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Mineral energy complex on the beneficiation policy through the lens of network analysis

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Mineral energy complex on the beneficiation policy through the lens of network analysis

Submitted in Partial Fulfillment of the Requirements
for the Degree of Masters in Management of Public Policy

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Date: 31 March 2014

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Declaration

I, Khensane Hlongwane, hereby declare this research report is submitted in partial requirements for the degree of Masters in Management of Public Policy at the Wits School of Governance, University of the Witwatersrand. Apart from where recognised, this research is my own work, and has not been formerly submitted for any degree to another university.

Khensane Hlongwane Date: 31 March 2014

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Abstract

This explanatory sequential thesis examined the Minerals Energy Complex (MEC) as a *network of policy stakeholders* in South Africa's beneficiation policy adopted in 2011. The MEC is a set of well-developed industries and institutions that have developed around the mining, energy and financial sectors of the South African economy. The MEC, as Fine and Rustomjee (1996, p. 5) see it, evolves over time depending on the balance and distribution of power amongst stakeholders in the mineral sector. This thesis found evidence that the MEC as it exists 2014 has evolved into a policy network of participant stakeholders in the beneficiation policy. The thesis employed network analytic techniques by combining qualitative and quantitative research methodologies. The combination of the two methodologies allows a researcher to utilise findings from different data sets; thereby increasing the comprehensiveness of the study, as pointed out in the literature by Fischer (2011). As Coviello (2005) has illustrated, policy networks can be meaningfully examined with a bifocal lens that integrates both qualitative and quantitative analytic techniques relevant to understanding network structure, relationships between network participants and dynamics of these relationships. The data results derived from research methodology unpacked how the MEC as a *policy network of stakeholders* is constituted and operates in terms of the resources exchanges around the beneficiation policy. Since the research proposition argued that stakeholders in possession of highly valued resources in the MEC policy network are likely to exercise higher levels of influence in the implementation dynamics of the beneficiation policy, the results generated revealed a limited number of influential stakeholders in the MEC policy network. Against this background, the thesis detailed the type of influence stakeholders may exert, along with their level of interest in the implementation of the beneficiation policy.

Keywords: Beneficiation policy, mineral energy complex, policy networks, policy network stakeholders

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List of acronyms

AAC	Anglo American Corporation
ACF	Advocacy Coalition Framework
AMCU	Association of Mine Workers and Construction Union
AMSA	ArcelorMittal South Africa
ANC	African National Congress
ANCYL	African National Congress Youth League
BEE	Black Economic Empowerment
BIT	Bilateral Investment Treaties
CIF	Consolidated Implementation Framework
COM	Chamber of Mines
CONSAWU	Confederation of South African Workers Union
Cosatu	Congress of South African Trade Unions
CSIR	Council for Scientific and Industrial Research
DMR	Department of Mineral Resources
DOE	Department of Energy
DHET	Department of Higher Education and Training
DOL	Department of Labour
DPE	Department of Public Enterprises
DST	Department of Science and Technology
DTI	Department of Trade and Industry
EDD	Economic Development Department

Eskom	Electricity Supply Commission
EU	European Union
FDI	Foreign Direct Investment
FEDUSA	The Federation of Unions of South Africa
GDP	Gross Domestic Product
GEAR	Growth, Employment and Redistribution
GMC	General Mining Corporation
HDSA	Historically Disadvantaged South Africans
IDC	Industrial Development Corporation
IGR	intergovernmental relations
IMF	International Monetary Fund
IPAP	Industrial Policy Action Plan 2012/13-2014/15
IPP	Import Parity Pricing
Iscor	South African Iron and Steel Corporation
ISI	Import Substitution Industrialisation
JSE	Johannesburg Securities Exchange
LRA	Labour Relations Act No. 66 of 1995
MCEP	Manufacturing Competitiveness Enhancement Programme
MEC	Mineral Energy Complex
MIGDETT	Mining Industry Growth Development and Employment Task Team
MINTEK	Mining Technology
MPRDA	Mineral and Petroleum Resources Development Act No. 28 of 2002

MTEF	Manufacturing Medium Term Expenditure Framework
NACTU	National Council of Trade Unions
NDP	National Development Plan
NEDLAC	The National Economic Development and Labour Council
Nersa	National Energy Regulator of South Africa
NFC	National Finance Corporation
NGC	ANC National General Council
NGP	National Growth Path
NIPF	National Industrial Policy Framework
NUM	National Union of Mineworkers
NUMSA	National Union of Metal Workers of South Africa
PGMs	Platinum-Group Metals
R&D	Research and Development
RDP	Reconstruction and Development Programme
SA	Stakeholder Analysis
SACP	South African Communist Party
SAMDA	South African Mining Development Association
SARS	South African Revenue Service
Sasol	South African Coal, Oil, and Gas Corporation
SIC	Standard Industry Classification
SIMS	State Intervention in the Minerals Sector
SNA	Social Network Analysis

SOE	State Owned Enterprises
SOMCO	State Owned Mining Company
SPSS	Statistical Package for the Social Sciences
Stats SA	Statistics South Africa
UASA	United Association of South Africa
UK	United Kingdom
USA	United States of America

Chapter 1

The mineral energy complex and the beneficiation policy

1.1. Introduction

Mining and mineral extraction have been the backbone of the South African economy. Since the 19th century mineral revolution, the sector provided the "historical thrust that enabled the economy to lift off in classical Rostovian fashion to self-sustained growth" (Wilson, 2001, p. 103). As a crucial sector in the economy, mining is a significant contributor to the twin objectives of employment creation and macro-economic development of the government (Garg, Van Tonde & Joubert, 2007). The sector not only contributes approximately 18.6 per cent to South Africa's Gross Domestic Product (GDP)[1], and an estimated one third of export revenues, but it is also a significant employer of labour. South Africa possesses approximately US$2.5 trillion of non-energy *in situ*[2] mineral wealth (Citibank 2010 report in Leeuw, 2012), making it a resource rich economy 'par excellence' (Bell & Farrell, 1997). Among resource rich economies in the world, South Africa holds the largest reserves of strategic industrial resources such as chrome, vanadium, gold, manganese, and the platinum-group metals (PGMs) (Department of Mineral Resources, 2011).

Arguably, the strength of the South African economy lies in what Fine and Rustomjee (1996) term the Mineral Energy Complex (MEC). According to the authors, the MEC is "at the core of the South African economy, not only by virtue of its weight in economic activity but also through its determining role throughout the rest of the economy" (Fine & Rustomjee 1996, p. 5). The MEC is a set of industries in the mining, energy and financial sectors of the South African economy. Similarly, the MEC represents institutions centred on mining and mineral extraction bound together through the interactions of the state and domestic corporate capital.

[1] 8.6 per cent direct and 10 per cent indirect. Direct contribution refers to the value-added by the sector consisting of the sum of wages and salaries, gross profits of mining companies and taxes. Indirect contribution refers to the value added generated through upstream and downstream linkages (Economic Commission for Africa, 2004)

[2] This refers to the ores as they are found in nature and in original position within the host rock (Bise, 2013, p. 536).

Furthermore, it has evolved as a particular system of accumulation whose economic linkages gave rise to key networks that exercise profound effects on the development and industrialisation path of South Africa (Freund, 2009; Roberts & Rustomjee, 2009). These networks and the linkages between the mining activities of the participants provided the state with revenue to invest in the creation of State Owned Enterprises (SOEs)[3] such as the South African Coal, Oil, and Gas Corporation (Sasol), the South African Iron and Steel Corporation (Iscor), as well as the Johannesburg Securities Exchange (JSE) (Leeuw, 2012).

Despite the maturity of the industry, well developed infrastructure, and comparative advantage in resource endowment, South Africa has failed to develop a matching manufacturing industry of significant scope and scale and produce more beneficiated products down the mineral value chain (Turok, 2013). Rather, the country has emerged as a major producer and exporter of raw materials, alloys, ores, and metal-ingots. It imports manufactured goods from countries such as India, Brazil, and China. These countries have developed effective policy strategies that diversified away from traditional economic activities into more advanced products in the mineral value chain (Economic Commission for Africa, 2004). Arguably, a central feature attributed to the economic success of these three countries arose through the promotion of economic linkages between the mineral sectors and industrial sectors, which in turn sustained industrial development in these counties (Morris, Kaplinsky & Kaplan, 2011).

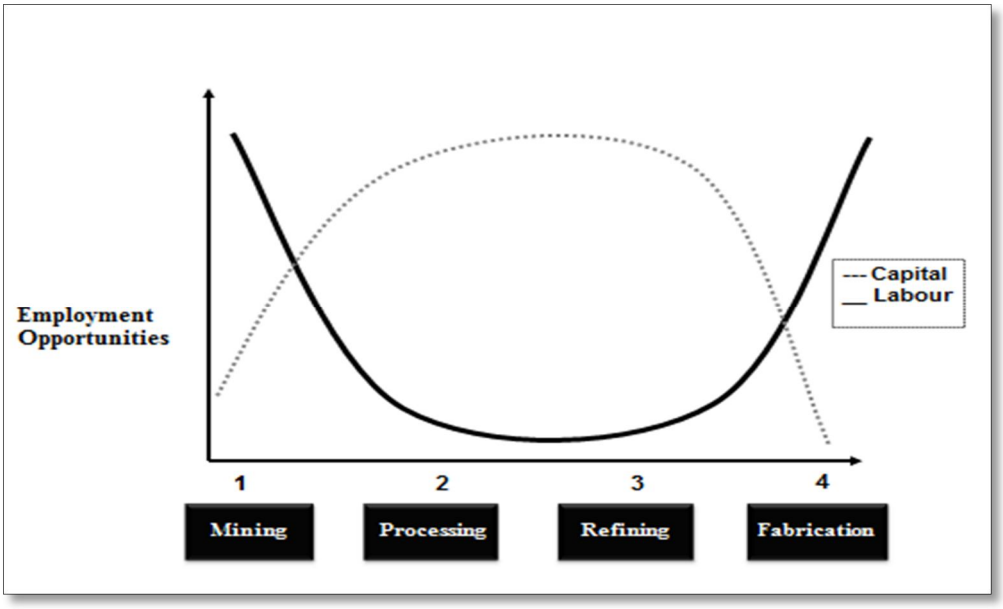
Faced with an unemployment rate of 24.7 per cent in terms of the narrow definition, and 35.6 per cent based on the broader definition (Statistics South Africa, 2013), coupled with a trade deficit of R 15.02 billion[4] (South African Revenue Services, 2013), the need to transform the economy has become more apparent to policymakers and various stakeholder groupings. In an attempt to engender structural transformation, the Cabinet of South Africa adopted the *Beneficiation Strategy for the Minerals Industry of South Africa* in 2011 as a policy framework premised on greater processing of natural resources in South Africa (Department of Mineral Resources, 2011). In general, the policy prioritises the mining value chain as one of the key economic activities in the creation of employment and diversification of the economy. It seeks to provide an enabling environment for leveraging on the resource endowment of the country

[3] As per Chapter One, Section A of the Companies Act No. 71 of 2008, SOEs in line with the Public Finance Management Act No. 1 of 1999 and the Municipal Systems Act No. 32 of 2009, SOEs are referred to as State Owned Companies.
[4] This amount is attributed to exports of R 65.43 billion and imports of R 80.45 billion.

to stimulate structural transformation and production led growth (Department of Mineral Resources, 2011).

The policy succinctly calls for a "paradigm shift in mineral development" necessitating the need of transforming comparative advantage into a national competitive advantage (Department of Mineral Resources, 2011). In essence, the beneficiation imperative argues that profit from mining activity and its related activities stay in the country to benefit local communities and contribute to the twin objectives of the government: namely industrialisation and employment creation. According to Robinson and Van Below (1990), the final stage of the mineral value chain is labour-intensive in contrast to the first three stages, which are capital-intensive. Similarly, Baartjes (2011) illustrates that the potential for employment creation is far greater at the downstream end of the metals beneficiation pipeline.

Figure 1: The mineral value chain and the potential for employment creation



Source: Baartjes (2011)

In addition, a 2008 report commissioned by the Department of Labour (DOL) maintains that employment opportunities are high at semi-manufacturing and final production stages. Here, Lundall, Maree, and Godfrey (2008) present data for the carbon steel pipeline, which they argue is the most important pipeline in terms of volumes produced. The findings presented by Lundall et al. (2008) illustrate the potential benefits of increasing the levels of beneficiation in South Africa given that (Lundall et al., 2008, p. 9):

Stages 2 and 3 are very capital intensive, with investments of R1.5 million to R8.5 million required per job. The employment-output ratio is also extremely low with only 1 to 7 people employed per 1000 ton of steel produced. On the other hand Stage 4, the finished product and machine building stage, is much more labour intensive. Investment per job ranges from only R0.1 million to R0.6 million while employment per 1000 ton of steel output ranges from 75 to 150.

While the South African beneficiation strategy is strategically aligned to a number of national policies and programmes, it targets eleven commodities that possess the most potential in maximising value extraction (Department of Mineral Resources, 2011). These commodities as identified by the Department of Mineral Resources (DMR, 2011) are chromium, manganese, coal and uranium, nickel, diamonds, platinum, gold, titanium, iron-ore, and vanadium. Furthermore, the ten commodities have been clustered according to the following value chains (Deloitte, 2011, p. 9):

- Energy commodities such as coal, uranium, and thorium;
- Iron and steel value chain includes iron-ore, chromium, and manganese;
- Pigment and titanium production includes titanium, and vanadium;
- Autocatalytic converters and diesel particulate filters with a specific focus on platinum; and
- Jewellery fabrication focussing on diamonds, gold and platinum.

Beneficiation is a highly complex process as it tends to vary depending on the mineral concerned. As a result, each value chain requires specific policy interventions. In 2013 the DMR sought to develop the Consolidated Implementation Framework (CIF) in order to uncover constraints to beneficiation, as well as unpack supply-side constraints. At the time of writing (March 2014), the DMR has yet to release the CIF. However, the department indicates the CIF aims to prioritise and accelerate local mineral beneficiation. Emphasis is placed on strengthening the synergies between the CIF and existing beneficiation interventions in order to maximise the development impact of the policy (Department of Mineral Resources, 2013).

1.2. Background to the study

The debate around beneficiation has witnessed divergent viewpoints from stakeholders in the policy landscape. It reflects the polarisation between capital, organised labour and government and policy analysts over the merits and demerits of beneficiating minerals in South Africa. For example, some claim the prevailing policy lacks an integrated approach that considers the true competitiveness of the downstream beneficiation sectors, the availability of infrastructure, access to local and international markets, and the shortage of industry specific skills (Dobreva & Schoer, 2007; Rossouw & Baxter, 2011). Anthony Butler (2011) maintains the concept is popular leftist rhetoric, which incorrectly assumes abundant minerals lead to a virtuous circle of growth and economic prosperity. A common trend in this argument assumes that the exploitation of commodities and industrial development "do not go hand in hand" (Morris, Kaplinsky & Kaplan, 2011, p.6).

For Morris et al. (2011), this view reasons that the exploitation of natural resources undermines industrial development due to the resource curse and the related Dutch Disease as claimed by Auty (2001)[5]. The resource curse thesis reasons that resource rich economies fail to promote diversification and competitive manufacturing sectors due to corruption, maladministration and rent-seeking behaviour. It is advised the state "takes a back seat as a night-watchman, leaving the solutions of resource governance to Adam Smith's invisible hand" (Yeung, 2000, p. 134). For similar reasons, Joffe, Kaplan, Kaplinsky and Lewis (1995, p. 31) opine that the government ought to reconsider the promotion of beneficiation since the market mechanism remains the most efficient allocator of resource rents. The benefits that arise from the mineral sector, as Joffe et al. (1995) observe, ought to be utilised in sectors that are unrelated to the resource sector. Simply put, Joffe et al. (1995) claim that government intervention causes misallocation of resource rents in the sector.

[5] The resource curse thesis as per Auty (2001), argues that countries endowed with minerals have lower growth rates than non-mineral-rich countries. In some African countries, resource endowment has caused internal conflicts and wars as societies compete over resource allocation and resource use. Related to this is the Dutch disease thesis, which proposes that the exploitation of natural resources affects the viability of non-mineral sectors in an economy due to the large inflows of foreign currency earnings and foreign direct investment (FDI). The large inflows and FDI lead to the strengthening the local currency while reducing the costs of importing beneficiated and/or manufactured goods. As a result, the viability of the local manufacturing industry is adversely affected and de-industrialisation occurs.

Kumba Iron Ore[6], a major stakeholder in the iron ore value chain, insists the beneficiation policy needs to carefully evaluate the economic rationale underpinning beneficiation, given that demand for commodities such as iron ore is driven by international steel production rather than domestic consumption (Kumba Iron Ore, 2011). Secondly, Kumba asserts that the costs of transporting beneficiated goods are significantly higher than transporting unbeneficiated iron ore. In relation to higher transportation costs is the fact that South Africa is geographically distant from major end-user markets and shipping routes, as observed by Walsh (2013). Because of this, analysts contend that with all the will in the world benefit from local beneficiation is doubtful. Such deterministic conclusions, in view of Morris et al. (2012), echo a long standing tradition in the natural resource governance literature on the role of mineral resource endowments in the industrialisation of developing countries in Africa.

Above all, they capture the sentiments of stakeholders who believe beneficiation is an inappropriate policy option for South Africa since the country lacks competitive advantage in manufacturing and resource based industrialisation. On the other hand, organised labour argues that the ownership structures of the industry remain major impediments to the transformation of the mineral industry. Mindful of this, the Congress of South African Trade Unions' (COSATU) affiliates, the National Union of Mineworkers (NUM) and the National Union of Metal Workers of South Africa (NUMSA), call for state ownership of the industry to drive the beneficiation policy objectives (COSATU & NUM, 2005; NUMSA, 2012). Representing the spirit of militant populism, the African National Congress Youth League (ANCYL) vehemently argues that beneficiation would "never" happen due to the industry structure and ownership patterns (ANC Youth League, 2009).

The debate concerning the mineral sector became politicised further when the ANCYL rallied around the politically contentious idea of nationalising the commanding heights of the South African economy (Butler, 2013). In particular, the ANCYL lamented inadequate transformation had taken place within the mining industry since democratisation in the country and thus nationalisation would enhance benefit from mining activity. Against a highly politicised environment, the African National Congress's National General Council (NGC) commissioned a study to investigate state intervention in the mineral sector (Jourdan, Pillay & Chitiga-Mabugu, 2012). Among the terms of reference for the study was an analysis of

[6] Hereafter referred to as "Kumba"

nationalisation, potential and actual upstream and downstream sectors; mineral related logistics; state assets in the sector, as well as a review of the legislative and regulatory frameworks governing the sector. The study titled, *State Intervention in the Mineral Sector Report* (SIMS), rejected nationalisation at market value on the grounds that it would be "unaffordable" (Jourdan et al., 2012, p. 352).

Drawing on the ANCYL's suggestion of acquiring a 60 per cent stake from the mining companies, Keeton and Beer (2011) point out that nationalisation would cost the South African government an estimated R 25.7 billion per annum. Such promulgation in their estimation would compel the government to reduce expenditure or it would need to borrow or possibly raise taxes to finance the fiscal deficit (Keeton & Beer, 2011, p. 36). Similarly, the authors of the SIMS report recount that while nationalisation with compensation at less than market value would comply with the Constitution, it would breach South African obligations under Bilateral Investment Treaties (BITs)[7]. In addition to this, the SIMS report reasons that nationalisation without compensation would require Constitutional change and might cause near collapse of foreign investment and access to finance, as well as widespread litigation by foreign investors who signed BITs with South Africa (Jourdan et al., 2012).

With this in mind, the SIMS report concludes that the Mineral and Petroleum Resources Development (MPRDA) Act No. 28 of 2002 nationalised mineral resources in South Africa. This, according to the authors, occurred through the conversion of old-order private rights to new-order state rights. The authors then recommend that the state classify certain minerals as strategic since South Africa has producer dominance (Jourdan et al., 2012, p. 353). Following the recommendations and findings of the SIMS report, during the 2012 ANC elective conference in Mangaung, the nationalisation debate abated as the governing party opted for policy resolutions that favoured beneficiation. In particular, the ANC resolved to strategically target particular mineral value chains to optimise their developmental impact in the economy. The ANC elective conference then adopted resolutions favouring strategic engagement with

[7] BIT is an agreement between foreign investors and contracting companies domiciled in another the territory of another state. It includes a terms and conditions between contracting parties where nation states agree to maintain predictable and secure investment climates, fair and equitable treatment of investors. Importantly BITs make provision for dispute resolution and protection of investors in the event of expropriation and nationalisation (Dolzer & Stevens, 1995, p. 6).

various stakeholders such as mining companies, organised labour and state institutions in order to advance developmental goals of the ANC led government (ANC, 2012; Sergeant, 2013).

In many respects, nationalisation is largely the result of activism against mining companies (Bourgouin, 2011). This activism manifests itself as resource nationalism and is characterised as "the tendency of states seeking direct or increasing control of economic activity in their natural resource sectors."(Ward, 2009, p. 5) Similarly, resource nationalism encompasses regulatory or contractual measures (Leon, 2010) taken by resource-rich nations to shift political and economic control of their energy and mining sectors from foreign and private interests to domestic and state controlled companies (Bremmer & Johnston, 2009). While the sentiments driving resource nationalism vary from country to country and mineral to mineral, Solomon (2012) proposes that at the heart of resource nationalism is the popular frustration at the perceived lack of broad-based benefit from the mining industry and the associated uneven distribution of wealth.

1.3. Problem statement

As the discussion above illustrates, the debates on the beneficiation strategy are highly politicised and ideological in presentation. Dichotomising the state, private capital and labour ignores the fact that all stakeholders are integral actors operating as parts of a whole in a complex MEC network. To understand the nature of the relationship, it is critical to identify the underlying interests and power relations shaping their interactions. Although the MEC is widely cited in the literature of policy-making in South Africa, it has not been explored in relation to network analytic techniques. In particular, analyses have not analysed the MEC as a *network of policy stakeholders.* As an approach to conducting policy analysis, policy network analysis states that policy emerges through collective action and the interactions of state and non-state actors with separate interests, goals, and strategies (Matland, 1995; Hill & Hupe, 2006).

1.4. Purpose statement

Against this background, the thesis seeks to contribute to the debates on the beneficiation policy through an exploratory study of the MEC as a policy network. In doing so, the thesis employs network analytic techniques. It does this in an effort to increase scholarly insights into the structure of the policy network as it exists in 2014. Additionally, the thesis seeks to explore the perceptions of the stakeholders in relation to the beneficiation policy. To achieve the stated

objectives, the study combined qualitative and quantitative research methodologies. The combination of the two methodologies allows a researcher to utilise findings from different data sets; thereby increasing the comprehensiveness of the thesis, as pointed out in the literature by Fischer (2011). As Coviello (2005) has illustrated, policy networks can be meaningfully examined with a bifocal lens that integrates both qualitative and quantitative analytic techniques relevant to understanding network structure, relationships and dynamics.

1.4.1. Rationale and justification for the research

It is appropriate to locate the beneficiation policy within scholarly debates. Through network analytic techniques, the researcher will gather data on the structure of the MEC policy network and the locations of the actors within the policy network. Secondly, in its analysis, the thesis seeks to identify the policy preferences and perceptions of these actors with the aim of uncovering their level of interest in the beneficiation policy. The literature on mineral policy development is replete with examples of policies that have failed because inadequate attention was given to powerful stakeholders and their economic interests and objectives. In the words of Grimble and Wellard (1997, p. 185), "policies have failed because their objectives have been perceived to be adverse by one or more stakeholder groups and have therefore led to non-cooperation or even open opposition by these stakeholders." The discussion on the Australian experience of implementing a resource rent tax by Sarker (2011) highlights the role that stakeholders play in policy processes.

The Australian government introduced a resource rent tax to increase the efficiency of the resource taxation system and allow for the redistribution of wealth gained from mining to less resource-rich areas (Sarker, 2011). However, as a result of this legislation, political upheaval occurred due to the Australian government announcing the tax as a complete package without engaging and negotiating with the powerful stakeholders, such as the mining companies. This, according to Sarker (2011), caused political chaos, including the removal of the democratically elected prime-minister: Alan Rudd of the Labour Party. Therefore, anticipating stakeholder interests is crucial for improving policy design and implementation. In this regard, policy analysts agree that understanding the perspectives of key actors provides information regarding stakeholder perspectives on policy. Secondly, their concerns and expectations related to the policy can highlight the manner in which those stakeholders must be involved in the policy (Grimble & Wellard, 1997; Beilin & Gilmour, 2007).

1.5. Research questions

As conceptualised by Onwuegbuzie and Leech (2006), research questions reflect the problem that the researcher is investigating by providing a framework for conducting the study, helping the researcher to organise the research and giving it relevance, direction, and coherence (Onwuegbuzie & Leech, 2006).

Consequently the research questions that frame the study are:

Primary research question

- What roles do the stakeholders in the MEC policy network play and what complex relationships prevail amongst them?

Through network analytic techniques, this question seeks to establish who explore the powerful and influential actors in the policy network are. It will also explore how these actors relate to the interrelations and resource exchanges in the network.

Secondary research question

- What do the central stakeholders in the MEC policy network perceive as advantages and disadvantages of the beneficiation policy?

Through stakeholder analytic techniques, this question seeks to probe actors' interests and positions regarding the beneficiation policy. This question is informed by the knowledge that policy-related interactions are often closely linked to perceived influence (or potential influence) on the policy subject matter.

Following the research questions and the purpose statement indicate, the thesis combines qualitative and quantitative research methodologies in a single study. The combination of the two methods is known as 'mixed methods': a methodological orientation that evolved as a pragmatic way of combining the information from quantitative and qualitative methods (Tashakkori & Teddlie, 2003). Since qualitative data is the dominant method employed in the research, the current research methodology is symbolised as:

$$\text{QUAL} \longrightarrow \text{quan}$$

The definition of qualitative dominant mixed methods research as defined by Johnson, Onwuegbuzie and Turner (2007, p. 124) is "the type of mixed research in which one relies on a qualitative research process, while recognising that the addition of quantitative data and approaches are likely to benefit the research project". Table 1 illustrates the research questions to be addressed in the thesis.

Table 1: The research design of the thesis

Phase	Qualitative	Quantitative	Research question to be addressed
1	✓	-	Who are the actors that have been involved in all the policy processes of the beneficiation policy?
	✓	-	In terms of resource exchanges, what complex roles prevail amongst the stakeholders?
	✓	-	Which organisations/individuals/institutions do you exchange *material and non-material resources* such as information with?
	✓	-	Which stakeholders have the ability to influence the implementation of the beneficiation policy?
2	-	✓	What is their level of interest in the successful implementation of the policy?
	-	✓	What is their level of influence in the implementation of the policy?
	-	✓	What does your organisation perceive to be potential advantages and disadvantages in implementing the beneficiation policy?

