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NORTH SOUTH CORRIDOR PROGRAMME IN THE CES TRIPARTITE CONTEXT

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ABSTRACT

In the realm of the post-independence economic integration process in Sub-Saharan Africa, intra-regional trade intensity for the African Regional Economic Communities (RECs) has remained low. The average share of intra-regional exports in Africa's total exports was about 11 percent during the period 2000-2012 (Ncube, Brixiova, & Meng, 2014). The intra-REC co-movement of industrial outputs has been affected by high transportation costs in Sub-Saharan Africa, varying from 15 to 20 percent of import costs (Teravaninthorn & Raballand, 2009).

As a policy response to the unbalanced economic growth structure of the REC micro-geographies, transport corridor as an integrated policy approach in economic infrastructure planning has gained importance in the second half of the 1990s and the total number of transport corridors increased to nineteen in the geographies of Sub-Saharan Africa over the past two decades. Among nineteen transport corridors, North-South Corridor Programme, launched by the three African RECs – COMESA, SADC, and EAC - in 2009, has been endorsed by the economic development communities as the most promising corridor programme to unlock unutilized economic potential through decreasing trade transaction costs (*e.g.,* transit transportation costs), particularly for the landlocked countries in the Eastern and Southern Africa Region.

With focus on the North-South Corridor Programme, the present research revealed the spatial, political, and operational bottlenecks impeding the efficiency of the North-South Corridor Programme through the following key aspects: (I) Political geography of the corridor location; (II) Transit transportation infrastructure quality and transit trade and transport regimes; and (III) transportation governance issues with regard to the multi-country cross-border corridor management. Furthermore, the research theorized a replicable multi-layered analytical framework for executing policy analysis on multi-country cross-border transport corridor studies.

1. CHAPTER 1. INTRODUCTION

1.1. INTRODUCTION

Acknowledging the multi-cephalic trajectory of African economic regionalism and overlapping inter-regional cooperation frameworks at the Regional Economic Community (REC) level, *transport corridor* programmes have progressively contributed cultivating an inter-governmental policy fusion space for economic infrastructure development. Over the last few decades, *cross-border transport corridor* programmes, *i.e.* a supply-driven economic infrastructure policy approach to deepen cooperative regional integration efforts in the sub-regions of Sub-Saharan Africa (SSA), became the locus of regional policy formulation in Sub-Saharan Africa in the effort to: **(I)** restructure spatial geography of circulations through inter-connecting privileged spatial areas of human settlements and stretching connection patterns across spaces; **(II)** enhance a form of compromise between tensions that arise in formulating and implementing region-wide integration strategies; and **(III)** consolidate interstate trade flows for commodity related sectors through streamlining the transit movement of intra- and inter-regional physical trade flows at regional level (Dalleau & van Hove, 2012; World Trade Organization (WTO), 2006; Mackie, Bilal, Ramdoo, Hohmeister & Luchko, 2010; Delpeuch & Messerlin, 2011; Lui & van Seters, 2012; Getis & Getis, 1966). In the Economic Brief, undertaken for the African Development Bank (AfDB), Mulenga (2013) explicated "*transport corridor"* as "a route (generally linear tract of land or water) on which at least one main transport line (a road, a railway or a canal) has been built and which connects centers of economic activity across one or more 'neighboring' countries" (p.2). Hence, *transport corridor* has been defined as constructs having functional and physical dimensions (*i.e.* links, nodes and gateways) and providing transit transport and logistics services that promote trade among (hub) cities and countries for commodity related sectors, in particular the mining sector.

Nonetheless, the co-existence of the programmatic paradigms for economic infrastructure development in the realm of African regional economic development corroborated that there

is no definite meaning and intended purpose of *transport corridor.* Following the launch of the "Spatial Development Initiative (SDI)" in South Africa in 1995, *transport corridor* subscribed to a methodological policy approach for spatial clustering with the prime objective of generating economic growth in under-developed areas (Hope & Cox, 2015, pp.11-13). Nonetheless, gradual alterations occurred to the policy concept *transport corridor* over the last decade*.* In 2008, the AfDB legitimated the multilateral appropriation of transport corridors as *Regional Public Goods* (RPGs). This policy approach implies that the *transport corridor*, generated through regional and inter-state cooperation efforts, forms a shared contribution property ownership, in particular for the corridor countries. AfDB adopted and retained the concept of RPG, as propounded by Devlin and Estevadeordal (2002/2004). They defined RPG as "transnational public goods whose non-rivalry and non-exclusive properties extend beyond national borders but are contained in a well-defined set of states or a geographical region" (Devlin and Estevadeordal, 2004, p.159). This approach enhanced a holistic understanding with regard to the interplay between (a) *non-trade related inter-state cooperation areas*, rising from geopolitical motives of African States, contractual arrangements and regulatory devices framing property rights of the physical infrastructure components of the transport corridor system, and (b) *structural transport market deficiencies*, arising from the imperfect and fragmented nature of the African transport market. In 2008, three African RECs – the Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), and Southern African Development Community (SADC) –, formed the inter-REC political alliance "COMESA-EAC-SADC (CES) Tripartite Task Force (TFT)" in the effort to deepen economic integration of the southern and eastern Africa, through streamlining the REC policies for the three priority areas, *i.e.* infrastructure development, customs harmonization, and trade facilitation. In 2009, the CES Tripartite RECs launched the North-South Corridor Programme, *i.e.* an Aid-for-Trade (AfT) programme financed by multiple bilateral and multilateral donor organizations. Hence, the CES Tripartite RECs used the policy concept *transport corridor* to introduce a 'meta-regional programmatic perspective' for economic development and involved transport corridor countries into the implementation and coordination of the North-South Corridor AfT programme.

The present research focused on the North-South Corridor Programme, with scopic attention to the transit road transport component of the corridor physical infrastructure[1]. The research critically assessed the complex interplay between the spatial dynamics of the corridor location, political geography of the corridor countries, and transit inter-operability issues impacting the trade logistics capacity of the North-South Corridor.

The ***theoretical*** and ***practical contributions*** of the research were:

- The research considered *transport corridor* as a policy planning approach for economic development. *Section 2.3.* theorized a replicable multi-layered analytical framework for multi-country cross-border transport corridor research design and analysis and the present research conducted the case analysis based upon the theory framing in *Section 2.3.*
- The research findings revealed the spatial, political, and operational bottlenecks impeding the efficiency of the North-South Corridor. The identified bottlenecks, considered as the drivers of trade costs and/or non-technical barriers to trade, explicated **(a)** how spatial morphology of the corridor country location impacts directly the spatial adaptation and infrastructure responsiveness of the transport corridor system and its infrastructure responsiveness; and **(b)** why *physical infrastructure optimizations* in corridor transport structures, *harmonized transit regime*, and *institutionalized corridor governance system* could be important to enhance the efficiency impacts of the North-South Corridor Programme. The research findings pointed out the efficiency issues in transit logistics network system of the North-South Corridor Programme.

The major ***limitations*** of the research were identified and addressed as follows:

- ***External limitation.*** There is no *locus classicus* of the African transport corridor studies that could provide research insights on theoretical framing strategies, largely due to the co-existence of the aforementioned 'coding paradigms' in the realm of regional policy-making. Therefore, the case research and analysis grounded in intersection experience and analytical eclecticism, created through investigating different academic fields, *i.e.* transit transport and

[1] Approximately 95 % of traded goods (i.e. mining products, agricultural products, and manufactured goods) are transported by road along the North-South Corridor (Pearson, 2012, p.2)

logistics studies, network and stakeholder models used in analyzing the operational performance of transport corridors, and theoretical studies of regionalism (*e.g.*, neo-functionalist and neo-realist perspectives within the fields of new economic regionalism and new economic geography).

- ***Internal limitation.*** The qualitative case study, both exploratory and descriptive in purpose, was designed as an "*embedded single-case study*" with multiple units of analysis (Yin, 2003, p.40). The researcher used an inductive content analysis and hermeneutic interpretation as an approach to code concepts, thematic content constructs, and patterns from the analyzed case data. The case study protocol and research created threats to validity and reliability of the research findings, *e.g.,* objective verifiability, credibility, confirmability, and so on. In the effort to address the matters of validity and reliability, the research used: **(I)** Phillip Mayring's "*step model of inductive category development*" (Mayring, 2000) in the effort to balance the descriptive and interpretative content components of the present research; **(II)** a data reduction strategy through setting out an inclusion criteria for selecting collecting primary and secondary data; and **(III)** triangulation of analyzed case data with the constructed theory-based methodology.

1.2. RESEARCH RATIONALE

1.2.1. Research Object

This section provides an objectively structured presentation of the research object, the North-South Corridor Programme. It informs on its programmatic objectives/outcomes, corridor ownership structure reflected as percentage share of the corridor transportation land use by country, and the corridor infrastructure components.

Political identity. Following the informal establishment of a joint COMESA-SADC Task Force for the purpose of information exchange at the Executive Secretariat level, the EAC was brought into contact in order to establish a Tripartite Task Force (TTF) at the 2005 Ministerial Meeting of the Southern African Development Community (SADC) in Egypt. One year later, the first TTF meeting was held in Rwanda. TTF focused on joint implementation of programmes (*e.g.,* inter-REC infrastructure investment programmes, transit trade policies,

inter-REC cooperation for extra-regional trade agreements) aimed at deepening regional economic integration through establishing two individual sub-committees, namely the Trade and Infrastructure Sub-Committees (Zamfir, 2015). At the 2008 CES Tripartite Summit of Heads of State and Government held in Kampala, Uganda, two summit resolutions were adopted with regard to the establishment of FTA and the TTF Work Programme. The approved TTF Work Programme reflected a supply-driven economic infrastructure policy approach to deepen regional integration and regional trade liberalization efforts through restructuring inter-REC transit transport chain and concentrating investment flows in the traded commodity sectors, *i.e.* mining products, agricultural products, and manufactured goods. Following the 2008 Tripartite Summit, the Trade Sub-Committee of TTF was in charge of preparing the Tripartite Free Trade Area (TFTA) through drafting an iterative roadmap for establishing the TFTA and the Agreement establishing the TFTA. The draft version of the TFTA was communicated to the 26 members and partner states and started the multilateral negotiation process in relation to tariff liberalization, FTA negotiating modalities, and so forth. For the TTF Infrastructure Sub-Committee, the core task was the design of the North-South Corridor Pilot Aid-for-Trade Programme (Ibid.). The CES Tripartite RECs[2] embarked upon a 20-year regional Aid-for-Trade Programme 'North-South Corridor Programme' and pledged to mobilize US$1.2 billion worth external infrastructure financing for the identified programme components during the 2009 High-level Meeting (HLM) Conference in Lusaka, Zambia (World Trade Organization, 2009b). The African Development Bank's Ten-Year-Strategy (TYS) (2013-2022) (AfDB, 2013a) and its Regional Integration Strategy Papers (RISP) (2011-2015) (AfDB, 2011a/2011b/2011c) highlighted the strategic and operational role of the CES Tripartite Arrangement for mainstreaming regional Aid-for-Trade (AfT) strategies for economic infrastructure development.

Programmatic objectives. In the corridor region, one of the major constraints to the regional economic development is the high cost of cross-border trade, in particular costs of surface transport. In its March 2011 Cost of Doing Business in Zambia, Japan International Cooperation Agency (JICA) estimated that the freight shipping rate for the 20-foot heavy

[2] The three RECs – the Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), and Southern African Development Community (SADC) – constitute together a regional grouping of 26 countries with a combined population of 527 million people and a combined Gross Domestic Product (GDP) of US$ 624 billion. The CES Tripartite makes up 58 % in terms of contribution to GDP and 57 % of the total population of the African Union (AU) (African Development Bank, 2011c).

container costs US$ 4,700 for the distance from the *Lusaka* city in Zambia to the seaport of *Durban* in South Africa, under CIF[3] terms of delivery in export-oriented international trade (JICA, 2011). Two core reasons of the high cost of cross-border trade are: **(I)** the high costs of production in the manufacturing sectors affecting the manufacturing businesses since it is more expensive to import the raw materials used in the manufacture of finished products than export raw materials to extra-regional trade partners; and **(II)** the lack of institutional capability in streamlining the sequential development of projects designed for upgrading the transport facilitation and transportation structures of the Trans-African Highway Network (see **Appendix B**). To address these structural issues, the North-South Corridor Programme comprises trade facilitation projects, surface transport rehabilitation/maintenance projects, and regional power inter-connector projects across the eight countries, namely Botswana, Democratic Republic of Congo (DRC), Malawi, Mozambique, South Africa, Tanzania, Zambia, and Zimbabwe. With the technical and financial implementation support given by the Department for International Development (DFID) and TradeMark Southern Africa (TMSA), the **primary programmatic objective** of the North-South Transport Corridor Programme is to improve, harmonize, and standardize the cross-border multi-modal infrastructure system through smoothing the transit traffic flow, decreasing delays at land border crossings and seaports, and removing tariff and non-tariff barriers to trade in the CES Tripartite context. The expected **programmatic outcomes** of the Programme are agreed as follows: **(I)** reduce the overall transport costs and transit traffic times between the port of *Dar es Salaam* and *Lusaka* city by at least 25 percent; **(II)** reduce travel times spent on road transport between *Lusaka* city and *Durban* by at least 10 percent; **(III)** reduce transit travel times at the *Chirundu* border crossing between Zimbabwe and Zambia by at least 10 percent; **(IV)** reduce transit costs and traffic times between the eastern and southern parts of Africa; and **(V)** increase hydroelectric power generation and transmission in the region ("The North-South Corridor Programme Press Release", 2009, September 06). In an effort to enhance corridor efficiency and functionality, the CES Tripartite launched in early 2011 the Comprehensive Tripartite Trade and Transport Facilitation Programme (CTTTFP), along with a series of institutional corridor management units and infrastructure financing coordination mechanisms (TradeMark Southern Africa, 2011c).

[3] CIF is a trade term and stands for 'Cost, Insurance, and Freight'. The International Chamber of Commerce (ICC) stipulates, "under CIF the seller is required to obtain insurance only on minimum cover" (International Chamber of Commerce, 2010, p.105).

Spatial identity. Among the 19 transport corridors (see **Appendix C**), the North-South Corridor is acknowledged by the regional development financing communities as the busiest multimodal transport network in terms of traffic and freight volumes with a total of 10,647 km of road network connecting 25 gateway cities, three seaport outlets (*i.e.* Port of *Durban* in South Africa, Port of *Maputo* in Mozambique, and Port of *Dar es Salaam* in Tanzania), 600 km of railways, and 14 border posts. Amongst 19 transport corridors, the North-South Corridor, combining *Durban*, the *Dar es Salaam* Corridor, and the segments of the *Trans-Kalahari* and *Nacala* Corridors, stretches from the port of *Durban* to the eastern port of *Dar es Salaam* through crossing eight countries. Corridor ownership structure reflected as percentage share of the corridor transportation land use by country is as follows: Zambia (25%) and the Democratic Republic of Congo (DRC) (4%), via Botswana (12%), Zimbabwe (20%) and Malawi (10%), with ports in Mozambique (4%), Tanzania (9%) and South Africa (16%) (TradeMark Southern Africa, 2011a/2011b/2011c; Odoki, Anyala & Akena, 2014).

The intra-regional trade interface of the promising North-South Corridor Programme is expected to unlock unutilized economic potential through decreasing trade transaction costs (*e.g.,* transportation, storage, document presentation at border crossings), minimizing trade adjustment costs and increasing efficiency-seeking Foreign Direct Investment (FDI) flows to targeted commodity markets, particularly the resource-based markets and resource infrastructure markets (Freund & Rocha, 2010, p.14; Vijil & Wagner, 2012; Hoekman & Nicita, 2010, p.18; Arvis, Mustra, Ojala, Shepherd, & Saslavsky, 2010, p.5). However, the 2016 African Regional Integration Index highlights that each of the eight corridor countries follows different regionalism trajectories. Among the eight corridor countries, South Africa represents 61 % of regional GDP, with high integration in the five Dimensions. Botswana represents 2 % of regional GDP, with high scores on trade integration; highest score on regional infrastructure in SADC, and financial and macro-economic integration; and Zambia represents 2.5 % of regional GDP, with highest score on trade integration in COMESA, productive integration and free movement of people both in COMESA and SADC scores (African Development Bank [AfDB], African Union Commission [AUC], & Economic Commission for Africa [ECA], 2016). Zimbabwe ranks higher on Productive integration in SADC due to its geographical closeness to the SADC countries (low in COMESA ranking). Whereas DRC is a

high performing country on Trade integration in COMESA and one of the principal contributors to wealth creation in the ECCAS, with 36 % and 19 % of regional GDP. Mozambique and Zimbabwe are high performing countries on Trade integration in SADC and Zimbabwe is high performing on Free Movement of people both in COMESA and SADC (Ibid.).

Inter-modal infrastructure components. The Tripartite initially focused on strengthening, coordinating, and harmonizing programs in infrastructure, investment, and trade facilitation. A pipeline of cross-border projects has been identified for infrastructure upgrading projects along the North-South Corridor (Odoki, Anyala & Akena, 2014; Teravaninthorn & Raballand, 2009). The bloc's Tripartite Task Force identified 59 road schemes, 38 rail projects, six bridges and eight one-stop border-posts required to rehabilitate the Corridor over two decades (see **Appendix D** for the detailed overview of project pipeline).

1.2.2. Relevance to the existing academic research corpus

The scope of the research rationale was established throughout a progressive research of available corridor-level assessments and of applied macro-economic impact assessment studies evaluating multi-modal and multi-regional transport corridors. A synthesis reading of research products revealed major research gaps in the existing literature of corridor studies that are identified as follows:

- The present understanding of corridor assessment, developed by development practitioner and academic literature-makers, provides a one-sided (logistics) perspective while informing on the current state of corridors without producing to-the-point empirical insights on: **(I)** the interplay between the corridor infrastructure developments, industrial potential of the corridor location, geopolitical identity and geo-economic weight of the corridor stakeholder groups (Kunaka & Carruthers, 2014, p.17); and **(II)** the existence of non-proclaimed geo-political and operational bottlenecks within the organizational context of corridors and the corridor transit regime, impacting the shared absorptive capacity of corridor countries – critical mass of primary corridor users –, while benefiting from the service- and physical-infrastructure related components of corridors;

- Without demonstrating a nuanced methodology to triangulate zonal statistics data[4], overlapping REC-level "*product space*" statistics data[5] (Hausmann & Klinger, 2006; Hidalgo, Klinger, Barabasi, & Hausmann, 2007), and traffic statistics data to assess geo-economic dynamics and/or trade potential of the corridor context, the current state of macro-economic impact assessment studies provides a limited rhetorical construction of corridor efficiency when developing prescriptive corridor –level economic infrastructure and trade facilitation recommendations on the basis of inadequate estimates of corridor efficiency. The lack of integration of "*product space*" statistics data (Ibid.) limits the critical understanding with regards to the spatial topologies of investment flows along the corridor transport chain (Aschauer, 1989; Munnell, 1990; Garcia-Milà & McGuire, 1992; Holtz-Eakin, 1994; Morrison & Schwartz, 1996);
- Despite the analytical shifts from static to dynamic macro-econometric modeling devices (*e.g.* gravity model[6], input-output model[7]) used to execute macroscopic trade and traffic simulations to analyze the disaggregated factors that generate demand for intra-corridor flows, the macro-econometric impact assessment studies of corridors introduce a mechanistic understanding of intra-corridor flow. Furthermore, they do not take into consideration person flow along the corridor (Altshuler, Womack, & Puchner, 1979) consider intra-corridor trade flow as a systemic, stochastic and rational choice of travel demand without taking into consideration shifts in geopolitical or behavioral patterns of the corridor countries;
- Corridor Diagnostics and Monitoring & Evaluation (M&E) Assessments, without providing numerical data on yearly forecasts on future transport demand and cross-border trade capacity, impede responsiveness of the cross-border corridor infrastructure quality management and prevents corridor stakeholder groups to adjust supply push

[4] *Zonal statistics data* are the aggregate data calculated and computed for a sample of spatial zones defined by its input value, i.e. its shape, locations of the zone, and so forth.
[5] "*Product space*" is a trade network theory; according to which the similarities/dissimilarities between the inputs deployed to produce a final product reflects the input-output linkages in export business (Hausmann & Klinger, 2006; Hidalgo, Klinger, Barabasi, & Hausmann, 2007).
[6] The classic "*gravity model*", emerged from the gravitational analogy, is a theory-grounded econometric model used to generate empirical findings on economic distance, in other terms, bilateral trade patterns between two spatially defined entities. The model enables to simulate bilateral trading interactions between two spatially defined entities on the basis of the following equation: Trade value of important/export between the spatial entity A to the spatial entity B is equal to the economic size, measured in GDP, of the two spatial entities divided to the geographic distance between the two location points (Combes, 2008).
[7] *Input-output model* is an econometric model used to understand inter-industry dynamics through simulating input-output linkages between different industrial (sub)sectors. It enables to understand how outputs produced within an industrial (sub)sector could be used as inputs for another industrial (sub)sector ("Input-Output Analysis", n.d., para 1-3).

infrastructure investment policies to increase internal trade fluidity of the corridor in an efficient manner.

The identified major research gaps proved that the evidence-based quantitative research practices in multi-country cross-border transport corridor studies do not provide a holistic perspective with regard to the spatial, political and operational bottlenecks impeding the efficiency of transit logistics systems and organizational performance issues of transport corridors.

1.3. IDENTITY OF THE RESEARCH AND RESEARCH OBJECTIVES

From the perspective of the present time, the below research question was identified for the explanatory research and it is both retrospective and prospective in nature, depending on the research study design, scheme of data collection form and data processing techniques. The hypothetical formulation of the research question identifies the regional trade integration as dependent variable (the "effect") and the structural and operational capabilities of the North-South Corridor as the independent variable (the "cause").

To what extent North-South Corridor contributes to regional trade integration process in the CES Tripartite Context of the Sub-Saharan Africa geography?

The three sub-questions were identified in the effort to analyze the independent variable of the research question in a structured manner:

- Do the political geography and spatial morphology of the corridor location influence the infrastructure responsiveness and spatial adaption of the surface transport structures along the North-South Corridor?
- What are the spatial, political, and operational bottlenecks impeding the efficiency of the North-South Corridor Programme?

