data.

Developing countries should therefore increase their effort in establishing and maintaining databases that offer concrete indicators of a nation's socio-economic developments, as well as data relating to specific sectors and projects. This would assist them in implementing suitable reforms and investments, whether transport-oriented or otherwise, while also facilitating further research on these countries.

Another limitation was that the focus of this paper, the SGR, was opened in the same year as this dissertation was researched and written. Therefore it was extremely difficult to establish true economic growth and development effects – they could merely be predicted. However the literature review indicated that these predictions can often be, intentionally or otherwise, skewed or misrepresented. Additional research could revolve around retrospective analysis, with actual cargo freight and revenues employed in analysis rather than predictions.

Finally, the scarce research on TII in developing nations is primarily focused on urban areas, including capital cities and other large urban centres. Rural areas are often neglected, even though these are the regions often most in need both investments in transport infrastructure as well as other sectors. As large parts of the SGR pass through these rural areas, the effects ascertained may differ slightly from their effects in urban areas. However this does offer the possibility of further research – analysis of the economic growth and development effects on rural areas will complement existing research currently mainly oriented at urban areas. This would also facilitate measuring effects arising from investments due to smaller areas required in examination. This would be an extra dimension to existing literature.

This lack of existing research on the areas found to be most in need of development also holds for the SSA region. Empirical research on the effects of TII is abundant when it comes to developed countries – particularly for the United Kingdom and the United States. However their infrastructure is extremely well developed relative to that of SSA. Both SSA nations, international institutions as well as the scientific knowledge base would benefit from increased focus on areas most in need of TII – particularly SSA.

One of the main contributions of this dissertation is to supplement literature on transport infrastructure with a focus on railroad infrastructure – an area severely lacking in comparison to analysis of roads. Due to the increased demand for railroads due to their cost-competitiveness, ability to transport a large amount of goods and reduced emissions compared to other modes of transport, railroads will likely hold an increasingly-important position in transport infrastructure, particularly for developing countries.

A side note is that the analysis of this paper is severely impacted by corruption, very similarly to the impediment it constitutes to achieving Kenya Vision 2030. The non-transparent bidding process and corruption make it very difficult to measure the true cost of the SGR – it may lie below the \$3.4 billion but may also exceed it by a sizeable margin. This uncertainty further solidifies the author's view that to realise the true benefits of investments, transport-oriented or otherwise, corruption in developing nations must be tackled before implementing any major investments. Although the project should still offer a positive return, this corruption will affect the period required for this positive return on investment to be realised. The fact that corruption not only impedes achieving many aspects of the blueprint set forth under Kenya Vision 2030 as well as individual research epitomises the issues of corruption.

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