1.6. Research proposition

The ability to influence the implementation of beneficiation policy depends on the resources at the disposal of the stakeholders in the MEC policy network as it operates in South Africa. Thus, stakeholders located at the core of the network tend to exhibit higher levels of influence due to the number of ties they maintain with other actors in the network. Such stakeholders, known as central stakeholders, occupy influential positions in the network. Centrality is defined by Rowley (1997, p. 898) as the position an actor occupies relative to others. Therefore the research proposition in this thesis hypothesises:

Stakeholders exhibiting high levels of centrality in the MEC policy network are likely to exercise higher levels of influence and power in the implementation dynamics of the beneficiation policy.

1.7. Conceptual framework

A series of inter-related concepts help inform the study. In this section, I define and elaborate on key concepts such as mineral beneficiation, perceptions, interests, influence, and power.

Mineral and metals beneficiation

The terms value addition, forward linkages, downstream beneficiation, further processing, upgrading, refining, and enrichment tend to be used interchangeably to describe mineral beneficiation. In the discussion that follows the term beneficiation is used throughout to signify local (in South Africa) beneficiation.

From a technical perspective beneficiation is defined as (Eob Choi, 2010, p. 7):

> *A variety of purposes whereby extracted ores from mining are reduced to particles that can be separated into mineral and waste where the former is suitable for further processing or direct use.*

Section 1 of the MPRDA Act No. 28 of 2002, as amended by the MPRDA Amendment Act No. 49 of 2008, defined beneficiation as follows:

- *Primary stage, which includes any process of the winning, recovering, extracting, concentrating, refining, calcining, classifying, crushing, screening, washing, reduction, smelting, or gasification thereof;*
- *secondary stage, which includes any action of converting a concentrate or mineral resource into an intermediate product;*
- *tertiary stage, which includes any action of further converting that product into a refined product suitable for purchase by minerals-based industries and enterprises; and*
- *final stage, which is the action of producing properly processed, cut, polished or manufactured products or articles from minerals accepted in the industry and trade as fully and finally processed or manufactured and value added products or articles*

Subsequently, the MPRDA Amendment Bill No. 15 of 2013 simplified the definition in order to remove ambiguities within the MPRDA Act No. 28 of 2002, to define beneficiation as:

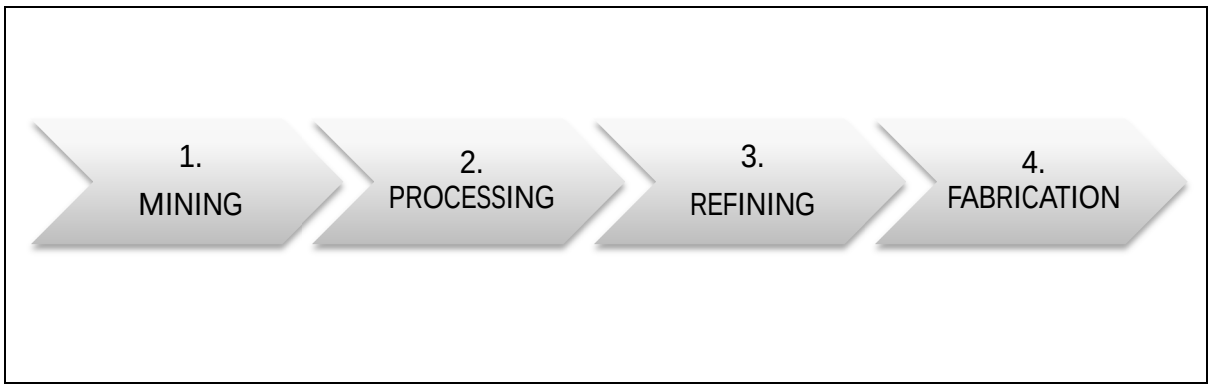
> *Transformation, value addition or downstream beneficiation of a mineral and petroleum resource (or a combination of minerals) to a higher value product, over baselines to be determined by the Minister, which can either be consumed locally or exported*

In the White Paper on Minerals and Mining Policy for South Africa (1998), beneficiation represents

> *The successive processes of adding value to raw materials from their extraction through to the sale of finished products to consumers. These include large-scale and capital-intensive operations like smelting and technologically sophisticated refining as well as labour-intensive activities such as craft jewellery.*

Thus, a production process where value is added at each stage entails mineral beneficiation. Accordingly, the value extraction process can be represented in diagrammatic form to illustrate the four sequential stages involved in beneficiation (see Figure 2). Based on this, Robinson & Van Below (1990) indicate that for chromium, the ore is smelted into ferrochromium, which is then melted with iron and other alloys to produce fabricated alloys such as stainless steel products. In the final stage, the flat-rolled products are fabricated producing consumer products or intermediate products (Robinson & Van Below, 1990, p. 92)

Figure 2: The typical stages involved in beneficiation



Source: Robinson and Van Below (1990)

Following Robinson and Van Below, Lundall et al. (2008) confirm:

- Stage 1 involves the primary action of mining and producing an ore or concentrate.
- Stage 2 converts the concentrate into an intermediate product such as a metal or alloy, where the value added to the original ore increases significantly.
- In Stage 3 the intermediate good is refined into a semi-fabricated product suitable for activities that take place in manufacturing.
- In Stage 4 the converted metal from stage three is further transformed or fabricated into a finished product for sale and subsequent inclusion in a variety of different applications.

Noting the stages involved in mineral development, James (1985, p. 314) articulates that:

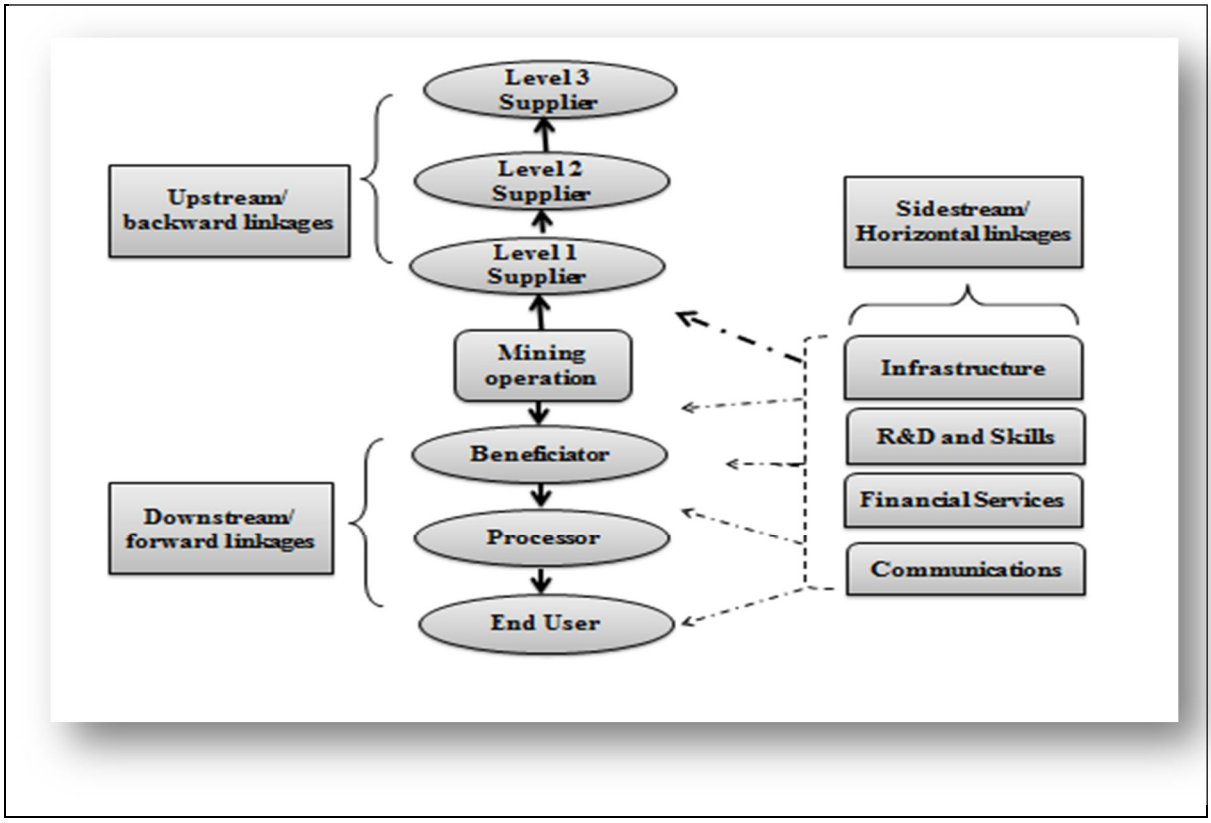
> *Beneficiation refers to the process or series of processes by which an ore containing a metal or mineral as it is found in nature is converted into a product containing a progressively higher concentration of the metal or mineral concerned. The final result is achieved when the metal or mineral reaches the highly beneficiated or chemically pure form required by the end-user. Beneficiation ends and manufacturing begins when the mineral commodity has been converted into a final usable product.*

Central to the definition offered by James is the separation of mining and manufacturing. Following Figure 2, stages 1–2 involve mining activities where companies extract natural resources from the ground and transport the raw material to a processing plant usually close to the mine. The process of value addition continues as the materials are converted into ores and alloys. While these stages transform the chemical composition of the raw materials (Robinson & Van Below, 1990, p. 92), stages 3-4 typically involve manufacturing where the physical shape of the alloys is transformed into intermediate components or usable products. While cognisant that beneficiation occurs in South Africa, albeit at low level in comparison to the resource endowment of the country, this thesis takes beneficiation as the interface between mining and manufacturing. Thus, from a policy perspective, beneficiation entails an activity beyond the mineral extraction and where value is added to minerals through various manufacturing processes.

The mineral value chain and production linkages

The discussion above on beneficiation and the illustration of the production processes is known as the *mineral value chain*. The term 'value chain' was originally coined by Michael Porter (1990) as a means of presenting the chain of activities involved in the generation of value from raw material to the final consumption of a product. The main thrust of his concept argued that a range of supporting activities (direct and indirect) is responsible for value generation in production stages. These supporting activities are known as 'production linkages', which arise "from the capabilities developed as suppliers provide inputs into the commodities sector and as they develop the capabilities to use the outputs of the commodities sector" (Kaplinsky, 2011, p. 20). In mineral economics, these linkages are commonly referred to as backward, forward, and horizontal linkages. Figure 3 illustrates these production linkages.

Figure 3: The production linkages and the mineral value chain



Source: Adapted from Economic Commission for Africa (2011)

Figure 3 illustrates that backward upstream linkages arise from the linkages between a mine and its suppliers. The linkages to a mine form part of the supply chain of a mine including specialised manufactures, input providers, agents, distributors and service suppliers (Walker, 2005). Horizontal/sidestream linkages are generated from inputs such as financial services, communications, research and development (R&D), and other critical inputs required by mining companies. Forward/backward linkages include activities engaged in further processing and beneficiation of minerals and metal resources (Economic Commission for Africa, 2011).

Influence and power

Political theorists and scholars alike have written extensively on the concepts of *power* and *influence*. Both concepts have produced divergent viewpoints on the two constructs. While this may be the case, it is generally agreed that power varies in relation to the level of analysis and is shaped by specific contexts (Agupusi, 2011). In this respect, there are two streams of thought on the conceptions of influence and power; one that considers influence as a conception of power and the other that argues the concepts are not interchangeable. Those analysts, who approach the two concepts as different yet closely related concepts, argue that neither is a

substitute of the other. Morriss (2008, pp. 8-9) begins by distinguishing the grammatical differences between the two, illustrating that the word *influence* is both a *verb* and *noun,* while *power* is only a *noun.*

In explaining the differences between the two constructs, Morriss (2008) defines influence as the ability to *affect* a phenomenon. Power, in his typology, refers to the ability to *effect* something or anything with might vigour, energy, force and the possession of control or command over others, domination, authority (Morris, 2008, p. 10). Drawing on Morriss (2008), it seems that power and influence do not overlap conceptually and that both concepts cannot be used as synonyms in reference to social relationships. This distinction is similar to Scott (1994) for whom influence, in practise, exists only in and through processes of consensus and agreement. Views rooted in this stance tend to emphasise that influence differs from power in the manner in which compliance is evoked. Where power is coercive; influence is voluntary since it entails the capacity to obtain compliance without relying on formal actions, rules or force (Liebler & Mc Connell, 2012).

Consider the example below by Willer, Lovaglia, and Markovsky (1997, p. 571) who illustrate:

> *A boss with a legendary work ethic asks an employee to stay late to complete an important proposal. The employee agrees and cancels her plans for the evening.*

While power might be implicit in the actions of the boss, Willer et al. (1997) suggest the boss used her influence to convince the employee to stay, doing this without a threat. Here, influence is a socially induced modification of a belief, attitude or expectation. If, however, the boss suggested the employee stay late and that in doing so she (the boss) would recommend her promotion, the boss would have exercised her power to induce the compliance from the employee. According to Willer et al. (1997, p. 573) the boss offered a reward in exchange for the compliance and implied a threat if the employee failed to comply. The illustration presented by Willer et al. (1997) seeks to clarify that power involves changing behaviour through the threat of force and sanction. Therefore, the main thrust is that power refers to the possession of control whereas influence is an exercise or application of power but not the possession of power (Willer et al., 1997).

Scholars who conflate power and influence maintain power involves the ability to influence certain behavioural outcomes (Scott, 1994; Lunenburg, 2012). In particular, Knoke (1990) adopts a definition of power that asserts all power relationships are combinations of influence and domination. Knoke (1990, p. 3) provides the following illustration:

> *A physician who advises a patient to avoid a heart attack by giving up smoking and taking up jogging can be said to exercise influence if the patient accepts the recommendation and complies with the advice.*

Since the physician exerts greater control over the behaviour of the patient, Knoke (1990) used the above example to illustrate that power represents the ability to influence behaviour. As Knoke (1990) contends, influence occurs when one actor intentionally transmits information to another that alters the actions of the latter from what would have occurred without that information. Knoke (1990) acknowledges that he defines the construct along the Weberian notion that power is "the probability that one actor within a social relationship would be in a position to carry out his own will despite resistance" (Weber, 1947, p. 152). Extending this further, Dahl (2002, pp. 202-203) notes that *A* has power over *B* to the extent to which *A* can get *B* to do something which *B* would not otherwise do. Within this context, *A* is in a position to get what he wants in order to satisfy his desires and interests. The autonomy of *A*, according to Göhler (2009, p. 28), means less power for *B*, and by implication, denotes an asymmetrical and zero-sum relationship.

Göhler (2009) makes a distinction between *power to* and *power over*. *Power over* means enforcement of individual intentions over others while *power to* is the ability to achieve something independent of others (Göhler, 2009, pp. 28-29). In this respect, *power over* emphasises the repressive aspect of power given it restricts behaviour of actors that are subjected to it. This perspective of power, as stated by Rosness, Blakstad, and Forseth (2011), addresses two aspects of power: firstly, it examines how actors achieve their objectives against the interests of others, and secondly it associates power as a resource actors use to advance their interests irrespective of other interests. The latter aspect of the construct is important in the analysis of the power because it accrues to actors, who control and possess critical resources needed by others. Under this interpretation, power not only creates asymmetric relations in social relationships, but fosters resource dependence among parties (Mitchell, Agle & Wood, 1997).

Within this context, Frooman (1999) suggests a categorisation of power based on *resource dependency theory*. Resource dependency theory defines a *resource* as anything an actor perceives as valuable, whereas *dependency* is the state in which one actor relies on the actions of another to achieve a particular outcome (Frooman, 1999, p. 195). Thus, resource dependency is said to exist when one actor is supplying another with a resource that the other actor deems a means to an end. Taking this further, Frooman (1990) postulates that dependency is the extent to which actor *A* has power over *B*. That is, *A* has power over *B* if *B* is more dependent on *A* relative to *A's* dependency on *B*. Central to the illustration provided by Frooman (1990) is the notion that *B's* need for resources provides opportunities for *A* to gain control over it. Frooman (1999) defines two ways in which powerful actors gain control over others. These are characterised as "discretion over resource use" and "discretion over allocation".

In short, discretion over allocation translates to a stakeholder who has power to articulate a credible threat of withdrawal of resources (Frooman, 1999). Such strategies are likely to occur when *A* discontinues providing resources to *B* with the intention of making *B* change certain behaviour. Discretion over the use of resources involves a strategy in which *A* continues to supply resources with conditionalities attached (Frooman, 1999, p. 196). According to the above, power is determined by the combined measure of the amount of resources a stakeholder has and their capacity to mobilise those resources in support or opposition towards an activity (Schmeer, 1999). The use of violence, force, or physical sanctions are characterised as coercive power while physical resources such as money, funding, aid, or any material means constitute utilitarian power. Esteem, prestige and normative symbols constitute the normative aspects of power (Mitchell et al., 1997). Where power is defined as the type of resources used to exercise control, another view is that power must be examined relationally.

In other words, actors do not possess power in the abstract; rather power accrues to those who dominate others in a relationship (Hanneman & Riddle, 2005). In policy analysis, power as a relational concept unpacks "who participates, who gains and who loses from alternative outcomes; and who prevails in bargaining processes over key issues that could affect dynamic policy processes and outcomes" (Agupusi, 2011, p. 33). Considering that the above discussion closely matches the conceptualisation of power in network analysis, Young et al. (2010) duly note the term carries negative connotations akin to domination, submission and constraints which arise from the unequal distribution of power among actors. In order to avoid negative connotations, this thesis opts to use *influence as an exercise of power*, which in policy processes

translates to the “ability to shape policy decisions so that they are in alignment with the policy preferences of the actor” (Young, Lewis & Sanders, 2010, p. 30).

Similarly, influence refers to the ability to control decision-making processes, as well as the ability to affect policy outcomes. In other words, influence empowers stakeholders with the ability to achieve their desired policy preferences. Stakeholders may exercise it through different channels such as direct and indirect lobbying or it can occur in different stages of the policy process like agenda setting, policy formulation or policy implementation (Young, Lewis & Sanders, 2010, p. 30). Overall, influence, as conceptualised here, is based on the possession of financial, symbolic or physical resources that other network participants deem a means to an end.

Interest

To understand influence as an exercise of power it is necessary to analyse the interests of the different actors and assess how these interests intersect in realising their policy preferences. In policy processes, actor beliefs, values, and culture shape their ideology and perceptions (Agupusi, 2011, p. 33). Such perceptions as Agupusi highlights, represent stakeholder interest in policy and decision-making processes and in many respects are transferred into the decision-making and policy processes. Interest in this thesis is used in an economic sense to represent the level of utility or welfare perceived by stakeholders (Grimble & Wellard, 1997). Put simply, it represents the advantages and disadvantages that the implementation of the policy may bring to the stakeholder.

Stakeholder analysis

Stakeholder Analysis (SA) is used to assess stakeholders with favourable and unfavourable interests in the implementation of a respective policy or issue (Miron & Preda, 2009). It is employed for the description and identification of stakeholders based on attributes such as levels of interest and influence in policy processes. As an analytical approach to understanding a policy environment, SA identifies the key stakeholders who have the power to hinder or block a policy. As such, it is a risk management strategy, which attempts to categorise the differential consequences arising from a particular policy and indicating the interests and impacts of the policy on different stakeholders (Beilin & Gilmour, 2007). Within the mineral sector, SA is particularly relevant for policy analysis because the sector is characterised by multiple objectives, concerns, conflicts and competition over the use of highly valued resources. Such conflicts are based on economic competition for scarce natural resources or between economic or environmental use over such resources (Riege & Lindsay, 2003).

In general, a stakeholder can be of any form, size, or capacity. Stakeholders can be individuals, organisations, or unorganised groups (World Bank, 1996). Where Reed et al. (2009) classify stakeholders as people or organisations who either (a) stand to be affected by the project or (b) could 'make or break' the success of the project, Freeman (1984, p. 46) defines a stakeholder as

> *Any group or individual, who can affect or is affected by the achievement of the organisation's objectives*

Citing Goodpaster, Frooman (1999) observed two types of stakeholders in the Freeman definition: the strategic stakeholder and the moral stakeholder. The strategic stakeholder is said to affect the objectives of an organisation. Emphasis in this approach classifies stakeholders as strategic since these stakeholders provide something of importance to the organisation (Mayers, 2005). The moral stakeholder, on the other hand, is affected by the decision making process. Here stakeholders represent the groups or constituents that have a legitimate claim or "those that will be directly impacted" by the decision-making process (Pouloudi, 1999, p. 2). Although the Freeman (1984) definition is widely cited in the literature, it implies that any entity can be regarded as a stakeholder. As a result, scholars have narrowed the concept to those who have a 'stake', 'claim', or 'vested interest' in a given issue, policy, programme, or intervention.

For example, Goodpaster (1991) associates stakeholders with players with a 'stake' in a project. These players invest economic value which puts them at risk. In other words, stakeholders bear some form of risk as a result of having invested some form of capital, human or financial resources something of value in a project (Mitchell et al., 1997, p. 865). Following this the scholars categorise stakeholders based on three key attributes to indicate the amount of attention managers need to give to stakeholders. In this view stakeholders possess one; two or all three of the following attributes (Mitchell et al., 1997, p. 865):

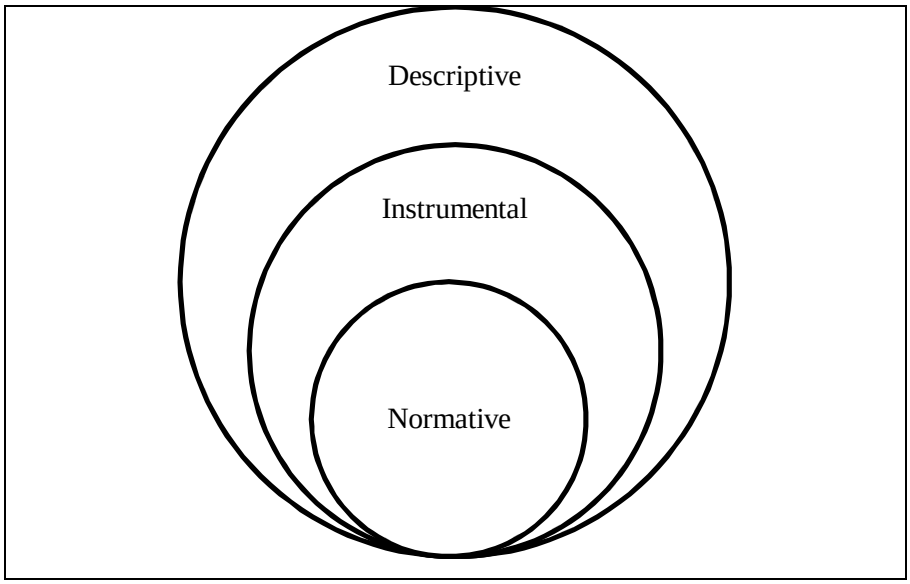
- The power to influence the policy;
- The legitimacy of the stakeholders relationships with the policy; and/or
- The urgency of the stakeholders claim on the policy.

With this in mind, there exist three approaches to analysing stakeholders. Donaldson and Preston (1995) and other scholars categorise the approaches as the substantive, instrumental and normative approaches to stakeholder analysis:

- The substantive argument proposes that analysing stakeholders generates information that describes the interactions among organisations (Donaldson & Preston, 1995). Similarly, the descriptive SA reflects and explains past, present and future states of affairs of organisations and their stakeholders (Beilin & Gilmour, 2007).
- The normative argument for stakeholder analysis contends that stakeholders are actors with legitimate interests in a particular programme, policy or project (Donaldson & Preston, 1995). According to this approach, self-serving ends of profit maximisation neglect the interests of actors affected by the decision-making process decisions. A view that prevails in the normative approach is that stakeholders should be involved in decisions that affect them and their communities. Therefore, SA legitimises the decision making process through the involvement of stakeholders in decisions that affect them (Pouloudi, 1999).
- Stakeholder analysis can be used instrumentally to establish frameworks for examining the achievements of organisational objectives (Donaldson & Preston, 1995). Here, scholars analyse stakeholders based on their capacity and ability to mobilise relevant resources toward the attainment of policy, programme or project outcomes (Jones, 1995; Jones & Wicks, 1999). The instrumental aspect of SA is in many respects primarily linked to resource dependency theory, as it argues that organisations are dependent on the resources of others to survive (Phillips, 2003). Resource dependence theory argues that more often than not, these resources needed by the organisation are held by others in the external environment. Thus, power and influence over the organisation accrues to those organisations that control the resources they require (Pfeffer & Salancik, 2003, pp. 44). In stakeholder terms, organisations need to respond to stakeholders that control critical resources because it is these stakeholders that "control resources that can facilitate or enhance the implementation of decisions" (Berman, Wicks, Kotha & Jones, 1999, p. 491).

For Donald and Preston (1995, p. 74), the descriptive, normative, and instrumental approaches to SA are mutually supportive in the sense that the three approaches are "nested within each other" as depicted in Figure 4.

Figure 4: An illustration of the three aspects of stakeholder theory



Source: Donaldson and Preston (1995).

In their view, the descriptive aspect is supported by the instrumental aspect on one level (Donaldson & Preston, 1995, p. 74). Since the descriptive aspect presents and explains relationships in the external environment, the instrumental aspect provides predictive value by prescribing the best practices for the attainment of goals. The core of the theory then is normative as it recognises the saliency of stakeholder rights and interests that have intrinsic value (Donaldson & Preston, 1995, p. 74). Likewise, Reed et al. (2009, 1936) agree that the normative aspect of SA reinforces the instrumental aspect in that the normative basis suggests that stakeholders should be involved in decision-making processes and thus feel some level or ownership of these processes. In doing so, argue Reed et al. (2009, 1936), SA "may serve instrumental ends if it leads to the transformation of relationships and the development of trust and understanding between participants".

In public policy, stakeholder engagement is initiated by the government and depending on the political environment and the issue at hand; it includes stakeholders with a legitimate involvement in the policy and on the instrumental level, the rationale is access to information and resources and build policy support (Schalk, 2011a, p. 5). Here, stakeholder engagement strengthens the collective nature of the policy-making process as information sharing increases the likelihood of finding innovative solutions to wicked problems. Governments also engage stakeholders to build support for policies and reduce the likelihood of conflict during the

implementation stage (Mtegha, Cawood & Minnit, 2010). When governments provide avenues for stakeholders to express their interests, concerns and perspectives regarding policy, strategies to influence key stakeholders can be formulated in order to promote supportive actions and decrease opposing actions before attempting to implement a policy (Ondee & Pannarunothai, 2008). These conditions are expected to reduce contracting costs, resulting in enhanced solidarity around a particular policy (Pouloudi, 1999; Hyder, et al., 2010). Against this background, the primary focus of this thesis is to unpack the basis on which stakeholder engagement occurs in the development and implementation of the beneficiation policy in South Africa.