- How do physical infrastructure optimizations in corridor transport structures, harmonized transit regime, and institutionalized corridor governance system affect the efficiency of the North-South Corridor Programme?

The narrow focus of the research requires setting out specific research objectives to undertake the research. Given the polyphonic research field of transport corridor studies and pluri-methodological character of economic geography scholarships, the interpretive-explanatory research adopts **(I)** a "*hypothetico-inductif*" research strategy (Crozier-Friedberg, 1977) to infer theoretical patterns from the observed case data and **(II)** develop an interpretative frame of understanding to construct the reflexive foundations of the research trajectory. The "*hypothetico-inductif*" research strategy will enable to reconstruct the representation of corridor research studies and to renew the widely accepted research rhetoric of corridor assessments in transport studies (Ibid.; Reichardt & Cook, 1979, p.17; Easterby-Smith *et al.*, 1991, p.24; Guba & Lincoln, 1994; Stake, 1995). In terms of political stance of analysis, the present research adopts a politically detached stance without proliferating any judgments and truth claims on the political implications of research findings, despite the fact that ideological inscription of the chosen sector and academic research field impacts the autonomy of the trade and transport data constructs. As part of the research management strategy, the present research conjoins a *dynamic temporal approach* to analyze the evolving nature and internal fluidity of the lived North-South Corridor space and a *synchronic temporal approach* to highlight historical interventions within the organizational and systemic context of the Corridor (Champagne & Denis, 1990; Brousselle, 2004; Brousselle & Champagne, 2005).

The below objectives of the research aim to develop focused research goals in order to address the research question and the sub-questions:

Research Objective 1. Conduct an inductive case-specific data analysis for the baseline period 2002-2015[8] in the effort to *understand* and *assess* extent of regional road transport connectivity in the CES Tripartite context.

- **Expected Research Outcome 1.1.** *Define* the multi-dimensional spatial identity construct and organizational structure of the North-South Corridor. *Establish* an operational definition for the North-South Corridor phenomenon. The researcher addressed the *Expected Research Outcome 1.1.* in **Chapter 1**.

Research Objective 2. Conduct a systematic theoretical literature review to *set out* conceptual and theoretical framing for the case research and analysis.

- **Expected Research Outcome 2.1.** *Produce* a reflexive content to enable the research to have an epistemological and ontological positioning, *i.e.* a research lens. The researcher addressed the *Expected Research Outcome 2.2.* in **Chapter 3**.
- **Expected Research Outcome 2.2.** *Theorize* an *in vivo* paradigm for African regionalism(s) that is open to be gradually altered for the account of evolving regional development policy issues. *Develop* a replicable multi-layered analytical framework for multi-country cross-border transport corridor research design and analysis. The researcher addressed the *Expected Research Outcome 2.2.* in **Chapter 2**.

Research Objective 3. Conduct an inductive content analysis with the aim of *identifying* and *analyzing* the spatial, political, and operational bottlenecks impeding the efficiency of the North-South Corridor.

- **Expected Research Outcome 3.1.** *Examine* the political geography of the North-South Corridor transport system, cross-border interoperability issues with regard to the North-South Corridor transit regime. The researcher addressed the *Expected Research Outcome 3.1.* in **Chapter 5**.

[8] The baseline period is divided into three-year groups to facilitate the case-specific data collection: 2002-2006 (*i.e.* period prior to the first TTF meeting in 2006, in Rwanda); 2006-2009 (*i.e.* period prior to the 2009 HLM Meeting launching the North-South Corridor Programme in *Lusaka*, Zambia); and 2009-2015 (*i.e.* period following the launch of the North-South Corridor Programme).

1.4. STRUCTURE OF THE THESIS RESEARCH

Chapter 1 presented the *raison d'être* and the identity apparatus of this research through setting out the research question and establishing the specific research objectives to conduct the research. The remainder of the research is structured as follows:

Chapter 2 provides a trans-topical solid literature background to the research inquiry. *Section 2.1* theorizes an African(ist) paradigm of regionalism for the research and provides a narrow-scope literature review on the cooperative forms and economics of regional integration in the African context. *Section 2.2* offers research insights with regard to the historical evolution of *transport corridor* as a policy approach in Africa. *Section 2.3* builds a theoretical background to understand organizational performance of cross-border transport corridors and theorizes a meta-framework for the cross-border transport corridor research design in relation to the case object.

Chapter 3 sets the research lens for the research inquiry in the effort to avoid any analytical generalization and to originate the research. *Section 3.1* informs on the status of ontological claims with regards to the notions of *border* and *borderland space* and demonstrates the flexible boundaries of the identity apparatus of the research inquiry, *i.e.* cross-border transport corridor. *Section 3.2* delves into the epistemological considerations with regard to the *corridor*, explains the concept of corridor, and posits a multi-dimensional interpretative framework through informing on the different positional identities of the corridor phenomenon.

Chapter 4 deconstructs the methodological research architecture designed for the research inquiry. *Section 4.1* informs on the pluralistic Philosophy of the Research. *Section 4.2* details the research design process, with focus on research strategy, research choices and the temporal dimensions of the research inquiry. *Section 4.2* fully details the data collection, data processing techniques and procedures for the research, while setting out descriptive parameters on data quality management and the matters of validity and reliability relevant to the qualitative research experience*. Last but not least, Section 4.2.* explains the methodological

assumptions, limitations and delimitations with regard to the research object, selected research arena, and the choices made in previous sections of **Chapter 4**.

Chapter 5 consists of three sections. *Section 5.1* assesses and critically examines the political geography of the transport corridor system through analyzing **(I)** the geo-economic motives of the North-South Corridor countries and their territorial morphology and **(II)** inter-state dynamics in enhancing vertical and horizontal intra-regional resource synergies. The outputs of *Section 5.1* explain whether there is a 'zone of common interest' for the North-South Corridor countries and why the North-South Corridor Programme offers a limited regional trade logistics connectivity capacity for the corridor countries. *Section 5.2* identifies and critically assesses the core cross-border interoperability issues with regard to the North-South Corridor transit regime and reveals its limits in blending into the domestic infrastructure systems and transit regimes of the corridor countries. *Section 5.3.* points out to the issues concerning the institutional capacity of the North-South Corridor. *Section 5.4.* concludes with the key research findings for **Chapter 5**.

Chapter 6 summarizes the trajectory of research and its contribution and offers recommendations for future research.

2. CHAPTER 2. LITTERATURE REVIEW

Chapter 2 builds a trans-topical literature background to the research inquiry and justifies its originality and relevance to the present research. **Chapter 2** proceeds as follows. *Section 2.1* acknowledges that there is no coherent paradigm explaining the complex process of African economic regionalism(s) and codifies an interpretive African(ist) paradigm for economic integration that was born out of a wide range of research in regionalism theories. The researcher uses '-ist' suffix intentionally to claim that the organized praxes of African regional development organizations offer an *in vivo* paradigm for African regionalism(s) that is open to be gradually altered for the account of evolving regional development policy issues. *Section 2.2* explicates the historical evolution of *transport corridor* as a policy approach in the composite institutional context of African (sub-)regional development organizations. *Section*

2.3 theorizes a meta-framework for the cross-border transport corridor research design in relation to the case object.

2.1. THEORIZING AFRICAN(IST) PARADIGM OF REGIONALISM

Relativizing the Paradigm of Regionalism. The eclectic African(ist) paradigm of regionalism progressively emerged out of the increasing integrative approaches between *in situ* and *ex situ* regional policy praxes. *Ex situ* refers to the historical "*extra-regional echoing*" phenomenon (Kaiser, 1981), rooted in both the geo-political and anthropo-geographic configurations of Africa by the colonial objectives and the politico-economic rescaling efforts to immerse into newly established trade blocs (*i.e.* Regional Trade Agreements [RTAs], Preferential Trade Agreements [PTAs]) in the 1990s. Contrastingly, *in situ* refers to the African Union (AU)'s coherent linear market integration[9] strategy, grounded in policy-oriented cross-border cooperation and monetary regionalism (Dieter & Higgot, 2003) for deepening mutual economic development (African Union, 1991). The divergent yet correlative regional policy praxes create a theoretical tensional field of cross-border integration, inter-regionalism, new economic regionalism for the present case research since the empirical reality refers to a dynamic polycentric regionalism that conciliates different scales, forms, and scopes of policy-oriented trans-border cooperation mechanisms in various fields of activity. In other terms, *regional integration process* is considered as a tensional and undirected phenomenon occurring between: **(I)** *inter-governmental* and *market-induced* "extra-regional echoing" (Kaiser, 1981) practices, creating cooperative links between formal/informal non-state institutions and organizations (e.g. donor organizations, multinational corporations [MNCs], civil society organizations [CSOs], criminal groups, and so forth) outside the African continent and the African nation-states; and **(II)** *geographically bounded* and *state-induced* integration process. *State-induced* integration, started with the establishment of the eight AU-endorsed RECs in Africa, supports the neo-functionalist theory of regional integration process, which Haas (1958) defines as:

[9] Defined by the legal terms of the Abuja Treaty establishing the African Economic Community (AEC), the six stages of regional economic integration as follows: Preferential Trading Area (PTA), Bilateral and Multilateral Free Trade Area (FTA), Customs Union, Common Market, Economic and Monetary Union, and Complete Economic Integration (Abuja Treaty, 1991, Article 6).

"The process whereby political actors in distinct national settings are persuaded to shift their loyalties, expectations and political activities toward a new centre, whose institutions possess or demand jurisdiction over the pre-existing national states. The end result of a process of political integration is a new political community, superimposed over the pre-existing ones." (Haas, 1958, p.16)

Building on the scholarship of the New Economic Regionalism (Johnston, 1965; Cooper & Messell, 1965; Berglas, 1979; Palmer, 1991) and the neo-functionalist theory of regional integration process, the present case research acknowledges the North-South Corridor Programme as a *government-induced regional cooperation*. Lee (2000) coined the term as "the execution of joint projects, technical sector cooperation, common running of services and policy harmonization, and joint development of natural resources" (p.3).

Cooperative Forms of Regional Integration. Defining forms of regional integration in Africa requires an explorative research effort including analyzing theory characteristics of the neo-functionalist (Haas & Schmitter, 1964) and neo-realist perspectives (Söderbaum, 2004) of regionalism. Cooperative forms of regional integration are associated to the scale construction of *"regionness"*, the concept coined by Hettne (2005/2008). According to Hettne and Söderbaum (2000), the *"regionness"* is an ideational construct with five stages of historical evolution: **(I)** an objectively defined spatial entity with its territorial boundaries; **(II)** an evolving organized social system, largely due to spatial demographic shifts; **(III)** an institutionalized cooperative platform consisting of member states; **(IV)** an organized convergence group blending and harmonizing norms and values throughout the region; and **(V)** a global polity with fixed and organized decision-making structure. Nonetheless, the operational sense of *"regionness"* has gained a different connotation in the contemporary African regional economic integration scene (Ibid.). These five stages come into being co-existent through time. The network structures of inter-regional relations determine three cooperative forms of regional integration that co-exist:

- *Relations between regional groupings*, such as inter-REC cooperation, the New Partnership for Africa's Development (NEPAD) Initiative;

- *Bi-regional and transnational arrangements*, such as the CES Tripartite, Greater Arab Free Trade Area (GAFTA), Economic Community of Great Lakes Countries (CEPGL);
- *Hybrid relations* between regional groupings and single powers, such as the Republic of South Africa.

Furthermore, the eight AU-endorsed RECs act as convergence groups, with differentiated senses of *"regionness"* (Hettne, 2005/2008; Hettne & Söderbaum, 2000), while advocating and accommodating policy adjustments in optimizing nation-states' economic performance towards the continent-wide linear market integration. However, the stability of the political infrastructure provided by the RECs is volatile and limited in terms of influencing the quality and longevity of cross-border dialogue, largely due to **(I)** the weak alignments between state-focused and society-focused approaches to the politics of trade in the African continent, **(II)** structural weaknesses impeding regional competitiveness, and the African 'privatized' international relations, as evidenced in the recent extra-regional initiatives such as the U.S. African Growth and Opportunity Act (AGOA) (2000), the United Nations Programme of Action for African Economic Recovery and Development (UN-PAAERD) (1986-1990).

Economics of Integration: Linear Market Integration. Defined by the legal terms of the Abuja Treaty establishing the African Economic Community (AEC), the six stages of regional economic integration as follows:

- *Preferential Trading Area* (PTA), acknowledging preferential access to certain products for participating member states;
- *Bilateral and Multilateral Free Trade Area* (FTA), enabling to eliminate tariffs quotas and preferences on most goods and services among a group of FTA member states;
- *Customs Union* (*e.g.,* Southern African Customs Union [SACU], East African Community Customs Union [EACCU], Union Économique et Monetaire Ouest African ('West African Economic and Monetary Union') [UEMOA]), introducing a common external tariff grounded in a regional trade cooperation policy to the FTA;
- *Common Market*, introducing common external trade policies into regional trade market regulations while addressing to the technical and non-technical barriers to trade

(NTBTs/TBTs), *i.e.* borders, technical standards, taxes among member states, through converging and harmonizing fiscal and monetary policy in the effort to achieve the economy of scale at the common market level;

- *Economic and Monetary Union*, realizing the monetary regionalism through introducing a common currency;
- *Complete Economic Integration*, the ultimate form and final stage of economic integration (Abuja Treaty, 1991, Article 6).

Hence, the AU's linear market integration has been conceptualized as a sequential process allowing for incremental and progressive improvements for deepening regional economic integration through assembling national economies into large-scale economic regions (Robson, 1980). The proclaimed linear market integration approach lets countries to develop at their own particular pace in gaining comparative advantage throughout its government-induced spatial integration process. It also supports the idea of deepening inter-REC cooperative actions for implementing cohesive and inclusive regional development policies. However, the AU's six-stage linear market integration approach, rooted in the theory of comparative advantage, requires a combination of "*negative integration"* and "*positive integration*[10] approaches for the African nation-states (Koester, 2000, pp.21-34). For the realization of the first two stages, negative integration process occurs since the national governments are required to decrease their political and economic interference from the goods and factor trade mobility across borders. For the efficient implementation for the last four stages, a positive integration approach is required since the member states of the eight AU-endorsed RECs need to adjust and harmonize their economic integration demands in order to increase the additive value of cooperative integration efforts and intra-regional and bilateral trade creation effects of customs union and common market initiatives. The composite political geography, spatial geo-economy, and colonial heritage of the African states fuel in fact a politics of expectation that is difficult to be realized for reaching the ideal goal of continent-wide complete economic integration. As evidenced in the sampled literature for the present research, a number of applied research papers quantifying the trade

[10] *Negative integration approach* refers to the removal of Non-Tariff and Tariff Barriers to Trade (NTBTs/TBTs); whereas *positive integration approach* refers to the domestic policy adjustments in the effort to increase the responsiveness of nations-states to regional integration efforts (Koesler, 2000, pp.21-34).

implication of PTAs in Africa concluded that PTAs promote trade diversion with non-member states, rather than economic integration (Turkson, 2012; Kwentua, 2006).

2.2. HISTORICAL OUTLOOK TO THE AFRICAN TRANSPORT CORRIDOR APPROACH

Section 2.2. constructs a historical narrative on the evolution of the concept *transport corridor* as a policy approach in the realm of African(ist) economic regionalism process.

2.2.1. Spatial Development Initiative (SDI) Programmes

In historical terms, the concept *transport corridor* gained a policy connotation as 'integrated policy approach for spatial hub development' with the "Spatial Development Initiative (SDI)" in South Africa in 1995. The concept *transport corridor* subscribed to a short-term policy planning approach for spatial clustering with the core objective of generating economic growth in under-developed sub-national regions of South Africa (Hope & Cox, 2015, pp.11-13). Coordinated by the Department of Trade and Industry (DTI) in South Africa, the SDIs have been implemented with the aim of increasing locational growth prospects and competitiveness of South Africa while maximizing its domestic and international transit transport efficiency. The SDIs have further contributed to identify and establish 'spatial development axes' for enhancing the efficiency of (domestic and international) transit trade logistics for trade integration (see **Appendix E**). In the SDI approach**,** the rehabilitation and optimization of trunk infrastructure served to enhance the quality of co-modality in transit transport structures and to canalize investment flows in the resource-based markets and resource infrastructure markets across bordering countries. The first successful implementation of SDI was the development of the Maputo Development Corridor between the Gauteng province in South Africa and the seaport of Maputo in Mozambique in 1995 (Mtegha, Leeuw, Naicker, & Molepo, 2012; Söderbaum, 2001). Following the subsequent effects of the Mozambican civil war on decline of highway systems, the Maputo Development Corridor contributed to the inter-state trunk and seaport infrastructure rehabilitation with

the private sector and PPP investments and local economic development with empowered local MSMEs communities (Nyirabikali, 2005). Since then, between 1995 and 1999, the number of SDIs increased to eleven and South Africa institutionalized its SDI methodology at regional scale through inscribing it into the Regional Spatial Development Initiative Programme (RSDIP) in 2000 (Ibid.).

With the inception of the Walvis Bay Corridor (WBC)[11] programme in 2000, the SADC adapted the SDI approach to the regional spatial structure through developing and establishing corridor cluster systems in the effort to optimize intra-regional transit trade logistics capacity across the neighboring transport corridor countries (Cross-Border Road Transport Agency [C-BRTA], 2016). Subsequently, the AU expanded the SDI concept to the entire continent through integrating it into its resource-based regional development strategy for accelerating the African industrialization (African Union, 2009). The report *Minerals and Africa's Development: the international study group report on Africa's mineral regimes* by the United Nations Economic Commission for Africa (UNECA) acknowledged that the SDI approach serves to deepen and harmonize regional market structure for the natural resources commodities (*i.e.* agro-processing, forestry products, minerals) and sectorial policies for the natural resources markets (UNECA, 2011, p.132).

Until 2012, the Programme for Infrastructure Development in Africa (PIDA), NEPAD, and Infrastructure Consortium for Africa (ICA) further adopted the SDI approach. The NEPAD specifically integrated the SDI approach into its spatial development policy planning by creating an in-house SDI Unit, which led to the birth of the Northern Corridor of Central and East Africa[12] (Mulenga, 2013; see also Ntamutumba, 2010). Nevertheless, the logistics efficiency gains from the SDI-infused transport corridor programmes have remained limited in focusing solely on developing the associations between actual operations (social and economic planning) and trunk infrastructure planning for optimizing domestic and international transit transport structures. Peterson (2015) suggested that while transport

[11] The Walvis Bay Corridor links the Namibian Port of Walvis Bay with the landlocked SADC countries, with a multi-modal transport structure (World Bank, 2005).
[12] The Northern Corridor of Central and East Africa Programme came into effect by the signature of the Northern Corridor Transit Agreement (NCTA) in relation to surface transport infrastructure planning of the road networks to and from the Kenyan seaport of Mombasa. The Northern Corridor of Central and East Africa Programme serves to landlocked countries, such as Uganda, Rwanda, Burundi, Democratic Republic of Congo, and Kenya (Ntamutumba, 2010).

infrastructure improvements in the Sub-Saharan African cross-border transport corridors have led to significant growth in the international trade of the region in recent times, these efficiency gains have been limited by the corrupt practices at the (inland and sea) border crossing points. The unsystematic operational coordination capacities of the corridor programmes have affected the progression of the hard and soft infrastructure planning projects, through causing inconsistencies in project transition planning iterations.

2.2.2. Transport Corridors as Regional Economic Infrastructure

Despite the progressive implementation of the SDI-infused transport corridor programmatic approach in economic infrastructure planning, several institutions – G20 Infrastructure Action Plan, ICA, EU-Africa Infrastructure Trust Fund (ITF) –, have highlighted that the regional inter-modal transportation structures, spatial distribution of trade activities, and the governance of domestic transportation markets vary significantly in coverage and efficiency by country and by regions (OECD, 2012). The report *African Infrastructure Initiative: Managing Transnational Infrastructure Programmes in Africa – Challenges and Best Practices* by WEF (2014) provided numerical support for the structural need for cross-border corridor infrastructure programmes in the sub-regions of Africa. According to this report, the number of landlocked countries (16), the average number of border countries (4.5), the average size of countries (614.000 square kilometers excluding islands), and the proportion of land border vis-à-vis the border's total length (84%) determine the structural need for transnational corridor infrastructure programmes in the sub-regions of Africa (Ibid.). To address this structural need, the *Africa Competitiveness Report* (2013a) by WEF indicates that US$ 93 billion annually until 2020 is still needed to fill the infrastructure gap, considered as one of the basic global competitiveness requirement and an obstacle to sustaining the trajectory of growth at continental level (World Economic Forum, 2013a; World Bank, 2012). The fact-based reality of fragmented African regionalism landscape, promoted by these extra-regional actors, fueled a politics of expectation for developing a regionally integrated approach to economic infrastructure development.

The four prominent pan-African organizations – the African Union Commission (AUC), United Nations Economic Commission for Africa (UNECA), NEPAD, and African Development Bank (AfDB) –, with relative alignment to the REC infrastructure investment plans, Regional Integration Strategy Papers (RISPs), anchored the need of regional infrastructure into a continental sectorial policy initiative, *i.e.* the Priority Action Plan of the Programme for Infrastructure Development in Africa (PIDA PAP) for the period 2012-2040. It is expected that the total capital of PIDA PAP by transport sector will reach to US$ 25.4 billion by 2020 (African Development Bank, 2013c, p.2). In parallel to the aforementioned political moments impacting the geo-political distribution of transport sector share in financial commitments at continental level and multi-modal corridor projects restructuring regional transport value chains, a set of donor coordination initiatives for infrastructure investments were established in the effort to support major continent-wide sector-specific policy reforms, such as Comprehensive Africa Agriculture Development Programme (CAADP), Action for the Accelerated Industrial Development of Africa (AIDA) by AU; Africa50 Infrastructure Fund by AfDB in 2013; Infrastructure Consortium for Africa (ICA) by G-8 countries, World Bank (WB), AfDB, European Commission (EC), European Investment Bank (EIB), and the Development Bank of South Africa in 2005; AU's 2012 Action Plan for Boosting Intra-African Trade including a plan for continent-wide free trade by the indicative date of 2017; Private Infrastructure Development Group (PIDG) by the Euro-Australian partnership and WB in 2002; Power Africa initiative by the U.S. in 2013; and Global Infrastructure Fund (GIF) by WB in 2014 (Gutman & Chattopadhay, 2015).