1.8. Research outline

Chapter one, the introductory chapter of the research report outlines the background to the study. The problem and purpose statements as well as the research questions are discussed in the chapter. Following this, a detailed conceptual framework is presented in this chapter. Since the study has proposed that the MEC has yet to be analysed as a policy network of stakeholders, chapter two reviews the existing body of knowledge on the MEC and the manner in which scholars have analysed the MEC. Furthermore, the chapter evaluates extant literature on the beneficiation and the cross-cutting constraints identified in relation to the policy. In adopting network analytic techniques, chapter three discusses the policy network theory as the theoretical framework of the study. The research methodology of the study is outlined in chapter four. Chapter five presents the findings of the study and, finally, chapter six concludes the research report by presenting the main findings and policy recommendations for the policy network operations in relation to beneficiation policy of the minerals industry of South Africa.

Chapter 2

Literature survey on MEC policy influence in the mineral sector

2.1. Introduction

Following the contention that the MEC has yet to be analysed as a network of policy actors, this chapter presents the existing literature on the MEC along with the complex's influence on economic policy development in South Africa. The most common interpretation reasons that although the origins of the MEC lie in mining, it has evolved historically to represent linkages and agencies that control key sectors of the South African economy (Fine & Rustomjee, 1996). The state, through its regulatory authority played an important role in that regard by facilitating the growth of MEC productive activities and large scale capital. In this way, the MEC has been shaped by synergistic linkages between domestic corporate capital and the state, working hand in glove to protect and promote the political and economic interests centred around mineral resource extraction. On the contrary, the MEC is not by any means expressed as a homogeneous unit but rather as a struggle for access to state (political) power between different (economic) interest groups, sometimes characterised as *fractions of capital*[8].

Davies, Kaplan, Morris, and O'Meara (1976) express these fractions as the power bloc through which the dominant classes compete to maximise power over policy outcomes. In this line of analysis, capital development depends on a hegemonic fraction empowered to use the state as an instrument of advancing their policy interests (Davies et al., 1976). Thus, it is argued by the authors that in periods when different fractions dominate, the state adopts policy measures that preserve the power of that fraction of capital. Defined under the preserve of Marxist and neo-Marxist scholarship, such instrumentalist conceptions on the South African state epitomize a "captured" state (Dietz in Jourdan et al., 2012, p. 52) "available to and wielded by an undifferentiated dominant capitalist class" (Wolpe, 1980).

[8] The concept of fractions of capital refers to sections of capital that differ according to their productive activities. Thus mining capital, industrial capital and agricultural capital, or even local capital, and foreign capital represent distinctive fractions of capital (Clarke, 1978). As Clarke (1978, pp. 34-35) notes, "fractions are the product of the political organisation of a number of individuals capitals who have interests in common and only exist as such through their representation in the political process" Clarke (1978, pp. 34-35).

The literature on the MEC has paid particular attention to the centrality of interest groups influencing policy and how their objectives systematically constrain the development of other policies (Fine, 2008). In analysing MEC policy effects, scholars tend to express policy-making in South Africa through various theoretical paradigms, among them, neo-Marxism, regulation theory, revisionist theory, and neo-corporatism. While these approaches focus on the interactions between the state and policy stakeholders and the relationships that influence policy development, the theories fail to provide a paradigm to view policy-making as conceptualised by the Policy Network theory. As a result of this deficiency in the literature, this chapter aims to propose a recasting in the literature through an integrative literature survey (Torraco, 2005). This type of analysis reviews and synthesises representative literature in order to generate new frameworks and perspectives on a topic under review.

In other words, an integrative literature survey addresses the need for *reconceptualising* an existing body of knowledge, thereby offering a new perspective about an issue that is not addressed in the literature. The chapter begins by discussing the central concepts of the MEC thesis. The intention here is to unpack the notion of the MEC as conceptualised by the original authors of the thesis, Fine and Rustomjee (1996). This will provide the basis of examining the dominant policy interests in the economy along with an analysis of the evolution of the MEC. While Fine and Rustomjee conceptualise the MEC as a system of capital accumulation in South Africa, this literature review will show that the MEC has evolved into a *policy network* of participant stakeholders with varying levels of interests and influence in policy development. Following this, extant literature on the beneficiation policy is examined.

2.2. Literature survey on the MEC

As observed by Fine and Rustomjee (1996), the MEC exists as a set of public and private sector institutions whose interactions have set the pace and tone of the political economy in South Africa. In some orientations, institutions are widely recognised as appropriate for maintaining social order (Schofer, Hironaka, Frank & Longhofer, 2012); while in others they are viewed as governance arrangements shaping economic, social, and political factors for a variety of purposes (Leftwich, 2007). Institutions whether formal (rules and procedures) or informal (norms), “are the structural properties which constrain some forms of behaviour and interaction of societies” (Leftwich, 2007, p. 11). Thus, institutions are defined as “both formal and informal rules governing the actions of individuals and organisations and the interactions of the participants in the development process” (Kumssa and Mbeche, 2004, p. 841).

Utilising this typology, Fine and Rustomjee (1996) point to institutionalised relations between the state and subsidiaries of six corporations that controlled mining (with the exception of Iscor), namely Anglo American Corporation (AAC), General Mining Corporation (GMC), Anglo Transvaal (Anglovaal), Rand Mines, General Mining (Genmin), and Gold Fields of South Africa. These mining houses, known as the group producers, influenced policy through the well-known lobby group, the Chamber of Mines (COM) established in 1887 to represent the interests of the mining industry (Fine & Rustomjee, 1996, p 10). Policy coordination between the COM and the government was institutionalised on the macro-level with the formation of the Department of Mineral and Energy Affairs created in 1989 (Fine & Rustomjee, 1996). The second major theme from Fine and Rustomjee entails the notion that the MEC is a core set of interlinked economic sectors directly tied to mining, energy, and finance (Fine & Rustomjee, 1996).

Drawing on these two authors, Bell and Farrell (1997, pp. 591- 592) classify these industries under the Standard Industry Classification (SIC) scheme as mining, electricity, and mining-led manufacturing such as chemicals (SIC 351-4); non-metallic mineral products (SIC 361, 369); iron and steel (SIC 371), and non-ferrous metal basic industries (SIC 372). These sectors were linked by conglomerate domination and ownership concentration that revolved around what Fine and Rustomjee (1996, p. 10) term "a separate but intimately related epicentre of finance." At the time of writing, the axes of capital dominated the financial sector, exhibiting oligopoly control since SA Mutual, Sanlam, AAC, Liberty/Standard, Rembrandt/Volkskas, and Anglovaal controlled the sector (Fine & Rustomjee, 1996, p. 106). Finally and perhaps more strikingly, Fine and Rustomjee argue that "the MEC is to be seen not merely as a core set of industries and institutions but also as a system of accumulation and one that has varied and changed in nature over time" (Fine & Rustomjee, 1996, p. 5).

A system of accumulation in narrow terms specifies "a core set of industrial sectors with strong linkages with one another and relatively weaker linkages with other sectors in an economy" (Ashman, Fine & Newman 2012, p. 4). As a system of accumulation particular to South Africa, the MEC confines industrial activity to mining and related industries, which develop forward, backward, and upstream linkages into the industry. Subsequently, non-MEC sectors such as the agriculture and the manufacturing industries remain incipient features of the economy as examined by Marais (1998, p. 8). Viewed in this lens, the concept of the MEC as a system of accumulation addresses two features of the MEC. Firstly, it describes the process through which the core set of industries and institutions developed historically in the political economy.

Secondly, it highlights the extent to which other sectors in the economy have developed (Fine & Rustomjee, 1996, p. 91).

Noting the significance of the mineral sector to the political economy of the country, Bell and Farrell (1997) argue that due to statistical inaccuracy, the conclusions drawn from the MEC thesis remain inconclusive. For Bell and Farrell (1997) a major dissatisfaction with the MEC thesis lies in its persistent rejection that South Africa industrialised through import substitution, stimulated by protection of consumer goods, as Fine and Rustomjee (1996, p. 5) observe. Import substitution industrialisation (ISI), represents a sequential process that begins with manufacturing-finished consumer goods, then moves to higher stages of manufacturing intermediate goods, followed by capital goods through backward linkages (Hirschman, 1968, p. 6). In accepting that ISI occurred before 1945 and declined relatively thereafter, Fine and Rustomjee (1996) argue that the form of industrialisation taken by post-war South Africa occurred in the opposite direction of the traditional ISI model.

In this regard, Fine and Rustomjee conclude that the pattern of industrialisation in South Africa cannot be reduced to an ISI model, which has in fact theorised Latin American industrialisation (Fine & Rustomjee, 1996, p. 222). Likewise, Lewis, Reed, and Teljeur argue that South Africa failed to follow the ISI route to industrialisation due to the inability to diversify into the capital goods sector. Rather, Lewis et al. (2004, p. 151) acknowledge that a diversified consumer goods production system underpinned the industrialisation of the economy. In stark contrast, Bell and Farrell (1997) show that during the inter-war period (1919-1939) and subsequent periods, the percentage contribution of consumer goods declined relative to capital goods. Employing constant price data, as opposed to current price data used by Fine and Rustomjee, Bell and Farrell (1997, p 597) provide statistics in support of the ISI logic.

In their view, during the period between 1916/7–1926/7, consumer non-durables contributed two-thirds of positive values and that by 1926/7–1936/7 consumer non-durables along with motor vehicles contributed 52.8 per cent. In 1936/7–1946/7 the share of consumer goods declined to 31.3 per cent while that of intermediate goods reached 46.9 per cent (Bell & Farrell, 1997). Furthermore, they argue that during the period between 1946/7–1956/7, the percentage share of consumer goods fell to an estimated 26.2 per cent, while intermediaries and capital goods maintained 34.2 per cent and 24.7 per cent respectively. However, in the period between 1956/7–1972, the shares of both intermediate and capital goods in manufacturing value-add continued to grow an average rate of over 7.1 per cent (Bell & Farrell, 1997, p. 597). This

estimation showed that the percentage share of intermediate and capital goods continued to grow strongly after 1945. Contrary to the MEC thesis, Bell and Farrell conclude that "there is no historical evidence to support the contention that the MEC as a system of accumulation prevented diversification of the manufacturing industry and thus retarded industrialisation" (Bell & Farrell, 1997, p. 591).

While the different data sources collected by Bell and Farrell (1997) seemingly challenge the MEC thesis, at the heart of the criticism is the assumption that South Africa followed an inward looking industrialisation path since it adopted protectionist measure to support the domestic industry. The argument postulated by Bell and Farrell (1997) ignores the fact that South Africa imported machinery and technology used in the cited sectors. It is erroneous therefore to conclude that industrialisation occurred as a result of the economy failing to produce a capital goods sector that could contribute to the means of production in the economy. Rather, Freund (2009) maintains that the economy focusses on raw material export while industrial output is founded wholly on imported goods. Nonetheless, the MEC, as Fine and Rustomjee (1996, p. 5) see it, has "evolved depending [on] the balance and structure of the economic and political forces" at play. In other words, the process through which the MEC has evolved is highly dependent on the balance of power between political and economic interests. In this respect, Sub-section 2.2.1 details the evolution of the MEC as a system of accumulation.

2.2.1. The MEC as a system of accumulation

A number of scholars have drawn on the principal findings that the MEC is a system of accumulation particular to South Africa. For example, Ashman, Fine, and Newman (2012b) recognise that industry during the 1920s centred on English speaking (foreign) mining capital and conglomerates such as AAC and De Beers. Writing prior to the development of the MEC thesis O'Meara (1978) saw the economy as an appendage to the British economy since foreign interests dominated and controlled the sector, effectively restricting the participation of Afrikaners in mining activity (O'Meara, 1978, p. 173). A key feature of capital relations in this period as identified by Marais (1998) was the growing hostility towards the dominance of English conglomerates on the part of Afrikaner capital, which dominated agriculture and the manufacturing industry. Not only were the capital fractions economically distinct, but both adopted different views on the role of the state and the functioning of the economic system.

As with most localised industries, Afrikaner capital produced intermediary products for the mining industry at a rate higher than imported foreign goods. Thus, Davies et al. (1976) locate

Afrikaner capital interests in restricting foreign competition and maintaining local markets for their goods. Mining capital interests on the other hand lay in minimising the prices of these commodities, preferring polices that encouraged competition. Similarly, Marais (1998, p. 10) notes that due to liberal policy prescriptions, foreign mining capital preferred free trade policies while localised Afrikaner capital required state assistance financed, ironically, through surplus generated from mining capital. Despite the rather different needs of mining and Afrikaner capital, the literature reports that both fractions benefited from state intervention in the market economy. Such interventions occurred in various forms including price controls, taxation, limiting the supply of commodities, and most significantly, labour market regulation (Jourdan et al., 2012, pp. 41).

With respect to the latter, policy instruments wielded to advance capital accumulation rested on procuring cheap African labour, resulting in what Harvey (2003; 2005) termed accumulation by dispossession. Drawing on the Marxist concept of primitive accumulation, Harvey (2003) asserts that capital accumulation is always accompanied by two exploitative processes, namely the dispossession of the people from their land and the suppression of indigenous forms of production. To a large extent then, accumulation by dispossession created the proletarianisation of the work force (Harvey, 2003; 2005). Taken further, his use of the concept suggests that a key factor in the accumulative process involves the state policy. Likewise, Wilson (2001) mentions that the state advanced capital accumulation by enacting pass laws at the insistence of the COM. As an emergent power-player, the Chamber yielded considerable policy influence to procure the supply of cheap black labour while supporting policies such as the Industrial Conciliation Act No. 11 of 1924 and the Mine and Works Act No. 25 of 1926, which reserved skilled employment for the white labour force (Wilson, 2001).

Davies et al. (1976) recount how policy instruments such as the Customs Tariff Act proposed tariff protection to contractors that employed a fair amount of ‘civilised’ white labour. These policies, in addition to migrant labour, contract labour, racial despotism, and single-sex hostels are seen by Bezuidenhout (2008) as the cornerstones of capital accumulation during this period in South Africa. The body of literature analysing the MEC identifies the inter-war and post-war periods as the two phases that marked significant changes in capital relations and in the distribution of power between Afrikaner and English fractions in particular. Although these phases merged into one another, Trapido (1971, p. 314) attests that each accompanied the emergence of a new group of beneficiaries from the surplus accumulated from MEC activities

in the economy. Therefore, the evolution of the MEC in this period exhibited overlapping phases in what Fine and Rustomjee opine as "a history of the creation and empowerment of large-scale Afrikaner capital, its interpenetration with English capital and their combined collaboration with the state" (Fine & Rustomjee, 1996, p. 5).

2.2.2.1. The inter-war and post-war accumulation strategy

Ashman et al. (2012b) assert that the establishment of SOCs such as Eskom in 1923 and Iscor in 1928 provided a bridge between the two fractions of capital. In stark contrast Jourdan et al. (2012) argue that the primary objectives of the SOCs aimed to promote local industrialisation and the interests of the Afrikaner capital. This argument is also made by Roberts and Rustomjee (2009) who argue that the state used SOCs to incentivise and subsidise Afrikaner interests. In this instance, the state continued "its practice of protecting companies that employed a large percentage of white labourers on condition they paid high (civilized) wages to their white employees" (Schneider 2000 in Jourdan et al., 2012, p. 52). To that end, Davies et al. (1976) conclude that state intervention through SOCs was seemingly opposed to mining capital. While unconvinced that the establishment of Iscor like other MEC activities generally impeded broader industrialisation, Bell and Farrell (1997) contend that Iscor was an economically justifiable investment for long-term industrialisation in the economy.

According to the authors, Iscor "represented an example of successful sectorial industrial policy in accordance with South Africa's comparative advantage"" (Bell & Farrell, 1997, p. 605). Not only was steel a relatively cheap productive input, but Bell and Farrell propose that it represented an important input into the development of the manufacturing industry. Secondly, the authors took to task the assertion, as they saw it, that Iscor preserved Afrikaner interests to the detriment of the manufacturing sector. In their discussion, manufacturing sub-sectors such as the motor vehicles sector, paper and paper products, and textiles grew at an average annual compound rate of 24.6, 18.8, and 13.1 per cent respectively during these inter-war years (Bell & Farrell, 1997, p. 601). However, Fine and Rustomjee (1996, p. 64) maintain that the establishment of these SOCs "cannot be read of as a policy to create an indigenous Afrikaner capital."

Given the power held by English capital, the authors did not associate the development of the SOCs with exclusive promotion of Afrikaner interests, but rather as the integration of Afrikaner interests into the mineral economy (Fine & Rustomjee, 1996, p. 64). In other words, policies

represented neither political interests nor did they seek to advance economic interests of one group over the other. In many respects then, policies epitomised complex interactions between economic and political interests, each with varying levels of power and influence on policy. In a subsequent response, Fine and Rustomjee add that policies represented shifting power blocs and distribution of power over the inter-war period, which shifted toward the 1950s (Fine & Rustomjee, 1998a). The 1950s witnessed massive state support for Afrikaner economic empowerment. Jourdan et al. (2012, p. 38) mention that the state used its political power to support the emergence of the Afrikaner working class and the presence of Afrikaner capital in the MEC activities, which were previously the domain of English capital.

Drawing on Fine and Rustomjee (1996), Jourdan et al. (2012, p. 46) suggest Afrikaner capital first arose to prominence through preferential treatment by the nationalist state. Through fiscal and monetary policy measures, assert Jourdan et al. (2012, p. 46), the government shifted state bank accounts to Afrikaner financial institutions, namely Volkskas, Sanlam, and Rembrandt, while awarding profitable procurement contracts for coal supply to Afrikaner-owned mines during the construction of new power stations in the 1950s. Such targeted actions are seen by Fine and Rustomjee (1996, p. 153) as well as by Jourdan et al. (2012) to have strengthened Afrikaner capital by challenging the dominance of British commercial banks such as Standard and Barclays Banks. Conversely, Ashman et al. (2012) recount that the 1949 establishment of the National Finance Corporation (NFC) realigned the balance of power between Afrikaner and English fractions.

In their discussion, the NFC was set up by the state to facilitate local investment of treasury bills and mining debentures deposits (Ashman et al., 2012). Consequently, AAC was able to access local investment, which decreased its dependence on private capital from Britain. For Ashman et al. (2012, p. 6) the NFC significantly deepened the interdependency between the state and English capital, and eroded the disjuncture between English and Afrikaner capital. Although the interdependency of the fractions deepened in view Ashman et al. (2012), Jourdan et al. (2012) note that in certain areas of the mining industry the English fraction still continued to dominate. In the gold mining industry, attest Jourdan et al. (2012, p. 38), state power forced AAC to facilitate entry of Afrikaner capital, leading to Fedvolks (a subsidiary of Sanlam) acquiring GMC (a subsidiary of AAC) in 1962.

Nonetheless, both Ashman et al. (2012) and Jourdan et al. (2012) agree that the period of the 1960s saw the emergent Afrikaner fraction penetrating core MEC sectors and the strengthening of several financial institutions. In both analyses, it is duly noted that financial institutions from both Afrikaner and English fractions engaged in cross-cutting activities that extended MEC control over the commanding heights of the economy (Ashman et al., 2012; Jourdan et al., 2012). As a result of state patronage, Afrikaner "capitalists were propelled into the upper reaches of the economy and integrated into the steadily evolving web of conglomerates that dominated the economy" (Marais, 1998 p. 21). Thus, the 1970s marked a significant period in that the fractions of capital now merged into a unified power bloc focussed on capital accumulation centred on meeting international and domestic resource market needs (Fine & Rustomjee, 1996; Ashman et al., 2012; Jourdan et al., 2012).

The construction of Sasol II and III plants, the expansion of Eskom, as well other manufacturing industries within the MEC core, consolidated collaboration between the MEC activities and state-led expansion in promoting industrialisation (Fine & Rustomjee, 1996, p. 159). However, global events such as the collapse of the Bretton Woods system, the sharp rise in oil and energy prices, and the imposition of select sanctions against apartheid intensified the reliance on the core MEC activities (Fine, 2008). At the same time, Terreblanche (2002) argues that the apartheid regime experienced a legitimacy crisis and the MEC a serious accumulation crisis due to disinvestments, capital controls, and social unrest. These events had the twin effect of hampering industrialisation and frustrating attempts to invest in international markets. Effectively, these events confined the accumulative strategy within South Africa (Fine & Rustomjee, 1996). With the dawning political transition, the MEC played an active political role in facilitating negotiations with the ANC to abandon its socialist doctrines and policies (Terreblanche, 2012).

Since the mining industry entailed a racially structured system of mineral property and ownerships rights, its transformation was a key policy priority for the banned ANC (Capps, 2012). The ANC 1955 Freedom Charter argued that:

> *The national wealth of our country, the heritage of South Africans, shall be restored to the people;*
>
> *The mineral wealth beneath the soil, the Banks and monopoly industry shall be transferred to the ownership of the people as a whole;*

All other industry and trade shall be controlled to assist the wellbeing of the people;

All people shall have equal rights to trade where they choose, to manufacture and to enter all trades, crafts and professions.

As a result of assumed socialist orientations, the MEC engaged in capital-intensive projects that were dependent on export markets to keep their assets out of reach of the post-apartheid state (Ashman et al., 2012). Following this, the MEC succeeded to convince the governing New National Party to accept policies of privatisation, which led to the privatisation of strategic SOCs such as Iscor and Sasol (Legassick, 2006; Terreblanche, 2012,). Subsequently, state investment programmes in the economy halted due to what Terreblanche (2012, pp. 59-63) refers to as "the dogma of neoliberal globalism." In what follows, section 2.2.2.2. examines the evolution of the MEC after the 1994 poltical transition. For scholars like Marais (1998), this period realigned the MEC into a new domiant hegemonic project. Despite the political change, scholars analysing the MEC maintain that there is a continuing concentration on the core MEC sectors and economic activities, a point that reflects the concept of path dependency as conceptualised by Roberts and Rustomjee (2009).

2.2.2.2. The post-apartheid accumulation strategy

While the MEC has survived over the post-apartheid period, it experienced significant changes partly driven by the democratisation, economic restructuring, globalisation, and financialisation of the economy (Ashman et al., 2012). Jourdan et al. (2012) highlight similarities between the evolution of the MEC pre-1994 and post-apartheid periods. In terms of similarities, economic empowerment, as observed by the authors, has been a policy priority for both governments. These authors argue that ANC government has used policy instruments including state financing, mineral rights and preferential procurement and Black Economic Empowerment (BEE) to support the participation of black capitalists in the mining industry (Jourdan et al., 2012, p. 37). Briefly, BEE set out to increase black ownership in companies and create a new black middle-class in South Africa. Such objectives aimed to ensure that black Africans could access finance capital, management training, and skills upgrading.

While notable progress was made in leveraging access for domestic black capital into the MEC sectors, Jourdan et al. (2012) reason that the objectives of achieving greater black ownership were prioritised at the expense of broader national industrialisation. Evidence in support of this proposition lies in the MPRDA Amendment Act No. 49 of 2008 (Jourdan et al., 2012, p. 38).

Correctly acknowledging that beneficiation is not a formal objective of the MPRDA, the authors go on to suggest that the 2008 Amended MPRDA relegates the state to "a passive librarian-like role", limiting the ability of the state to actively compel the MEC to achieve beneficiation policy objectives (Jourdan et al., 2012, p. 171). In making this statement, Jourdan et al. (2012) seem to agree with Leon (2011), that equity targeting set forth in the MPRDA has hindered broad based industrialisation. Leon (2011) associates BEE to comprador capitalism, crony capitalism, and opportunism: all of which hinder the promotion of BEE as the parties that benefit from such arrangements are connected to the ruling elite.

The second similarity highlighted by Fine and Rustomjee (1996), Fine (2008), and Ashman and Fine (2012), entails the continuing MEC influence on ANC policy. According to these scholars, the egalitarian principles of the 1955 Freedom Charter and the Reconstruction and Development Programme of 1994 (RDP) set out to restructure the economy through nationalisation and active state participation in the mineral sector. Furthermore, Fine and Rustomjee (1996), argue that the RDP largely described as a socialist policy, was abandoned by the ANC as it adopted the Growth, Employment and Redistribution (GEAR) policy. Capps (2012b) attributes this to the interventions of the International Monetary Fund (IMF) and the World Bank together with the MEC, all of whom dictated that "there could be no alternative to the market in the new dispensation and that any project of social change would, therefore, have to work with its grain" (Capps, 2012 b, p. 319). Generally speaking, this process – called liberalisation – accompanied a redefinition of the relations between the state and the market, "even involving the withdrawal of the functions of the state as they had previously existed" (Campbell, 2003, p. 3).

Fine and Rustomjee (1996, p.3) suggest that the GEAR policy "safeguarded" the interests of the MEC by protecting their assets from the newly elected ANC regime. For Ashman and Fine (2012), ANC protection enabled the conglomerates to move their primary listings to the London Stock Exchange (LSE). This, according to the authors, accompanied unprecedented levels of capital flight as major corporations such as Anglo American, De Beers, Old Mutual, South African Breweries, Liberty, SASOL, and Billiton sold their less productive assets to the emerging black bourgeoisie (Ashman & Fine, 2012). Elsewhere, Fine reasons that the listings were not only the result of capital fear of losing economic control in South Africa, but were accompanied by internationalisation of their operations (Fine, 2008). Overall, Ashman and

Fine (2012) argue that the post-apartheid accumulative strategy has been dominated by the three Fs: capital flight, finance, and foreign ownership.

Notably, the stark difference between pre-1994 policy-making and that of post 1994 is the participation of the previously unrepresented stakeholders and interest groups into the process of policymaking in South Africa, as observed by Lewis et al. (2004). For the authors, the participation of these new stakeholders reinforces substantial changes in the "mode of governance, mode of policy formulation and implementation" (Lewis et al., 2004, p. 156). In particular, the noteworthy interests are organised labour movements such as Cosatu, the National Council of Trade Unions (NACTU), and the Federation of Unions of South Africa (FEDUSA), the Confederation of South African Workers Union (CONSAWU). Sectorally, these unions have also participated extensively in a number of important sectorial forums such as the National Economic Development and Labour Council (NEDLAC) and Mining Industry Growth Development and Employment Task Team (MIGDETT).

NEDLAC, as documented by Lewis et al. (2004, p. 157), represents an important policymaking institution where policy stakeholders such as organised labour, the government, and business engage in the process of policy-making. In reviewing the character of policy in South Africa since 1994 and the influence of organised labour in the process, Lewis et al. (2004) maintain that organised labour is "largely responsible for initiating a participative mode of governance in NEDLAC" (Lewis et al., 2004, p. 157). What is more, MIGDETT is a multi-stakeholder task team chaired by the DMR including government departments from the Economic Sector and Employment Cluster[9], Cosatu-affiliated union the NUM, FEDUSA affiliated United Association of South Africa (UASA) and Solidarity affiliated to CONSAWU. MIGDETT also includes organised business groups COM, and the South African Mining Development Association (SAMDA), an organisation representing small black mining interests in the mining industry. In view of Lewis et al. (2004), democratisation brought black business interest groups to the policy table, further transforming policy processes in the country.

The above discussion on the MEC outlines the history of mineral-related policy-making in South Africa and interests underpinning policy development. Firstly, economic policy represented the interests of the powerful stakeholders, who supported the export of raw materials. As a result of these interests, the local economy is characterised by limited

[9] Departments in areas of economic policy are grouped together or 'clustered' at the level of ministers and director-general. It consists of departments from Economic Development, Higher Education and Training, Mineral Resources, Labour, Public Enterprises, Science and Technology as well as Trade and Industry to name a few.

diversification of exports, a dwindling manufacturing sector and limited beneficiation (Roberts & Rustomjee, 2009; Freund, 2009). Roberts and Rustomjee (2009) conclude by stating that the poor performance of non-MEC sectors is the direct result of the MEC market power and its lack of interest in beneficiation and local industrialisation. Arguably, such interests have stakes in the current beneficiation policy, many of which will impact on the implementation of the policy. Section 2.3 surveys the literature on the beneficiation of minerals in South Africa.

2.2.Literature survey on the beneficiation policy

Within the literature, it is taken as a given that the beneficiation policy is little more than a pipe-dream and politicians are all talk and lack the capacity and political will to implement the beneficiation policy (Rees, 2011). Section 2.2.2.2 argues that a major obstacle to the implementation of the beneficiation policy was the MEC's lack of interest in local industrialisation and beneficiation. Key to the analysis is the notion that MEC interests centres on resource extraction and exportation to international markets. Discussions on beneficiation argue that a number of other cross-cutting constraints affect the viability of implementing the policy. These constraints range from physical and social infrastructural constraints, to the skills shortage, input pricing, domestic and market constraints. For a better understanding of beneficiation sections 2.31, section 2.3.2 and section 2.3.3 each outline the constraints as they exist in the current body of knowledge.

2.2.1. Physical constraints to the implementation of the beneficiation policy

Representing the international advisor grouping set up to advise the Presidency of South Africa, the Harvard Group, Haussmann, Klinger, and Lawrence (2008) dismiss the policy on the assumption that it is based on anecdotes rather than systematic analysis. Dobreva and Schoer (2007) add that it is incorrectly framed in simplistic value chain analysis that fails to recognise the manner in which interventionist policies tend to generate market imperfections. Elsewhere, Haussmann, in collaboration with Rodrik and Sabel (2007, p. 17), admonish the narrow focus on the mining value chain, contending such views are legacies of archaic views of industrial policy. In arguing that beneficiation "is not a sensible policy", these views propose that benefit from mining can be exploited in different avenues beyond downstream manufacturing. Furthermore, a major point of contention for the group relates to the proposition that targeting labour intensive downstream industries lead to employment creation (Haussmann et al., 2007; Haussmann et al., 2008).

Such a view rests on the widely recognised skills crisis plaguing South Africa. The skills involved in cutting and polishing diamonds in the jewellery industry, as Haussmann et al. (2008) point out, are quite different from those involved in mining diamond ore. In the same way, Rossouw and Baxter (1998) argue that an experienced miner cannot be trained overnight to become a metalworker. The study conducted by Lundall et al. (2008, p. 36) confirmed that the shortage of skilled artisans like millwrights, draughtsmen experienced in computer-aided design and metallurgical and chemical engineers affect the viability of the industry. Arguably, the skills crisis reinforces the insignificance of beneficiation given that the education system fails to supply the demanded workers, as observed by Rossouw and Baxter (2011). Similarly, it calls for the urgent need to address the misalignment between the education system and the skills demanded by the labour market. To a large extent, the labour market requires highly skilled labour due to capital deepening and technological advancement (Yu, 2013).

In discussions on beneficiation, another controversial issue is that the policy lacks an integrated approach that considers the true competitiveness of the downstream beneficiation sectors and the availability of infrastructure (Rossouw & Baxter, 2011). Of central concern here is the inadequacy of the rail and port infrastructure and its incapacity to freight beneficiated goods. The infrastructure related challenges are compounded further by the costs of transporting beneficiated goods. Since transportation costs are lower for exporting raw-ores than beneficiated ferroalloys, it stands to reason as does Burgess (2010) that the provision of physical infrastructure favours raw material exports at the expense of local beneficiation. Morris et al. (2012, p. 10) associate this with enclave infrastructural development, since "infrastructural services such as roads, ports, power, and water facilities were developed to facilitate the extraction of commodities, their transport to the coast and their shipping to final markets abroad".

As a result of this, Roberts and Rustomjee (2009) concluded that closer alignment between infrastructure and the development objectives is crucial. A further challenge discussed in the literature on beneficiation is the provision of electricity (Morris, 2011). Analysts have identified that stages 2 and 3 of the beneficiation value chain are very energy-intensive (Lundall et al., 2008). Secondly, these firms receive electricity supply directly from municipalities whose pricing structures are higher than those charged by Eskom (Lundall et al., 2008). For example, a study conducted by Eskom found that average prices charged to consumers were between 40 and 110 per cent higher than prices Eskom charges to direct customers (Eskom, 2012, p. 91). Against this background, the National Development Plan (NDP) maintains that

beneficiation is not a panacea for job creation since high energy and capital costs render beneficiation unprofitable (National Planning Commission, 2011).

2.2.2. Market constraints

The analysis put forth by Jourdan (2010) is extremely useful because it sheds light on the difficulties experienced in accessing international markets for beneficiated commodities. The author shows the manner in which trade practices adopted by the European Union (EU) limit market access for higher value added exports from developing countries. As maintained, these practises include steel subsidies to European producers amounting to an estimated $80 billion in tariff barrier for products where value is added (Jourdan, 2010). Furthermore the analysis states that, anti-dumping laws, standards covering health, environment and labour are applied to prevent market access for these goods. In the main, Jourdan (2010) points out that the EU imposes low tariff barriers for ores and alloys in comparison to semi-finished and beneficiated goods. Such practises lead the author to the conclusion that EU trade practices inhibit industrial development in developing countries by imposing higher tariff barriers for beneficiated goods in an effort to encourage the export of ores and alloys (Jourdan, 2010).

Related to international market access is the fact that South African manufactures have limited access to raw material inputs for local beneficiation. This, according to Turok (2013, p. 9) arises firstly as a result current structure of the mining industry, which is internationalised in nature. The consequence in view of Turok (2013) is that the industry remains interested in the export of raw materials as mining companies are bound in long-term supply contracts with international beneficiators. While Kraemer and Tulder (2009) reason the long term supply contracts grant overseas clients exclusivity rights and access over resources, the authors maintain that these international beneficiators maintain their strategic position in the control national resource reserves. Another aspect that impedes the growth of the downstream beneficiation industry is the wide-spread use of Import Parity Pricing (IPP). Defined as a pricing practise adopted by firms which sell their products to local producers at the same level as import price of that product (Competition News, 2001), IPP forces local purchasers to pay a premium for key commodities produced in South Africa instead of an ‘across the fence’ local competitive price or export parity price (Jourdan, 2010).

In other words, IPP adversely affects the affordability of resources as local purchasers are obligated to match the ‘landed price’ of assumed costs such as freight, insurance, harbour charges, import duty and surcharges. Since inputs become too expensive, the implication is that

pricing at par with imported prices is not strictly cost-related (Competition News, 2001). The reasons for IPP are manifold. However, the lack of competition in the domestic market is arguably a significant factor in this process. Essentially, this implies that in the absence of competitors dominant firms exert unilateral market power in setting prices. This pricing mechanism is practised by the dominant steel producer Arcelor Mittal SA (AMSA). While Jourdan has observed that South Africa has a relatively small market that cannot sustain more steel producers, Roberts and Rustomjee argue that there is now considerable evidence that the key impediment to beneficiation is the uneven power relationships between the oligopolistic upstream industry which practices IPP and the downstream domestic industry that cannot exert countervailing power (Roberts and Rustomjee, 2009, p 65).

2.2.3. Institutional constraints

Other scholars have located beneficiation in the context of institutional alignment. Here, emphasis is placed on the institutional arrangements and how the misalignment between state institutions constrains the growth and structural transformation objectives of the country. Where Kaplan (2007) proposes that "institutionally there is no clear centre in government", Morris et al. (2011b) add that the country lacks strategically directed and appropriately aligned institutional arrangements necessary for transforming the economy into an engine for growth. Similarly, Jourdan et al. (2012, p.222), report that the lack of co-ordination and strategy alignment between the Department of Trade and Industry (DTI), which is responsible for industrial and economic development, and the DMR, is the main reason for the lack of progress in realising beneficiation and job creation. In response to this disarticulation, the authors propose an Economics Super Ministry as an option to facilitate industrial development in the economy.

While the call for a super-ministry is an attractive response to the problem of disarticulation between existing institutional arrangements, its establishment is not without political consequence. For instance, the *Southern Africa Report* cautions against bureaucratic turf wars between competing ideologies of big business, labour and government over policy control, since each stakeholder may see it as directly related to its interests (*Southern Africa Report*, 2012). Related to the bureaucratic turf wars, is the cost and complexity of setting up new institutions to manage policy. Cosatu (2012) claims the super-ministry is likely to be a "bureaucratic nightmare" with multiple layers of authority. As such the federation proposes a State Owned Mining Company (SOMCO) whose executive leadership would comprise of representatives from different government departments (Cosatu, 2012). What is clear from

these views is that the current institutional framework is inadequate in many respects and the DMR cannot provide an enabling environment for the implementation of the policy.

The discussion on the beneficiation policy provides an overview of the on-going debates around the policy and its implementation dynamics. As a policy framework aiming to create a favourable environment for production-led growth and local processing the natural resources in South Africa, the beneficiation policy is a key component in the industrialisation strategy of the South African economy. Beyond this the literature survey reveals that the policy is marred by constraints such the provision of infrastructure and skills shortages, domestic and international market constraints and institutional shortcomings. While analysts and scholars alike argue that addressing these challenges is critical for the implementation of the policy, the literature on the beneficiation policy fails to account for the perceptions of the key stakeholders in possession of the resources required for the implementation of the policy. As a result, it is important to examine the stakeholders with a view of understanding their instrumentality in the implementation of the policy.

2.3.Conclusion

There exists consensus among scholars that the MEC has and continues to play an important role in determining policy direction and content through various linkage effects and power relations, especially in relation to beneficiation policy in South Africa. The observations made from the literature review shows that the historical process behind mineral policy development involved an intimate relationship between the state and stakeholder groups in the MEC. Such observations highlight the extent to which policy-making is path dependent because sectorial interests governing policy-making pre-1994 still continue to dominate policy-making in the mineral resource sector today. As we have seen, the MEC actors controlled critical resources and also influenced the adoption of policies centred on mineral resource extraction and exportation. In the main, scholars argue that due to sectorial interests underpinning the resource sector, South Africa is plagued by a dwindling manufacturing sector and jobless growth and a reserve army of unemployed youth. A key area of concern is to examine the evolution of the MEC as it exists in 2014 and identify the influential stakeholders that are likely to exercise higher levels of influence and power in the implementation dynamics of the beneficiation policy. The next chapter details the theoretical framework guiding the analysis of the MEC as it exists today.

Chapter 3

Theoretical framework

3.1. Introduction

Up to this point it has been argued that the MEC exists as a product of complex network interactions of the state and domestic corporate capital in the economy, with global links clearly also present. In order to analyse the MEC in South Africa, this thesis employs the *policy network* approach as the guiding theoretical framework. This chapter details the key theoretical concepts of the policy network theory. It begins with an overview of the two typologies within policy network theory, the governance perspective and the interest intermediation perspective. The rationale is to provide a background of the policy network theory and also unpack the analytical units of each perspective. Section 3.3 details the interest intermediation perspective along with the analysis of the distribution of power in policy networks.

3.2. The policy network theory

As a starting point the policy network theory rejects the assumption that policy occurs 'automatically' from the state (Brynard, 2007), in a top down fashion modelled in principal agent terms (Rodrik, 2008). Instead, policy-making according to the policy network theory is the result of actors wound together in a complex web of resource dependency relationships. That is to say, policy networks indicate interactions between interdependent actors who strategically cooperate and exchange resources (Coleman & Perl, 1999; Thatcher, 1998; Mintrom & Vergari, 1998). Added to that, policy networks denote a specific 'division of labour' which fosters a collaborative and partnership approach to policy-making in contemporary democracies (Howlett & Ramesh, 1998; Pappi & Henning, 1998).

For scholars in the public policy field, it is commonly agreed that policy networks illustrate expressions of collective action (Carlsson, 2000) which weave public, private and civil society actors in a complex web of relationships and interactions (Blair, 2000). Policy networks represent a "sets of formal institutional and informal linkages between governmental and other actors structured around shared and negotiated beliefs and interests in public policy-making (Rhodes, 2006, p. 426). Additionally, policy networks have the following three characteristics.

Firstly, policy networks consist of actors such as government departments, business organisations and civil society groupings that regularly participate in a given policy domain. In this context, policy networks include what Booysen (2001) refers to as 'participant stakeholders' with a declared or conceivable interest or stake in a policy concern.

Secondly some form of resource exchange occurs between the actors. This form of exchange, depending on the needs, interests and resources of the actors involved, links actors in resource dependency relationships (Jordan & Schubert, 1992, p. 33). Thirdly and related to the above, mutual dependencies emerge between participants who share resources in order to achieve their goals and preferred policy outcomes (Bevir & Richards, 2009). This perspective is in line with the notion that "mutual resource dependency links actors both horizontally and vertically in networks" (Sandstrom & Carlsson, 2008, p. 505). Not only are actors linked by resource exchanges, but actors engage in policy networks because they benefit from these relationships. Accepting this, Van Waarden (1990, p. 31) states that "administrators need political support, legitimacy, and assistance in the implementation of policy; while interest groups desire access to policy-making structures that favour their interests".

Van Waarden (1990) also emphasises that actors interact in policy networks in an attempt to reduce transaction costs. Gaining access to and influence over decision-makers is a time-consuming exercise; thus in his view, building permanent relationships with government agencies reduces transaction costs for interest groups (Van Waarden, 1990). A rationale for government participation in policy networks is found in the fact that interest groups have knowledge and expertise on target populations (Van Waarden, 1990, p. 31). These two resources give stakeholders influence over policy processes since (Daugbjerg, 1998, p. 286):

> *They possess the technical expertise within their sector and have systematized information and knowledge of the environment in which policy is to be implemented. Thus, members of policy communities can pool policy relevant resources behind a certain policy position. Politicians who are keen to avoid unintended policy consequences and implementation failure often, but not always, accommodate the interests of policy community members.*

In this way policy networks represent instrumental tools actors use to engage and exchange resources for mutual benefit (Van Waarden, 1990). The interdependency between the government and private interests does not imply the government is equally dependent on other stakeholders as they are to the government. Rather as Klijn and Koppenjan (2000) reason, the

government occupies a unique position in policy networks, one which is characterised by the resources at its disposal. Among the resources highlighted by the authors is "sizeable budget and personnel and monopoly on the use of force along with democratic legitimacy" (Klijn & Koppenjan, 2000, p. 151). By implication then, the government engages with non-state stakeholders for instrumental purposes to gain information and support for the common interest (Klijn & Koppenjan, 2000).

Against this background, Börzel (1998) argues there are a 'Babylonian' variety of policy network conceptions which differ according to the unit of analysis. In some instances, the term is used as a research method to analyse the relations between actors that are mapped as graphs (Pappi & Henning, 1998). Here, researchers analyse actor embeddedness in networks and analyse how actor locations impose constraints or opportunities as a result of their locations in the network structure (Wasserman & Fraust, 1994). For example, Kenis and Schneider (1991) propose that as a methodological tool network analysis enables a researcher to identify the 'complex policy games' such as "the relations and patterns of strategic actions between a set of actors" (Kenis & Schneider, 1991, p. 44). In other contexts, the term is used as a theory to illustrate the complexity of the modern day policy environment (Miller & Demir, 2007). It may be used to analyse the different phases in policy-making and the participant stakeholders involved in each phase since formulation and implementation stakeholders differ from each other (Kenis & Schneider, 1991, p. 24).

Börzel (1998) identifies two different theoretical schools of thought on policy networks. On the one hand the interest intermediation school interprets policy networks as a generic term describing the relationships between the state and interest groups (Börzel, 1998). On the other hand, the governance school views policy networks as a new form of governance (Marsh & Smith, 2000). For Börzel (1998), the interest intermediation discusses power relations within networks, viewing policy networks as a concept that applies to all kinds of relations between the public and private actors (Börzel, 1998, p. 255). Governance, in her view focusses on the context, in which policymakers are embedded. Elsewhere, Börzel (2011) illustrates that those who view policy networks as a new form of governance focus on the structures and processes through which joint policy-making is organised.

Much of the thinking behind the governance conception reasons that societies governed through networks are more inclusive. As elements of governance, networks enhance democratic participation by bringing together the expertise of actors who provide valuable

information about the target populations of programmes (Peters, 2000). According to Börzel (1997, p. 5) this view is often postulated by German public policy scholars like Kenis and Schneider (1991) along with König & Bräuninger (1998). These authors conceive policy networks a new mode of governance replacing market and hierarchical coordination. In particular, Kenis and Schneider describe policy networks described along the following dimensions (Kenis & Schneider, 1991, pp. 41-42):

> *…By actors, their linkages and by its boundary. It includes a relatively stable set of mainly public and private corporate actors. The linkages between the actors serve as communication channels and for the exchange of information, expertise, trust and other policy resources. The boundary of a given policy network is not primarily determined by formal institutions but results from a process of mutual recognition dependent on functional relevance and structural embeddedness*.

In this body of literature, policy networks are political mechanisms that governments use to organise society (König & Bräuninger, 1998; Kenis & Schneider, 1991). In effect, policy networks represent vehicles for mobilising policy resources among a number of interest groups beyond the traditional hierarchical control of the government (Kenis & Schneider, 1991, 41). The main thrust of the governance paradigm argues that policy-making is the direct result of the blurring of boundaries between public and private actors (Kenis & Schneider, 1991). In many respects then, the governance paradigm draws on the 'hollowing out of the state thesis to theorise that the autonomy of the state weakens due to the increasingly blurred distinction between the state and society" (Fawcett & Daugbjerg, 2012, p. 197). The applicability of the governance perspective is limited by the fact that the distribution of power is rarely used in the analysis of policy networks.

Klijn and Skelcher (2008, p. 602) attribute this to the underlying assumption of the governance perspective that "cooperation, mutuality and consensus exist between actors in the policy network". In other words, the governance perspective assumes that policy network are hierarchy free, and that equality and equity exists in policy networks (Klijn & Skelcher, 2008). However, as Chapter 2 indicates, influence in policy is more accommodating to the interests of actors who control critical material and non-material resources. This chapter pays particular attention to the interest intermediation approach which views policy networks as power dependency relations between the government and interest groups (Börzel, 1998). The interest

intermediation paradigm takes as a given that power imbalances and asymmetric relationships exist as structural characteristics of policy networks. In the main, the distribution of power remains a central tenet of the interest intermediation paradigm.

It explores the dominant type of interactions and resource exchanges in policy networks and whether a one or a few dominant actors dominate in the process (Kriesi, Adam & Jochum, 2006). Where power is concentrated in such a manner, Kriesi et al. (2006) argue that the paradigm explores which configuration of actor interests form the core of the network and those that belong to the periphery. Effectively, the conclusions drawn from the interest intermediation paradigm attribute policy outcomes to the interests of those forming the powerful core of the network (Smith, 1990; Rhodes 1997). For Börzel (1998), the theoretical constructs within the interest intermediation school draw on Rhodes (1997) to analyse policy networks as power dependency relationships. In what follows, Section 3.3 of this chapter first examines the American literature before moving on to consider the British literature. It then analyses the key analytical constructs drawn from the British literature, used to analyse the interactions between and within the MEC policy network of stakeholders in the beneficiation policy.

3.3. Policy networks as interest intermediation

Within this body of literature, there are typologies that define policy networks as a meso-level concept, focusing on the power relationships between organisations, and others which employ the term on the micro-level focusing on relationships between individual actors within a network (Atkinson & Coleman, 1992). The American theory discusses policy networks on the micro-level, focusing on personal relationships between key actors. The British theory, on the other hand conceives policy networks as meso-level constructs, analysing relational interactions between institutions (Börzel, 1997; 1998; 2011). Section 3.3.1 and section 3.3.2, respectively, discuss the theoretical findings of the American and British theoretical perspectives on policy networks.

3.3.1. The American theoretical perspectives on policy networks

The American contributions to the debates on policymaking note that policy processes in the United States (US) arises in policy subsystems with various actors actively concerned with policies in domains such as air pollution control and mental health. A notable contribution in that regard was Freeman who defines a subsystem “as the pattern of interactions of participants, or actors involved in making decisions in a special area of public policy with special interest

groups immediately attached" (Freeman, 1965, p. 5). Accordingly, Jordan (1990, 321) adds that policy occurs in informal "whirlpools or centres of activity" in which those with an interest in a topic participate. Furthermore, policy occurs in sub-governments consisting of (Ripley & Franklin 1984 in Jordan, 1990, p. 321):

> *"Clusters of individuals that effectively make the most routine decisions in a given substantive area of policy… A typical sub government is composed of members of the House and/or Senate, members of Congressional staffs, a few bureaucrats and representatives of private groups and organisations interested in the policy area".*

In an extension of this argument, scholars argue that policymaking occurs in policy subsystems commonly referred to as iron triangles which consist of members from the administrative agency, congressional subcommittee and an interest group (Kavanagh, 2006). While this view holds that policy is developed within a tightly knit relationship between the three actors, the iron triangle concept claims that a small set of policy actors dominate the policy domain and that the relationships between these actors are impermeable. Implicit in the conception is the premise that the three actors pursue their private interests at the expense of the general public (Rhodes, 1997). It is noteworthy then to liken the analogy of iron triangles to that of corporatism, as do Jordan and Schubert (1992), in that all three participants have compatible goals and their activities are mutually supportive. Like iron triangles, corporatism envisions a tripartite partnership between a restricted number of privileged actors with the bureaucracy in policy-making (Jordan & Schubert, 1992).

Having said that, Heclo (1978, p. 88) challenges this assumption, arguing that it is "not so much wrong as it is disastrously incomplete". Heclo introduces the concept of issue networks to illustrate that policies emerge from a large number of participants with diverse interests. As opposed to the impermeability of iron triangles, issue networks as Heclo points out includes a wide range of actors, such as legislators, businessmen, lobbyists, academics and journalists. Interaction, in this interpretation fluctuates and relies more on consultation rather than negotiation or bargaining (Heclo, 1978). Sabatier (1988) also argues that the iron triangle notion is restrictive and proposes that a larger number of actors are active in policy processes. For this reason, Howlett and Ramesh (1998) argue that a policy emerges from a broader 'policy subsystem' which includes all actors who play an important role in the policy process. Weible and Sabatier (2005, p. 181) define policy subsystems by:

geographic scope, a substantive issue, and a population of hundreds of active stakeholders from all levels of government, multiple interest groups, the media and research institutions.

Within the policy subsystem literature, the Advocacy Coalition Framework (ACF) proposes that actors group themselves into advocacy coalitions "composed of people from various organisations who share a set of normative and casual beliefs and who often act in concert" (Sabatier, 1988, p. 133). Elsewhere Sabatier (1998, p. 103) defines an advocacy coalition as the set of actors in a policy subsystem from a wide variety of institutions who (a) share policy core beliefs[10] and (b) who coordinate their actions [interests] with the aim of translating those beliefs into public policy. Weible and Sabatier (2005) build on this model to argue that in contentious policy domains, a policy subsystem usually comprises two or more advocacy coalitions "whose composition will remain stable over time because of the pressures for in-group loyalty and out-group distrust" (2005, p. 183). This point is based on a study conducted earlier by Sabatier (1988) who examined policy-making in the air pollution policy sub-system in the U.S.

Sabatier (1988) revealed two distinct advocacy coalitions; 'the Clean Air Coalition' and the 'Economic Feasibility Coalition'. Accordingly, environmental public health groups, labour unions and researchers dominated the 'Clean Air Coalition group. Their belief systems stressed the following (Sabatier, 1988, p. 140):

- The primacy of human health over economic development and efficiency;
- The perception that air pollution was a serious health problem; and
- Deep distrust of the motives of corporate officials.

The competing 'Economic Feasibility Coalition' was dominated by; industrialists and energy companies along with their allies in Congress and a few economists. The belief system of this group stressed (Sabatier, 1988, p. 141):

[10] Belief systems are categorized on a three tiered system at one end is a category of *Deep Core beliefs* which define the ideological orientations and value systems of the actors. At the next level *policy core beliefs* include strategies and policy positions for achieving Deep Core beliefs in the policy area/ subsystem in question. Following this, a set of Secondary Aspects comprising of instrumental decisions and information searches necessary to implement the Policy Core in the specific policy area (Sabatier, 1998, p. 103).

- The need to balance human health against economic development;
- Questioned the seriousness of the health problem; and
- Believed that social welfare generally required deference to market arrangements.

The above study challenges the assumption that actors form coalitions with actors possessing similar interests or organisational affiliations. Rather the ACF framework argues that common belief systems enable network participants to pool resources to strengthen their bargaining position and advance their policy objectives. As such, policy core beliefs are the fundamental 'glue' of coalitions since these structure network interactions (Sabatier, 1998, p. 103). In effect, the ACF framework advocates that advocacy coalitions compete to ensure their own policy objectives are translated into a government policy (Weible & Sabatier, 2005, p. 181). When the coalitions gain sufficient power to 'own some turf' (Thurber, 1996) they wield significant influence to capture the state and advance their own policy objectives at the expense of the weaker and peripheral actors.

Having said that, a key feature of the US political system is its federal structure which renders policy processes far more open to a multitude of actors and interest groups (Marquard, 2006). Policy-making in the US reinforces for Atkinson and Coleman (1992) elements of pluralism in that a multitude of actors participate in the decision-making process. As the theorists observe, the participation of a multitude of actors tends to increase competition between the actors over whose interests translate into a government policy. Atkinson and Coleman further note that due to the competing interests the authority of the state fragments, amounting to a 'disjointed incrementalism' style of policy-making (Atkinson & Coleman, 1992, p. 163).What is more, the iron-triangle and the ACF were developed primarily from the US experience of policymaking and offer little explanatory power for policy network analysis in countries with different governance systems and policy-making institutions (Rhodes, 1997; Sabatier, 1998).