Through the aforementioned multilateral cooperative efforts for economic infrastructure development, the policy concept *transport corridor* scaled up organically in the realm of regional policy planning. The *transport corridor* started referring to 'economic infrastructure constructs' having functional and physical dimensions (*i.e.* links, nodes and gateways) and providing transit transport and logistics services that promote trade among (hub) cities and countries for commodity related sectors, in particular natural resources markets'. One of the core programmatic features of this policy approach has been the cross-sectorial linkages between regional trade facilitation policies, Aid-for-Trade programmes for financing (hard and soft) infrastructure projects, and private sector development policies, in the effort to enhance a form of compromise between tensions that arise in formulating and implementing

region-wide integration strategies and to consolidate regional flows in the traded sectors through concentrating and transmitting demand on transport corridor routes (Delpeuch & Messerlin, 2011; Lui & van Seters, 2012; Getis & Getis, 2007). In the region of Sub-Saharan Africa, – an economic region operating with over ninety sub-regional trade facilitation instruments and seven transport corridor management groups/bodies –, the three RECs (*i.e.* COMESA, EAC and SADC) consolidated their AfT Strategies for trade-related infrastructure development as a means to support the CES Tripartite RECs' individual Medium- and Long-Term Strategic Plans but also as a response to national AfT Priorities, declared by the CES Tripartite REC member-states in various WTO/OECD Aid-for-Trade Questionnaires. **Table 1** encapsulates the AfT Strategic Actions of the three RECs and provides an overview of the differentiated institutional approaches to the trade-related infrastructure development in the regions of East and Southern Africa.

Table 1. *Regional Dimension of AfT: Overview of AfT Strategic Actions with focus on Trade-related Infrastructure*

REC	Relevant AfT Proxy	Major Strategic Actions	REC AfT Strategy Year
COMESA (19 member countries)	Trade-related infrastructure	- Operationalization of an COMESA Infrastructure Fund under the COMESA Fund in Mauritius alongside with the COMESA Adjustment Facility (launched at the COMESA Secretariat in 2002) and COMESA Aid for Trade unit (launched in May 2007)[a]. COMESA Infrastructure Fund pledged 250$ million in 2015 for infrastructure projects.[b] - Improved state of physical infrastructure in line with the Chapter 11 of COMESA Treaty, COMESA Transport Policy, COMESA Protocol on Transit Trade and Facilities, and the Transport Strategy and Priority Plan (TCS/PIP): 45 transport infrastructure projects in the pipeline and support the regional infrastructure development projects (*e.g.* road rehabilitation, toll bridge, road construction, One-stop-Border Posts [OBPS], ring road, port upgrade) on various corridor cluster projects, *i.e. Djibouti* Corridor, *Lamu* Corridor, Northern Corridor, Central Corridor, *Dar es Salaam* Corridor and the North-South Corridor, *Shire-Zambezi* Waterways Project, COMESA Air Space Integration Project.[c]	2009
EAC (5 members)	Trade-related infrastructure	- Definition of the areas of co-operation for Transport in Chapter 15 of the 2000 Treaty for the establishment of the EAC (Article 89).[d] - Agreement of the 5 EAC Road Network Projects in 1998: **(I)** *Mombasa-Malaba-Katuna*; **(II)** *Dar es Salaam-Mutukula-Masaka*; **(III)** *Biharamulo-Lockichogio*; **(IV)** *Tunduma-Nyakanazi*; and **(V)** *Tunduma-Namanga-Moyale*.[e] - Within the framework of the World Bank approved East African Trade and Transport Facilitation Project, the implementation of the East African Transport Facilitation Project and the preparation of an EAC Transport Strategy and Road Sector Development Programme.[f] - Ongoing collaboration with African Development Bank and the NEPAD Regional Integration and Trade Department for developing the EAC Aid for Trade Strategy.[g]	In Progress

SADC (15 members)	Trade-related infrastructure	- Configuration of Transport Corridors in four corridor clusters: Western Corridors Cluster, Eastern Corridors Cluster, Southern Corridors Cluster, and North-South Corridor.[h] - Signed legal documents for regulating corridor governance for eight corridors, *i.e. Trans-Kalahari*, *Trans Caprivi*, *Maputo*, *Beira*, *Nacala*, *Mtwara*, *Dar es Salaam*, and the Central Transport Corridor, and the operationalization of the corridor management institutions for *Maputo*, *Dar es Salaam*, the Central Transport Corridor, and *Trans-Kalahari* Corridor.[i] - Implementation of the SADC Protocol on Transport, Communications and Meteorology: SADC Directorate of Infrastructure and Services in charge of regional transport policy and planning with focus on five transport sub-sectors: **(I)** roads infrastructure; **(II)** road transport; **(III)** railways; **(IV)** ports, maritime transport and inland waterway transport; and **(V)** aviation.[j] - Implementation of the 2012 SADC Regional Infrastructure Master Plan in line with the 2020 Programme for Infrastructure Development in Africa (PIDA PAP).[k]	In Progress

[a]Lui and van Seters (2012).[b]"East Africa: Comesa Unveils U.S $ 250 Million Fund" (2015, May 06).[c]COMESA (2013).[d] The Treaty for the Establishment of the East African Community (2000, Article 89, p.62).[e] NEPAD-OECD Africa Investment Initiative (2008, p.3).[f] African Development Bank (2006).[g] Ibid.[h] Cross-Border Road Transport Agency (2016, pp.19-20).[i] "Progress in Transport and Meteorology" (2013, December 03) .[j] SADC Protocol on Transport, Communications and Meteorology (1996).[k] SADC (2012b).

Despite these multiregional cooperative policy-making efforts producing new geo-economic constructions for infrastructure provision, it is difficult to estimate the geographical reach and transnational efficacy of such sector-specific initiatives in sub-regions of Africa, mainly for three reasons. *First*, transport sector, with its subsectors, is a heterogeneous system in which Sub-Saharan African countries finance about 65 percent of their infrastructure expenditures - almost US$ 60 billion – from their public sector budgets, according to International Monetary Fund (IMF) and ICA[13] estimates (2012) (Gutman *et al.*, 2015). Furthermore, there is no commonly accepted policy stance for African states but contradictory perspectives impacting the style of socio-economic and political relations among transport market actors. *Second*, the transport market is auto-organizing itself on the borderland spaces of countries, largely due to the level of dependence on inter-territorial trade on the common and separate markets, development of economic cooperation and regulation mechanisms in the RECs, polycentric organizational structure of transport markets, and wide regional disparity in economic development, which affects transport infrastructure asset management and maintenance

[13] The G-8 Summit in 2005 established the Infrastructure Consortium for Africa (ICA) to promote public and private investment in infrastructure. Its members include the G-8 member countries, the World Bank, the AfDB, the European Commission, the European Investment Bank, and the Development Bank of South Africa. Its secretariat is situated in the AfDB and publishes an annual report on the state of infrastructure finance I Africa as well as other key studies in infrastructure finance (Gutman *et al.*, 2015).

systems. *Third*, as intimidated by the 2016 Africa Regional Integration Index, the regional integration nature of the REC micro-geographies of the TFTA bloc-member RECs differs from one to another. The SADC have higher than average REC scores on regional integration overall whereas the EAC is the top performing REC on Regional integration overall (African Development Bank, African Union Commission & Economic Commission for Africa, 2016) (see **Appendix F**).

2.3. THEORETICAL BACKGROUND TO THE ORGANIZATIONAL PERFORMANCE OF CROSS-BORDER TRANSPORT CORRIDOR

A *theory*, in essence, is a constructed thought-framing system that offers simplified, categorized, and declarative statements and builds a relational logic scheme to stipulate situation awareness with regard to the research object and its own particular environment. However, the primary impetus for the present research was to identify the North-South Transport Corridor phenomenon *in its situ* and understand its complex organizational structure through conducting a preliminary inductive content analysis. The initial analysis of the collected case data led the researcher to proceed with a theoretical sampling and coding strategy. Through systematically analyzing the theoretical codes from the network and stakeholder model theories grounded in studies of organizational management and systems philosophy, the present research generated a descriptive "*post factum"* theory frame for the case object in the effort to not impose preconceived grounded theories on the case data during the course of data analysis (Merton, 1968).[14] As argued by Sussman (2000), transportation systems are complex, dynamic, and internally connected and inter-connected with other complex social and economic systems. **Figure 1** displays the multi-dimensional transport corridor understanding developed for the research to address the research question and its sub-questions. **Figure 1** provides a differentiated approach to modeling research design for cross-border transport corridor studies. In a dynamical sense, the performance of the transport corridor system depends on mutually exclusive conditions at intra- and cross-layer levels that create tension forces throughout the temporally structured

[14] According to Merton (1968), the "*post factum"* theory building means that theory that is produced after observations are made.

sequences of corridor development process. Each layer has its intrinsic functional, organizational and material components that are designated *ex ante* at the corridor system building stage but adjusted progressively in relation to evolving transportation systems boundaries of corridor system.

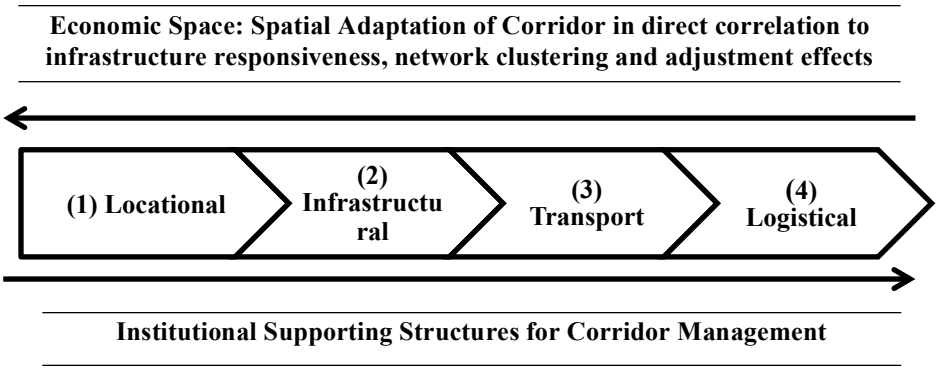

Figure 1. *A visual of the theorized meta-framework for the cross-border transport corridor research design in relation to the case object.*

Conceptually, the direction of two horizontal arrows illustrates a two-step kinetic process occurred along the cross-transport corridor chain. The *rightwards arrow* represents the sequential development process of cross-border transport corridors projects/programmes placed into operation and indicates a forward-linkage implying the aggregation process of sequential inputs mobilized to produce and operationalize the cross-border transport corridor system. The *leftwards arrow* represents the backward-linkage implying that the organizational performance, spatial adaptation and infrastructure responsiveness of cross-border transport corridors depend on **(I)** the mutually exclusive conditions affecting interconnection patterns among the sequential building blocks of the cross-transport corridors and **(II)** human mobility and orientations while using/interacting with the corridor transportation modes. These are as follows:

(1) ***Locational Layer:*** The spatial morphology of the corridor country location impacts directly the spatial adaptation of the transport corridor system, infrastructure responsiveness and absorption capabilities of transport network clustering effects produced throughout the temporally structured sequences of corridor development process in the corridor countries.

(2) ***Infrastructural Layer:*** The physical infrastructure networks, the permanent physical property and agency of the corridor, create a structurally stable physical platform to the economic development of the transport corridor through facilitating the behavioral patterns of the corridor, *i.e.* tempo and movement of network flows occurring around and within the transport corridor space. The interaction between transport-related infrastructure layer and locational layer determines the scale of corridor homogeneity through shaping its accessibility and mobility patterns, which in turn affects corridor-level transportation growth cycle, through impacting the total costing structure of transport systems and services within the organizational context of the corridor and the capital intensive nature of the hard and soft infrastructure sector.

(3) ***Transport Layer:*** Transport layer provides institutionalized axes and reveals economic growth identification patterns for transit trade logistics clustering. As inferred from **Figure 1**, the spatial economic system is structured progressively by the production of transport supply and demand through activating interaction axes and creating circular dependencies between locational layer (with optimal land use strategies) and transport layer (with transportation activity generation process) whereas infrastructure layer enables to develop a directional spatial distribution structure of transportation activities impacting travel demand along and within the transport corridor zone.

(4) ***Logistical Layer:*** In the operational sense, the logistical layer of cross-border transport corridor refers to **(I)** a geographically defined clustering activity for pooling and concentrating corridor-level logistics capabilities (Chhetri, Butcher, & Corbitt, 2014; Bolumole, Closs, & Rodammer, 2015; Qi & Liu, 2015) comprising multi-scaled infrastructure nodes on the transportation service system of national, international, and regional supply chain networks along the transport corridor chain; and **(II)** standard logistics functions performed within the cross-border transport corridor chain (Chhetri *et al.*, 2014). According to Rivera, Gligor, & Sheffi (2015), logistics clusters include (private or public) companies offering logistics services such as transportation, warehousing, distribution, and associated logistics services providers

as well as third-party organizations aimed at absorbing logistics-related benefits of co-locating, *e.g.*, knowledge sharing and the formation of a corridor-level labor pool. The locational layer of cross-border transport corridor creates an agglomeration space for logistics services; a movement space for transportation service providers and transportation network users; and an inter-firm networking space for firms located in neighboring corridor countries.

(5) ***Institutional Supporting Structures for Corridor Management:*** Institutional layer has not a freestanding institutional capacity in determining operational delivery capabilities of cross-border transport corridor. International policy instruments regulating transit systems (see **Appendix G**) frame the institutionalization process of corridor management through establishing legal requirements for rules of operations including transit customs and border management. Furthermore, logistics layer of cross-border transport corridor affects transactional yet cooperative interdependencies among corridor stakeholders, namely the owners of logistics hubs and centers, logistics forwarders, national governments of corridor countries representing their own local economy, regional-level political institutions (Grandori & Soda, 1995).

2.4. CHAPTER CONCLUSION

Chapter 2 served to explicate the empirical reality of the case. The chapter theorized an African(ist) paradigm of regionalism and used it as a building block to develop a regionalist policy understanding of economic infrastructure development in the African context. Furthermore, **Chapter 2** produced a historical narrative to understand the evolutionary development of *transport corridor* as a policy approach in the realm of African economic regionalism. Last but not least, **Chapter 2** built a meta-framework for the cross-border transport corridor research design in relation to the case object.

3. CHAPTER 3. GENESIS OF A RESEARCH LENS

Acknowledging the complexity of publicly available historical data and fragmented nature of the research corpus relevant to the research object, there remains a theoretical challenge while elaborating a 'one-size-fit-all' theoretical framework that performs an analytical generalization with regard to transport corridor appraisal and assessment process. **Chapter 3** decorticates the multi-scaled nature of transport corridor and creates the "*effet de théorie*" ('theory effect') (Bourdieu, 2001, pp.145-146) for the remainder of the research. **Chapter 3** builds up a composite ideational structure to originate a multi-disciplinary yet operational theoretical lens and a *coexistence field* of divergent theories relevant to Transport Corridor studies.

3.1. ONTOLOGICAL POLITICS OF BORDER

The present state of transport studies indicates that the power of *borderland space* impacts on the corridor performance at operational, managerial, and political levels. In the effort to develop a context-specific conceptualization of corridor space and explain the evolving geospatial network properties of *corridor* linking economic systems beyond state spaces, through the social constructivist lens of contemporary border research and critical geopolitics studies, this research employs the notion "*bordering"* as the spatial delimitation frame of analysis (van Houtum & van Naerssen, 2002, pp.125-136; Newman, 2011, pp.33-47; Scott, 2011, pp.123-142). In line with the geopolitical vision of the networked world order, "the notion of 'bordering' suggests that borders are not only semi-permanent institutions but are also non-finalizable processes" (Kolossov & Scott, 2013, p.2). Whereas, the borderland space could refer to a geographical expression of social practices evolved in constant fluxes, beyond the territorial boundaries of the nation-states and an institutional space consolidated through processes of regionalization efforts (Flint & Taylor, 2007; Held, McGrew, Goldblatt, & Perraton, 1999; Agnew, 2009; Smith, 2001; Kolossov & Scott, 2013). According to Brunet-Jailly (2004), the concept "*border"* could be considered as interface since its existence generates a multi-agent territory and creates systemic contacts through canalizing and communicating the fluxes between departure/arrival location points. In other words, the

concept *border* is a social construct, which functions through and between identified spatial hierarchies and has a systemic lifespan comprising four subsequent phases: **(I)** the genesis of power relations, *i.e.* confrontation, and impulsion; **(II)** the performativity of borderland space, *i.e.* expansion, morphologic transformation, and integration; **(III)** the maturity of borderland space, *i.e.* stabilization of power relations, affirmed mesh size of vertical and horizontal networks; and **(IV)** the decline or transfer, *i.e.* territorial de- and re-composition, identity crisis. Despite the fact that the *border* acts as a geospatial networking scheme inter-connecting non-contiguous and contiguous institutional territories – nation-state spaces -, the *borderland space* encompasses in reality transversal dialectical relations, fluid and diffused territorial limits, and geo-economic discontinuities of nation-state spaces (Carroué, 2002; Gay, 1995, 2004; Lévy & Lussault, 2003; Walther & Retaillé, 2014).

3.2. EPISTEMOLOGICAL CONSIDERATIONS

In order to gain freedom of thought beyond the deployment of official spatial representations of the corridor, the pre-literature review theoretical engagement will set out the identity apparatus of the research object – corridor – with a distinct conceptual vocabulary, specifying the epistemological framework within which a variety of methods can find application; interpretive frame of overlapping and proximate context of corridors (Newman, 2000; Ò Tuathail, 2002; Ò Tuathail & Agnew, 1992); and hierarchical, relational and situationally contingent structure of the corridor. From the semantic point of view, the concept *corridor* is considered as a floating signifier – potential nodal point – since it is open to different ascriptions of meaning. Through establishing relationships to other signifiers, such as the notions of *border, bordering,* and *state space,* the concept *corridor* could be inserted into different systems of meaning (Torfing, 1999, pp. 98-99; Jørgensen & Phillips, 2002). In other terms, the concept *corridor* could serve to unify an operative 'corridor discourse', binding together multiple possible meanings equal to the different positional identities of the *corridor* (Ibid.).

3.2.1. Concept of Corridor

In etymological terms, the word *corridor* derives from the Latin root word "*currere*" ('to run') and the Italian word "*corridore"* ('to runner'), as a synonym to passage or a "belt of land linking two areas or following a road or river" (Def. C16. as cited in Concise Oxford English Dictionary, p.312). The conceptual definition of the word *corridor* derived initially from spatial topology and structural analysis of landscape ecology studies (Kansky, 1963; Chorley & Haggett, 1967).

Following the emergence of the New Economic Geography scholarship during the course of 1990s, the epistemically objective nature of the concept *corridor* has evolved. The concept has gained a polysemiotic quality and started referring to a plethora of pragmatically independent terminological usages in the effort to: **(I)** establish a multi-level dialogue platform to promote regulatory coordination to trade facilitation; **(II)** identify overlapping transport axes and organizational patterns of networked infrastructure systems with focus on spatial patterns of activities at various scales of the interconnected geospatial spaces; **(III)** develop a politically shaped rhetorical device for enhancing operational economic integration and inter-connecting organized groupings of human settlements and production centers across borders with impact of the (re)formation of geographic space (Priemus & Zonneveld, 2003; Prentice, 1996); **(IV)** develop an economic restructuring tool for industrial scale-up and cross-sector innovation across countries; **(V)** construct a socio-economic and spatial meta-framework for analyzing logistically integrated pathways that enhance the geostrategic allocation of movement of goods between two or more locational points, depending on the size of the region and hinterland area, the existing intermodal infrastructure facilities, and the level of political stability in the cross-border business activities and trade markets (Gottmann, 1961/1987; Whebell, 1969; Yeates, 1975; McGee, 1991; Doxiadis, 1978; Byiers & Vanheukelom, 2014); **(VI)** develop key growth axis for regional development; **(VII)** enhance a trans-border economic network of interactions that establishes strong industrial forward and side-stream linkages between the economic agents across economic hubs embedded within different state spaces; **(VIII)** develop a territorial innovation system through inter-connecting privileged spatial areas.

As propounded by Artibise and Danielle (2000), the instrumental value and structural properties of *corridor* relies on the context-dependent multidimensional chains of connectivity systems within a limited geographic area. With respect to the limits of developing a universally accepted structural 'corridor model' in the fragmented literature, the politically distorted, hybrid and elusive nature of the concept *corridor* confirms the subjectivity of the intellectual terrain chosen for the research object. The lack of theoretically neutral conceptual classification of *corridor* enhances pre-defined conservative approaches and analogical reasoning while analyzing the network effects of corridors, *i.e.* economic landscape connectivity, bordering capacities, and regional trade integration within a defined geographic space (Peterson, 2015).

3.2.2. Typological Framing: Types of Corridors

Many scholars (Priemus & Zonneveld, 2003; Lieb, 1978; Manheim, 1979) have considered *corridor* as the linear articulation points of transport, economic and demographic processes. However, the epistemic communities within the field of transportation policy codified a set of archetypical and fluid constructs of the concept *corridor* through referring to the different yet interconnected variables, *i.e.* transportation system, network behavior of the transportation geography, spatial patterns of socio-economic activities, and flows circulating through the transportation system. While conducting case study research on the transport corridors, it is crucial to highlight that there is no *locus classicus* of transport corridor studies that could provide a 'one-size-fit-all' conceptual definition of what *corridor* means. The following typological framework, observed from the variety of definitions used in the sampled literature for the research, confirms the multi-dimensional interpretative framework of corridor phenomenon:

- ***Transport corridor*** facilitates the entry for land-locked economies and trade diversification through canalizing and concentrating cross-border movements of goods and services (Hope & Cox, 2015; Byiers & Vanheukelom, 2014). *Transport corridor* is considered as "*bundle of infrastructures*" contributing to the socio-economic development of the regions surrounding the corridor transportation structures (Priemus & Zonneveld,

2003, p.173). Depending on the complex character of the transportation geography (*e.g.,* land use environment, movement lane, and design speed environment), the conceptualization of the corridor zone and specificity of the geographical linkage modes, transport corridors could gain additional functionality, *i.e.* multi-modal, inter-modal, cross-border, and transboundary.

- ***Economic corridor*** facilitates wider economic growth and social development of cross-border regions and/or sub-national regions through connecting and clustering economic agents (*e.g.,* manufacturing hubs, producers, logistics forwarders) within a defined geographical space (De, 2014, pp.15-45). The supply-end of the corridor creates the impetus for trade and enhances concentric producing regions around hub cities and gateway countries through implementing supporting institutional structures for trade facilitation, *e.g.,* transport agreements and cross-border policy standardization practices. However, *economic corridor* develops in time and in parallel to the infrastructure projects deepening transport corridors.

- ***Sector corridor*** progresses up the sector-specific value chain through connecting market- and/or industry-specific production networks and their economic agents across two or more economic nodes (Mulenga, 2013).

- ***Development corridor*** is an integrated spatial development-planning concept. It provides an organizational process view of corridor development in relation to the institutional and operational efficiency levels of the existing transportation structures and transit trade logistics services along the transport corridor chain.

- ***Trade corridor****,* built on the basis of geographical assumptions of International Relations theory, provides an active transport form embedded in a spatial geography of circulations and it refers to a fusion space connecting and extending interstate and/or intrastate commerce spaces and traded markets. According to Arnold (2006), there are three types of trade corridors: "*national trade corridor", "bilateral trade corridor",* and *"multilateral trade corridor"*. Arnold defines "*national trade corridor"* as "a designated route within the national transport network that is used to transport imports and exports from and to an

international gateway or a border crossing" (p.5). As for the *bilateral trade corridor*, it is used to "transport trade between two countries and to allow each country to use the international gateways of the other" and include one or more than one border crossing points (Arnold, 2006, p.5). Last but not least, "*multilateral trade corridor"* is "used to transport cargo through three or more countries, of which at least one is a transit country" (Arnold, 2006, p.6).

3.3. CHAPTER CONCLUSION

Chapter 3 introduced a research lens, through delving into ontological and epistemological considerations in relation to transport corridors and solidified the research inquiry stance. The multi-dimensional interpretative framework of corridor phenomenon, motivated primarily by politico-economic considerations, impacts the practical terrain of corridor development design and decision variables of corridor interventions since the constructed language of political reasoning frames **(I)** the transportation systems boundaries and components, and **(II)** the nature of its interaction with systems outside of those boundaries and internal dynamics between its transportation components. Furthermore, the aforementioned typological definitions posit a perceptual input to provide spatial content for the *corridor* concept (Evans, 1982/1985; Grush, 2000/2007), while developing different input-output structures for the design of corridor transportation systems, *i.e.* modal networks (Morlok, 1978), patterns of flows (Manheim, 1979), and logistics operating facilities and operators (Sussman, 2000).

4. CHAPTER 4. DECONSTRUCTING THE METHODOLOGICAL BEHAVIOR

The primary objectives of **Chapter 4** are **(I)** to *provide* a detailed presentation of the methodological research architecture; **(II)** to *clarify* the degree and intensity of critical engagement with the research object through the development of a trans-disciplinary theoretical formula on the basis of a pragmatic instrumental rationality (Foucault, 1984, p.255) that contains strong elements of constructivist and ecological rationality approaches derived from the Philosophy of Interdisciplinary Economics; and **(III)** to *construct* a differentiated pre-suppositionalism perspective in the effort to produce the relational patterns between theoretical knowledge components of *episteme* and *techne* for the research. **Chapter 4** adopts the "*research onion*" approach, developed by Saunders, Lewis, & Thornhill (2009), and uses it as a stylistic apparatus to format the systemic framework development in the effort to enhance a well-structured understanding of the research stages. Saunders et al. (2009) develops the diagram of "*research onion*" (see **Appendix H**) as a meta-visual representation of the different layers that come to position the research methodology, in which the outer layers set out a contextual boundary for the choices made in the inner layers. Nevertheless, methodological behavior of this research does not take for granted its straightforward alignment between the methods and the Philosophies of Science that placed at a bipolar categorical spectrum and rejects its lack of consideration with regard to the symbolic impact of ontological, epistemological and axiological considerations on the creative construction of the research stance, comprising research philosophy, strategic research approach, and data processing methods (Bryman, 2012; Williams & May, 2002).

The sections of **Chapter 4** are structured as follows:

Section 4.1. informs on the pluralistic philosophy of the research, which goes beyond the scholastic dispositions and pure intellectual virtues offered by the three scholarships of Research Philosophy (*e.g.*, positivism, realism, and interpretivism), due to their role in repressing the research practice, the ideational structure of the research approach, and knowledge-information processing methods in the selected research arena.

Section 4.2. details the research design process, with specific focus on research strategy, research choices and the temporal dimension of the research while addressing to the formulated research question and to the research outcomes in the effort to set out the scientific tone and perspective for the research. Furthermore, it details the data collection, data processing techniques and procedures in relation to the philosophical stance of the research and it sets out a set of descriptive parameters on data quality management in the effort to detect and address the matters of validity and reliability relevant to the qualitative research experience. Last but not list, *Section 4.2.* highlights the methodological assumptions, limitations, and delimitations with regard to the research object, selected research field, and the choices made in the previous sections of **Chapter 4.**

4.1. RESEARCH PHILOSOPHY AND APPROACH

4.1.1. Research Philosophy

A research philosophy, in essence, refers to the metaphysical element and a *priori* research commitment that structures the normative theoretical journey of the research through providing presuppositional worldview assumptions with regard to explanations of the phenomenal world in the effort to **(I)** *produce* and *organize* a theoretical framing to address the research goal; and **(II)** set out the context of research discovery and justification for the type of knowledge being investigated throughout the research experience (Bryman, 2012; Greene & Hall, 2000).

The pluralistic philosophical stance of the research aims to develop a unique *research habitus* and to generate a context-sensitive logic of research practice relevant to both the selected research arena and research object in hand. Pierre Bourdieu's theoretical concepts of "*habitus*" and "*scientific theory*" played a key part in the formulation of the concept *research habitus* (Bourdieu, 1972). According to Bourdieu, "*habitus*", in sociological terms, is a tacit structure of acquired dispositions, perceptions, and schemes of thoughts developed by an individual in the course of its interaction with its environment (Bourdieu, 1972/1984; Bourdieu & Wacquant, 1992). In the realm of scientific research, Bourdieu (1972) puts

forward that a theory could be considered as a "*habitus*" since the researcher acquire its intellectual dispositions through its interaction process both with the research environment and its social environment. The metaphoric concept *research habitus* created for the present research provides a thought-provoking reflexive approach to the researcher, who aims to increase the responsiveness of the research object to the selected research arena, without repressing the materialistic conditions, temporal dimension and philosophical lens of the research trajectory into the deterministic historicity, presupposed disciplinary expectations, and epistemological domination of the three strands of the Philosophy of Sciences (*e.g.,* positivism, realism, and interpretivism). While building up the pluridisciplinary Research Philosophy for the research in hand, the *research habitus* acts as **(I)** an organizing principle to provide a distinctive conceptual linkage between and among various theoretical lenses to understand different dimensions of the research reality and **(II)** a systemic account for sketching the cognitive boundaries of an interpretivist research approach to the case in hand (Eriksson & Kovalainen, 2008). The theoretical relevance of the metaphoric concept *research habitus* is that it enables the researcher to produce a situational logic to construct the optimal theory of scientific rationality relevant to the research arena, *i.e.* transport corridor studies.

4.1.1.1. Foundations of the Pluridisciplinary Research Philosophy

The below mentioned features of pluridisciplinary research philosophy has been used to construct the methodological prescriptions relevant to the research object and set out the intellectual accountancy for the research, while rejecting any paradigmatic loyalties. The Pluridisciplinary Research Philosophy, with elements of externalist and internalist philosophy of sciences (McMullin, 1971), contributes to triangulate the research analysis by exploiting the specificities of each philosophical approach and methodology relevant to the research object and context, while making the researcher the constructor of an entrepreneurial research experience that opens a paradigm dialogue between positivist and phenomenology paradigms (Easterby-Smith, Thorpe, & Lowe, 1991) in the context of the present research.

Post-Structuralist Approach for Reconstructing the Epistemological Properties of the Research Concepts and Interpretive-Explanatory Approach for Framing the Context of

Research Analysis – Post-structuralist approach enables to understand deviation patterns in the definition of things and disrupts the sense of commonly accepted meanings, *i.e.* the contexts in which the manipulative power of epistemological communities embedded. The interpretive-explanatory quality of the research concepts enables to "reconstruct the tacit rules, the shared experience and the collective knowledge of social actors" (Angermüller, 2005, p.4). Considering the composite geo-economic aspects of the Transport Corridor phenomenon, this philosophical approach will also contribute to lay the meta-interpretive frame for the context of case analysis, *i.e.* context formed not only by the nation-state institutions but also by the historical experiences and geographical embeddedness of nation-states. This philosophical approach, despites its post-structuralist and interpretive-explanatory qualities, provides also a substantial Marxist critique to the hegemony and ideological inscriptions of epistemological communities in impacting the autonomy of data collected and processed throughout the qualitative research experience (Torfing, 1999).

Positivist Rational Reconstruction for Constructing Theory Typology and Variables – In the economic theories of rationality, positivist rational reconstruction, derived from the logical positivist works of mainstream economic methodologists and dated back to the 18th century in the History of Economic Thought, is considered as a methodology of economic methodology (Rosenberg 1986, p.136). This research considers positivist rational reconstruction as an instrumentalist sociological apparatus, which relates the identified theoretical concepts to the research reality, in the effort develop an optimal theoretical and conceptual framework for the progressive analysis of the research phenomenon. Given the supply-driven and industry-sponsored nature of transport corridor evaluation studies, this philosophical approach affirms that all produced research knowledge, prescriptive in nature, is conjecture to the selected instrumentalist methodology of the research. The positivist rational reconstruction enables to segment and institute individual research entities (*i.e.* units of analysis) to create a holistic understanding of the research object, without loosing sight of the big picture. This approach requires a "*hypotethico-inductif*" research strategy (Crozier-Friedberg, 1977), which will be detailed in the next subsection (see *Section 4.1.2. Research Approach – 'Finding a Third Way'*).

Post-positivist critical multiplism for developing a realist critique of 'Evidentialist' Program Theory, derived from the mainstream Policy Evaluation Studies dated back to 1960s – Post-positivist critical multiplism is a philosophical approach rejecting the conventional portrayal of positivist knowledge accumulation and research validity production systems (Cook, 1985). This approach derives from the ontological roots of the methodology of "*multiple operationalism*" (Campbell & Fiske, 1959) and "*triangulation*" (Denzin, 1978). The historical emergence of the post-positivist critical multiplism coincides with the same decade of the 1960's during which evidentialist evaluation studies in policy planning and assessment proliferated in the United States (Albaek, 1989). This approach enables to understand the complex, causal and multiplistic interactions among the hypothesized "*Context-Mechanism-Outcome (CMO) pattern configurations*" of policy programme interventions (Pawson & Tilley 1997, p.217). In the scope of the research, post-positivist critical multiplism *not only* justifies the background motives of a constructed transparadigmatic theory with regard to the research object *but also* enables to develop a critical research stance towards the determinist organization of scientific inquiry-building and the dominant nature of economic epistemology in the current transport corridor evaluation studies.

Constructivist Economic Rationality (derived from the New Philosophy of Economics) approach to establish a political frame for the interpretation of the Transport Corridor space – While understanding the composition of agents values that define the potential economic gains from the transport corridor projects and structure the "*Context-Mechanism-Outcome (CMOs)*" configuration (Ibid.) of the transport corridors programmes, constructivist rationality approach, rooted in the ideas of empirical realism dated back to the 18th century British philosophy of Enlightenment (Hayek, 1967, p.85), contributes to **(I)** discover stakeholder values and value-sensitive policy decision-making through the analyze of the transport corridor project planning and implementation documents; **(II)** critically evaluate the tacit motives, considered as the non-proclaimed factors providing a predictive content to the results of economic evaluations in transport corridor studies, behind the constitution and institutionalization of the transport corridor programme in the CES Tripartite context; and **(III)** theorize the spatial order of geo-economic regional integration in the micro-geographies of RECs in and in the institutional context of the Transport Corridors.

4.1.2. Research Approach – Finding a 'Third Way'

The background motives of this subsection is to set out a 'Third Way' research approach through extending beyond the scientific determinism of dualistic relational system among inductive and deductive reasoning in an attempt to address the multi-layered reality of the Transport Corridor phenomenon, *i.e.* a phenomenological reality that creates a confusion between the context of discovery and the context of justification while interacting with the observable knowledge and the empirical data relevant to the research object. The research approach relies on the "*hypothetico-inductive*" reasoning approach (Crozier-Friedberg, 1977), according to which a research hypothesis acts as a device to adopt a skeptical stance towards the competing explanations before the data collection process. The "*hypothetico-inductive*" reasoning approach supports an adaptive theory approach through which theory testing and theory generating are combined in the process of research on historical data and *in situ* analysis of the research object (Ibid.). This approach furthermore helps immersing the researcher into the investigated research field through enabling the researcher to develop the search terms and descriptors in an attempt to structure a purposeful homogenous sampling of topical themes relevant to the research object (Koerber & McMichael, 2008; Leech & Onwuegbuzie, 2007; Bloomberg & Volpe, 2008; de Gagne & Walters, 2009; Trochim, 2006). The inductive quality of this research approach contributes to accumulate, generate and digest evidential case data while conducting **(I)** a hermeneutical textual interpretation (Bloomberg & Volpe, 2008; van Manen, 2002; Zweck, Peterson, & Pentland, 2008) and **(II)** an inductive document analysis of the selected research corpora in relation to the research object in hand (Elo & Kyngäs, 2008; Schilling, 2006).

4.2. QUALITATIVE RESEARCH DESIGN

Following the detailed explanations of the research philosophy and reasoning approach, *Section 4.2* details the logic, role and purpose of the research design. The researcher designed the research practice as follows: **(I)** Conduct a primary inductive research to reveal patterns of meaning-making in the sub- and side- research fields in relation to the research object through using a purposeful sampling strategy in developing a qualitative evidence synthesis

from the observed data in the publicly available archival records and documents (Cook & Campbell, 1979; Suppes, 1970); **(II)** Develop an interpretivist understanding of the scientific inquiry in the effort to produce concrete research outcomes; **(III)** Based on the outcomes of the primary inductive research, converge collected evidences (Yin, 2009) and generate a "*post factum"* hypothetical research question that structures the research writing (Merton, 1968); **(IV)** Build the theoretical ground of the scientific inquiry through inferring a complex causal model involving equally consistent probabilistic (direct and indirect) causal links with regards to the situational conditions of the research object; **(V)** Design the single case study protocol (*i.e.* data collection methods, techniques) through a theory-laden data collection approach; **(VI)** Process and converge collected (quantitative and qualitative) evidences through an adaptive theory approach, according to which theory testing and theory generating are combined in the process of processing the observed data and doing the *in situ* analysis of the research object.

4.2.1. Case Study Composition

Form of the Case Study **–** Many scholars provided numerous definitional taxonomies classifying the forms of case study (Eckstein, 1975; Stake, 1995; Bassey, 1999; de Vaus, 2001; Yin, 2003/2009). However, the present research is an "*embedded single case study*" with multiple units of analysis (Yin, 2003, p.40). The three units of analysis refer to the three sub-questions in *Section 1.2. of* **Chapter 1**. The single case study was chosen to develop a nuanced, context-sensitive, and empirically rich analysis of the research object, *i.e.* the North-South Transport Corridor phenomenon in the CES Tripartite context. The case study protocol (*e.g.,* data collection and techniques) was developed systematically for the research in the effort to overcome the common methodological critics with regard to the single case studies, *e.g.,* the methodological rigor and replicability issues with regard to the forms of case study designs, validity and reliability issues in case research, and the case researcher's subjective stance.

Purposes of the Case Study Research **–** The proposed research has a dual purpose since it is both explorative and descriptive in purpose. *Explorative in purpose*, because the research involves a preliminary inductive content analysis to **(I)** reveal patterns in the collected data

(Cook & Campbell, 1979; Suppes, 1970); and **(II)** develop a qualitative evidence synthesis from the collected data, prior to the formulation of the research question and the theory-building process. Since the present research was identified as an "*embedded single case study*" with multiple units of analysis (Yin, 2003, p.40), explorative approach enhances the analytical eclecticism while understanding the contextual specificities of the research object before identifying the units of analysis. *Descriptive in purpose*, because the present research enables to develop a situational theory-building and an *in situ* analysis of the research object while explaining the key variables and relationships with regard to the contextual particularities of the North-South Transport Corridor in the CES Tripartite context.

4.2.2. Case Study Protocol: Data Search Strategy, Collection and Analysis Techniques

4.2.2.1. Time Boundaries of the Case Study Research

The descriptive purpose of the instrumental case study requires a process research approach (Pettigrew, 1997; Makkonen, Aarika-Stenroos, & Olkkonen, 2012) in data collection, according to which empirical data collected for the research are a combination of retrospective, real-time, and prospective data. The present research adopts the time period 2002-2015 as the timeframe for case data collection in the effort to grasp the situational particularities of the research object under examination. A chronological sequence mapping has been used as a data research tactic to access the investigated research field (Ibid.). The following three-year groups were identified: 2002-2006 (*i.e.* period prior to the first TTF meeting in 2006, in Rwanda); 2006-2009 (*i.e.* period prior to the 2009 HLM Meeting launching the North-South Corridor Programme in Lusaka, Zambia); and 2009-2015 (*i.e.* period following the launch of the North-South Corridor Programme). In parallel to the chronological sequence mapping, a thematic sequence mapping has been used as a means to identify and reconstruct the historical paths of events in order to extrapolate key issues and provide a holistic understanding of the research phenomenon as a whole (Makkonen *et al.* 2012). Since a process research approach might raise concerns with regard to the stability and comparability of the research object in relation to the collected case data, the research

follows a synthetic strategy as the mode of the case reporting. The synthetic mode of case reporting enables to ground the present research within the existing research literature and creates methodological rigor for ensuring reliability, validity and transparency for the research findings.

4.2.2.2. Data Analysis: Methods and Practices

Flick claim that qualitative case research is inherently multi-method (Flick, 2002, p.227), largely due to its flexibility in the case content structuring grounded in data and the simultaneous data collection and analysis in case study. This section informs on the multi-method data analysis methods and practices applied to the present research. The design procedure for subjecting the collected case data to the inductive content analysis and coding system was adapted from Elo and Kyngäs (2008) and Schilling (2006). There are two levels of data analysis. *First cycle coding* consists of conceptual and holistic coding. According to Dey (1993, p.104), the researcher attempts "to grasp basic themes or issues in the data by absorbing them as a whole [the coder as 'lumper'] rather than by analyzing them line by line [the coder as 'splitter']" (as cited in Saldana, 2009, p.118). *Second cycle pattern coding* was conducted to explain, infer, or identify emergent themes and synthesize a large amount of data into distinct units of analysis.

First Cycle Coding – Conceptual and Holistic Coding

Prior to the theory-building process, the procedural method used to examine the present state of research in transport corridor studies was the inductive content analysis of the published peer-reviewed and practitioner-oriented research materials (Zhang & Wildemuth, 2009). The qualitative research corpora were identified via employing the electronic bibliographic databases, *i.e.* ERIC, Credo Reference, Ebrary, EBSCOhost, First Search, JSTOR, Gale Academic One File, InformaWorld, ProQuest, Google Scholar, Mendeley, and SAGE. The inclusion criteria for data collection was set out to develop a purposeful sampling of the research corpora relevant to the research object and to create theme saturation before formulating the research question (Bloomberg & Volpe, 2008; de Gagne & Walters, 2009; Onwuegbuzie & Collins, 2007; Trochim, 2006). The inclusion criteria consist of: **(I)** the articles, complete

books or chapters, and monographs addressed issues exploring the use of transport corridors in Africa; **(II)** the articles were published in peer-reviewed journals typically read by academics in Africanist economic development; and **(III)** the complete books or chapters were authored by academics in economics with strong background in transport infrastructure. The researcher performed the first cycle coding by using the software Scrivener for locating the categorical constructs in each individual text, retrieving qualitative data relevant to the research object, defining categorical constructs to create themed content categories that can be indexed and analyzed. The use of the software Scrivener as a Computer Assisted Qualitative Data Analysis Software (CAQDAS) allowed the researcher to remain grounded within the domain of the research subject and demonstrate authenticity through increasing transferability of the case research findings.

Second Cycle Coding – Pattern Coding

The use of pattern coding allowed the researcher to group summaries of the information generated in first cycle coding into themed constructs of content and categorized sets of information that were further analyzed. The emerging themes became the categories for analysis (Saldana, 2009; Thomas, 2009) and constituted the units of analysis. The second cycle coding process entailed reviewing the first cycle codes in the effort to identify their commonality and assigning a pattern code to the themes (Saldana, 2009).

Hermeneutic interpretation

The third and final procedural step in the present research was to subject the information generated from the first and second cycle coding processes to hermeneutic interpretation (Bloomberg & Volpe, 2008; van Manen, 2002; Zweck, Paterson & Pentland, 2008). Hermeneutics is an approach without having a predefined methodology but is governed by the research question, the research methodology, and the selected data sources (Bloomberg & Volpe, 2008; Laverty, 2003). It enables the researcher to discover and interpret the contextual meaning of collected documents. According to Bloomberg and Volpe (2008) and Laverty (2003), hermeneutical interpretation could be used to understand written textual units *in situ.* However, in the effort to increase the objective verifiability of inductive content analysis, the themed content categories were analyzed in relation to the two contextual properties of the collected textual documents: *coherence* and *reference*. *Coherence* is the "relations of textual

units to each other within the text" (Becker, 1979, p.212) whereas *reference* is the connection "of textual units to non literary events" (Becker, 1979, p.212).

4.2.3. Presentation of the Research Corpus Material

This section provides the sources of evidence extracted systematically for the case study research, by which the matters of validity and reliability of the research were identified. The research question, through providing the main coding frame for the inductive content analysis, sets out the data selection/collection logic for the research and enables the researcher to set up mutually exclusive sub-categories for determining the individual research themes, research corpus material and a data reduction strategy.