Unlike the United States, the political system in South Africa pre-1994 and post-apartheid dispensations is largely modelled after the Westminster system of the United Kingdom. Drawing on the aforementioned description that the South African economy exists as an appendage of the British economy (O'Meara 1978), the political system of South Africa is also modelled after the British Westminster system. Thus, parliamentary sovereignty, strong cabinet, accountability through elections, majority party rule, the separation of powers and institutionalised opposition political parties characterise the Westminster governance system

(Rhodes, 1997). Another feature of the US policy-making is its association with pluralism which entails fragmentation and a diversity of interest groups. In contrast the UK represents corporatist realities since access to policy networks is limited and in most cases labour, business and the state participate in policy processes (Casey, 1998, p. 16).

Similarly, economic policy-making in contemporary South Africa is often tight-knit, depending on the issues involved, politicisation of the issue and good standing between alliance members ANC, Cosatu and the South African Communist Party (SACP). That is not to ignore the American contributions to policy network analysis in general. Apart from its analysis of coalitions, it addresses the extent to which policy core beliefs unify interest groups into strategic partnerships that vie to influence and control critical resources (Weible & Sabatier, 2005). Notwithstanding, the US literature emphasises micro-level relations, failing to explicitly explain how the relationships between these actors impact on the distribution of resources and power in policy networks. Based on the research objectives of the current thesis, the British literature addresses this gap by analysing the meso-level of policy networks. The next section discusses the British literature and illustrates key points that will be used in analysing the MEC in South Africa, the focus of this thesis.

3.3.2. The British theoretical perspectives on policy networks

The emergent scholarship within the British literature is largely attributed to the seminal study of Heclo and Wildavsky who analyse decision-making within the British Treasury. They illustrate that policy is made within a community where (Heclo & Wildavsky , 1974, p. xv):

> *Community refers to personal relationships between major political and administrative actors, often in conflict, often in agreement, but always in touch and operating within a shared framework. Community is the cohesive and orienting bond underlying any particular issue*

Rhodes elaborates on this model by distinguishing between five types of networks that differ according to interests represented, membership, vertical and horizontal interdependence and the distribution of resources (Rhodes, 1997). He finds that the policy community is a network that is relatively closed, with restricted membership and vertical interdependence. Following Heclo (1978), Rhodes (1997) details that issue networks have a large number of participants and interaction amongst participants is based on consultation rather than negotiation or

bargaining[11]. Similarly, Smith (1993, 62) juxtaposes the term 'policy community' against 'issue networks' as a description of loose relationships characterised by a large number of participants and low barriers to entry. Bevir and Richards (2009, p. 4) associate issue networks with unstable policy outcomes fluctuating interaction along with the absence of consensus on policy objectives.

Within policy communities in contrast, policy-making is far more centralised among limited participants (Kavanagh, 2006). Also, policy communities are characterised by consensus on policy principles, suggesting for Bressers, O'Toole and Richardson (2002) that policy communities exhibit less conflict among participant stakeholders. Arguably, this is because policy communities tend to produce stable policy outcomes as members internalise norms and values of the network (Jordan & Schubert, 1992; Daugbjerg, 1998). This degree of institutionalisation differentiates issue networks and policy communities, as Jordan and Schubert (1992) propose. Policy communities in this framework represent institutions that shape attitudes, behaviour and structure the opportunities for actors (Jordan & Schubert, 1992). For Van Waarden (1990), the *type* of actors involved in policy communities shed light on the needs and interests of actors engaged in the policy process. Likewise, Rhodes argues that "policy communities are either dominated by government interests or economic interests or they serve the interests of all members of the community provided they develop common interests" (Rhodes, 1997, p. 39).

The literature surveyed in chapter two of the thesis illustrated that the key interests of the MEC as a system of accumulation lay in resource extraction. Initially the MEC arose to preserve the economic interests of the English capital in the mineral, energy and financial sectors of the South African economy. Over time, the MEC evolved to incorporate both Afrikaner and African stakeholders in the process of mineral policy development and implementation. Following Van Waarden (1990), Rhodes (1997) and the surveyed literature, one can associate the MEC as a policy community characterised by common policy interests in the mineral sector of the South African economy.

[11] The other three types of networks are said to differ according to the dominant interests (Rhodes, 1997, p. 39). As the name implies professionalised networks are characterised by the prominence of professionals who express the interests of a particular profession. Intergovernmental networks represent organisations from local governments and exclude public sector unions. Producer networks on the other hand are distinguished by the dominate role of economic interests.

While the type of actors sheds light on the policy community, structure is another important variable for Van Waarden (1990), as it indicates the size of the network, its boundaries, and the linkages between the members. Taking this into account, Sandstrom and Carlsson (2008, p. 499) add that the structure reflects stakeholder embeddedness within network connections as well as the relational linkages amongst participant stakeholders. In this perspective, the structure of a network is an important determinant in the distribution of resources and power in policy networks (Van Waarden, 1990; Sandstrom & Carlsson 2008). In an attempt to describe the distribution of power in policy communities, Rhodes (1997, p. 37) argues that the actors in policy networks employ strategies within known rules of the game, and engage in exchange relations with each other. Since neither possesses all resources needed to achieve their goals, a network of mutually dependent actors emerges in the process (Rhodes, 1997).

Drawing on prisoners' dilemma, Rhodes (1997) adds that relations in policy networks are 'game-like' because actors aim to control key resources in order to maximize influence over policy outcomes. Furthermore, Rhodes (1997, p. 37) postulates that the ability to influence the decision-making process is largely the result of the resources of such actors. Highly valued resources, be they financial, information, labour power, facilities or legislative authority provide the resourceful actors with power to "coordinate collective actions toward the achievement of their preferred policy objectives" (Knoke, Pappi, Broadbent & Tsuinaka, 1996, p. 18). The greater the resources, the more indispensable the actor is to the policy network games and by implication the actors acquire an influential position in the network (Klijn & Koppenjan, 2000, p. 141). At the heart of the British scholarship is the notion that the structure of the policy network reflects the differing capacities of actors to gain access to resources needed for participating in and influencing policy decisions (Knoke et al., 1996).

According to Knoke et al. (1996, p. 18) "access to resources and their exchange confers unequal positional advantages, which can be represented as the actor locations either near the centres or on the peripheries of the network". Under this framework, there is a clear distinction between the core of the network and peripheral actors. In other words, peripheral actors represent structurally marginal actors who are less connected to resources, less influential, and more isolated than central actors in policy networks (McDaniel & Miskel, 2002). To quote Rhodes and Marsh, asymmetrical power relationships and actor positions "foster competition and conflict among the participants to increase their access to network power and influence over policy outcomes" (Rhodes & Marsh, 1992, p. 186). Well-connected actors gain important

advantages through their access to flows of resources, while peripheral actors cannot tap sufficient quantities of quality resources to participate effectively to collective actions. Thus policy actors who control scarce resources which are unavailable form alternative sources have the ability to influence policy outcomes and policy processes (Knoke et al., 1996; McDaniel & Miskel, 2002).

Despite its theoretical observations underpinning the interest intermediation school, it is the subject of major criticisms. In an extensive critique, Dowding (1995) argues that the concepts provide explanations on the properties of policy networks but fail to produce fundamental theories of the policy process. He demonstrates that due to their inability to distinguish between independent and dependent variables, the typologies of the interest intermediation school lack clear conceptualisation of the causal and relational variables. In his words, the driving force of explanation, the independent variables, are not networking characteristics per se but rather the characteristics of the components within the networks. In general he advocates that network analysts concentrate on network characteristics rather than focussing on actor attributes (Dowding, 1995, p. 137). Extending the analogy on the metaphorical use of policy networks, Thatcher (1998) claims the explanatory claims are too vague and poorly-defined.

Thatcher (1998) claims there has been terminological disagreement within the interest intermediation school; some authors have used the same terms to describe different phenomena or different terms to describe the same phenomenon. As a result, this has created definitional complexity. Another criticism the author levels against the interest intermediation school alleges that many of the factors cited to explain why policy networks arise – such as the fragmentation of government and the interdependence of government and interest groups and increased specialisations in policy-making – are very general. Finally, the genesis of policy in terms of ideas and agendas is not analysed. It is also unclear whether policy network typologies seek to explain both policy processes and outcome or merely processes (Thatcher, 1998). Notwithstanding the above reservations, the perspective adopted in this thesis finds the typologies within the interest intermediation school as the most suitable analytical framework in its analysis of the MEC as a policy network of participant stakeholders in the beneficiation policy.

Framed in this manner, the MEC can be analysed using policy network theory based on the following observations; firstly theorists assert that policy networks are “in large part the sum of past policy decisions and the outcomes are likely to privilege certain policy options” (Marsh

& Smith, 2000, p. 6). As scholars cited in the literature survey, Fine and Rustomjee (1996) argued that the historical process through which the MEC evolved over time, involves an intimate relationship between the state and domestic corporate capital. Both stakeholders interact through various linkage effects to support the interests centred on mineral resource extraction and exportation. Taking account of the linkages and the interactions between the MEC stakeholders, Ashman et al. (2012) conclude that the MEC led to policies that prohibited the adoption of policies targeting diversification of the economy beyond mineral resource extraction.

Secondly, the interest intermediation perspective of the policy network theory argues that in contentious policy domains a limited number of groups enjoy privileged access to policy-making (Rhodes & Marsh, 1992; Marsh & Smith, 2000; Daugbjerg, 1998). Like the United Kingdom consultation in 'high politics' domains is limited in South Africa. In these cases, the policy-making process is closed, with only a small group of influential people consulted (Rhodes, 2006). In the literature review Lewis et al. (2004) alluded that stakeholders from business organisations, organised labour and government departments in the Employment cluster participate in various economic policy-making forums such as NEDLAC and MIGDETT. These stakeholders engage in the policy-making process due to their sectoral expertise, resources and knowledge within the economy and the mineral sector. In addition, these stakeholders participate in policy networks to influence the outcome of the policy and protect their interests in the process (Lewis et al., 2004).

Within the interest intermediation perspective it is generally acknowledged that the stakeholders whose interests shape the outcome of the policy process are usually in a position of influence in the policy network. Furthermore, these theorists assert that the ability to influence the policy process depends on the resources of the actors (Rhodes, 1997; McDaniel & Miskel, 2002; Klijn & Koppenjan, 2000). The literature survey showed that business interests continue to influence ANC economic policy (Roberts & Rustomjee, 2009, Ashman et al., 2012). Considering MEC interests own 80 per cent of JSE capitalisation, their share of the economy is a resource that gives them influence on policies that affect their economic interests, as Agupusi (2011) observes. Based on this, one can apply the policy network theory to argue that the MEC has veto power due to the resources at its disposal, which in turn reinforces the

analogy that such actors are indispensable in policy networks (Klijn & Koppenjan, 2000, p. 141).

The exchange of resources is an important theoretical construct in the interest intermediation perspective as theorists reason that stakeholders depend on the resources of others to achieve policy goals (Rhodes, 1997). In the South African context, the government depends on business tax to support its expenditure and public finance, while the corporate sector depends on the government to provide a stable policy environment for capital accumulation (Seekings & Nattrass, 2011, p. 340). Additionally, the ANC government depends on organised labour movements such as Cosatu based on their ability to mobilise for political and socio-economic goals (Khunoa, 2013, p. 176) and in turn Cosatu depends on its alliance with the ANC to influence the policy direction in the economy (Buhlungu & Tshoaedi, 2013, p. 16). While scholars such as Calland (2006) as well as Buhlungu and Tshoaedi (2013) regard Cosatu as an important and influential actor in the broader socio-economic and political landscape, Habib and Taylor (2013) attest to the waning influence of the federation over government policy.

Evidence in support of this proposition is provided by the fact that the GEAR policy was adopted without any consultation with Cosatu (Habib & Taylor, 2013). As a result, the adoption of GEAR provoked discontent within the alliance as Cosatu expressed hostility towards GEAR through a serious of wildcat strikes and public criticism against the ANC (Seekings & Nattrass, 2011; Habib & Taylor, 2013). This raises a number of questions: is organised labour part of the MEC policy community; if so what explains their radical perceptions and differences? After all the literature maintains that members within policy communities have consensus with the ideology and that within policy communities there is a shared world view, a common culture (Marsh & Smith, 2000). Rhodes (2006, p. 427) adds that within a policy community:

> *Over the years, such interests become institutionalised. They are consulted before documents are sent out for consultation. They don't lobby. They have lunch. These routine, standardised, patterns of interaction between government and insider interests become policy networks*

Does this imply that business organisations are closer to the core of the policy network than organised labour movements? More questions are raised again, who then are the influential and resource dependent actors within the MEC network? To answer these questions and unpack the how policy network concerning the beneficiation policy is constituted, this thesis employs

network analytic techniques to unpack and detail the relationships of the MEC as a policy network of stakeholders in the beneficiation policy.

3.4. Conclusion

This chapter detailed the theoretical framework guiding the analysis of the MEC as a policy network of participant stakeholders in the beneficiation policy. The chapter detailed the key constructs of the policy network theory, differentiating between policy networks as new governance and policy networks as interest intermediation. In particular, the thesis adopted the interest intermediation perspective and within that the key perspective derived from the British scholarship theorising on policy-making process and the distribution of power. Given, the literature survey suggested that the MEC has evolved over time based on the political and economic forces at play (Fine & Rustomjee, 1996); this thesis seeks to use the policy network approach to argue that the MEC as it exists in democratic South Africa has evolved into a policy network of participant stakeholders in the beneficiation policy. In particular, the thesis draws on the theory to unpack and detail networking amongst the participant stakeholders with a view to learn how the network concerning the beneficiation policy is structured and operates in terms of the resource exchanges concerning the beneficiation policy. In order to achieve these objectives, this thesis employs Social Network Analysis as a methodology.

Chapter

4

Research Methodology

4.1. Introduction

The following chapter details the research methodology used to explore the research questions posed in Section 1.5 of the thesis. The methodology used to carry out this thesis is generated from Social Network Analysis (SNA), a research methodology used for analysing the interactions and relationships between actors in a given network (Wasserman & Fraust, 1994). Section 4.2 outlines the research objectives with specific reference to the purpose statement in section 1.4 of the thesis and the rationale of conducting the research as outlined in Section 1.4.1. Section 4.3 sets out to justify the rationale of employing SNA to achieve the research objectives. In Section 4.4 the research design is discussed, detailing the sampling frame and target population of the study. Since the research was conducted in two sequential phases, Section 4.5 details the implementation of the research design in two separate sub-sections. Following this, validity and ethical considerations are discussed prior to the conclusion of this chapter.

4.2. Research objectives

As Section 1.4 outlined, the purpose of this exploratory sequential thesis is to analyse the MEC as a *network of policy stakeholders* in the beneficiation policy. Through network analytic techniques, this question seeks to explore the powerful and influential actors in the policy network and how these actors relate to the interrelations and resource exchanges in the network. Furthermore, the rationale is to probe actors' interests and positions regarding the beneficiation policy. Against this background, the research objectives of the thesis are to analyse:

- the structure of the MEC policy network and the locations of the stakeholders;
- the roles actors facilitate in resource exchanges as a result of organisational affiliations;
- identify the policy perceptions of the central stakeholders; and
- uncover their level of interest and influence of the central stakeholders in the implementation of the beneficiation policy.

4.3. Justification of the research methodology

To answer the research questions posed in Section 1.4 and achieve the stated research objectives, this thesis employs network analytic techniques. The thesis combines qualitative and quantitative research methodologies to investigate the structure of the MEC as a policy network of stakeholders as well as the central stakeholder perceptions on the beneficiation policy. In line with the theoretical arguments posed in chapter three, network analysis offers a specific methodology for investigating networks dynamics (see Section 3.2). In particular, the methodological concepts and principles derived from SNA inform the analysis of networks, the actors, and the resource exchanges between the actors. Actors in SNA are classified as nodes or vertex, while the relationships between them are classified as ties, linkages, or edges. Secondly, the linkages between actors are the main unit of analysis (Wasserman & Fraust, 1994). Additionally, the linkages (relational ties) between actors are channels for transfer or resource flows.

Researchers employ quantitatively driven methods to measure the presence or absence of ties. Network analysts use these ties to analyse actor positions and power within the network in order to determine the actors that control key resources in the network (Brandes, Kenis & Wagner, 1999). Data is collected using quantitative methods, which enable researchers to measure structural network properties of nodes within the network (Edwards, 2010). Furthermore, the structural measures provide indications on resources flow through networks and also aid in examining the roles actors play as a result of their location in a network (Wasserman & Fraust, 1994). On the other hand, Scott (1991) maintains that SNA consists of a body of qualitative methods that generates data on the interactional processes, actor perceptions on relationships and network dynamics. In other words, the qualitative aspect of network analysis is appropriate in addressing the process, content and dynamics of networks, through analysing the perceptions of network participants (Jack, 2005).

Since qualitative research involves a "*methodically controlled understanding of meaning* actors attach to their reality" (Hollstein, 2011, p. 405), then qualitative network analysis develops more representative data from the "bundles of relations" that connect individuals to others (Schepis, 2011). According to Edwards (2010), qualitative network researchers have employed a number of strategies in an attempt to generate and analyse network relational data. The methods highlighted by Edwards (2010) include in-depth interviews, name generator tools, observation techniques, archival data, and ethnography. While quantitative and qualitative

methods have dominated network analysis, a number of researchers have combined both research methods in the analysis of networks. For these researchers, SNA presents a specific opportunity to combine quantitative and qualitative methods in order to map and measure network properties, explore issues relating to the dynamics of network ties as well as exploring the meaning the ties have for network participants (Edwards, 2010, p. 5).

For example, Prell, Hubacek and Reed (2009) conducted interviews with respondents to gather data indicating the relational ties amongst stakeholders involved in natural resource management. In the second phase, Prell et al. (2009) transformed the resulting data into numerical data through UCINET, a computer programme for network analysis (Borgatti, Everett & Freeman, 2002). The software aids in the statistical analysis of exploring structural measures of the network. Coviello (2005) conducted a study on the structural charactersitics of the personal network of FLUX Glassworks International. The data collection involved the use of inductive in-depth interviews, asking respondents a set of open-ended questions to describe relational ties between the actors as well as the period in which each tie was formed (Coviello, 2005). Following the interviews, Coviello (2005) transformed the qualitative data into quantitative measures also using UCINET, simultaneously generating strucutural measures that analyse centrality (Coviello, 2005).

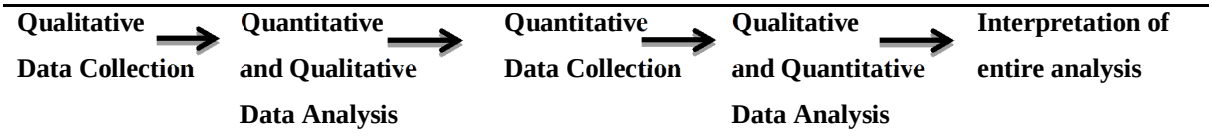
The methodology employed by Prell et al. (2009) and Coviello (2005) is known as a sequential mixed design. Onwuegbuzie and Johnson (2006, p. 53) describe a sequential mixed design as "the data collected and analysed from one phase of the research informs the other phases of the research". Furthermore, the research methodology employed by the scholars follow the convention of a bifocal approach where mixing methods occurs at the time of data analysis (Coviello, 2005). Within this context, Coviello (2005) recommends collecting qualitative data in the first phase of the research project as this enalbes the researcher to transform the responses into numberical data using UCINET, during stage two. In pursuit of the research obejctives, the bifocal approach to network analysis remains the most appropriate methodology for the analysis of the MEC as a policy network. The methodology embraces the use of both qualitative and quantitative means to investigating the structure of the network, the roles the actors facilitate, the perceptions, levels of influence and interest in the implmentation of the beneficiation policy. Section 4.4 details the research design and draws on the citied authors in its rationale of employing SNA as a method in analysing the power and influence of stakeholders in the *beneficiation policy.*

4.4. Research design

Creswell (2003, p. 215) defines a sequential exploratory research design as "the collection and analysis of qualitative data followed by the collection and analysis of quantitative data." The research design of a sequential exploratory thesis involves a series of decisions concerning data collection and analysis of the data. Creswell (2003) presents these decision-making variables as "priority, implementation and integration." In a mixed methodology study, implementation of the research design occurs in sequential or concurrent phases when data is collected (Creswell, 2003, p. 211). Thus, qualitative data was collected prior to quantitative data for this cross-sectional thesis. Priority indicates the importance of the quantitative or the qualitative approach in a single study. The priority might be equal, or either qualitative or quantitative data dominate a research methodology. Similarly, "priority indicates whether quantitative or qualitative information is emphasized first in the study as well as the extent of treatment of one type of data or the other" (Creswell, 2003, p. 212).

Priority in this study is given to the qualitative data, while quantitative results assist in measuring and interpreting the findings of the study. According to Creswell (2003, p. 212), data integration involves combining both qualitative and quantitative methodologies at the data collection or data analysis stage in the research design. Since the 'bifocal' approach to network analysis involves mixing methods in network research at the level of data analysis (Edwards, 2010), the thesis integrated quantitative and qualitative methods during the analysis stages. In particular, qualitative data was converted into quantitative data and subsequently analysed. For Edwards (2010), qualitative data provides contextual details that aid in the interpretation of the configuration of the network. Figure 5 presents a graphic illustration of the sequential exploratory design

Figure 5: The stages of the sequential exploratory research design



Source: Adapted from Tashakkori and Teddlie (2003).

4.4.1. Sampling frame and target population

In instances when network boundaries are unclear and policy network actors unknown, researchers employ snowball sampling strategies to gather network data (Lahat, 2011). Snowball sampling is a strategy of identifying actors through the subjective recommendations made by research participants of other people who belong to the group under study (Lahat, 2011). In network analysis, 'snowball sampling' occurs through two types of questions: name generators and name interpreter items. Name generators identify other actors in order to delineate network boundaries whereas name interpreters obtain information on the relationships amongst network participants (Marsden, 2005, pp. 11-17).

4.5. Research implementation and generation of data

Within SNA, researchers either study ego-networks or complete networks. Ego network analysis focusses on an individual actor named the 'ego' and the relationship the ego maintains with other the alters (actors who have ties with the ego (Wasserman & Fraust, 1994). The analysis of complete networks collects relational data on the whole network that includes participant stakeholders and ties between actors (Everton, 2012, p. 398). Therefore, the thesis collected data on the complete network. The questionnaires used in both phases one and two of the data collection were designed and constructed after analysing the works of scholars such as Prell et al. (2009), Wasserman and Fraust (1994) and Schmeer (1999). In line with the research objectives outlined in section 4.2, data collection occurred in two distinct phases, discussed in Sections 4.5.1 and 4.5.2.

4.5.1. Phase one – qualitative data collection

In this phase of the data collection, the researcher administered a telephonic questionnaire (Appendix B) constructed to answer the research objectives in section 4.2. Phase one data collection sought to explore the roles actors facilitate in resource exchanges as a result of their structural location in the MEC policy network. The objective was to identify the stakeholders with high levels of influence in the resource exchanges of the MEC policy network. The interviews in this phase of the implementation of the research design began on 26 April 2013, ending 19 June 2013. Interviews ranged between 10 minutes to 30 minutes (see Appendix C for the list of dates of the interviews). The snowball method of sampling in this thesis began with the focal actor, the Department of Mineral Resources (DMR), since the ministry is the custodian of the beneficiation policy. On April 26, 2013, the researcher contacted the DMR telephonically and administered the name generator questionnaire, asking the DMR to name

all local and international actors, groups, and organisations who participated in the development of the beneficiation policy.

While it is recognised that policy processes are complex and messy activities (Pasteur, 2001), this thesis draws on Dunn (1994, p. 15) in analysing policy processes as a series of interdependent and sequential phases, which represent on-going, related and linked activities that occur through time. Furthermore, the theoretical framework of the thesis, discussed in Chapter 3, established that policy processes and policy outcomes are the result of networks of policy stakeholders wound in complex resource exchanges in public policy (Mintrom & Vergari, 1998; Skogstad, 2005). Adopting the policy network theory as an analytical framework that captures the processes of policy-making between actors, the name generator sought to establish which stakeholders participated in the following phases of the policy process:

- Agenda setting

Before a policy is developed, a problem or an issue must exist to facilitate necessary government intervention. Thus agenda setting involves "problem structuring" (Dunn, 1994, p. 17).

- Policy formulation

Policy formulation often includes forecasting and the examination of various policy scenarios as well as the consequences of the existing and proposed polices (Dunn, 1994, p. 18).

- Policy adoption

Legislative authorities pass legislation that adopts the policy as an official government policy and an administrative authority is assigned responsibility for implementation (Dunn, 1994, p. 18).

- Policy implementation

Once the policy decision has been adopted, the policy carried out by institutions which mobilise financial and human resources to implement the policy (Dunn, 1994, p. 19).

Rather than presenting the DMR with a list of names, the name generator enabled the DMR to recall the first names that came to mind. The 'free recall' approach encourages respondents to generate a list of actors as they recall or come to mind, adopting the 'free choice approach' (Prell, 2012; Wasserman & Fraust, 1994). After listing the alters, the name interpreter sought to ascertain information on the resource exchanges amongst the policy network stakeholders.

The questionnaire asked participants to indicate the relational ties and exchanges of information and material resources between their organisations. Information included meeting dates, invitations to seminars and workshops, networking events and documentation on the policy. In terms of material resources, respondents were asked to indicate the exchanges of material resources such as sponsorship, financial assistance, budgetary allowance, grants and aid.

The name interpreter recorded this information on the presence or absence of ties as well as the flow of information and financial resources. The researcher then approached the 'new' members and administered the telephonic questionnaire until no new stakeholders were enumerated. The data from the telephonic responses generated a list of 19 stakeholders in the beneficiation policy listed below:

Government departments and related institutions

- Department of Mineral Resources (DMR)
- Department of Trade and Industry (DTI)
- Department of Science and Technology (DST)
- Economic Development Department (EDD)
- Department of Higher Education and Training (DHET)
- Department of Public Enterprises (DPE)
- National Planning Commission (NPC)
- Department of the National Treasury (DNT)

Public institutions

- Mining Technology (MINTEK)
- Council for Scientific and Industrial Research (CSIR)
- The Industrial Development Corporation (IDC)

Governing Party

- African National Congress (ANC)

Organised business associations

- Chamber of Mines (COM)
- South African Mining Development Association (SAMDA)
- Manufacturing Circle (MANU-CIRCLE)

Organised labour associations

- National Union of Metalworkers of South Africa (NUMSA)
- National Union of Mineworkers (NUM)
- Solidarity
- United Association of South Africa (UASA)

Once the participant stakeholders were identified and the relational ties between them disclosed, the next step in phase one, discussed in section 4.5.1.1 required the data to be prepared for subsequent analysis

4.5.1.1. Phase one – data preparation

The data gathered during phase one was prepared in a Microsoft Excel spread sheet by constructing a matrix representing the data. In network analysis, researchers often utilise the adjacency matrix to represent the presence or absence of ties (Wasserman & Fraust, 1994). Each entry in a matrix is called a cell. The number of rows and columns indicates the number of actors and the elements represent the ties between them. The sender of the directed tie is the row and the receiver is the column (Hanneman & Riddle, 2005). To illustrate data preparation in network analysis, the example presented has been extracted from Hanneman and Riddle (2005) in their tutorial on SNA. The two researchers (Hanneman and Riddle, 2005) are interested in analysing the relationship between four actors A, B, C, and D of a network. Each member is asked whom they regard as a close ally within the network. Data collected from the responses reveals the following;

- A chose B and C, but not D;
- B chose only C;
- C chose A and B and D; and
- D chose only C.

The collated data is then entered into Microsoft Excel to represent the presence of a relationship from sender to receiver. Since actor A is the sender of a tie to actor B and C a '1' is entered in the cell; if a tie is absent – as in B does not choose A – '0' is entered to indicate the nature of the relationship (Hanneman & Riddle, 2005). Relationships between the four hypothetical actors can be represented in the following Excel matrix:

Table 2: A methodological presentation of an adjacency matrix in Microsoft Excel

	A	B	C	D
A	-	1	1	0
B	0	-	1	0
C	1	1	-	1
D	0	0	1	-

Source: Hanneman and Riddle (2005).

The patterns of relationships in Table 2 are binary graphs that indicate the absence or presence of a tie. Furthermore, the ties between A and B are an *asymmetric relationship* since element *AB* does not necessarily equal element *BA*. However, the ties between A and C are bonded ties representing a symmetric relation, since the element *AC* equals element *CA* (Hanneman & Riddle, 2005). Following the guidelines of Hanneman and Riddle (2005), the relational data on the MEC prepared in Microsoft Excel was exported to UCINET (Borgatti, Everett & Freeman, 2002) and subsequently analysed to map actor positions and measure structural dynamics of the MEC as a policy network of stakeholders in the beneficiation policy. Section 4.5.2 details the SNA concepts used to analyse the MEC as a policy network of participant stakeholders in the beneficiation policy.

4.5.2. Phase one – data analysis

The analysis of the data on the MEC as a policy network of stakeholders follows two approaches: centrality measures and sub-structure analysis. Centrality is used in the analysis to evaluate the distribution of power in the network whereas substructure analysis describes actor embeddedness within the network (Chan & Liebowitz, 2006). Section 4.5.2.1 outlines centrality concepts that inform the analysis of the data, followed by section 4.5.2.2, which is a discussion on the techniques used for substructure analysis.

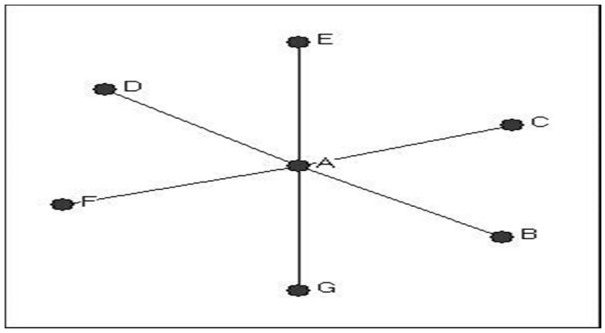
4.5.2.1. Centrality measures in network analysis

Within network analysis there are three measures that quantify the most important actors in a network. These measures of centrality are commonly cited as degree centrality, betweenness centrality and closeness centrality. While the three types differ in how they define centrality, they systematically provide measures of how power is distributed in a network.

4.5.2.1.1. Degree centrality

This approach refers to well-connected actors that are highly visible and recognized by the other network participants (Brandes, Kenis, & Wagner, 1999). These actors are then regarded as major channels of information and "crucial cogs" in the network since they maintain direct contacts to other actors in the network (Wasserman & Fraust, 1994). In essence, degree centrality holds the premise that the more ties actors maintain, the more power and influence it gains. Consider the example in Figure 6.

Figure 6: An illustration of a star in a network



Source: Hanneman and Riddle (2005)

Figure 6 indicates that actor A is well connected since it possesses more relational ties than the other actors. Therefore actor A is "well connected and has access to many alternative sources of information, material and ideational resources" (Rowley, 1997, p. 899). Based on the relational ties actor A has, it is said to have relative autonomy as it is less dependent on others for resources (Hafner-Burton & Montgomery, 2010). If actor B fails to provide resources to actor A, actor C or D represent alternative sources for resource exchange. The degree centrality of a node as computed by Wasserman and Fraust (1994, p. 179) is symbolised as d(ni), where d symbolises degree and n the number of nodes in a given network. The actor-level degree centrality index is defined as $C_d(n_i)$ where C_d represents centrality degree. Furthermore, degree centrality depends on group size symbolised as g – 1. Based on the above degree centrality can be symbolised (Wasserman & Fraust, 1994, p. 179) as:

$$C_d(n_i) = \frac{d(ni)}{g-1}$$

What is more, degree centrality of a node differs when the ties in network are directed or the ties are undirected. In an undirected network, the element *AB* equals *BA*. Simply put, if A is

connected B, it is taken as a given that B is connected to A (Hanneman & Riddle, 2005). However, if the network is directed, that is if the ties in the network have direction (Wang & Li, 2009, p. 2289) degree centrality is distinguished as either in-degree or out-degree. If an actor receives many ties, this actor is said to be *prominent*, or to have high *prestige*. That is, many other actors seek to direct ties to the actor. Thus in-degree measures indicate the importance or centrality of the nodes. Actors who display high out-degree centrality are often said to be *influential* actors since these actors can influence the attitudes of members and exchanges between them (Hanneman & Riddle, 2005).

The out-degree centrality of a node as computed by Wang and Li (2009, p. 2289):

$$C_{do}(n_i) \sum_{g-1}^{n} X_{ij}$$

The in-degree centrality of a node is calculated as (Wang & Li, 2009, p. 2289):

$$C_{di}(n_i) \sum_{g-1}^{n} X_{ij}$$

Where C_{do} refers to out-degree while C_{di} is in-degree, n = the number of nodes in the network and X_{ij} refers to the sum of all ties from actor i to actor j (Wang & Li, 2009, p. 2289). The UCINET routine calculates degree centrality based on these measures and produces a table which contains a list of degree centrality in descending order.

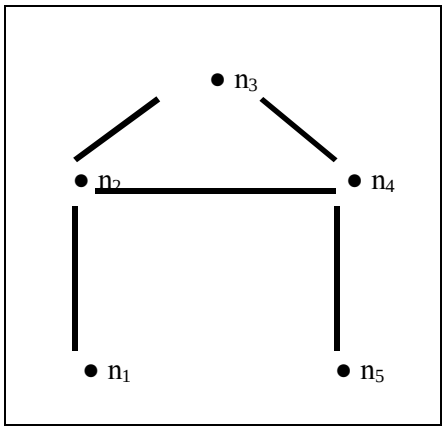
4.5.2.1.2. Betweenness centrality

Betweenness centrality indicates which actor is an intermediary *between* other actors. In policy networks these actors are considered important because they control the interaction between other actors who must go through it to communicate and exchange resources with each other. Figure 6 illustrates that actor A is the only one with a direct link to actor B. In order for actor C to exchange resources with actor B, it can do so only through actor A. If actor C is connected to actor B only through actor A, then actor A controls all resource flows between them. Thus resource exchange between B and C is completely at the "whim" of A; "who can distort or falsify any exchange passing through the actor" (White & Borgatti, 1994, p. 336). The betweenness centrality algorithm as computed by Everton (2012, p. 223):

$$C_B = \sum i \sum j \frac{g_{ikj}}{g_{ij}} / [\frac{(g-1)(g-2)}{2}]$$

Where g_{ij} indicates the number of geodesics from actor i to actor j and g_{ikj} refers to the number of geodesic paths from actor i to actor j that pass through actor k, in this instance betweenness measures actor$k$ (Everton, 2012, p. 223). The UCINET routine calculates betweenness centrality based on this measure and produces a table which contains a list of betweenness centrality in descending order. Associated with betweenness centrality is the concept of a *local bridge* as developed by Granovetter (1973). A local bridge is an attribute of an actor who is a bridge between two or more actors (Granovetter, 1973). In Figure 7, n_2 and n_4 represent the local bridges between n_1 and n_5.

Figure 7: An illustration of the local bridge in network analysis



Source: Freeman (1978)

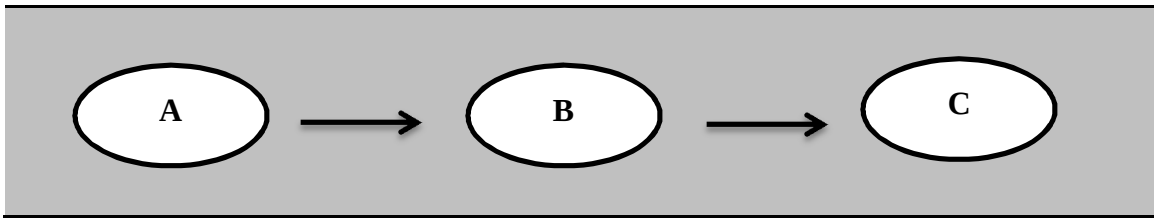
As Freeman (1978) identifies, there exists two paths from n_1 to n_5;

- One through n_2, n_3 and n_4; and
- Another through n_2 and n_4.

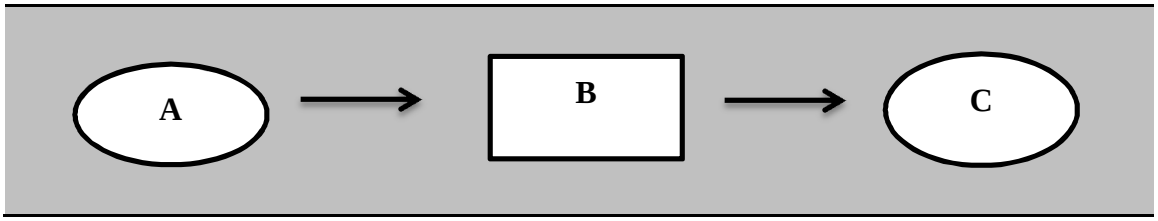
Effectively, n_2, n_3 and n_4 represent gatekeepers since these actors facilitate the process of resource exchange between n_1 and n_5. The gatekeepers "allow, withhold, or distort incoming and outgoing resources" (Hafner-Burton, & Montgomery, 2010, p. 4). Actors that enable the flow of resources between actors who need to exchange resources facilitate brokerage positions in networks. Brokerage is defined as a relation "where one actor mediates the flow of resources between two other actors who are not directly linked" (Fernandez & Gould, 1994, p. 1458). Fernandez and Gould identify five different brokerage roles in policy networks as coordinator, itinerant broker or consultant, representative, gatekeeper, and liaison. These five different roles

indicate that brokers facilitate different roles depending on the group to which they belong (Fernandez & Gould, 1994):

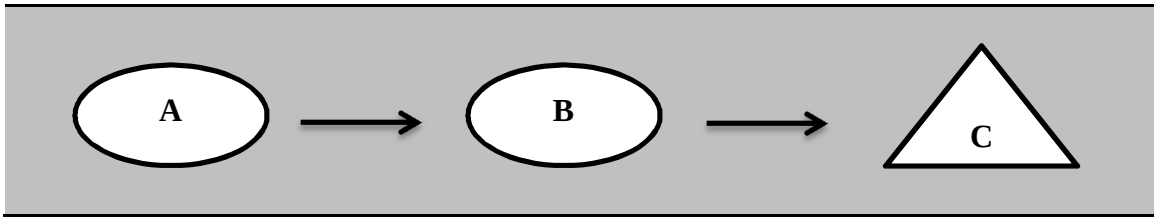
- The Coordinator mediates resource flows between members of one group. In the illustration below, the shapes are used to illustrate that all three actors belong in the same group. Thus, actor B coordinates information amongst all group members (Fernandez & Gould, 1994, p. 1459).



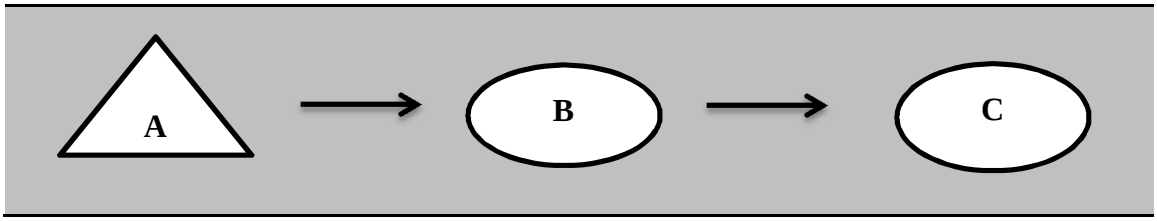
- The itinerant broker or consultant mediates between members of one group. Here, the itinerant broker is not a member of the group, hence the different shape. While the circle illustrates that actors A and C are members of the same group, the rectangle indicates an actor B mediates the flow of resources within members of another group (Fernandez & Gould, 1994, p. 1458).



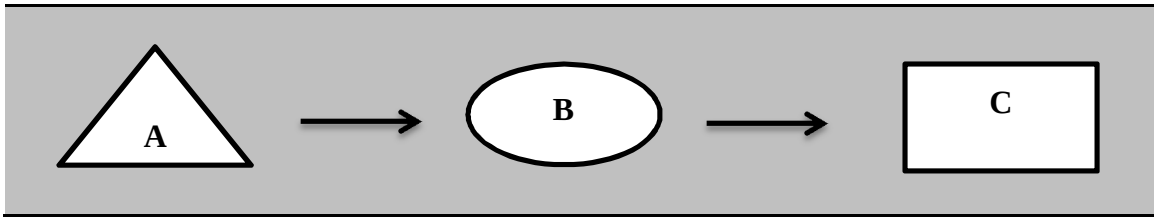
- The Representative, according to Fernandez and Gould (1994, p. 1458), facilitates the flow of resources from its respective group to members of another group. Thus the circle shows that actor A and B are members of the same group and actor B facilitates resource flows to actor C, a member of a different group, represented by the triangle.



- Gatekeeper regulates the flow of resources to its respective groups. Thus, actor B and C are members of the same group and actor B facilitates resource flows from actor A (Fernandez & Gould, 1994, p. 1458).



- The various shapes used in this illustration show that all three actors have different organisational affiliations. Thus, the Liaison broker mediates resource exchanges between two different groups; however it is not a member of either group. Thus, actor B mediates between actors A and C (Fernandez & Gould, 1994, p. 1458).



The analysis of brokerage positions are implemented in UCINET to calculate the raw number of times that each stakeholder plays one of these five brokerage roles (Hanneman & Riddle, 2005). Analysing brokerage positions describes the types of brokerage roles dominant in networks, while shedding insight on the specific roles the actors have assumed within the network structure (Fernandez & Gould, 1994; Borrás, 2007). The analysis of brokerage is limited to the roles of coordinator, gatekeeper and representative since these roles yield significant political power in policy networks. As Fernandez and Gould (1994) discuss, such brokers control the flow of information and determine who receives the information, when and how others receive information. Drawing on the framework developed by Fernandez and Gould (1994), the researcher grouped the MEC stakeholders according to their respective institutional and organisation types:

- Group one: Government departments
- Group two: Organised labour
- Group three: Governing party
- Group four: Public institutions
- Group five: Organised business associations

The output generated to analyse brokerage roles is presented in a table illustrating the raw number of times a nodes plays a brokerage role (Hanneman &Riddle). After analysing brokerage positions, the researcher sought to explore the sub-structure of the MEC as a policy network of stakeholders in the beneficiation policy. Section 4.5.2.2 outlines the concepts informing the analysis of sub-structures in network analysis.

4.5.2.2. Sub-structure measures in network analysis

The analysis of substructures evaluates network embeddedness (Chan & Liebowitz, 2006). Rowley, Behrens and Krackhardt (2000) highlight relational embeddedness and structural embeddedness as two different ways in which actors are embedded in a given network. The relational aspect of actor embeddedness, as defined by the authors assesses the characteristics of the relational ties, while structural embeddedness examines the structural positions of actors within a network (Rowley et al., 2000, p. 369). Two approaches to analysing the substructure of the MEC as a policy network are the bottom-up and top-down approaches, each emphasising a different aspect of stakeholder embeddedness. The bottom up approach argues that the whole network structure emerges from the micro-structure or sub-components of the network, while the top down approach examines the macro network and then identifies sub-structures which form the broader macro network (Hanneman & Riddle, 2005).

Furthermore, the bottom up approach analyses structural embeddedness of the nodes in a given network. In doing so, it examines the cliques within the network and actor embeddedness within those cliques (Chan & Liebowitz, 2006). A clique reflects a sub-set of a network in which the actors have more ties to one another than to other members of the network (Hanneman & Riddle, 2005). Network analysts argue that the formal clique approach imposes two restrictions in the analysis of cliques. Firstly, the approach requires every member of a sub group to have a direct tie with all members of a sub component. Secondly, it insists that the ties in the sub-component cannot exist in any other clique (Chan & Liebowitz, 2006 Everton, 2012). While Hanneman and Riddle (2005) along with Chan and Liebowitz (2006) have proposed

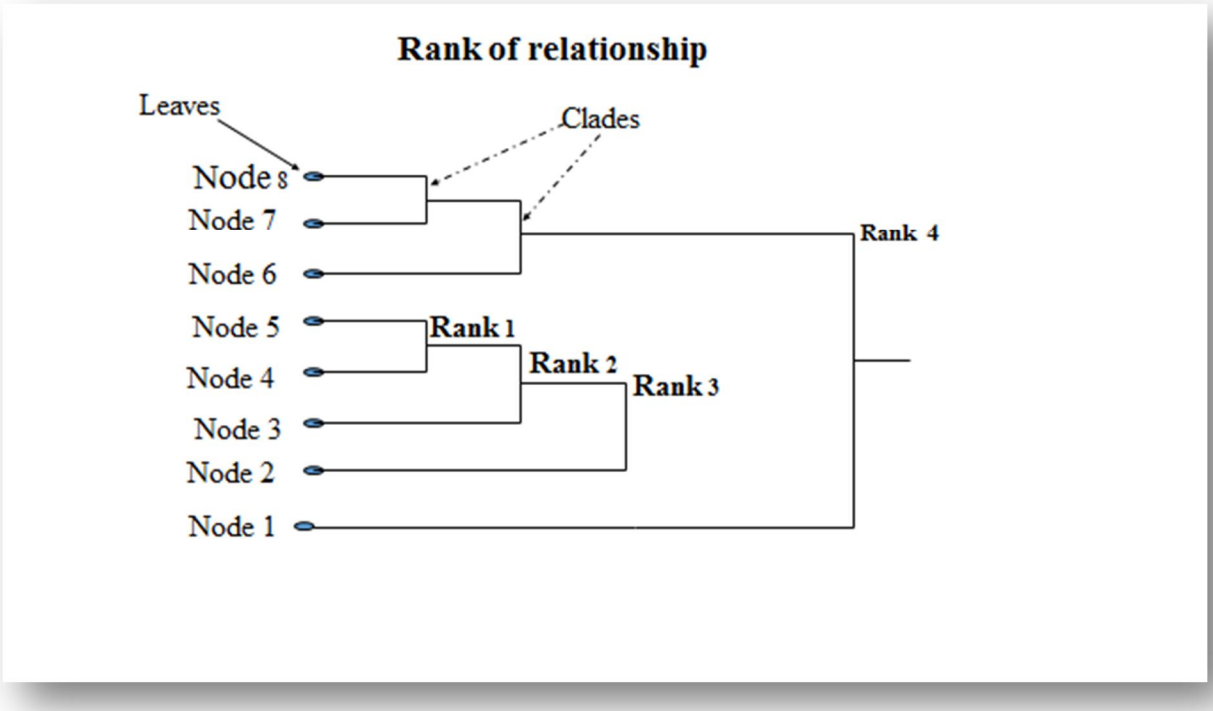
alternative methods such as the n-cliques[12], the thesis employs the top down approach as it analyses both relational and structural embeddedness of a given network.

The top down approach examines the sub-components of a network in order to determine the weak spots or the cut points of the network (Hanneman & Riddle, 2005). The actors whose removal disconnects the flow of resources are called "cut points" (Everton, 2012). Such cut points, like brokers, are crucial to the flow of resources because they link disconnected nodes in the network. Thus in examining structural embeddedness, the top down approach evaluates whether the removal of these nodes affects the flow of resources. Additionally, the Lambda Set approach examines the relations that are critical to the structure of the network (Hanneman & Riddle, 2005). In doing so, the Lambda Set ranks each of the relations by measuring the flow or resources or 'traffic' passing through each link. Following that the Lambda Set approach then identifies sets of relationships which if disconnected would disrupt the flow of information among all the actors (Hanneman & Riddle, 2005).

In essence, the Lambda Set partition approach to sub-structure analysis highlights the most strategic relationships for the flow of resources in policy networks. The Lambda Set approach identifies these relationships in a hierarchical clustering dendogram that ranks the relationships, as depicted in Figure 8. The x-axis represents the level of the relationship, and the y-axis represents the nodes and the level or rank of the relationship at which they are clustered. The interpretation of the dendogram means that rank one show that the relationship between nodes 4 and 5 are the most important followed by the relations between nodes, 5, 4 and node 3. Each branch in the dendogram is called a clade and the terminal end of each clade is called a leaf. Clades can have one leaf called simplicifolious and two-leaved clades are bifolious and three-leaved are trifolious (Drout & Smith, 2012). Thus the relationship between nodes 4 and 5 is simplicifolious while the relationship between 5, 4, and 3 is trifolious.

[12] The n-clique it allows an actor to be a member of a clique if they have ties to some member at a predetermined path distance (Everton, 2012).

Figure 8: An illustration of the Lambda set



Source: Adapted from Drout and Smith (2012).

Much like degree centrality measures and brokerage analysis, sub-structure analysis measures are calculated in this thesis to generate data that answers the primary research questions of the thesis. As per Section 1.5, the research question seeks to identify the influential actors in the policy network and also explore how these actors relate to the interrelations and resource exchanges in the network. Furthermore, the network analysis methods are employed in the pursuance of the research objectives which seek to explore the configuration of the network, the central and important actors in resource exchanges, the relational linkages between and amongst participant stakeholders, and the roles the stakeholders facilitate as a result of organisational affiliations.

The data collected during phase one of the research project generated four types of data: (1) data depicting the stakeholders engaged during the policy processes, (2) actor embeddedness within the MEC policy network, and (3) data depicting relational ties between stakeholders as well as (4) data on centrality and sub-structures of the policy network. Finally, the collection of data on the influence and interest of stakeholders was introduced in the second phase of the

research project. Phase two of the implementation of the research design is discussed in section 4.5.3

4.5.3. Phase two – quantitative data collection

The stated objectives of this stage in the research project were to interview the influential and stakeholders in the implementation of the beneficiation policy. To arrive at a measure of influence Schiffer, Waale and Monge (2010, p. 22) propose summing up the number of times an organisation was mentioned, then dividing this by the number of organisation in the network. Schiffer et al. (2010) are informed by the logic that more influential actors would be mentioned more often. Once central actors were quantified using the above formula the researcher set up appointments with the respondents to conduct (focussed) semi-structured in-depth interviews. The interviews were set up with these stakeholders to conduct stakeholder analysis based on their perceptions on the beneficiation policy as well as their observations on the data collected from the first phase. In no order of importance, below is a list of the influential stakeholders based on the count of influence:

Government departments and related institutions

- Department of Mineral Resources (DMR)
- Department of Trade and Industry (DTI)
- Department of Science and Technology (DST)
- Economic Development Department (EDD)

Public institutions

- Industrial Development Corporation (IDC)

Organised business associations

- Chamber of Mines (COM)

Organised labour associations

- The National Union of Mineworkers (NUM)
- Solidarity[13]
- The United Association of South Africa (UASA)

The rationale of employing in-depth interviews was motivated by the aforementioned assertion that qualitative research methods allow researchers to delve deeply into the perceptions of

[13] Due to industrial action in the mining industry, the respondent from Solidarity could not be reached. As a result, the stakeholder has been left out in this round of data collection.

interviewees (Jack, 2005; Hollstein, 2011; Schepis, 2011). These in-depth interviews were conducted at the offices of the interviewees and in some instances at conferences on the subject under review, or at coffee shops (see Appendix D for the interview dates). During the process the researcher utilised a questionnaire to obtain in-depth information regarding the relationship between the position of the stakeholder in the MEC policy network and his/her influence and interest in the implementation of the beneficiation strategy. The questionnaire included an introductory section detailing the purpose of the Masters Research project, along with the stated objective of this round of interviews. Methods for recording the interviews for analysis entailed audiotape recording and note taking (Appendix E).

4.5.3.1. Phase two – data preparation

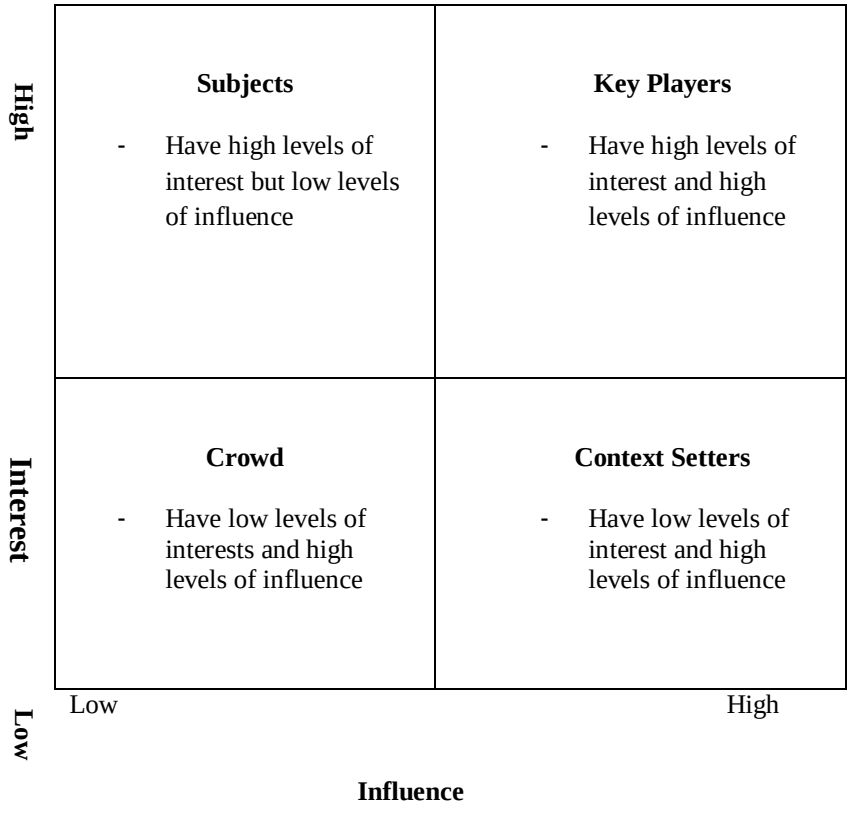
Upon completing the interviews, data preparation entailed transcribing the audiotaped interviews into readable text for content analysis. Subsequently, the researcher coded the data into content areas to generate homogenous themes. Coding is the process of organising data into categories and labelling those categories with a term (Creswell, 2003, p. 192). This process enables a researcher to arrange data into a more concise and systematised format, dividing the text into meaning units that can be condensed and labelled with a code (Graneheim & Lundman, 2004, p. 106). The coding approach involved clustering the data into content areas such as definition and understanding of policy, position, level of influence, interest and support in the implementation of the beneficiation policy.