Based upon the available open source data information, the relevant (primary and secondary) research material were identified by employing the electronic bibliographic databases, *i.e.* ERIC, Credo Reference, Ebrary, EBSCOhost, First Search, JSTOR, Gale Academic One File, InformaWorld, ProQuest, Google Scholar, Mendeley, and SAGE. Drawing from Yin (2003)'s work on case study, the researcher created a case study database through using and processing multiple sources of evidence and categorizing the informational value and quality of the collected research material.

The *primary documentary research material corpus* includes: **(I)** statistical and numerical compilations of data extracted from the following databases: World Bank Doing Business Indicators, World Health Organization Road Safety Data, World Development Indicators, World Trade Organization (WTO) Statistics Database, WTO Trade and Tariff Profiles, World Bank Logistics Performance (LPI) Index, Air Connectivity Index (Arvis & Shepherd, 2011), and Central Intelligence Agency (CIA) Fact Book; **(II)** empirical studies, *i.e.* international donor-funded corridor diagnostics and assessment studies, evaluation reports, economic impact assessment of transport corridors in Africa published in the practitioner and peer-reviewed academic journals; **(III)** archival material and legal documents, such as Regional Infrastructure Development Master Plans, Regional Integration Strategy Papers, Regulations, Treaties, Protocols, Sectorial Competitiveness Reports, Corridor Agency Reports, Road Agency

Reports, Transit Transport and Trade Facilitation Audits, Corridor Observatory Reports, government documents and white papers, and so forth; and **(IV)** visual materials, *e.g.* corridor country maps, maps visualizing the corridor infrastructure network, and so on. The primary documentary research materials were processed and analyzed in the effort to consolidate the research through accentuating the descriptive component of the research findings. The *secondary documentary research material corpus* was built up progressively on the basis of the collected primary sources. The secondary documentary research materials are: **(I)** policy research reports, discussion papers, and commentaries published by the think tanks, political research centers, university research centers; **(II)** interpretive research papers and case studies published in practitioner-oriented and academic scholar journals.

4.2.4. Matters of Validity and Reliability

The criterion for evaluating the validity of a qualitative case study is different from that of a quantitative study, while addressing threats to validity with regard to credibility, transferability, dependability, and confirmability of research findings. Several reliability procedures and validity strategies were structured into the present research that were selected from Gibbs (2007; as cited in Creswell, 2014) and presented as refutation defense of the study's credibility: **(I)** ensuring that there is not a discrepancy or drift in the meaning of the codes that are used during the research process; **(II)** utilizing thick, rich description in regard to interpretation and thematic analysis and synthesis; **(III)** clarification of bias that the researcher brings to the study; **(IV)** presentation of negative or discrepant information that challenges the emergent themes; **(V)** development of a detailed journal of the research experience. Not all of these strategies are necessary in ensuring the credibility of the study. However, if questions are raised the appropriate strategies will be applied in an attempt to satisfy the credibility issues.

In respect to the reliability of research findings, the "*step model of inductive category development*" (Mayring, 2000) process was adapted to the context of the case research and two checks of reliability were conducted (see **Figure 2**). *First*, the researcher made the *formative check of reliability* following the execution of the first cycle holistic coding. The

formative check of reliability enabled the researcher to create an internal feedback system to revise the sub-categories. Furthermore, the formative check of reliability contributed to the analysis of the circumstances under which the original research corpus material originated, *e.g.,* the author of the material and his/her research motivation(s), the target group of the published material and the publisher, the socio-cultural background and the time period of the published material. *Second*, the researcher made the *summative check of reliability* in the effort to revise the descriptive and interpretative framework of the research findings and finalize the research.

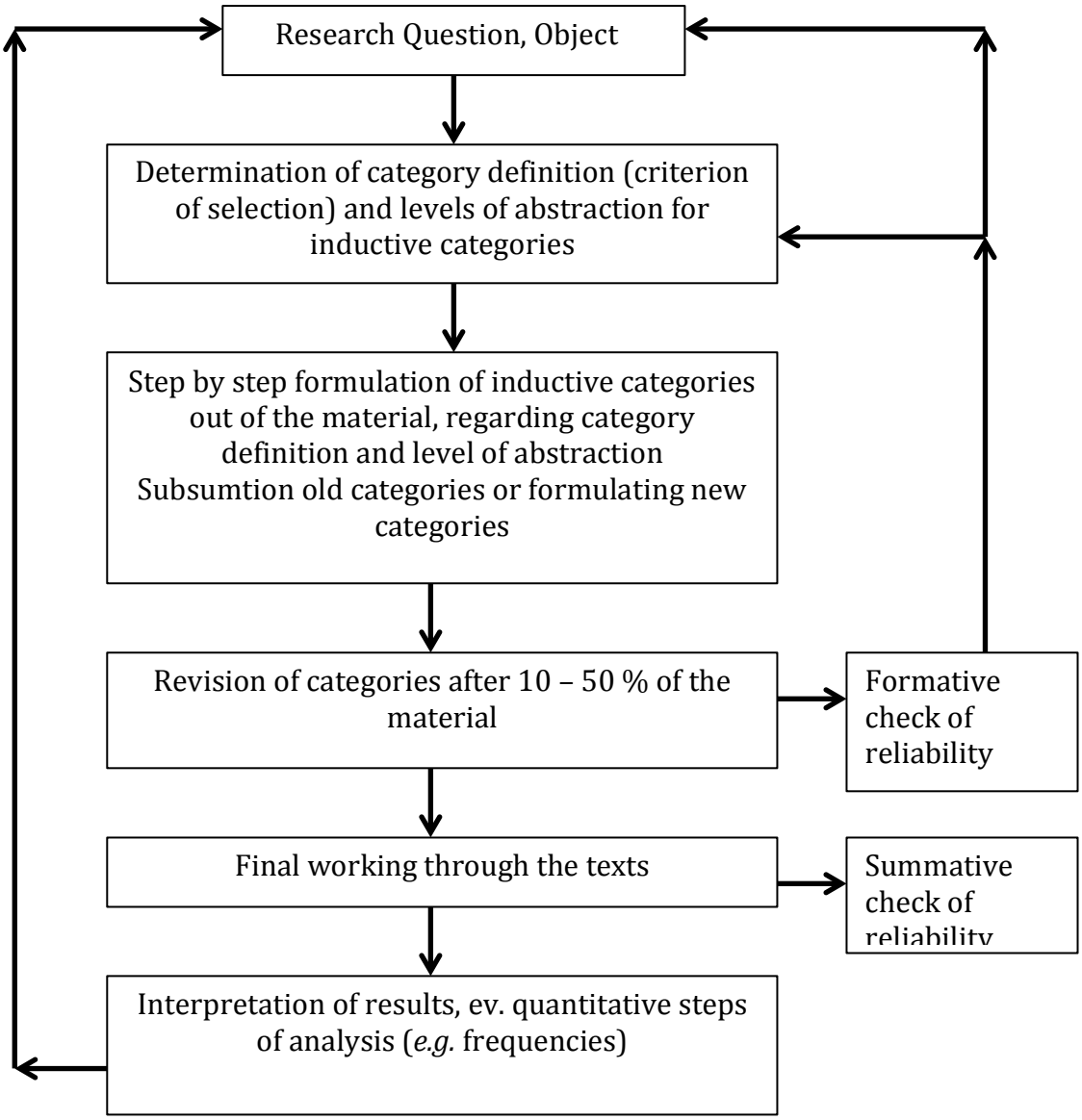

Figure 2. "*Step model of inductive category application"*
Adapted from "Qualitative Content Analysis," by P. Mayring, 2000, *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* (On-line Journal), *1*(2), Art. 20. Copyright © 2000 Philipp Mayring.

The focus of the study was not on particular individuals, but rather an inductive content analysis examination and interpretation of the sampled research materials from the constructed context of thematic coding and analysis. Credibility was established from a consistent coding cycle of the data that indicated recurring themes and patterns for the analysis (Auerbach & Silverstein, 2003; Saldana, 2009).

The use of content analysis as a valid scientific approach to the proposed study was supported by the past research. Murphy, Vriesenga, and Storey (2007) performed an examination of the types of research published in the journal *Educational Administration Quarterly*, and found that content analysis was the most popular method of qualitative research. Overall, 29% of qualitative studies between 1979 and 2003 published in this journal had used content analysis (Murphy *et al.*, 2007). Given the objectives of the present research, inductive content analysis was a valid methodological choice. Qualitative research, according to Greene and Caracelli (1997) engages in "particularity" instead of "generalizability" (as cited in Creswell, 2014, p. 193). Qualitative researchers have criticized outright the premise that quantitative validity criteria can be applied to qualitative research. Quantitative research tends to reflect a positivist philosophy where there is an external world to the researcher that can be independently measured, studied, and tested. To the contrary, the researcher and the research object are interconnected, intertwined in a symbiotic synergy where one influences the other, subject and object throughout the research experience. A researcher whether engaged in quantitative or qualitative research always influences that external reality. Thus, truth claims are subjective in their nature and dependent upon the subjective psychological perceptions of the researcher making such a claim. The conceptual methodology and literature review developed for the research study proposed no generalizability in regard to truth claims, but instead was dependent upon thematic analysis, synthesis, and systemic interpretation with regard to particularity of the data that emerged from the study conducted within the research timeframe.

4.2.5. Methodological Assumptions, Limitations and Delimitation

Assumptions. It was assumed that the qualitative research method would allow the researcher to answer the research question of this study. The emergent nature of qualitative research allowed flexibility in adjusting, if necessary, the research design when the analysis of the data began. It was assumed that the positivistic and scientific view is not the only view that can add value to transport corridors literature. That area includes the value and importance of the subjective side of regional integration that paradoxically can be discussed from an objective framework.

Limitations. Content analysis can often be time consuming and is primarily an explorative and descriptive methodology that describes the "what" of a phenomenon, but may not get at the "why" of the research object. Handling large amounts of data runs the risk of increased error and the process is primarily reductive. In addition, Trochim (2006) pointed out that content analysis is limited to the types of information found in text form. Dealing with ambiguity is important. Coding and categorizing data are not precise scientific expressions with specific procedures to follow, and the need for creativity was crucial in engaging in the social sciences in a research manner that is not quantifiable.

Delimitations. The case-related data were delimited to an initial purposeful population of works covering the timeframe of 2002-2015. The sampled literature was written by scholars, representatives and transport analysts from the REC organizations and inter-governmental organizations (IGOs). Despite the fact that a broad range of sources was examined in this study, the use of purposeful sampling means that the results from this study will not be perfectly generalizable to the population of all writings that could have been selected.

5. CHAPTER 5. ANALYSIS

Chapter 5 consists of four sections. *Section 5.1* assesses and critically examines the political geography of the transport corridor system through analyzing **(I)** the geo-economic motives of the five landlocked North-South Corridor and their territorial morphology and **(II)** inter-state dynamics in enhancing vertical and horizontal intra-regional resource synergies. The outputs of *Section 5.1* explain whether there is a 'zone of common interest' for the North-South Corridor countries and why the North-South Corridor Programme offers a limited regional trade logistics connectivity capacity for the corridor countries. *Section 5.2* identifies and critically assesses the core cross-border interoperability issues with regard to the North-South Corridor transit regime and reveals its limits in blending into the domestic transit infrastructure systems and transit regimes of the corridor countries. *Section 5.3.* points out to the issues concerning the institutional capacity of the North-South Corridor. *Section 5.4.* concludes with the key research findings for **Chapter 5**.

5.1. POLITICAL GEOGRAPHY OF THE TRANSPORT CORRIDOR SYSTEM

The functional distribution of transport corridor space and the dynamic nature of its functionally individuated organizational entity enhances a unique context-sensitive geographical expression, *i.e.* a unit of nucleated space built on an identified area as environment to physical infrastructure, resulting from an ordered spatial arrangement of space that is aimed to restructure and/or form the tempo and density of flows through its dynamic presence, resulting from stretching connection patterns across spaces (Ahmed, 2009).

Within the academic literature of locational economies and institutionalist regional development studies, spatial dimensions of transport logistics enhance an understanding with regard to the continuous interplay between *locational competition factors* of corridor countries and *infrastructure provision patterns*. *Locational competition factors* emerge and/or evolve largely, due to shifting human settlements and business network behavior (Amin, 1999; Guy & Henneberry, 2008; Chapman & Walker, 1991; Hayter, 1997, pp.5-6; Storper,

1997, pp.26-39). While locational competition factors evolve, they change the spatial structure of supply chain, commercial traffic volume, and density of contractional flows, therefore the accessibility, usability and mobility standards of *infrastructure provision*.

Spatial morphology of the corridor country location impacts directly the spatial adaptation of the transport corridor system, infrastructure responsiveness and absorption capabilities of transport network clustering effects produced throughout the temporally structured sequences of corridor development process in the corridor countries. Even though transport corridors reflect a supply-driven and demand-driven transportation system design, locational layer forms *not only* the interaction space for supply and demand sides of the transport corridor chain through providing community context and qualitative background factors to the transport corridor design *but also* determines the total cost structure and policy planning direction for physical transport infrastructure provision. Locational layer, while providing an institutional and spatial focus on the Transport Corridor phenomenon, provides a shared 'anthropogenic' component for transportation and infrastructural layers of corridor.

Given the fact that there are no indices measuring and providing an international comparability on the spatial component of regional connectivity among countries, an assessment on the territorial morphology[15] of the North-South Corridor (NSC) location was conducted in the effort to: **(I)** identify the structural locational assets of the NSC countries, particularly for the land-locked NSC countries; **(II)** critically assess and reveal the geospatial capacity of the NSC through investigating the potential interplays between the structural locational assets, expressed in the geographic characteristics of the countries, and the key micro-regional dynamics among corridor states, affecting the territorial homogeneity for the transport corridor-level integration in the long-term; and **(III)** explain whether there is a 'zone of common interest' for the landlocked corridor countries, namely Democratic Republic of Congo, Botswana, Zambia, Zimbabwe and Malawi, in the microcosm of the NSC. The outcomes of this assessment inform on the export direction of trade, the importance of transit trade for the five NSC landlocked countries, their access routes for international trade, and the geographical alignment of the corridor transport infrastructure between corridor countries.

[15] In the context of this research, territorial morphology refers to the size of the formal state territory, the shape of the land, and national boundaries of a country.

5.1.1. Scopic Focus to the Landlocked North-South Corridor Countries

5.1.1.1. *Democratic Republic of Congo*

Out of the eight corridor countries, the **Democratic Republic of Congo (DRC)** is the second largest country in Africa with a total land area of 2,344,858 km^2 (Central Intelligence Agency, 2016). The prorupted shape of the state boundary lines demonstrates the road transport's vital role in facilitating its intra-regional trade integration to the SADC region.

The three transit road sections[16] (400 km) of the North-South Corridor, connecting the *Luapula* Province in Northwest Zambia through the two-stop border post *Kasumbalesa* to the city *Lubumbashi* in *Katanga* Province in southern DRC and to the seaport of *Durban* in South Africa, continue to increase the DRC's intra-regional dependency upon the trade logistics and the inland transport services of South Africa, while providing to DRC the lowest share (4 %, equal to 400 km) of the total corridor transportation land use and a limited structural capacity for freight flows (Odoki *et al.*, 2014).

In parallel to the DRC's bilateral transport agreements with Zambia and Tanzania on increasing the domestic and cross-border railway network efficiency[17] and harmonizing the cross-border trade logistics as well as the rehabilitation works of the rural road infrastructure started in 2006, the NSC contributes to enhance a commodity trade hub and performs as a bilateral 'resource corridor'[18] and 'infrastructure-for-mining' channel between Zambia and DRC through linking the Zambia-DRC Copper belt area.

In the corridor region, from the observed historical World Bank data estimates on the share of total natural resources rents in GDP per annum, out of eight countries, DRC and Zambia have the highest ratio of natural resource exports to GDP. Nevertheless, the landlocked status of these two countries ties their domestic economy to its trade routes for shipping their

[16] The three road sections are *Kolwezi-Likasi*, *Likasi-Lubumba*, and *Lubumba-Kasumbalesa* (Odoki *et al.*, 2014)
[17] The DRC has two railway systems. The Société Commerciale des Transports et des Ports (SCPT) railway network links *Kinshasa* to the Port of *Matadi* whereas the Société Nationale des Chemins de Fer du Congo (SNCC) railway network links *Katanga* on the Zambia border to *Dilolo* on the Angolan border and *Katanga* to *Ilebo* in the *Kasaï* region (Cochran, 2016).
[18] In accordance with the African Mining Vision Action Plan this policy approach aims to develop new production frontiers in the effort to increase global mineral investment flows through diversifying regional trading partners and to enhance exploration intensity to in the landlocked yet resource-dependent countries (African Union, 2011).

domestic extracted commodities of minerals as industrial inputs to the extra-regions. The North-South Corridor links the main copper mining cities (*i.e. Likasi* and *Kolwezi*) and towns (*i.e. Lubumbashi*, and *Kasumbalesa* on the Zambian border) in the DRC to the Zambian copper mining cities (*Ndola*) and towns (*i.e. Solwezi*, *Chingola*, *Kitwe*), in the Copperbelt region, *i.e.* the region considered as the most developed area of Zambia.

5.1.1.2. *Zambia*

Zambia, as being the host country to the 2009 HLM conference launching the North-South Corridor Programme and the corridor country with the highest share (25%, equal to 2615.6 km) of the total corridor transportation land use (Odoki *et al.*, 2014), consolidates its economic role in the political geography of the SADC ecosystem, particularly for the following reasons. The corridor connects thirty-four road sections linking Zambia to the three neighboring countries, through six border posts, namely the *Kasumbalesa* (DR Congo-Zambia), *Tunduma* Border Post (Tanzania-Zambia), *Victoria Falls* (Zambia-Zimbabwe), *Chirundu* (Zambia-Zimbabwe), *Kazangula* (Botswana-Zambia), *Mchinji* (Zambia-Malawi), and to the seaports of South Africa through Zimbabwe and Botswana (Ibid.).

Zambia's increased regional transport interconnectivity, supported also by the Link Zambia 8,000 project of the Government of Zambia (Accelerated National Roads Construction Programme)' (Road Development Agency, 2012)[19], develops a factor-market crowding effect on Zambia's copper mining sector through creating positive demand shocks to the Copperbelt region. The NSC transforms Zambia not only into an 'intra-regional transport hub' with increased physical accessibility to the sea outlets of South Africa (*Durban* and *Richards Bay*), Mozambique (*Maputo*) and Tanzania (*Dar es Salaam*) through hinterland transportation links, but also into an 'intra-regional energy gateway country' connecting DRC to South Africa through the two planned power interconnectors between DRC-Zambia and Zambia-Tanzania-Kenya (Republic of Zambia, 2015).

[19] The Link Zambia 8,000 project of the Government of Zambia (Accelerated National Roads Construction Programme) proposes improvements on the Zambian's national road network (*i.e., Solwezi* to *Kazungala*, *Kapiri Mposhi* to *Nakonde*, and *Lusaka* to *Mchinji* via *Chipata*) (Road Development Agency, 2012).

Zambia, with a high hydropower generation capacity, generates and exports surplus hydroelectric power to Botswana, Zaire, and Zimbabwe (Ibid.). However, regardless of the fact that the North-South Corridor Programme builds a transit regime among eight corridor countries through putting Zambia at the center of the corridor, the corridor transit policies have a limited industrial clustering effect on the country, largely due to the fragmented industrial structure of the copper mining sector and the China-driven private investment landscape facilitated through the Zambia-China Economic and Trade Cooperation Zone (ZCCZ) in Zambia (Brautigam & Xiaoyang, 2011). Furthermore, despite the fact that the North-South Corridor Programme aims to enhance export-oriented domestic industrial development efforts for the corridor countries through decreasing the transport-related trade costs, the national competitiveness of Zambia remains limited since there is no policy alignment between the three inter-related policy schemes required for harmonizing trade logistics: domestic regulations governing the ZCCZ, SADC and COMESA RTAs, and the NSC transit policy (Farole, 2011). Rather, the North-South Corridor Programme consolidates a single-end market for Zambia through consolidating its reliance on the copper belt mining for unprocessed commodity exports in the Zambezi valley and the *Great Lakes* region.

5.1.1.3. *Botswana*

Botswana, with a total land area of 582,000 km^2 (Central Intelligence Agency, 2016), shares 12 % (equal to 1203 km) of the total NSC corridor transportation land use, with the nineteen road sections crossing the main cities of *Francistown* and *Gaborone* (Odoki *et al.*, 2014). The NSC links Botswana to the South Africa and Zambia via four border posts, *i.e. Kazungula Bridge* (Zambia-Botswana), *Lobatse* (South Africa-Botswana), *Gaborone* (South Africa-Botswana), and *Martin's Drift* (South Africa-Botswana) (Ibid.).

Botswana's compact shape of state, with its stable political environment, enables good territorial communication for transports infrastructure via the balanced spatial distance between its capital city and its state boundaries. Nevertheless, the technical capacity of the North-South Corridor on connecting the economic and population hubs is limited, particularly for the following reasons. *First,* nearly 45 % of the country's total land area is designated as

either protected area or wildlife management areas (Botswana Department of Environmental Affairs, 2015), which limits the potential trade diversification impact of the NSC on the country's agro-business sector. *Second*, the increased urban settlements in the southwestern part of Botswana around Gaborone, *Serowe-Palapye*, *Francistown*, and *Selebi-Pikwe* and in the south of Botswana around *Lobatse*, *Mahalapye*, *Kanye*, and *Molepolole*, causing infrastructure disintegration at the expense of the western part of the country, the *Kalahari Desert* (Jefferis & Nemaorani, 2013). *Third,* despite the government sector's heavy dependence on intra-regional air transport for the diamond trade, the NSC enhances an alternative 'resource corridor' through connecting the coal basins in South Africa, Botswana, Zimbabwe, and Mozambique.

Even though it is possible to argue that the North-South Corridor provides a supporting structure to the government initiatives taken under the *Botswana Energy Master Plan* (BEMP) through improving the accessibility of coal reserves in the country, the spatial configuration of the corridor consolidates South African and Mozambican dominance over the country's coal reserves. South Africa dominates the power supply in Southern Africa with the Southern African Power Pool (SAAP) whereas Mozambique dominates on regional inland transportation channels for the coal export with the *Nacala*, *Beira*, and *Maputo* railroad networks (Baruya & Kessels, 2013).

5.1.1.4. *Zimbabwe*

Zimbabwe, with a total land area of 391,000 km^2 (Central Intelligence Agency, 2016), shares 20 % (equal to 2058 km) of the total corridor transportation land use, with the sixteen road sections crossing the main provinces of *Harare* and *Bulawayo* (Odoki *et al.*, 2014). The North-South Corridor links Zimbabwe to Zambia, South Africa, and Mozambique via four border posts, *i.e. Victoria Falls* (Zambia-Zimbabwe), *Chirundu* (Zambia-Zimbabwe), *Beit Bridge* (South Africa-Zimbabwe), and *Nyamapanda* (Zimbabwe-Mozambique) (Ibid.).

Examining Zimbabwe's role in the NSC region is vital to capture the limits of the material preponderance of South Africa over the rest of the NSC landlocked countries (Scholvin, 2014).

In the landscape of the cooperative action for the North-South Corridor Programme, Zimbabwe's strategic role has been undermined at the expense of the geopolitical focus given to Zambia and South Africa. Zimbabwe, since its military invasion to the Democratic Republic of Congo in 1998, has been following a regional mediation strategy approach grounded on state brutality (Hove & Ndawana, 2016), in security affairs while claiming its regional leadership over South Africa in the SADC region through the Zimbabwean President Robert Mugabe's successive chairmanships of the SADC in 2014 and the AU in 2015. Given the fact that regional surface transport channels (road and rail), linking the Congolese-Zambian Copperbelt to South Africa's industrial hub in *Gauteng* Province, and its sea outlets in *Kwazulu-Natal* pass through Zimbabwe, South Africa, along with Botswana and Mozambique, has been following a "*quiet economic diplomacy*" approach toward Zimbabwe (Alden, 2002, para.13) in the effort to limit politico-economic pressure on Zimbabwe in the region and develop an integrated 'resource corridor' in the long-term to enhance local buy-ins and increase indigenous commercial investments through developing factor-market crowding effect in the mineral industries of the land-locked NSC countries.

Zimbabwe has progressed to be an anchor country for the SADC region, through **(I)** being part of the *Beira* & *Zambezi* Development Corridors and the *Limpopo* Development Corridors with the objective of developing a natural resource-based economic zone among South Africa, Mozambique, Malawi and Zimbabwe (Cross-Border Road Transport Agency, 2016); and **(II)** realizing foreign-led investments for economic infrastructure developments, *i.e.* the regional Zimbabwe-Zambian-Botswana-Namibia ('Zizabona') electricity inter-connector project to be completed in 2018; the construction project of the *Harare-Beitbridge* Highway, led by the Austrian contractor – Geiger International –, to be completed in 2019; and the construction project of the *Harare-Chirundu*, led by the Chinese contractor – China Harbour Engineering Company (CHEC) ("Zim, Chinese contractor, sign agreement on $2,2 bln Harare-Chirundu highway", 2016).

The North-South Corridor, passing through the two main Zimbabwean provinces of *Bulawayo* and *Harare*, contributes further to the development of new production frontiers for the platinum commodity trading with South Africa, particularly in the *Great Dyke* region of Zimbabwe. The *Great Dyke* region – a linear geological feature spanning 550 km – is

considered as a strategic economic belt, which concentrates the so-called platinum group metals (PGMs), *i.e.* nickel, copper, cobalt, gold, and platinum and it contains 85 % of the PGM resources in Zimbabwe (Makore & Zano, 2012).

5.1.1.5. *Malawi*

Malawi, with a total land area of 118,484 km^2 (Central Intelligence Agency, 2016), shares 10 % (equal to 1075.8 km) of the total corridor transportation land use, with the seventeen road sections crossing the main Malawian cities of *Uyole*, *Chiweta*, *Mzuzu*, *Lilongwe* and *Blantyre Bulawayo* (Odoki *et al.*, 2014). The corridor links Malawi to Tanzania, Zambia, and Mozambique via the four border posts, namely the *Songwe* (Tanzania-Malawi), *Mchinji* (Zambia-Malawi), *Zobue* (Malawi-Mozambique), and *Dedza* (Malawi-Mozambique) (Ibid.).

Malawi, as being an elongated state suffering from the steepness of the state territory, is highly dependent on the surface transportation routes and 90 % of the international freight and passenger traffic occur by the road transport (Plagemann & Scholvin, 2010). In the case of Malawi, the corridor contributes to the domestic development efforts through providing the basic transport infrastructure to the unplanned population hubs, namely the commercial capital *Blantyre*, the largest city and capital *Lilongwe*, and the third largest urban center *Mzuzu* (United Nations Human Settlements Programme, 2012).

Moreover, the corridor enhances two resource-based economic linkages for uranium commodity export trade and for the rare earths and mineral sands export trade between Malawi and Mozambique (Kadiresan, 2012), while also contributing to increasing exploration intensity in the Malawian oil producing zones concentrated in the *Great African Rift Valley*. The North-South Corridor also connects Malawi to the Port of *Walvis Bay* in Namibia through the *TransCaprivi Corridor* passing through Zambia, Botswana, DRC and Malawi; to the seaports of South Africa and Tanzania via the gateway country Zambia; and to the *Maputo* port of Mozambique via the *Nacala-Moatize* railway line of the Nacala Corridor.

For Malawi, *i.e.* a country considered as the "labor pool for South Africa" in the colonial period (Scholvin, 2014, p.109) and having a monopolistic uranium-mining sector managed by the Australian uranium companies operating in the geo-economically significant *Great African Rift Valley* (World Bank, 2009) since 2008, the three neighboring NSC countries perform as gateway countries through which the uranium commodity and the rare earths and mineral sands export trading activities could occur.

5.1.2. Tanzania, Mozambique and South Africa

Besides the five land-locked North-South Corridor countries, **Tanzania**, **Mozambique** and **South Africa** assume a strategic role in connecting and coordinating several corridor clusters in the spatial context of the corridor and in strengthening trade logistics inter-connectivity and transit potential of the corridor infrastructure in the regional geography of Eastern and Southern Africa.

South Africa, with a total land area of 1.2 million km^2 (Central Intelligence Agency, 2016), shares 16 % (equal to 1634 km) of the total corridor transportation land use (Odoki *et al.*, 2014). South Africa is linked to Zimbabwe and Botswana via eight road sections and the four border posts, namely *Beit Bridge* (South Africa-Zimbabwe), *Lobatse* (South Africa-Botswana), *Gaborone* (South Africa-Botswana), and *Martin's Drift* (South Africa-Botswana) (Ibid.). In addition, South Africa's geographic location enables the country to expand and solidify its role as an intra-regional transport hub through its linkage to several transit road and rail systems, such as *Trans Cunene*, *Trans Caprivi*, *Trans Calahari*, *Trans Orange*, *Maputo Development Corridor*, *Manzini-Durban*, *Maseru-Durban*, and *Phalaborwa-Richards Bay*.

Tanzania, with a total mainland area of 945,087 km^2 (Central Intelligence Agency, 2016), shares 9 % (equal to 981.9 km) of the total corridor transportation land use and the country is connected, from the Port of *Dar es Salaam* to the Central Africa, via fourteen road sections and the two border posts, *i.e. Tanduma* (Tanzania-Zambia) and *Songwe* (Tanzania-Malawi) (Odoki *et al.*, 2014). Tanzania, despite being a fragmented state lacking territorial unity between the mainland Tanzania and Zanzibar, connects the four corridor countries – Malawi, Mozambique,

Zambia, and DR Congo – via the *Mtwara* Development Corridor and the *Dar es Salaam* Corridor. Despite the recent implementation of the Tanzania Customs Integrated System (TANCIS) reducing the time and cost to export (Makene, 2014, July 07), the main issues limiting Tanzania's role in enhancing the transit potential of the corridor infrastructure derive from the existing capacity constraints in the national (road and railway) transport sector, *e.g.,* high freight costs for trucks, low quality infrastructure maintenance and rehabilitation services resulting in the poor road network conditions, low operational capacity in the Tanzania-Zambia Railway (TAZARA) connection, and the lack of political will for implementing the compatible transit transport policies in compliance with the SADC Protocol on Transport, Communications and Meteorology (1996), particularly following the divestment of the major infrastructure public enterprises between 2000 and 2004.

Mozambique, with a total land area of 801, 590 km^2(Central Intelligence Agency, 2016), shares 4 % (equal to 412 km) of the total corridor transportation land use and is connected to Malawi and Zimbabwe via eight road sections and the three border posts, namely *Zobue* (Malawi-Mozambique), *Dedza* (Malawi-Mozambique), and *Nyamapanda* (Zimbabwe-Mozambique) (Odoki *et al.*, 2014). Mozambique contributes to the concentration of the transit transport demand flow for DR Congo, Malawi, Tanzania, Zimbabwe, Zambia, and South Africa through six transit corridors, *i.e. Mtwara* Corridor, *Nacala* Development Corridor, *Beira* Development Corridor, *Limpopo* Development Corridor, Maputo Development Corridor, and the North-South Corridor (Makumbe, 2012). Out of the eight corridor countries, Mozambique supports the commitment proposed for speeding up the economic integration through signing the Accelerated Programme for Economic Integration (APEI)[20] in September 2012 and consolidating the physical road infrastructure connectivity via the Mozambique Regional Gateway Programme (MRGP)[21] (Byiers & Lui, 2013). Mozambique, as being one of the six SADC Economic Partnership Agreement (EPA) Group countries, the regionalization of the transport corridor infrastructure supports Mozambique's extra-regional market integration, particularly following the signature of the EU-SADC Economic Partnership Agreement (EPA)

[20] The Accelerated Programme for Economic Integration (APEI) was launched and signed by Mozambique, the Seychelles, Zambia, Malawi and Mauritius in September 2012 in order to eliminate NTBTs through improving the business regulations, enhancing intra-regional trade in services, and institutional capacity building (Byiers & Lui, 2013, p.20).

[21] The DFID-led initiative – Mozambique Regional Gateway Programme (MRGP) – targets the Beira Agricultural Growth Corridor (BAGC) and *Nacala* Corridor initiatives, considered as the Gateway corridors including in Zimbabwe, Malawi, and Zambia. The MRGP aims to enhance economic linkages with agricultural value chains and reduce trade costs (Byiers & Lui, 2013, p.20).

signed on 10 June 2016 (European Commission Directorate General for Trade, 2016). Given the fact that Mozambican exports tripled since 2001 (Ibid.) and that the EU is considered as the largest market for Mozambican exports, transport corridors provide Mozambique major outlets for strengthening its extra-regional trade liberalization.

5.2. TRADE LOGISTICS CAPACITY OF THE NORTH-SOUTH CORRIDOR

Infrastructure layer, considered as the permanent physical property and agency of the transport corridor, creates a structurally stable physical platform to the economic development of the transport corridor through facilitating the behavioral patterns of the transport corridor, *i.e.* tempo and movement of network flows occurring around and within the transport corridor space. The interaction between transport-related infrastructure layer and locational layer determines the scale of corridor homogeneity through shaping its accessibility and mobility patterns, which in turn affects corridor-level transportation growth cycle, through impacting the total costing structure of transport systems and services within the organizational context of the corridor and the capital intensive nature of the hard and soft infrastructure sector.

Given the fact that transport corridor projects aim at creating inter-modal linkages among different modes and forms of transport systems, the policy engineering of physical components of the corridor infrastructure and the expected output value of the infrastructure project intervals across and within the corridor impact the infrastructure financing patterns (*e.g.,* scale, regulation, and level of debt), financial performance and risk-return profile of transport corridor project, and the institutional coalition forms for the corridor management. As claimed by several scholars (Bougheas, Demetriades, & Morgenroth, 1999; Limao & Venables, 2001; Brun, Carrere, Guillaumont, & Melo, 2005; Adam & Bevan, 2006; François & Manchin, 2007), the quantity and quality of the transport infrastructure with low trade costs across borders is one of the core determinants to increase the bilateral trade and export value in low-income countries, particularly in Sub-Saharan Africa.

In the effort to assess the technical capacity of the North-South Corridor on blending into the domestic infrastructure systems of the landlocked corridor countries, the following context indicators were constructed: **(I)** the length and condition of core domestic infrastructure in the corridor countries; seaports, roads, rail networks, inland waterways, toll-roads, bridges, tunnels, and airports, trucking terminals, and inland container depots; **(II)** the degree of technical harmonization of infrastructure standards in the corridor countries; **(III)** domestic infrastructure funding availability for financing the transit transportation infrastructure in the corridor countries (*e.g.,* annual road expenditure, capital investment, maintenance expenditure); **(IV)** the state of border-crossing infrastructure; **(V)** road safety performance in the corridor countries; and **(VI)** node and link capacity and condition of the corridor transport infrastructure.

5.2.1. Domestic and International Transit Road Infrastructure Network Quality

The North-South Corridor consists of 116 road sections[22] with a total of 10,647 km. Since its inception, the average daily transit traffic flow (veh-km) increased by 0.2 % in Botswana, 0.4 % in Malawi, 0.9 % in Mozambique, and 1.1 % in Zambia between 2009 and 2013 (Odoki *et al.*, p.7). Nevertheless, the network quality of the geographically dispersed North-South Corridor road transport infrastructure is highly dependent on the road surface quality of the domestic transit regime in each of the NSC countries. Inferred from the comprehensive road network and annual average daily traffic datasets calculated for the 2014 economic impact assessment study of the North-South Corridor by Odoki *et al.* (2014, pp.52-86), the following assumptions could be made with regard to the physical network quality of the domestic transit infrastructure among the corridor countries:

- Out of the 116 identified North-South Corridor road sections, only 16 road sections were constructed after the year 2000 whereas 100 road sections dated back to the 1960s and

[22] Odoki et al. (2014) define the North-South Corridor road sections as "a series of homogenous road sections with unique characteristics" (p.12).

1990s, of which 38 road sections were not surfaced since the latter half of the 1990s (Odoki *et al.*, pp.52-57).

- The behavioral pattern of the road surface varies among the NSC countries, due to the hybrid pavement condition of the transit road sections. The majority of the transit roads are Surface Treatment on Asphalt Base (STAP) (47), Asphalt Mix on Granule Base (AMGB) (20), and Asphalt Mix on Asphalt Pavement (AMAP) (19) (Ibid.).
- The different material conditions of the transit road sections among the corridor countries do not have a direct effect on the asphalt cracking. In Botswana, Mozambique and Malawi, cracking in pavements occurs mostly in the STAP-type road sections whereas in Zambia STSP-type road sections have the highest pavement cracking percentages (Ibid.).
- The roughness of the road surface also varies across the corridor countries and affects the transit transportation costs through increasing the cost of vehicle maintenance. The roughness of the road surface is higher in Malawi and Zambia (Ibid.).
- The main heavy goods vehicles (HGV) trafficked arterials concentrate on the 43 road sections, of which HGV overloads occur on the road sections in Botswana, Zimbabwe, DRC, Zambia, and South Africa (Odoki *et al.*, pp.63-74).

5.2.2. Inter-operability issues in the North-South Corridor Programme

Lack of sustainable transit road safety management capacity and the corridor guidelines mainstreaming the transit road safety and security standards within the NSC region and country assistance strategies.

Despite the AU's ambitious regional objective of developing the world's best road safety practice on the African Regional Transport Infrastructure Network (ARTIN) by 2030 (Breen, Humphreys, & Melibaeva, 2013), the lack of transit road safety and security standards within the institutional North-South Corridor management system, particularly with regard to commercial vehicles, speed limit at the tolling points of the domestic and international transit road sections, have use-related effects on the corridor efficiency through causing transport-driven shifts in bilateral trade logistics.

The unknown of transit road security flaws, conditioning the 'shipability' cost of the goods in transit, limits the potential for conducting near-shoring sourcing activities among the NSC neighboring countries. According to the *Global Status Report on Road Safety* by the World Health Organization (2015), the domestic road safety and security standards vary across the NSC countries in the SADC region. South Africa and Zimbabwe have no government-induced vehicle safety standards in the effort to enforce car manufacturers to adhere to standards on fuel consumption and seat-belt installation, whereas there are no road safety and security auditing practices (*i.e.* formal audits required for major new road construction projects and regular audits of existing road infrastructure) in Tanzania, South Africa, and Mozambique.

The lack of government-induced transport logistics competency in conducting road safety and security audits in the aforementioned corridor countries proves the need of setting up an officially endorsed corridor-level lead agency in the effort to systematize and formalize the domestic and international transit road safety priorities and auditing practices, which could impact the total cost structure of the corridor-level development projects and routine periodic maintenance works in the long-term.

Last but not least, the national funding availability for maintaining and auditing the transit road safety in the North-South Corridor countries is mainly affected by the lack of government-endorsed national road strategies and limited national budget allocated to the road safety management. The National Road Safety Council in Tanzania and the Traffic Safety Council of Zimbabwe are not funded from the national budget and there are no government-endorsed national road strategies in the six corridor countries, *i.e.* Botswana, Democratic Republic of Congo, Malawi, Mozambique, Tanzania, and Zimbabwe (Ibid.).

Lack of a lean transit road transport regime and a transit road strategy.

The legislation framework of the transit road transport regimes vary significantly from one corridor country to another, affecting the equal distribution of the transit traffic regime, cross-border interoperability, frequency of operations, and modal imbalance of the transport corridor infrastructure among the NSC countries. A lean transit road transport regime is vital, for easing the movement of road vehicles in the international transit road sections across

borders, particularly in the case of in Malawi, *i.e.* a country with four international access routes (United Nations Conference on Trade and Development [UNCTAD], 1994, p.26). In the effort to understand the importance of a lean transit regime and a transit road strategy, the following contextual indicators were chosen to reveal the differences in the road transit management practices across the NSC countries: suppliers of transit road services and bilateral frameworks for the operation of transit transport services.

(a) Suppliers of transit road services.

The international logistics performance of the corridor countries, according to the Logistics Performance Index (LPI) ranking system, differs from one to another. Zimbabwe, Zambia, and DR Congo have the weakest performance of the eight corridor countries both in 2007 and 2016 due to the limited quality of trade-related infrastructure and the efficiency of border procedures (World Bank Logistics Performance Index [LPI], 2007/2016).

Among the eight corridor countries, in Botswana, the road transport and the clearing and forwarding business are privately owned and operated by the MANICA Freight Services Ltd., and Walford Meadows. In Malawi, MANICA Freight Services, AMI, Walford Meadows, and Burlington Express manage clearing and forwarding business system, which operate container depots in *Blantyre* and *Lilongwe*. In Malawi, the transit road sector interest groups comprises: the Road Transport Operators Association (RTOA), representing the clearing and forwarding businesses; the private sector initiative Malawi Export and Import Routes Limited (MEIRL) advising on the transit logistics; the PPP initiative Malawi International Transport Company (MITCO); and the international road haulage companies, such as SABOT Hauliers, Trans Africa Transport (United Nations Conference on Trade and Development [UNCTAD], 1994). In Zambia, the clearing and forwarding businesses are managed by the privately owned enterprises, *i.e.* AMI, MANICA, ZAMCARGO, and Walford Meadows. However, the Zambian government has been aiming to initiate a centralized Inland Container Depot (ICD) facility in the *Lusaka* city and the Copperbelt, in the effort to ease the consolidation of cargo through the centralization of the container depots and to reduce the transit times in seaports, and thus, the demurrage charges. Furthermore, in the road transit sector, the Zambian government plays an active role in the fields of trucking, clearing, and forwarding business

services. The government, through the Contract Haulage Limited (CHL), manages trucking services in the domestic and intra-regional transit trade to the six of the NSC corridor countries, *i.e.* South Africa, Botswana, Zimbabwe, Mozambique, Malawi, and Tanzania (Ibid.).

Nevertheless, differing level of government and private sector involvement into the supply of transit road services limits **(I)** the concentration of the corridor-level logistics capabilities (Chhetri *et al.*, 2014; Bolumole *et al.*, 2015; Qi & Liu, 2015) comprising multi-scaled transportation related infrastructure nodes on the transportation service network of national, international, and regional supply chain networks across the corridor road transport chain and **(II)** the absorption of logistics-related benefits of co-locating, *e.g.*, industrial know-how sharing and the formation of a trade logistics labor pool contributing to the functioning of the international transit transport along the corridor chain.

The lack of cooperative arrangements among the suppliers of road transit services of the eight NSC countries limits the standardization of the agglomeration spaces (*e.g.* cargo depots) for transit trade logistics services at the corridor level, which is in fact crucial for increasing the traceability of the road transit flow and to enhance an inter-firm networking space for clearing and forwarding agencies located in neighboring NSC countries. In other terms, the lack of cooperative arrangements affects transactional yet cooperative interdependencies among the NSC countries (Grandori & Soda, 1995). Since the logistics capacity of the suppliers of transit road services could influence the route-to-market through shaping firms' on-trade and off-trade channel focus and downstream distribution networks of (public and private) economic organizations operating in neighboring corridor countries, the suppliers of transit road services act as trade business enablers through providing 'non-tradable' business inputs (Porter, 1998/2000) on the existing Non-Tariff Barriers to Trade (NTBTs), which enhances the policy design of corridor-level adjustments to eradicate NBTs, *e.g.* import licensing, rules for valuation of goods at customs, trade prepared investment measures, and so forth.

(b) Bilateral frameworks for the operation of transit transport services.