In the interest category, the stakeholder respondent were asked to indicate, their own the level of interest in the implementation of the beneficiation policy. The researcher scored these responses on a Likert-Type scale where 5 represented a very high level of interest in the implementation of the policy, 4 represented a high level, 3, showed a medium level, 2 a low level and 1 indicated the stakeholder had a very low level of interest in the implementation of the beneficiation policy. Similarly, in the influence category, the responses were scored on a scale of 1-5 to show that a 5 indicated a very high level of influence in the implementation, a 4 (high level of influence, 3 (medium level of influence), 2 (low level of influence) 1 (very low level of influence). Following this the categories were summed up and tabulated into the influence interest matrix. Section 4.5.4 outlines the methods of analysing the data collected during phase two of implementing the research methodology.

4.5.4. Phase two – data analysis

The responses generated in phase two provided qualitative and quantitative data. Firstly, the qualitative data is tabulated into the homogenous themes, as highlighted in section 4.5.3. The issues and themes arising from the data underpinned the analysis of the stakeholders based on their level of interest in the outcome of the policy; and the level of influence that each stakeholder has in the implementation of the beneficiation policy. The data generated to analyse the influence scores as per section was analysed in the Statistical Package for the Social Sciences (SPSS) depict the distribution of influence scores across organisational categories. Furthermore, the responses for the interest and influence levels were used to characterise the stakeholders in an *influence-interest* matrix, as presented in Figure 9.

Figure 9: An illustration of the influence interest matrix



Source: Adapted from Bryson, Patton and Bowman (2011).

This grid arrays stakeholders on a two-by-two matrix where the dimensions on the x-axis represent the level of influence in the policy, and the y-axis, the level of interest in the implementation of the policy (Bryson, 2004). The level of influence, according to Schmeer (1999) depends on the quantity and type of resources and power the stakeholder has and the level of interest is the priority and importance the stakeholder attaches to the policy. The results and findings of the stakeholder analysis are presented in Chapter 5 of the thesis.

4.6. Validity issues

Validity is the extent to which any measure measures what it is intended to measure (Coromina & Coenders, 2006, p. 212). In network analysis the issue of validity centres on whether questions aimed at measuring a respondents' network accurately measure that network. To avoid measurement error and decreasing accuracy of the design, respondents in this study were asked free recall questions. According to Prell (2012), this decreases the likelihood of gathering incomplete or inaccurate data since some respondents either have more or have less ties than others (Prell, 2012).

4.7. Ethical considerations

Since the research objectives of the current thesis require data that record linkages between actors and the nature of these relationships, anonymity at data collection and data analysis stage is not guaranteed. According to Borgatti and Molina (2003), this "places a special burden" on the academic researcher who must record a link from that respondent to the person the respondent indicates having relationships with (Borgatti & Molina, 2003, p. 338). To ensure that University of the Witwatersrand's ethical considerations are factored in, the researcher circulated a letter informing the research participants about the study and the objectives of the study, and a description of how the data generated from the interviews would be used.

4.8. Conclusion

This chapter outlined the research methodology of this exploratory sequential thesis which seeks to analyse the MEC as a *network of policy stakeholders* in the beneficiation policy. The objectives of the thesis centred on unpacking the structural embeddedness of the policy network stakeholders within the network and the roles actors facilitated as a result of their locations in the network. Furthermore, the thesis sought to uncover the influential stakeholders in the implementation of the beneficiation policy and categorise these stakeholders in an influence-interest matrix. The thesis adopted SNA, as the most appropriate research methodology to achieve the stated objectives. Following the theoretical arguments posed in Chapter three, network analysis offers a specific methodology for investigating networks dynamics such as relational embeddedness and network configuration. Additionally, SNA presents a specific opportunity to combine quantitative and qualitative methods in order to map and measure network properties and explore network dynamics from the perspectives of network participants.

The implementation of the research design occurred in two sequential stages where phase one obtained qualitative data. In this phase, the researcher administered a telephonic questionnaire

to determine the network boundaries and the participant stakeholders in the beneficiation policy. The data generated resulted in two resource exchange networks, as well as a list of 19 stakeholders in the beneficiation policy. Following the phase one data analysis, nine stakeholders scored the highest levels of influence as per the telephonic interviews. Phase two interviewed these stakeholders with a view of categorising these stakeholders into an influence-interest matrix. The findings generated from both stages will be discussed in Chapter five of the thesis.

Chapter 5

Presentation and analysis of data gathered on the MEC

5.1. Introduction

In this chapter, the research findings, and specifically the data generated, are presented. As Chapter 4 demonstrates, a number of goals inform the collection and analysis of the MEC as a policy network of participant stakeholders in the beneficiation policy. Those goals were to unpack the structural embeddedness of the policy network stakeholders and the roles actors facilitate in resource exchanges as a result of their locations in the network. Furthermore, the thesis seeks to uncover the influential stakeholders in the implementation of the beneficiation policy and categorise these stakeholders in an influence-interest matrix. This chapter will show that the research objectives were accomplished. The findings obtained from phase one of implementing the research design are presented in section 5.2. Here, the findings highlight the structure of the information and material resource exchanges in relation to the beneficiation policy. In this context, measures of centrality and sub-structure analysis identify the influential stakeholders in the resource exchanges and how these actors relate to the interrelations and resource exchanges in the network. Section 5.3 then examines the phase two findings with a view of examining the influential stakeholder perceptions on the implementation of the beneficiation policy. The contribution of Section 5.3 is to understand key stakeholder perceptions on the implementation of the beneficiation policy.

5.2. Presentation and analysis of phase one data

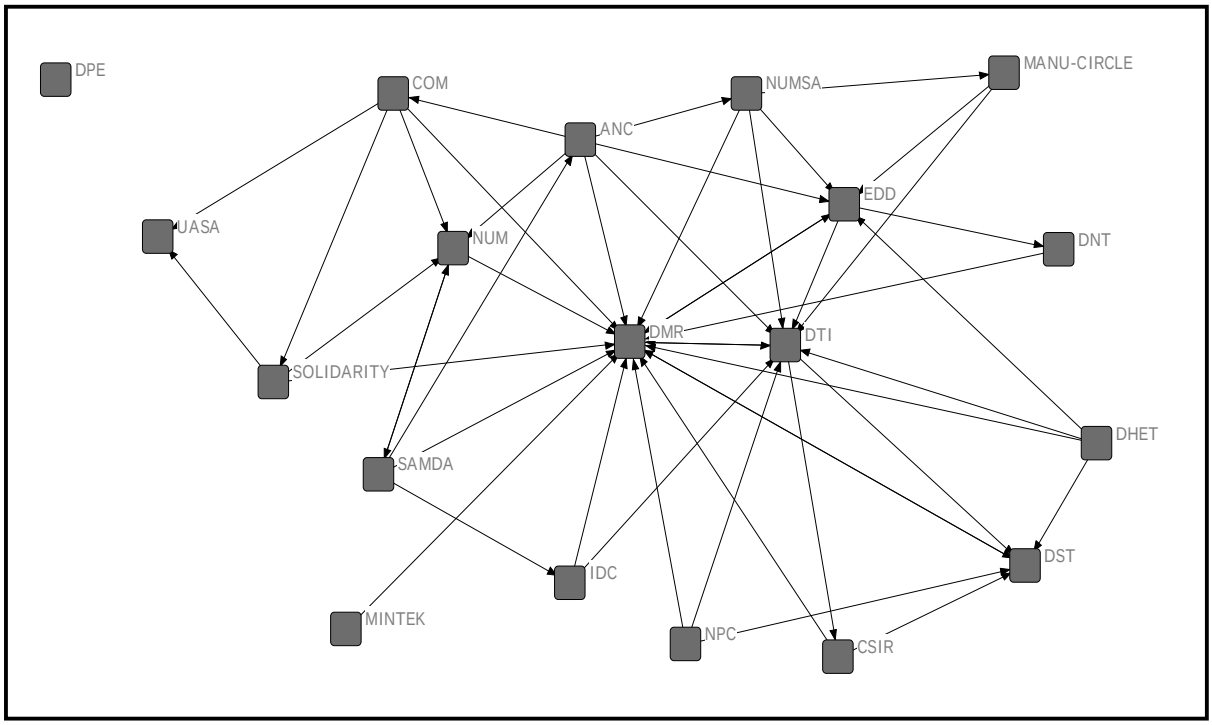
The data from the telephonic responses generated a list of 19 stakeholders in the beneficiation policy, as outlined in Section 4.5.1. The name interpreter in the questionnaire asked participants to indicate the relational ties and exchanges of resources between and the egos and alters. Based on the responses, the results presented in this section reflect the perceptions of the stakeholders who were interviewed telephonically regarding other stakeholders that participated in the policy processes of the beneficiation policy prior to the implementation stage of the policy. The findings generated two networks, the information network and the material (funding) network. These findings are organised as follows:

- Section 5.2.1 presents the findings for degree centrality, brokerage analysis, and the top-down approach analyse the information exchanges in the MEC policy network.
- Section 5.2.2 presents the findings for degree and betweenness centrality and the substructure of the material exchanges.

5.2.1. The structure of the information exchanges in the MEC policy network

Figure 10 provides a structural indication of the network as well as actor embeddedness within the exchanges of information regarding the beneficiation policy. It is constructed based on the responses from the interviewees who were asked to state the names of the organisations/individuals/institutions that provided their organisation with information on the policy. Examples of information include information on the policy, meeting dates, invitations to seminars and workshops, networking events, strategies, ideas, and related documentation. Furthermore, respondents were asked to state the names of organisations that they provided information to. Figure 10 presents part of the research findings of the current thesis which sought to explore the information exchanges amongst the MEC policy network participants.

Figure 10: The structure of the information exchanges in the MEC policy network



Note: The direction of the arrows in Figure 10 indicates who is sending information to whom in the MEC policy network and the absence of an arrow indicates the absence of resource exchanges between nodes.

Source: Results from fieldwork

Figure 10 illustrates that the DMR and the DTI are located in the centre of action, pointing toward the dominance of government organisations in the information exchange network concerning beneficiation policy-making and implementation in South Africa. However, the DMR receives a larger number of ties, which in turn suggests its importance in the exchange of information related to the beneficiation policy. Amongst non-state actors, organised labour movements UASA, Solidarity and NUM exchanged information amongst one another. Secondly, some ties are reciprocated between government organisations such as the DMR and the DTI as well as between the DMR and the EDD. Thirdly, Figure 10 also reveals that some nodes such as the DPE are isolated in the exchanges, while other nodes such as MINTEK are connected to one other node in the network of information exchanges. In what follows, the remainder of section 5.2.1 presents the degree centrality findings in sub-section 5.2.1.1, brokerage analysis in sub- section 5.2.1.2, while sub-section 5.2.1.3 presents the findings of sub-structure of the information exchanges in the MEC policy network.

5.2.1.1. Degree centrality findings of information exchanges in the MEC policy network

Table 3 presents the results of degree centrality measures generated from phase one of the research process. The output developed from UCINET shows that measures of in-degree indicate receivers of information and out-degree indicates the senders of information (Hanneman & Riddle, 2005). It is also important to note that the degree of actor is equal to the number of other nodes in direct contact with the actor (Freeman L. , 1978). In the example presented in Figure 6 actor A is adjacent to six other nodes, therefore its maximum degree centrality is numerically equivalent to 6, and the other actors each have degree centrality equal to 1 (Hanneman & Riddle, 2005).

The output in Table 3, generated from UCINET, indicates that the ANC displays the highest measure of out-degree centrality in the information exchanges in the MEC policy network. Nodes displaying high out-degree are said to be powerful to the extent of sending ties to a number of actors in a network, thereby influencing the information inside the network (Hanneman& Riddle, 2005). Given that the current government is led by the ANC, it stands to reason that the ANC enjoys a close relationship with all government departments and non-state actors in policy processes regarding the beneficiation policy. At the same time, the democratic legitimacy of the ANC as the governing party enables it to exert influence on the state apparatus. As such, the measure of out-degree centrality reflects that the ANC is in direct contact with many stakeholders in the policy network. In network analysis, nodes displaying high out-degree measures are commonly recognised as major channels of relational

information and 'crucial cogs' in the network configuration (Wasserman & Fraust, 1994, p. 179).

Table 3: Degree centrality findings of information exchanges in the MEC policy network

Stakeholder	Out-degree	In-degree
ANC	6.000	1.000
NUMSA	4.000	1.000
COM	4.000	1.000
DHET	4.000	0.000
SAMDA	4.000	1.000
EDD	3.000	5.000
SOLIDARITY	3.000	1.000
DTI	3.000	8.000
NPC	3.000	0.000
DMR	3.000	15.000
IDC	2.000	1.000
NUM	2.000	4.000
CSIR	2.000	1.000
MANU-CIRCLE	2.000	1.000
DNT	1.000	1.000
MINTEK	1.000	0.000
DST	1.000	5.000
UASA	0.000	2.000
DPE	0.000	0.000

Note: Out-degree measure represents the number of ties stakeholders sends while in-degree shows the actors who receive many ties in the network.

Source: Results from fieldwork

The findings for in-degree show that the DMR, followed by the DTI, displays higher in-degree centrality due to the large number of stakeholders directing ties to both these government departments. The high level of in-degree recorded for the DMR illustrates that as the policy champion of the beneficiation policy, the DMR is the information centre because the information related to beneficiation flows to the department. The DTI is also located in the centre of the information exchanges. Since the beneficiation imperative is a key pillar of IPAP 2012/13-2014/15, stakeholders engage the DTI on matters related to supporting and encouraging local beneficiation and manufacturing. According to the definition of centrality postulated by Hanneman and Riddle (2005), the more ties an actor maintains in policy networks, the more sources for the actor to send and receive information. Due to the many connections with other actors, the ANC, the DMR, and the DTI are the most active actors in the MEC policy network. This increases their influence in the information exchanges on the beneficiation policy.

In contrast, actors with low in-degree centrality measures are inactive. Thus, removing these actors is said to pose no effect on the ties that are present in the network, as theorised by Wasserman and Fraust (1994, p. 179). Therefore, the out-degree measures for UASA and the DPE illustrate that the two nodes do not send beneficiation related information to other network members. The in-degree measures like those of the DHET captures the extent to which the other nodes isolate the other government departments in the information exchanges on the beneficiation policy. Due to the well-recognised skills crisis plaguing South Africa, the mandate of the DHET is to facilitate the development of a world-class education system that produces skilled citizens that can compete and participate in the formal labour market (see Higher Eduction Act No. 101 of 1997). The development of world-class R&D falls beyond the scope of the DHET, but is within the purview of the DST and its apex agencies such as CSIR. Consequently, the DHET is overlooked in the information exchanges because participant stakeholders assume that those in possession of resources such as R&D knowledge are more important than the development of workers who will produce the R&D technology.

5.2.1.2. Brokerage analysis of the information exchange network

The discussion in Section 4.5.2.1.2 on betweenness centrality introduced to the concept of brokerage as developed by Fernandez and Gould (1994). The brokerage concept asserts that the occupancy of positions linking unconnected actors is an important determinant of network influence. The authors extend the concept further to note that actors can be differentiated into

a set of mutually-exclusive sub-groups "because the flows of resources within and from groups have different meanings" (Fernandez & Gould, 1994, p. 1457). Simply put, the authors propose that actors, grouped according to similar features (homophily), serve different brokerage roles depending on the group to which they belong. Analysing brokerage positions not only describes the types of brokerage roles dominant in exchange networks, but brokerage analysis provides insightful information on the specific roles the actors have assumed within the network structure (Fernandez & Gould, 1994; Borrás, 2007).

The analysis of brokerage is limited to the roles of coordinator, gatekeeper and representative since these roles yield significant political power in policy networks. As discussed in Section 4.5.2.1.2 such brokers control the flow of information and determine recipients of the information, as well as when and how other stakeholder receive information. The organising principle of grouping the MEC stakeholders is drawn from Fernandez and Gould (1994) who recommend grouping stakeholders according to their organisational affiliations:

- Group one: Government departments
- Group two: Organised labour
- Group three: Governing party
- Group four: Public institutions and
- Group five: Organised business associations.

In implementing these directives from the theory, the current research output, produced using UCINET, is displayed in Table 4. The rows show the raw number of times that each stakeholder plays one of the five-brokerage roles listed in the columns (Hanneman & Riddle, 2005). As Table 4 illustrates, the largest brokerage scores emanate from Group 1, the government organisations. Amongst group one organisations, the DMR ranks the highest on brokerage scores, facilitating the roles of coordinator and gatekeeper. As illustrated in Section 4.5.2.1.2, coordinators enable the flow of information between actors of the same group. When one considers the coordinating role of the DMR, it is interpreted in terms of its responsibilities as the policy champion leading the policy. Due to the interface between the beneficiation policy and the broader macro-economic objectives of the ANC government, coordination entails consulting with other government departments in order to ensure strategic alignment of inter-ministerial operations.

Table 4: Findings of the un-normalised brokerage scores of the information exchanges in the MEC policy network

Groups	Brokerage Roles					
	Organisation	**Coordinator**	**Gatekeeper**	**Representative**	**Consultant**	**Liaison**
Group One	DMR	7.500	18.333	0	0	0
	DTI	0.500	3.000	4.000	1.000	3.000
	EDD	2.000	3.500	0	0	0
	DPE	0	0	0	0	0
	DST	0	0	0	0	0
	DHET	0	0	0	0	0
	DNT	0	0	0	0	0
	NPC	0	0	0	0	0
Group Two	NUM	0	0	1.000	1.000	1.000
	NUMSA	0	0	0	0	1.000
	SOLIDARITY	0	0	0	0	0
	UASA	0	0	0	0	0
Group Three	ANC	0	0	0	1.000	1.833
Group Four	MINTEK	0	0	0	0	0
	CSIR	0	0	0	0	0
	IDC	0	0	0	0	0.333
Group Five	SAMDA	0	0	0	0	2.000
	COM	0	0	0	0	2.000
	MANU-CIRCLE	0	0	0	0	0

Note: The coordinator mediates resource flows between members belonging to one group. In other words the actor coordinates information amongst its group members. The itinerant broker or consultant mediates between members of one group. Here, the itinerant broker is not a member of the group, but mediates the flow of resources within members of another group. The representative facilitates the flow of resources from its respective group to members of another group. The gatekeeper regulates the flow of resources that flow from another group into its own group. The liaison broker mediates resource exchanges between two different groups; however it is not a member of either group (Fernandez & Gould, 1994, pp. 1458).

Unormalised brokerage scrores represent the number of times (raw count) a node acts as a broker in a network.

Source: Results from fieldwork

The department also ranks the highest values as gatekeeper. Since the function of the gatekeeper includes controlling the flow of information from other groups into its own group, the DMR is located in a key position to choose which information is filtered through to its group members. By controlling information flows, the gatekeeper not only determines which information is filtered through to its group, but also the content and nature of the information

that is filtered through to group members. As a result of its gatekeeping role, other government departments depend on the DMR to receive information or even connect with members from other groups in the context of the beneficiation policy. According to Borrás (2007, p. 6), the roles of coordinator and gatekeeper are the strongest forms of intermediation and brokerage in the policy networks, given that these positions allow the brokers to exercise important political influence.

On the other hand, the DTI predominantly acts as representative and to a lesser extent as gatekeeper, liaison and consultant broker. Where the liaison broker mediates between actors embedded in different groupings, the role of the representative entails controlling information flows from the group of the broker to other groups. This role is arguably as important as that of gatekeeper since both are positioned to filter the flow of information within groups. The EDD also emerges as a significant broker in the MEC policy network as it fills the role of coordinator and the gatekepper broker. In the broader macro- environment, the EDD is responsible for coordinating policies and programmes of other government departments by ensuring the alignment of government policies. Thus the DMR, the DTI and the EDD form part of what policy network theory refers to as *the dominant coalition* which retains some discretion regulating *the process of resource exchange* (see Rhodes, 1997, p. 37).

Amongst the stakeholders in Group 2, the dominant brokerage role- the representative is occupied by the NUM. While the affiliation to COSATU enables NUM to gain strategic advantage over other actors in Group 2 in accessing the DMR, other factors account for its strategic position. Firstly, prior to August 2012 statistics recorded that the union had the largest membership of unionised workers[14] within the mining industry (Steyn, 2013). As per the Amended Labour Relations Act No. 66 of 1995 (LRA), this majoritariansim accorded the union offical recognition rights to participate in bargaining councils engaged in wage determination.

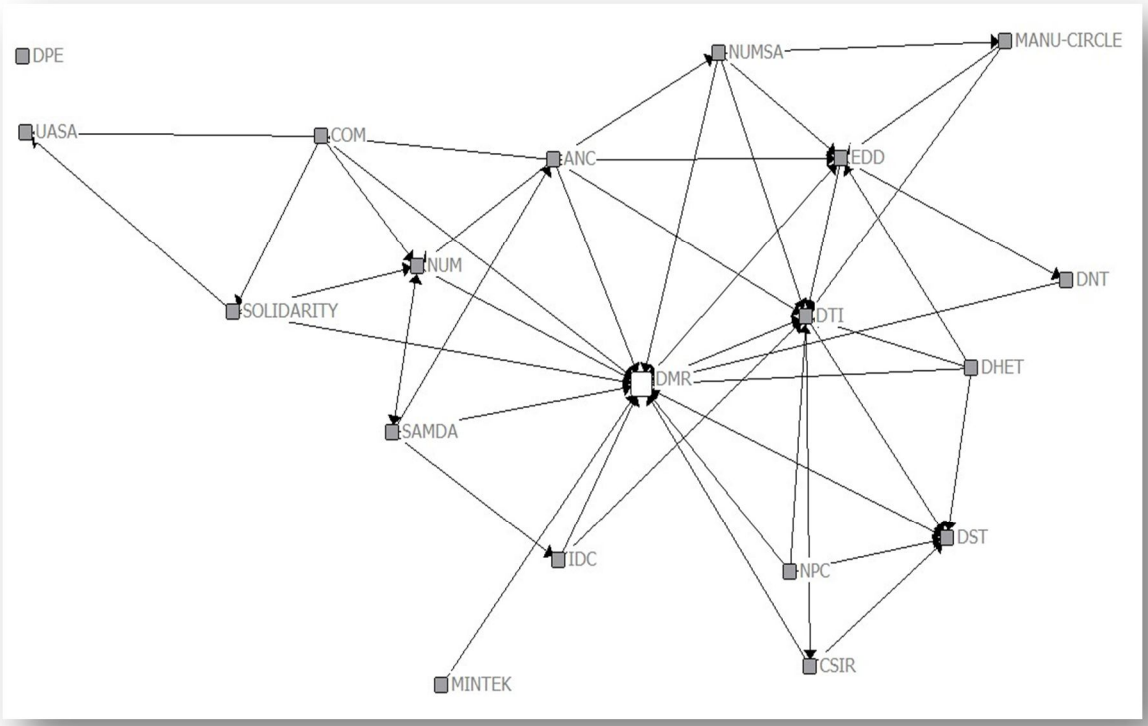
5.2.1.3. The sub-structure analysis of the information exchanges in the MEC policy network

The top-down analysis of sub-components of the MEC network generates data that reveals the sub-components such as weak-spots and cut-points of the network. As conceptualised by Hanneman and Riddle (2005), the rationale of analysing weak-spots is to investigate whether the removal of certain nodes divides the network into unconnected parts. Furthermore, the point

[14] At the time of writing (early 2014), NUM had lost considerable membership base to the Association of Mine Workers and Construction Union (AMCU) in the gold and platinum sectors.

at which the weak-spots occur is the cut-point of the network. Figure 11 illustrates that the DMR is the cut point of the information exchange network since it connects MINTEK to other stakeholders exchanging information resources on the beneficiation policy.

Figure 11: The results of the blocks and cut-points in the information exchange network



Note: The removal of certain nodes divides the network into unconnected parts. The point at which the weak-spots occur is the cut-point of the network.

Legend:		
	Cut point	Network participants

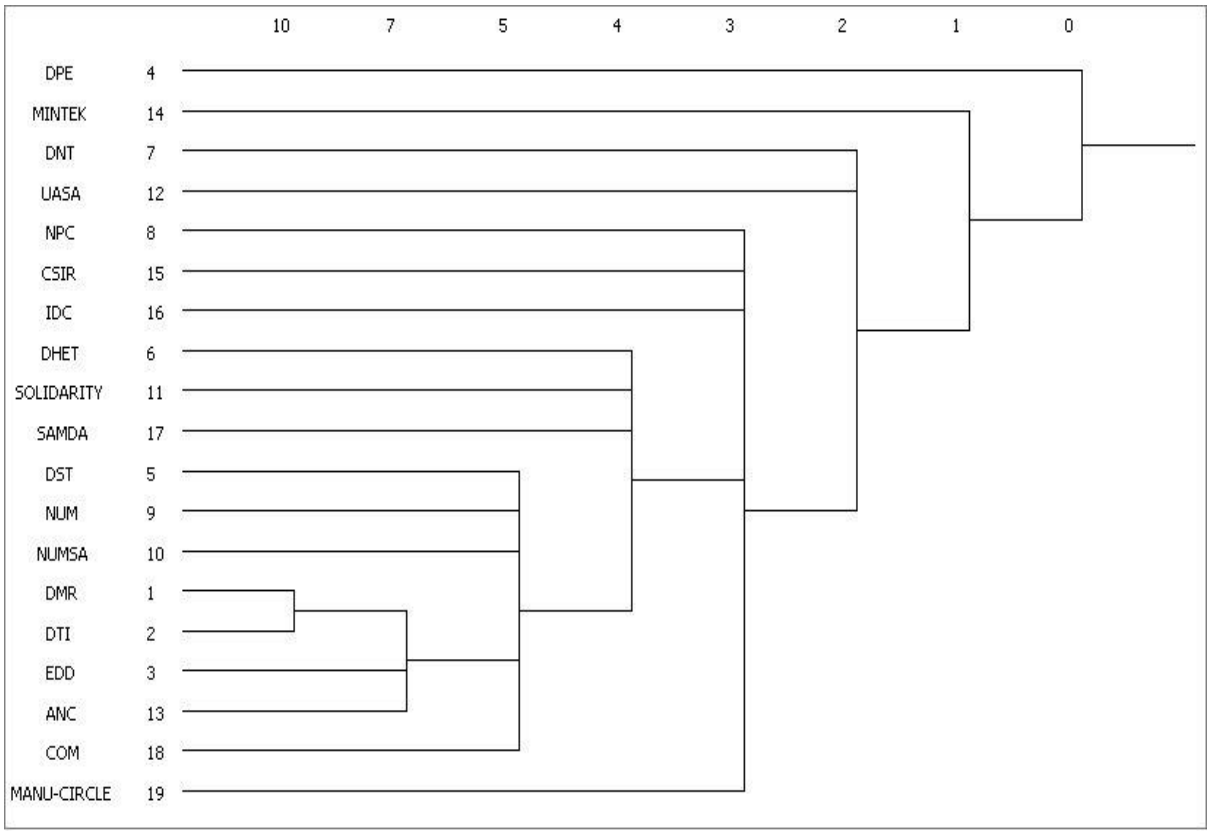
Source: Results from fieldwork

In this context, the removal of the DMR would isolate MINTEK from resource exchanges on the beneficiation policy. Similarly, the figure shows that the DMR creates a path for MINTEK to connect with other actors of the network. This supports the findings in Section 5.2.1.2 that among the roles the DMR facilitates is one of the local bridge; connecting actors in policy networks. In many respects then the DMR is structurally embedded at the centre of the

information exchanges in the beneficiation policy. This allows the department to control and facilitate the relationships and resource exchanges.