In contrast to the other SADC-member corridor countries, Botswana is not a signatory to the PTA[23], *i.e.* the regional agreement on the standardized road transit charges whereas it contributes to the standardization of axle loads and licensing practices alongside with the SADC-Southern Africa Transport and Communication Commission (SATTC). Between Botswana, Lesotho, and Swaziland, there is a Memorandum of Understandings (MoU) signed for reducing the dominance of South Africa operators on the road haulage industry in the common customs area and there are bilateral transport agreements between Zambia and Botswana ("International Trade Regime", n.d.). In the case of Malawi, the country signed a set of bilateral road transport agreements with Mozambique, Tanzania, Zambia, and Zimbabwe. Malawi administers the standardized transit system of road charges according to the PTA whereas Tanzania charges higher transit rates (United Nations Conference on Trade and Development [UNCTAD], 1994). The transit rates are higher in the *Tete* Corridor, due to the military escort for the road vehicles along the *Tete* Province-*Nyamapanda* border to Mozambique and the operational constraints (*e.g.,* overloading) to trans-shipability of goods across modes on the international transit routes (Die Deutsche Gesellschaft für Internationale Zusammenarbeit [GIZ] GmbH, 2011). With regard to the bilateral transit transport agreements, Malawi and Tanzania have a special cooperative agreement, according to which Tanzania provides transit facilities and eases the Malawian transit (or cargo) traffic to the port of *Dar es Salaam* under a transit bond system operating within the legislative framework of Malawi law (Grosdidier de Matons, 2014). Where, Malawi has the negotiation power for the preference treatment and concessional rates for its cargo in transit. In Zambia, the government signed with Botswana, Zimbabwe, Malawi and Tanzania bilateral agreements with regard to licensing, traffic sharing, axle load limits, and the ease of Zambian transit traffic to the port of *Dar es Salaam*. Zambia Consolidated Copper Mines (ZCCM), the major Zambian mining company, has its own copper cargo depot '*Ubungo*' with its own warehouses in the seaport of *Dar es Salaam*, which enables Zambia to handle its own loading of copper shipments (United Nations Conference on Trade and Development [UNCTAD], 1994). Yet

[23] The PTA regime aims to "harmonize road transit charges by replacing charges at the national level – related to road licence, toll fees, and others – with a uniform through transport charge. The agreed are is US$8 per 100 km for HGVs with more than three axles and US$ 3 per 100 km for rigid chassis HGVs f up to 3 tons" (United Nations Conference on Trade and Development [UNCTAD], 1994, p. 31).

there is no government-endorsed transport policy in the effort to increase the trucking capacity such as leasing systems for vehicle acquisition. In Zimbabwe, since the trunk roads handle cargo traffic for Malawi, Zambia (*Bulawayo-Hwange-Victoria Falls-Livingstone* and *Harare-Chinhoyi-Chirundu*), South Africa (*Harare-Masvingo-Beitbridge*), Botswana (*Harare-Kodama-Gweru-Bulawayo-Francistown* and *Bulawayo-Victoria Falls-Pandamatenga*) and Mozambique (*Harare-Nyamapanda-Tete* Corridor and *Harare-Mutare-Forbes-Beira* port), Zimbabwe has bilateral road transport agreements with these countries, except Botswana (Ibid.). In the effort to increase operational efficiency, safeguard the transit traffic and ensure the access to the seaports in Mozambique, Zimbabwe and Mozambique established the Beira Corridor Group (BCG) (Glickman, 1990). On the other hand, Zimbabwe and Malawi have no special agreements, despite the fact the Malawian transit traffic passes from Mozambique to South Africa through Zimbabwe.

5.3. INSTITUTIONAL CHALLENGES IN THE NORTH-SOUTH CORRIDOR PROGRAMME MANAGEMENT

5.3.1. Ideational Superstructure of Transport Corridor Management

The legal context of a transport corridor constitutes a multi-jurisdictional geography and a multi-level governance space for planning and collaboration for corridor-scale cohesion policy building, and corridor efficiency management through harmonizing and simplifying a set of (national, regional, and international) legal and policy instruments that are relevant to trade and transport facilitation process in the spatial context of the North-South Transport Corridor. However, institutional layer of the transport corridor has not a free-standing institutional capacity while determining organizational behavior of the corridor. Grossdidier de Matons (2013) identifies 19 general policy instruments that are relevant to trade and transit transport facilitation applicable to all modes of transport (see **Appendix G**).

The international legal instruments posit *not only* the ideational superstructure of the corridor-level institutional mechanisms *but also* establish the formal institutional frame to

achieve the functional optimum of transport corridor service provision, *i.e.* transit customs and border management, seaport and shipping, access to seaport, and road and rail transport services. These international policy instruments relevant to trade and transport facilitation have two functions: **(I)** framing the interest patterns and operational delivery capabilities of transport corridor stakeholders on cooperative corridor management; and **(II)** creating political cross-pressures and institutional tensions while identifying corridor-level jurisdictions and rules of operation, due to the lack of normative knowledge transfer expertise impacting on the diffusion of shared responsibility and ownership for transport corridor and cohesive corridor management policy. The former could be considered as the *positive externality effect* of international policy instruments, whereas the latter refers to its *negative externality effect* since it widens the gap between corridor policy effectiveness and political effectiveness through distorting the corridor programme priorities.

5.3.2. Organizational Governance Issues of the North-South Corridor Programme

The spatially extensive organizational context and form of North-South Transport Corridor provide a distinct variety of multi-level transport governance structure, depending its objectives and degree of stakeholder involvement in transport corridor management (Baiocchi, 2006). Despite the role of external actors (*e.g.,* donor countries, multilateral development banks, and international finance organizations) in funding the North-South Corridor Programme, the main institutional actors (or agents) are the COMESA, EAC, and SADC and the eight concerned corridor states, as described in the formal policy documents whereas logistics nodes, road safety agencies, urban logistics service providers, terminal managers, border management operators are considered as secondary actors affecting the quality and service environment of the logistics and transport services provided through the North-South transport corridor space. Despite the horizontal and vertical integration mechanisms linking the main actors in the North-South Transport Corridor policy implementation, an institutional framework was introduced at the 2009 HLM on the North-South Corridor, held in Lusaka, in the effort to avoid implementation gaps. According to the policy outcomes of the 2009 HLM, the governance of the North-South Corridor programme

management has been designed as follows: **(I)** Project Steering Committee responsible for policy management; **(II)** Project Implementation Unit (PIU) within the CES Tripartite responsible for facilitating, coordinating and monitoring the progress of implementing projects and programmes; **(III)** Tripartite Fund for managing external financing issues with the development partners, to be hosted at and management by the Development Bank of Southern Africa (DBSA); **(IV)** Special Purpose Vehicles (SPVs) in the effort to scale-up investment and implementation of project through PPPs and blended finance mechanisms ("The North-South Corridor Programme Press Release", 2009, September 06). Nevertheless, the programmatic issues of coordinating the NSC transport infrastructure financing and the co-existence of sub-regional and national formalities, procedures and border documentation systems influence the operational and managerial efficiency of the North-South Corridor Programme.

5.3.2.1. Programmatic issue of coordinating the NSC transport corridor infrastructure financing

From 2009 to 2016, within the framework of the North-South Corridor (NSC) Programme, the number of infrastructure projects totaled 300, of which 110 projects are in the implementation phase (Agence de Press Sénégalaise, 2016, January 29). Nevertheless, coordinating funding for the NSC corridor transport infrastructure components is a programmatic issue since the launch of the North-South Corridor Programme. The infrastructure funding for financing the domestic transit road maintenance and upgrading works occur mainly in the forms of Official Development Finance (ODF), Private Participation in Infrastructure (PPI), and the Chinese infrastructure investments models, particularly in the case of Zambia (Gutman & Chattopadhyay, 2015; see also World Bank Private Participation in Infrastructure Database [WB PPI Database], n.d.). Furthermore, the lack resource availability and resource mobilization for the optimizing the operational efficiency in the road transit systems are limited due to the fact that there are no government-endorsed transport road strategies in the six corridor countries, *i.e.* Botswana, DR Congo, Malawi, Mozambique, Tanzania, and Zimbabwe (World Health Organization, 2015). The fragmented nature of the domestic transit infrastructure funding systems influences the degree of technical

harmonization of the corridor-level infrastructure standards, largely due to the lack of a corridor-level infrastructure policy alignment among the infrastructure financing bodies implementing the (hard and soft) infrastructure projects in the NSC countries.

5.3.2.2. Co-existence of sub-regional and national formalities, procedures and documentation systems

The Maputo-based SADC-SATTC, via its specialized sub-sectorial working groups, contributes to the harmonization of the border management system and designs/implements the projects in relation to the regional transport corridors and the intra-regional surface transport projects. Nevertheless, the SADC-SATTC does not consider the national transport road operators as part of the corridor stakeholders represented in its working group on roads and traffic. Therefore, the harmonization of road transit policies and measures is limited to the public institutions of the North-South Corridor countries and not all of the eight corridor countries are party to the PTA Agreement. For instance, South Africa and Botswana could not benefit from a set of deregulated transit policy initiatives, *e.g.* regional motor vehicle insurance scheme, regional carrier license system, established under the PTA Agreement (United Nations Conference on Trade and Development [UNCTAD], 1994).

Furthermore, as borders could be considered as mutually exclusive institutional space for the inter-state interactions and the institutional building block for bilateral trading systems, the lack of a coordinated regional and/or corridor-level border management system impacts on the trade facilitation and transit trade capacity of the North-South Corridor Programme. With regard to the border posts management, the North-South Corridor encompasses 14 border posts out of the 15 border posts identified at the SADC level. In the North-South Corridor context, in response to the rising private-sector complaints over the protection of trading rights and the efficiency of the cross-border movements at the *Beitbridge* and *Chirundu* border posts since 2005 (Jakes, 2016), the first One-Stop Border Post (OSBP) was established at the *Chirundu* border (Curtis, 2009). However, the lack of a unified and coordinated sub-regional border management system at the corridor level impacts directly the movement of international transit traffic, border-crossing times between the adjacent borders and increase

transit trade costs through causing administrative delays, different working hours at the border posts, cumbersome procedures in customs processing, and corrupted acts of the border post officials violating the protection of trading rights.

5.4. CHAPTER CONCLUSION

The outputs of this chapter revealed the limited geospatial capacity of the North-South Corridor on connecting the economic and population hubs in the corridor countries and explain whether there is a 'zone of common interest' for the North-South Corridor countries.

Chapter 5 analyzed and discussed the country-specific geo-economic motives of the landlocked corridor countries with regard to the North-South Corridor Programme, which exhibits a limited regional trade logistics connectivity capacity of the North-South Corridor. In the guise of conclusion, the summary of findings is as follows:

- The North-South Corridor, while historically immersing itself in the traditional African Highway network system and the four SADC corridor clusters, consolidates further the politico-economic hegemony of South Africa.
- The NSC transforms the two landlocked yet resource-rich countries – Zambia and Zimbabwe – into strategic economic gateway countries to South Africa through enhancing vertical and horizontal intra-regional resource synergies in the effort to enhance local buy-ins and develop factor-market crowding effect in the mineral industries of the land-locked NSC countries. Therefore, the political design of the NSC Programme project pipeline for infrastructure maintenance and rehabilitation enhances unequal benefits of the North-South transport corridor infrastructure and its transit trade capacity while reinforcing the geo-economic role of South Africa, Zambia and Zimbabwe and causing trade displacements.
- The political design of the NSC Programme and its donor-dominated infrastructure financing system do not consider the following aspects of the geospatial reality in the NSC countries: shifts in human territoriality expressed in bilateral estimates of migration stocks and the historical evolution of spatial country-to-country migration structure; rural

connectivity patterns and growth points resulting from the settlement hierarchy in physical landforms and constraints affecting land use development in transportation; and the domestic labor market outcomes, resulting from the country-level demographic patterns and the compositional effect of the population structure and labor income age patterns on total household expenditure.

- The limited geospatial understanding of the North-South Corridor location and the interconnection patterns between the North-South Corridor and the SADC corridor clusters limit the infrastructure responsiveness of the NSC transit transport road network.
- The transit constraints at the physical and operation levels distort and limit the homogeneity of the corridor. The transit constraints produce systemically construction and use-related effects on the NS corridor efficiency, while structuring and conditioning the movement of flows and spatial patterns of activities between the identified origin (exit) and destination (entry) points of Corridor.
- The limited political and geospatial alignment between the domestic and international transit infrastructure and facilities in the North-South Corridor countries impact further the transit traffic movement direction driven by commercial considerations, the alignment and synchronization of the transport-related infrastructure modes and the scale of infrastructure operation in the context of the planned road transport infrastructure network system for the NSC.

6. CHAPTER 6. CONCLUSION

The purpose of the present research was to address the research question announced in Chapter 1, *i.e.* "To what extent North-South Corridor countries to regional trade integration process in the CES Tripartite Context of the Sub-Saharan Africa geography?" through answering the three sub-questions:

(I) Do the political geography and spatial morphology of the corridor location influence the infrastructure responsiveness and spatial adaptation of the surface transport structures along the North-South Corridor?

(II) What are the spatial, political, and operational bottlenecks impeding the efficiency of the North-South Corridor Programme?

(III) How do physical infrastructure optimizations in corridor transport structures, harmonized regime, and institutional corridor governance system affect the efficiency of the North-South Corridor Programme?

The qualitative case study, exploratory and descriptive in purpose, was designed as an "embedded single-case study" with multiple units of analysis (Yin, 2003, p.40). In the effort to establish the framework conditions and theoretical framing for conducting an *in situ* analysis of the research object, the researcher aimed to develop a case-specific intersection experience through investigating different academic fields, *i.e.* transit transport and logistics studies, network and stakeholder models used in analyzing the operational performance of transport corridors, and theoretical studies of regionalism (*e.g.,* new economic regionalism, new economic geography). The researcher used an inductive content analysis and hermeneutical interpretation as an approach to code conceptual/thematic content constructs from the analyzed case data and produce reflexive content for the case study analysis.

6.1. CONTRIBUTIONS OF THE RESEARCH

The findings of the present research provided theoretical and practical contributions. The present research acknowledged *transport corridor* as a policy planning approach and set out a case-specific constructivist *ex post* evaluation perspective. The researcher theorized a replicable multi-layered analytical framework for multi-country cross-border transport corridor studies. The framework facilitated the data structuring process since it provided multiple units of analysis, *i.e.* individual research entities to form the case study. The multi-layered framework enabled the researcher to investigate the complexity of the North-South Corridor Programme from various lenses, *i.e.* political geography of the corridor location, transit transportation infrastructure quality, transit trade and transport regimes, and transportation governance issues with regard to the multi-country cross-border corridor management. As such, the study provided a holistic perspective with regard to the spatial, political and operational bottlenecks impeding the efficiency of transit logistics systems operating along the North-South Corridor transport corridor chain and its structural organizational performance issues *(*see also *Section 1.1. in Chapter 1 for the theoretical and practical contributions of the research)*.

6.2. LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The major limitations observed during the course of undertaking the case research and analysis were related to the validation of the research quality and quality evidence of the available applied macro-economic impact assessment studies evaluating multi-modal and multi-regional transport corridors and corridor diagnostics with limited data collected from the road agencies that manage road sections within the corridor.

The present research suggests that future areas of research should look into how to calibrate existing macro-economic corridor impact assessment models, restructure data collection protocol and change 'statistical behavior' within the field of transport corridor studies, such as:

(I) Data production for identifying spatial connectivity patterns, growth points, historical evolution of country-to-country migration patterns. Spatial analysis of demographic data could contribute to the transport corridor design process since it will trace transport travel demand and inform on the concentration points of human flux.

(II) Application of product space statistics data (Hausmann & Klinger, 2006; Hidalgo *et al.*, 2007) to transport corridor studies to assess geo-economic dynamics and inter-industrial relations within the transport corridor context.

(III) Establishing corridor stakeholder data production working groups in the effort to: **(a)** increase the statistical production capabilities of the corridor countries; **(b)** help regional development policy agents to use infrastructure investment funds in an efficient manner; and **(c)** increase policy responsiveness of the corridor management groups in relation to the cross-border corridor infrastructure quality management issues, in other terms transport-related drivers of cross-border trade cost.

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APPENDICES

Appendix A
List of Abbreviations

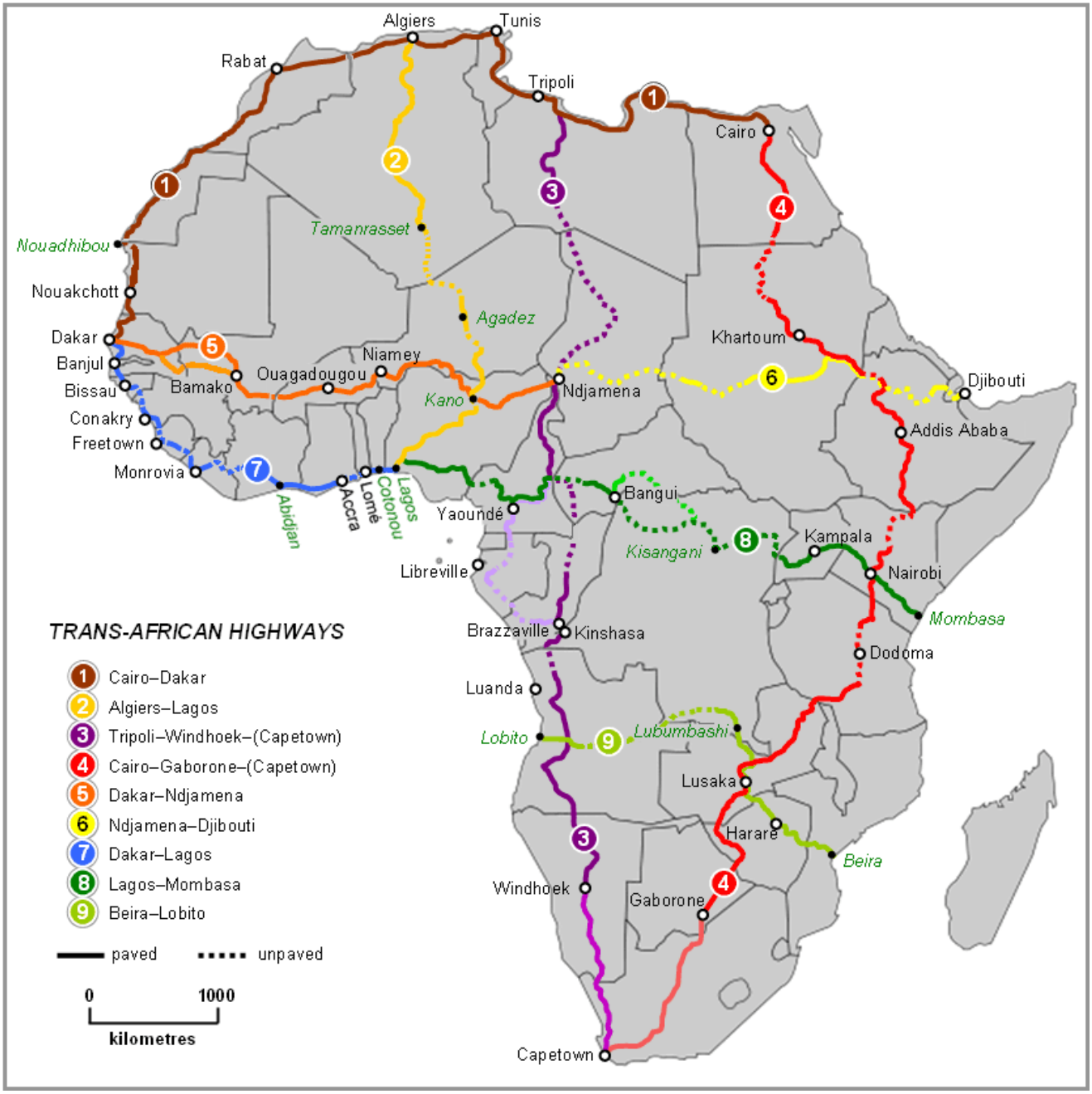
AADT	Annual Average Daily Traffic
AEC	African Economic Community
AfDB	African Development Bank
AfT	Aid for Trade
AGOA	U.S. African Growth and Opportunity Act
AIDA	Action for the Accelerated Industrial Development of Africa
AMAP	Asphalt Mix on Asphalt Pavement
AMGB	Asphalt Mix on Granule Base
APEI	Accelerated Programme for Economic Integration
ARTIN	African Regional Transport Infrastructure Network
AU	African Union
AUC	African Union Commission
BAGC	Beira Agricultural Growth Corridor
BCG	Beira Corridor Group
BEMP	Botswana's Energy Master Plan
CAADP	Comprehensive Africa Agriculture Development Programme
CAQDAS	Computer Assisted Qualitative Data Analysis Software
C-BRTA	Cross-Border Road Transport Agency
CEMAC	The Economic and Monitory Community of Central Africa
CEPGL	Economic Community of Great Lakes Countries
CES	COMESA-EAC-SADC
CHEC	China Harbour Engineering Company
CHL	Contract Haulage Limited
CIA	Central Intelligence Agency
CIF	Cost, Insurance, and Freight
CMO	Content-Mechanism-Outcome
COMESA	Common Market for Eastern and Southern Africa
CSO	Civil Society Organization
CTTTFP	Comprehensive Tripartite Trade and Transport Facilitation Programme
DBSA	Development Bank of Southern Africa
DFID	Department for International Development
DRC	Democratic Republic of Congo
DTI	Department of Trade and Industry
EAC	East African Community
EACCU	East African Community Customs Union
EBSCOhost	Elton B. Stephens Company
EC	European Commission
ECA	Economic Commission for Africa
EIB	European Investment Bank
EPA	Economic Partnership Agreement
ERIC	Education Resources Information Centre
GAFTA	Greater Arab Free Trade Area
GIZ	Die Deutsche Gesellschaft für Internationale Zusammenarbeit

FDI	Foreign Direct Investment
FTA	Free Trade Area
GDP	Gross Domestic Product
GIF	Global Infrastructure Fund
HGV	Heavy Good Vehicle
HLM	High-level Meeting
ICA	Infrastructure Consortium for Africa
ICC	International Chamber of Commerce
ICD	Inland Container Depot
IGO	Intergovernmental Organization
IMF	International Monetary Fund
ITF	Infrastructure Trust Fund
JICA	Japan International Cooperation Agency
JSTOR	Journal Storage
LPI	Logistics Performance Index
ODF	Official Development Finance
OECD	Organization for Economic Cooperation and Development
OSBP	One-Stop-Border Post
M&E	Monitoring and Evaluation
MEIRL	Malawi Exports and Imports Limited
MITCO	Malawi International Transport Company
MNC	Multinational Corporations
MoU	Memorandum of Understanding
MRGP	Mozambique Regional Gateway Programme
NTBT	Non-Technical Barriers to Trade
NEPAD	New Economic Partnership for Africa's Development
NSC	North-South Corridor
PGMs	Platinum Group Metals
PIDA	Programme for Infrastructure Development in Africa
PIDA PAP	Programme for Infrastructure Development in Africa – Priority Action Plan
PIU	Project Implementation Unit
PPP	Public-Private Partnership
PPI	Private Participation in Infrastructure
PTAs	Preferential Trade Agreement
REC	Regional Economic Organization
RISPs	Regional Integration Strategy Papers
RPGs	Regional Public Goods
RSDIP	Regional Spatial Development Initiative Programme
RTAs	Regional Trade Agreement
RTOA	Road Transport Operators Association
SAAP	Southern African Power Pool
SACU	Southern African Customs Union
SADC	Southern African Development Community
SADC-SATCC	Southern African Development Community – Southern Africa Transportation and Communications Commission
SDI	Spatial Development Initiative
SPVs	Special Purpose Vehicle

SSA	Sub-Saharan Africa
STAP	Surface Treatment on Asphalt Base
TANCIS	Tanzania Customs Integrated System
TAZARA	Tanzania-Zambia Railway
TBT	Technical Barriers to Trade
TCS/PIP	Transport Strategy and Priority Plan
TFTA	Tripartite Free Trade Area
TMSA	TradeMark Southern Africa
TRALAC	Trade Law Centre
TTF	Tripartite Task Force
TYS	Ten-Year-Strategy Plan
UEMOA	Union Économique et Monetaire Ouest African ('West African Economic and Monetary Union')
UNCTAD	United Nations Conference on Trade and Development
UNECA	United Nations Economic Commission for Africa
UN-HABITAT	United Nations Human Settlements Programme
UN-PAAERD	United Nations Programme of Action for African Economic Recovery and Development
ZCCM	Zambia Consolidated Copper Mines
ZCCZ	Zambia and China Economic and Trade Cooperation Zone
WB	World Bank
WB PPIAF	World Bank's Private Participation in Infrastructure Project Database
WB SSATP	World Bank – Sub-Saharan Africa Transport Policy Programme
WEF	World Economic Forum
WHO	World Health Organization
WTO	World Trade Organization

Appendix B
Trans-African Highway Network

Figure 1C. Trans-African Highway Network Map



Source: Byiers, B. (2015). Figure 1: Trans-African Highway Network. [map]. 1:1000 (km). In B. Byiers. Corridors as industrial policy? Linking people, policies, and places. *GREAT insights Magazine.* Vol.4 (4). June-July 2015. Retrieved from http://ecdpm.org/great-insights/territorial-development-2/corridors-as-industrial-policy-linking-people-policies-and-places/

Appendix C
SADC Transport Corridor Clusters

The Southern Africa Development Community (SADC) organized 19 transport corridors in the geography of Sub-Saharan African region into four transport corridor clusters: Western, Eastern, Southern, and North-South (Cross-Border Road Transport Agency, 2016). Each of the four SADC transport clusters is detailed in **Table 1E**, **Table 2E**, **Table 3E**, and **Table 4E**.

Table 1E. *Western SADC Transport Corridors Cluster*

Transport Corridor	Seaport	Corridor Countries
Lobito / Benguela	Lobito	Angola, Democratic Republic of Congo, Zambia
Bas Congo	Matadi / Banana	Democratic Republic of Congo, Angola
Malange	Luanda	Angola, Democratic Republic of Congo
Namibe	Namibe	Angola, Namibia
Trans Cunene	Walvis Bay	Namibia, Angola, South Africa
Trans Caprivi (Walvis Bay – Ndola – Lubumbashi)	Walvis Bay	Namibia, Democratic Republic of Congo, Zambia
Trans Kalahari	Walvis Bay	Botswana, Namibia, South Africa
Trans Orange	Cape Town	Namibia, South Africa

Table 2E. *Eastern SADC Transport Corridors Cluster*

Transport Corridor	Seaport	Corridor Countries
Dar es Salaam	Dar es Salaam	Democratic Republic of Congo, Malawi, Tanzania, Zambia
Mtwara	Mtwara	Malawi, Mozambique, Tanzania, Zambia
Nacala	Nacala	Malawi, Mozambique, Zambia
Beira	Beira	Mozambique, Zimbabwe
Limpopo	Maputo	Mozambique, Zimbabwe

Table 3E. *Southern SADC Transport Corridors Cluster*

Transport Corridor	Seaport	Corridor Countries
Maputo	Maputo	Mozambique, Swaziland, Southern Africa
Manzini-Durban	Durban	Swaziland, South Africa
Maseru-Durban	Durban	Lesotho, South Africa
Phalaborwa-Richards Bay	Richards Bay	South Africa, Swaziland

Table 4E. *North-South Corridor*

Transport Corridor	Port	Corridor Countries
North-South Corridor	Durban	Democratic Republic of Congo, Botswana, Malawi, Mozambique, Africa, Tanzania, Zambia, Zimbabwe

Appendix D
An Overview of the North-South Corridor Project Pipeline

A pipeline of cross-border projects has been identified for infrastructure upgrading along the Corridor (Odoki et al., 2009; Teravaninthorn & Raballand, 2009). The corridor remains a patchwork of dilapidated road, rail and port links, which largely date from the Colonial era and greatly, inhibit intra-regional trade (Ibid.).

The bloc's Tripartite Task Force identified 59 road schemes, 38 rail projects, six bridges and eight one-stop border-posts required to rehabilitate the Corridor over two decades. It also estimated at 10 billion dollars the total cost of upgrading 8,600 kilometers of road, 800 kilometers of rail, and expanding *Dar es Salam* port's capacity (Ibid.).

Roads and Bridges. Road networks account for over 95 % of all goods transported along the North-South Corridor. With 1.2 billion dollars in funding pledged at a 2009 Lusaka North-South Corridor donor conference, the Task Force identified road networks as the bottlenecks that were both most pressing and that had the most potential to show significant improvements with key interventions in the short term. Transporting a container from *Lusaka* to *Durban* costs about US $ 8,000, as against about US $ 1,800 for shipping a container from the Far East to *Durban*. Trucks take approximately one month for the *Lusaka-Durban* round trip, delayed by inadequate hard infrastructure (roads and bridges) and problematic soft infrastructure (slow, excessive border formalities). The cost of upgrading and maintaining the North-South Corridor's road network was estimated at US $ 6.9 billion. The Task Force concentrated on the 1,041 kilometers of road judged in need of urgent attention. All roads so categorized are now being rehabilitated or are at the design and preparation stage. However, this success has been overshadowed by the significant proportion of the 5,156 kilometers of road judged to be in fair condition but which have since deteriorated and now require immediate repair (Odoki *et al.*, 2009; Teravaninthorn & Raballand, 2009).

Border-posts. The Zambia-Zimbabwe border crossing at *Chirundu* opened as the region's first one-stop-border-post in 2009. Transit times for freight transport have been reduced from three days to same day clearance. Revenues from the Kasumbalesa one-stop post between Zambia and the Democratic Republic of Congo are up more than 50 %, although the planned *Beitbridge* one-stop post (South Africa-Zimbabwe) is behind schedule. Zambia and Botswana signed a 124 million dollar loan agreement in October 2012 with the Japan International Cooperation Agency (JICA) and the African Development Bank (AfDB) to build a one-stop-post, bridge and approach roads at *Kazungula*, where Zambia, Botswana, Zimbabwe and Namibia intersect and where ferry-crossings are used. Construction was due to commence in 2014; by 2018, crossing times are expected to be dramatically reduced (Odoki *et al.*, 2009; Teravaninthorn & Raballand, 2009).

Railways. The Maputo Development Corridor has restored historical rail (and road) links between South Africa's landlocked provinces of *Gauteng* and *Mpumalanga* and the Mozambican ports of *Maputo* and *Matola.* South Africa's state-owned transport utility *Transnet* is now focusing on improving *Durban*'s rail links with the North-South Corridor. However, relative to roads and border-posts, far less progress has been achieved with rail networks. Outside South Africa, the balance of the North-

South Corridor rail network is functioning well below capacity after decades of little or no investment in fixed and rolling assets. Most World Bank-inspired experiments with rail concessioning in Mozambique, Malawi, Zambia, Zimbabwe and Tanzania have been largely unsuccessful, with several returning to state ownership. Most of the North-South Corridor's rail networks face high operating costs and low revenue and are by insolvent operators whose infrastructure continues to deteriorate and lose customers. Traffic volumes would have to increase by around 400 % to make them commercially viable, and all appear locked in a spiral of decline with no potential exit strategy in sight. While roads continue to receive funding, few governments or donors have the financing or appetite to address revitalizing the North-South Corridor's 800 kilometers of north-south railway. Private operators will not fill this vacuum without government guarantees or locked-in revenue streams from mining operations as part of a wider financing package. Even in Mozambique, where extensive coal export-oriented railway construction and refurbishment is being undertaken, progress is slow and dependent on volatile coal export earnings (Odoki *et al.*, 2009; Teravaninthorn & Raballand, 2009). While only 5 % of North-South Corridor trade goes by rail, revitalization of the networks is the only viable medium-to-long term solution to the region's increased transport requirements. This revitalization is unlikely without innovative, stage-based financial packages involving governments, development finance institutions, bilateral donors and private operators.

Ports. Durban has undergone extensive capacity expansion, driven by the South African government rather than the North-South Corridor framework. The only North-South corridor port project is increasing cargo capacity of the *Dar es Salaam* Port.

Project Pipeline. The Task Force has established a 'Project Preparation and Implementation Unit' in Lusaka. Its role is to identify a pipeline of cross-border infrastructure projects and bring them to 'bankability' stage – the point where lenders are willing to consider financing them. As this preparation process can consume up to 10 % of total project costs, securing funding for early-stage development remains the biggest obstacle facing the North-South Corridor initiative. Efforts are underway to secure the backing of the beneficiaries of transport infrastructure schemes, such as miners, and transport and logistics companies. Most North-South Corridor countries have progressed in establishing regulatory frameworks for public-private partnerships, a necessary precursor to generating investor interest in new infrastructure schemes. Corridor governments will continue seeking new strategic relationships involving multilateral and bilateral donors, private operators, and new institutional investors. Yet such initiatives are still in their infancy, perpetuating dependence on scarce government and foreign public funding. The absence of long-term infrastructure financing solutions means that the North-South Corridor's unresolved underlying funding challenges will remain (Odoki *et al.*, 2009; Teravaninthorn & Raballand, 2009).

For the map locating ongoing and planned North-South Corridor road projects by the Tripartite Project Preparation and Implementation Unit (PPIU), consult the following publicly available report:
TradeMark Southern Africa. (February 2014). *Project Closure Report: Infrastructure North-South Corridor Roads.* Pretoria: South Africa. Retrieved from http://www.trademarksa.org/sites/default/files/publications/16-02-2014%20PPIU%20North-South%20Corridor%20Project%20Closure%20Report%20|%20V22.pdf

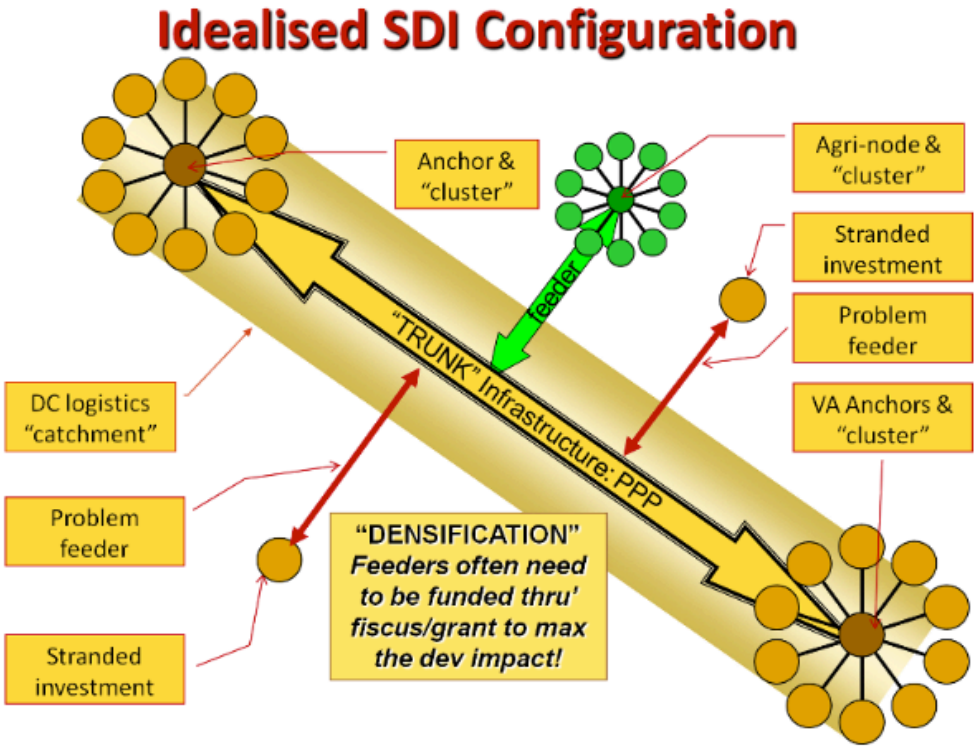
Appendix E
Spatial Development Initiative (SDI) Methodology

The **Spatial Development Initiative (SDI)** is considered as a short-term industrial policy for economic development with the following programmatic objectives:

- Detect and streamline natural resources markets at regional scale;
- Identify, prioritize and deliver new infrastructure projects (*e.g.,* infrastructure upgrading and maintenance) for private sector development in the natural resources markets;
- Densify the existing corridor transportation structures and create spillover effects on the areas of high economic growth potential;
- Anchor trunk infrastructure projects into the areas where the natural resource sectors are active through use-or-pay agreement;
- Promote Private Public Private infrastructure financing for the industrial economic zones with high investment potential and resource sector investments.

Based upon the aforementioned programmatic objectives, Jourdan (2011; as cited in School of Mining and Engineering and Centre for Sustainability in Mining and Industry, 2012, p.3) visualizes the idealistic SDI configuration as depicted in **Figure G1**. As illustrated in **Table 1G**, SDI is used as a methodology to capture the growth centers to transform and deepen the transport corridor into a development corridor through broadening the scope of economic development.

Figure G1. *Idealized SDI Configuration*



Source: Jourdan (2011; as cited in School of Mining and Engineering and Centre for Sustainability in Mining and Industry, 2012, p.3).
Reprinted from *Resources Corridors: Experiences, Economics and Engagement: A Typology of Sub-Saharan African Corridors*, by School of Mining and Engineering and Centre for Sustainability in Mining and Industry. 2012. Johannesburg: University of the Witwatersrand. Copyright (2017). EI Source Book. Retrieved from http://www.eisourcebook.org/cms/files/EISB%20Resources%20Corridors.pdf

Appendix F
Regional Integration Scores of the TFTA bloc-member RECs

Table H1 displays the regional integration nature of the REC micro-geographies of the TFTA bloc-member RECs.

Table H1. *Overview of overall REC scores in the TFTA bloc in the five Dimensions of Regional integration*

	Trade Integration	Regional Infrastructure	Productive Integration	Free movement of people	Financial and macroeconomic integration
COMESA	0.572	0.439	0.452	0.268	0.343
EAC	0.78	0.496	0.553	0.715	0.156
SADC	0.631	0.491	0.35	0.53	0.397
Average REC score	0.54	0.461	0.384	0.517	0.381

Source: African Development Bank. Africa Regional Integration Index (2016).

Note. Adapted from the 2016 Africa Regional Integration Index that is co-produced by the AUC, AfDB, and ECA. The Index covers Member Countries from the eight RECs recognized by the African Union. The Index is made of 5 dimensions and 16 indicators based on the 1991 Abuja Treaty and its operational framework. REC scores on Regional integration are calculated on a scale of 0 (low) to 1 (high). Average with a 95 % confidence interval.

Appendix G
International Policy Instruments Regulating Transit Systems

Grosdidier de Matons (2013) identifies 19 general policy instruments that are relevant to trade and transport facilitation and applicable to all modes of transport (**Table I1**). The below-mentioned international policy instruments posit *not only* the ideational superstructure of the corridor-level institutional mechanisms *but also* establish the formal institutional frame to achieve the functional optimum of transport corridor service provision, i.e. transit customs and border management, seaport and shipping, access to port, and road and rail transport services.

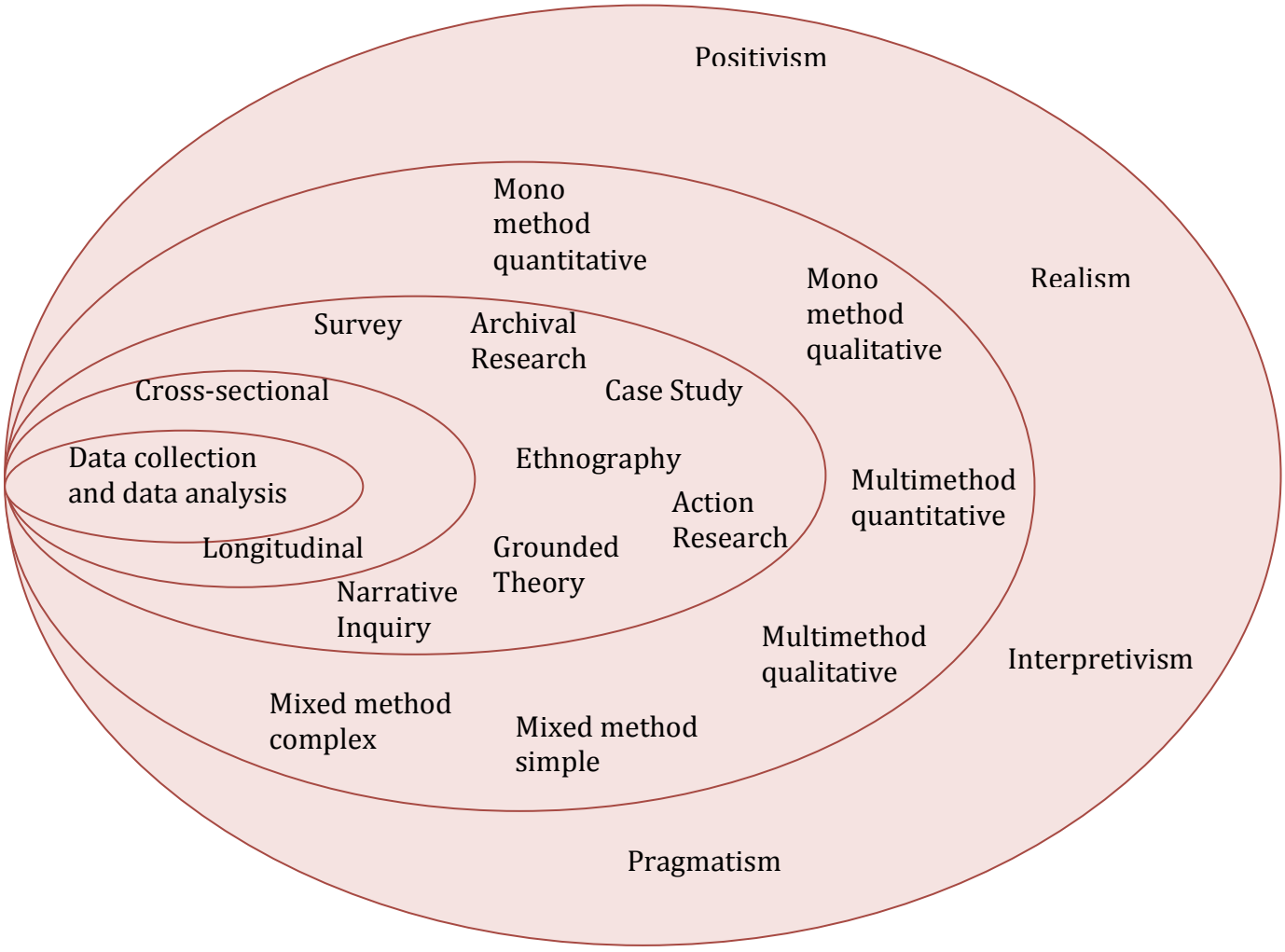
Table I1. *Overview of 19 international policy instruments relevant to trade and transport facilitation and applicable to all modes of transport.*

Conventions protecting the interests of landlocked states	1921 Barcelona Convention on freedom of transit 1947 General Agreement on Tariffs and Trade (GATT) (later the General Agreement on Trade in Services [GATTS]) 1965 New York Convention on Transit Trade of Landlocked Countries 1958 Geneva Convention on the High Seas
Conventions relating to the functioning of customs	1950 Brussels Convention establishing a customs cooperation council 1973 Kyoto Convention on the simplification and harmonization of customs procedures, preceded by the 1923 Geneva Convention on the same matter 1977 Nairobi Convention on mutual administrative assistance for the prevention, investigation, and repression of customs offences 1982 Geneva Convention on the harmonization of frontier control of goods
Technical conventions relating to transport equipment	1960 Brussels Convention on pallets 1956 and 1972 Geneva Customs Conventions on Containers 1960 Brussels Convention on packings 1994 Geneva Convention on pool containers
Customs conventions relating to the temporary import of goods and equipment	1961 Customs Convention on the temporary importation of professional equipment 1968 Customs Convention on the temporary admission of scientific equipment 1970 Customs Convention on the temporary admission of pedagogic material 1961 Customs Convention on the Admission Temporaire/ Temporary Admission (ATA) carnet for the temporary admission of goods.

Source: Grossdidier de Matons, J. (2013). "A Review of International Legal Instruments: Facilitation of Transport and Trade in Sub-Saharan Africa-Treaties, Conventions, Protocols, Decisions, Directives." [SSATP Working Paper 73]. Washington, D.C.: Sub-Saharan Africa Transport Program, World Bank.
Retrieved from http://documents.worldbank.org/curated/en/347441468008109279/A-review-of-international-legal-instruments-facilitation-of-transport-and-trade-in-Africa-second-edition

Appendix H
Diagram of the "Research Onion"
(Adapted from Saunders *et al.*'s diagram, 2009)

Figure J1 illustrates the "Research Onion" (Saunders *et al.*, 2009), according to which the first outer layer refers to research methodology; second outer layer refers to methodical choice; the third outer layer informs on the research strategy or strategies; the final layer refers to time horizon over which the research is undertaken; and the inner layer refers to the data collection and data analysis.



Source: The "Research Onion" (Saunders *et al.*, 2009).
Note. Adapted from Saunders et al.'s diagram, 2009.