Section 4.5.2.2 described that the Lambda Set ranks each of the relations in a given network by measuring the flow or resources or 'traffic' passing through each link. Furthermore, the Lambda Set approach identifies sets of relationships which, if disconnected, would disrupt the flow of information among all the actors (Hanneman & Riddle, 2005). The Lambda Set approach in Figure 12 ranks the relationship between the DMR and the DTI as the most important relationships for the flow of information related to the beneficiation policy.

Figure 12: The hierarchical lambda set partitions of the information exchange network



Note: The Lambda Set approach identifies relationships in a hierarchical clustering dendogram that ranks the relationships. The x-axis represents the level of the relationship, and the y-axis represents the nodes and the level or rank of the relationship at which they are clustered.

Source: Results from fieldwork

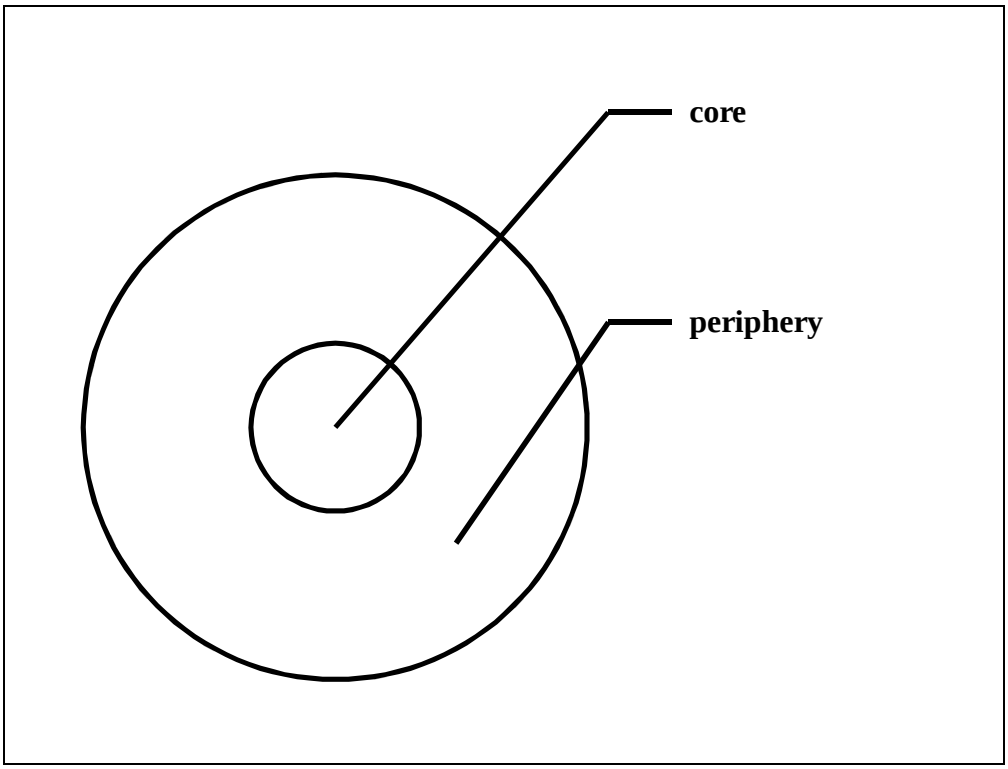
Figure 12 shows that the amount of information flowing to and from the two nodes is vital for network cohesion and the flow of information related to the beneficiation policy. In the broader political economy landscape, the two departments are working on the Mineral Value-Chains

strategy that seeks to identify the regulatory requirements as well as other constraints and opportunities in the industry. Since they are in possession of this information, Figure 12 reaffirms the notion that linkages between the two are vital for the exchange of information resources.

Additionally, the ties between the DMR, the DTI, the EDD and the ANC are identified as the second most important linkages in the MEC policy network. The exchanges between these four actors hinge on the synergy between the economic policies of the governing ANC party and those of the national government led by the ANC. The transformation of the South African economy has been a key policy priority for the ANC as a political party dating as far back as the Ready to Govern Conference of 1992 (ANC, 1992), the Draft Discussion Document on the Minerals and Energy Policy tabled in 1994 (ANC, 1994), and the Polokwane Conference 2007 Economic Transformation Resolutions (ANC, 2007) and more recently to the 2012 National Policy Conference in Gauteng (ANC, 2012) and the 2012 Elective Conference in Mangaung (ANC, 2012). Based on these policies, each of the three government departments has adopted policies strategically aligned to the ANC transformation agenda.

Much like the beneficiation policy adopted by the DMR, a key pillar of IPAP 2012/13-2014/15 adopted by the DTI seeks to improve the competitiveness of the economy and the manufacturing industry (The Department of Trade and Industry, 2013), the New Growth Path adopted by the EDD seeks to expand the industrial base of the economy and the labour absorption rate (Economic Development Department, 2011). Thus, the overlap of policies is indicative of the relational linkages and resource exchanges between the ANC and the government. Policies, strategies and resolutions emanating from ANC national conferences inform official policies and programmes of government departments, which in turn, are governed by senior ANC politicians. Taken as a whole, Figure 13 illustrates that four nodes in emerge as the core of the information network, as computed in UCINET. Within this context, core nodes are well connected in comparison to the peripheral nodes that exhibit fewer relational ties (Rombach et al., 2013).

Figure 13: The core-periphery structure of the information exchanges in the MEC policy network



Note: Core of the information exchanges includes: DMR, DTI, EDD, and ANC.

Periphery includes: DHET, NPC, DST, NUM, NUMSA, Solidarity, DPE, UASA, MINTEK, CSIR, IDC, SAMDA, COM and Manufacturing Circle.

Source: Results from fieldwork

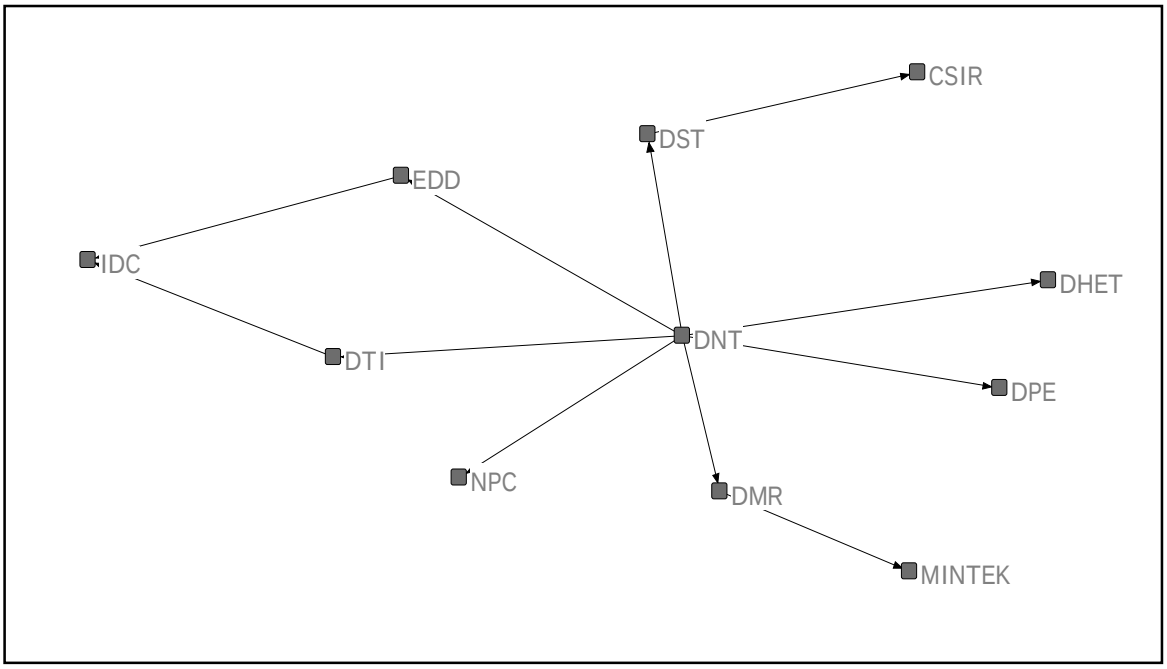
As the theoretical framework guiding this thesis argues, the core of the network influences policy while the periphery or structurally marginal actors are less influential and more isolated than the core nodes (Atkinson & Coleman, 1992; McDaniel & Miskel 2002). Due to the resource exchanges between the core of the network, the UCINET data findings of degree centrality, brokerage analysis and sub-structure analysis, indicate that the dominant resource exchanges occur frequently amongst the government departments and the governing ANC. There are fewer links in and amongst non-state actors such as NUM and NUMSA, with the exception of the linkages between the mining industry stakeholders such as NUM, UASA, Solidarity and the COM. Overall, the core of the network includes the resourceful nodes that in the words of Klijn and Koppenjan (2000, p. 141) are "indispensable to the policy network games." Furthermore, these nodes, as the findings show, have influential positions in the flow of information related to the beneficiation policy.

5.2.2. The structure of the material resource exchanges in the MEC policy network

The analysis of the MEC as a policy network of participant stakeholders in the beneficiation policy showed that the resource exchanges are not solely confined to the exchanges of information on the beneficiation policy. Rather, the data analysis indicates that the stakeholders exchange material resources (such as funding) in pursuit of the policy objectives. In this section, the results of the material exchanges are presented with a view of exploring stakeholder embeddedness in the relational linkages, as described in the research objectives of the thesis. Funding in this context means the provision of sponsorship, financial assistance, budgetary allowance, grants and aid support.

Figure 14 illustrates actor embeddedness in the funding network. The figure illustrates the senders and receivers of material funding where the direction of the arrow shows the target of funding. This network also reflects the perceptions of the interviewees in relation to financial exchanges in the beneficiation policy. It highlights the stakeholders who exchange monetary resources within the whole network.

Figure 14: The structure of the beneficiation policy material exchanges in the MEC policy network



Note: The direction of the arrows in Figure 14 indicates who is sending beneficiation policy related funding to whom in the MEC policy network and the absence of an arrow indicates the absence of resource exchanges between nodes.

Source: Results from fieldwork

It becomes apparent that the funding network is homogenous since funding flows within organisational borders. That means cross-boundary resource exchange is minimal as funding is channelled within similar organisations, as highlighted in the theory by Sandström and Rova (2010). The flow of financial resources occurs amongst state institutions. In this view, the NUM does not access beneficiation policy-related funds from the state, nor does the COM. Instead, these stakeholders' access funds from membership contributions.

Figure 14 captures the structure of financing within the MEC policy network. The flow of resources within this context occurs in a linear manner, flowing in formal hierarchies. As illustrated in Figure 14, funding is channelled in a top down fashion from the DNT to other government departments who in turn distribute the funds to their agencies. For example, funding flows from the DNT to the DST, and then to the CSIR in a centralised way. In many respects, this network displays a star-like structure similar to Figure 6 in Section 4.5.2.1.1 since the DNT is the central actor. Next, the degree centrality, betweenness centrality and sub-structure analysis results generated during fieldwork regarding the flow of financial resource within the MEC policy network are discussed in Section 5.2.2.1, Section 5.2.2.2 and Section 5.2.2.3, respectively.

5.2.2.1.Degree centrality findings of material exchanges in the MEC policy network

Within network analysis degree centrality provide measures of how power is distributed in a network. In essence, degree centrality is premised on the notion that the well-connected ones have access to a number of sources for resource exchange (Rowley, 1997). The more ties an actor maintains, the less dependent it is on any specific actor in the process. As a result of this autonomy, an actor becomes relatively powerful in the network (Hanneman & Riddle, 2005). Freeman (1978) argues that the degree of an actor is equal to the number of other nodes in direct contact with the actor. As captured in Figure 6, actor A is adjacent to six other nodes, therefore its maximum degree centrality equals 6, and the other actors each have degree centrality equal to 1 (Hanneman & Riddle, 2005). Table 5 is the output generated to represent the measures of in-degree and out-degree centrality of the nodes in relation to material resource exchanges related to the beneficiation policy.

Measured by out-degree, the DNT ranks the highest level of centrality in the funding network. Therefore, it is the most influential stakeholder in the funding network. As far as the ranking is concerned in the broader economy, the DNT manages government fiscal policy, and the allocation and distribution of revenue between national, provincial and local governments and

various state organs. In other words, the DNT determines who gets what, when and how in the allocation of financial resources in relation to the beneficiation policy. With respect to in-degree, the IDC possesses prestige as more actors are directing funding to the stakeholder. In this respect the IDC is the most connected stakeholder. As a state development financing institution, which provides finance for industrial development projects, the IDC is in this context structurally located to provide support to manufacturers who seek to beneficiate minerals and metals.

Table 5: Degree centrality findings of material exchanges in the MEC policy network

Stakeholder	Out-degree	In-degree
DNT	7.000	0.000
DMR	1.000	1.000
EDD	1.000	1.000
DST	1.000	1.000
DTI	4.000	1.000
DPE	0.000	1.000
DHET	0.000	1.000
NPC	0.000	1.000
MINTEK	0.000	0.000
CSIR	0.000	1.000
IDC	0.000	2.000

Note: Out-degree measure represents the number of ties stakeholders sends, while in-degree shows the actors who receive ties in the network.

Source: Results from fieldwork

The IDC has a dedicated Mining and Metals Beneficiation Business Unit established to assist and finance mining activities, value addition and other projects that promote job creation. Although the IDC falls under the EDD, there exists an indirect financial relationship between the IDC and the DTI, captured in Figure 14. In the 2012 *Budget Review*, the DNT introduced a six-year economic competitiveness and support package toward enhancing manufacturing competitiveness, and industrial development in South Africa (National Treasury, 2012). By 2013 the Medium Term Expenditure Framework (MTEF) directed R 8.6 billion to the DTI

toward the Manufacturing Competitiveness Enhancement Programme (MCEP), which offers financial support to enhance manufacturing competiveness as well as industrial development. The MCEP consists of the Production Incentive administered by the DTI and the Industrial Financing Loan Facilities managed by the IDC. Effectively, the flow of funds from the linkages between the DNT, the DTI and the EDD is captured in both Figure 14 and Table 5.

5.2.2.2.Betweenness centrality findings of financial exchanges in the MEC policy network

In policy networks actors who link otherwise unconnected actors are considered important because they control the interaction between other actors who must go through it to communicate and exchange resources with each other. Table 6 illustrates the betweenness centrality of the funding network calculated by UCINET. The numbers in the table illustrate the number of nodes that the actor connects in policy networks.

Table 6: Betweenness centrality findings of material exchanges in the MEC policy network

Stakeholder	Betweenness
DMR	1.000
EDD	1.000
DST	1.000
DTI	1.000
DPE	0.000
DPE	0.000
DHET	0.000
DNT	0.000
NPC	0.000
MINTEK	0.000
IDC	0.000

Note: The betweenness centrality measure reflects the number of times a node is an intermediary between other nodes.

Source: Results from fieldwork

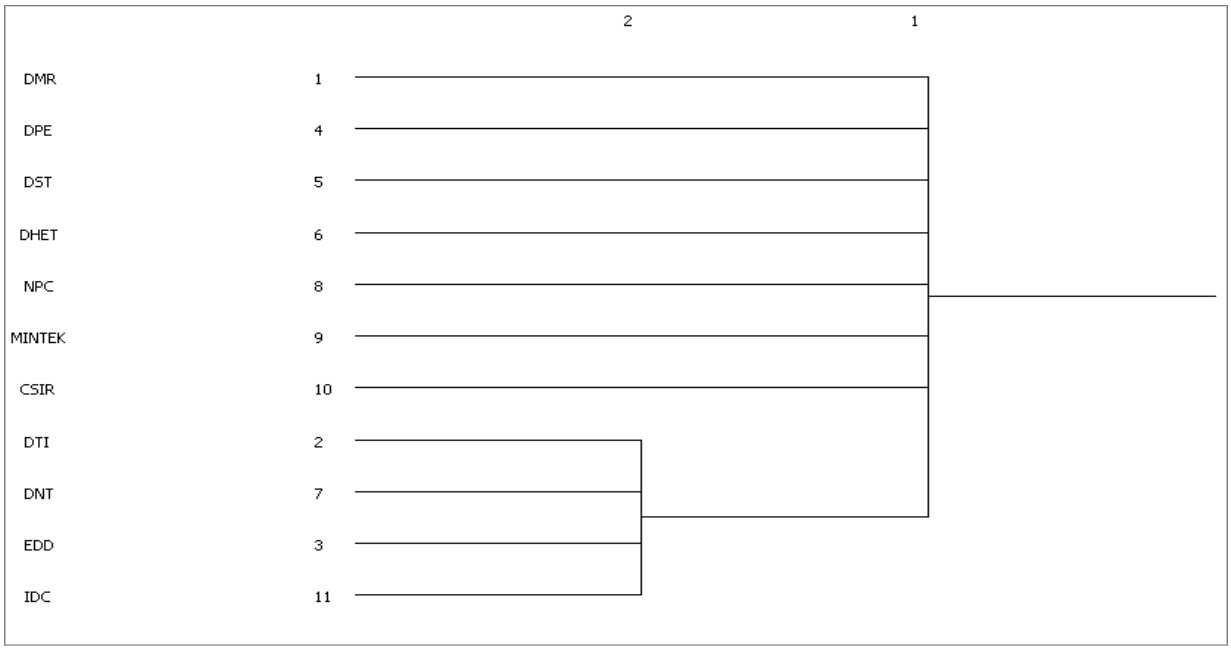
Table 6 shows that, on average, actor betweenness ranges from zero to 1. This implies that one actor is the bridge between other actors and that the hierarchy ranges from the DNT to the

DMR to MINTEK. Similarly, the betweenness centrality of the DMR is 1, suggesting the DMR is the intermediary between MINTEK and the DNT, and the DST is the intermediary between CSIR and the DNT. Taken as a whole, the results suggest that the government departments are the intermediaries between the DNT and the state agencies that require the funding to fulfil their various functions related to the beneficiation policy

5.2.2.3. The sub-structure analysis of the material exchanges in the MEC policy network

The analysis of network sub-structures is interested in analysing the sub-structures which form the broader macro network and how resources flow from the actors who control scarce resources to those who require the resources. Furthermore, sub-structure analysis offers meaningful insights into relational embeddedness of the actors in resource flows of the exchange network (Hanneman & Riddle, 2005). As the objective of the current thesis is to reveal structural and relational embeddedness of the resource exchanges, Figure 15 discloses the strategic relations that affect the cohesion and flow of material resource flows in the MEC policy community.

Figure 15: The hierarchical lambda set partitions of the financial exchange network



Note: The Lambda Set approach identifies relationships in a hierarchical clustering dendogram that ranks the relationships. The x-axis represents the level of the relationship, and the y-axis represents the nodes and the level or rank of the relationship at which they are clustered.

Source: Results from fieldwork

5.2.3. The results in relation to the primary research question

The primary research question that directed the research project was:

What roles do the stakeholders in the MEC policy network facilitate and what complex relationships prevail amongst them?

The data computed in UCINET reflects that the DMR and the DTI facilitate important roles in the dissemination of information on the beneficiation policy. These actors ranked the highest brokerage scores, pointing to their centrality in the information exchange network. The roles of coordinator and representative imply that these stakeholders control information on the policy. In a contentious policy domain like the beneficiation control over the flow of crucial information increases the power of stakeholders who are empowered to share information. Since 'knowledge is power' such brokers can manipulate information, play actors against each other or even exclude other actors in the process of information exchange (Freeman, 1978).

Equally, the ability to mobilise resources is considered to be an important indicator of power in policy networks, as observed by the theorists. Based on the data generated from UCINET, government institutions such as the Treasury and the IDC play influential roles in the MEC funding network. In structural terms, this particular network represents star-like characteristics since the DNT is the crucial cog in the network. As illustrated, funding flows in a linear and most importantly a hierarchical manner from the department to other departments who in turn distribute funding to agencies mandated to perform various R&D and financial obligations in relation to mineral beneficiation. The results support the theoretical premise that the government is "not an actor among actors" (Klijn & Koppenjan, 2000, p. 151), but rather a pivotal actor in the activities of the MEC policy network

5.3. Presentation and analysis of phase two data

The findings in phase one considered the structural and relational aspects on the resource exchanges in the MEC policy network. Furthermore, the data supported the theoretical premise that the amount of resources and the ability to mobilise resources towards a policy activity is an indicator of the level of influence for a stakeholder (Schmeer, 1999). To analyse the levels of influence and interest in the implementation of the beneficiation policy, the thesis sought to consider the type of influence stakeholders may exert and the level of interest in the implementation of the beneficiation policy. Influence levels as Section 4.5.3 outlined, are the sum total of the number of times an organisation was mentioned divided by the number of organisations in the network (Schiffer et al., 2010). The findings of the data analysis conducted

during phase one revealed nine stakeholders with high levels of influence. This section of the thesis presents the findings of the stakeholder analysis based on the levels of influence and interest recorded from the data analysis.

5.3.1. Stakeholder positions on the definition of beneficiation

The analysis of stakeholder interest is premised on the proposition that interest is closely related to policy definition and the position of the stakeholder regarding a policy (Schmeer, 1999). In this view, policy definition highlights a stakeholder's understanding of the policy under review and identifies those who may oppose policy choices due to their (mis)understandings. Similarly, the definition will inform the vested interest and position on the policy. As Ben Turok, Member of the South African Parliament (2012) mused, one of the challenges facing the beneficiation strategy is lack of common understanding of what beneficiation represents (Matthews, 2012). In the research interviews conducted on the beneficiation policy, respondents agreed with the normative principles of addressing the high unemployment rate in the country and reducing the dependence of the economy on resources. Furthermore, the interview data indicated consensus between the interviewees that the main challenges regarding the mineral beneficiation policy related to supply-side interventions such as electricity and security of supply for local beneficiators.

Despite this, interviewees diverged when it came to the most appropriate definition of beneficiation. The respondent from UASA acknowledged this conundrum: "I agree with the statement that we do not have a common understanding of what beneficiation is. What the employer views as beneficiation is vastly different from what organised labour will classify as beneficiation" (interview with UASA, 19 July 2013). Along similar lines, NUM acknowledged that a common definition is impossible given that stakeholders have different interests. From NUM's perspective, beneficiation represents a phenomenon of moving beyond the old practice of mining minerals from the pit to port [sic] and a process of "identifying a value chain from the mineral extracted from the ground and processing it to meet all the downstream industries" (interview with NUM, 10 July 2013). The respondent from the DST (24 July 2013) downplayed the merits of the beneficiation policy on the grounds that it lacks an informed understanding of the manner in which South Africa is integrated in global trade relations, to the DMR (12 July 2013). To the DTI (22 August 2013) and the EDD (27 July 2013) beneficiation represents an opportunity to grow and industrialise the economy.

The respondents highlighted the importance of the beneficiation strategy to the manufacturing process and thus saw it as the interface between mining and manufacturing (DMR, 12 July 2013; DTI, 22 August 2013). In particular, the DMR acknowledged the policy sought to utilise minerals in their final usable form as inputs into the local manufacturing process. The observations made from the interviews with the DMR (12 July 2013), the DTI (22 August 2013) and the EDD (27 July 2013) were corroborated by the IDC. The IDC argued that mining is not beneficiation, but forms part and parcel of the mineral value chain of which manufacturing forms an important part (interview with IDC, 19 July 2013). This is because the process of beneficiating minerals entails value-addition where minerals are processed into commodities, a process that entails manufacturing. The premise that beneficiation is not confined to mining is shared by the COM for whom "beneficiation is not a mining policy" (interview with COM, 22 August 2013).

The reason the COM refutes the notion that beneficiation is solely a mining policy is an economic one since beneficiation extends beyond the confines of mining and transcends other sectors such as manufacturing (interview with COM, 22 August 2013). The NUM respondent argued that the mining companies represented by the COM are export-oriented and do not care about secondary industry. The NUM respondent went on to reason that beneficiation is "not their [the] business [of the COM]" (interview with NUM, 10 July 2013). Inherent in the NUM perspective is the observation that the COM is intent to avoid restructuring the sector and that the COM is highly interested in profit maximisation at the expense of local industrialisation. Nevertheless, consensus exists amongst the interviewees that beneficiation represents a series of processes where value is added to the mineral in question at each stage of the value chain. The findings of the analysis suggest that from a policy perspective, beneficiation is an important input into strengthening the linkages between the mining and manufacturing sectors and possibly other sectors that are currently playing a less direct role in the industrialisation of the South African economy.

5.3.2. Stakeholder levels of interest in the implementation of the beneficiation policy

As mentioned in Section 5.3.1, stakeholder definition and understanding on the policy is important for determining stakeholder position and vested interest in the policy under review. This is important because it establishes whether the stakeholder is neutral, supports or opposes the policy. According to Schmeer (1999), determining stakeholder interest sheds light on the instrumentality of the stakeholder in the implementation of the policy. This section outlines the findings on stakeholder levels of interest in the implementation of the beneficiation policy as

observed in the interviews. The content in the following bullet-point sections refers to the data obtained from the phase two interview with the representative of the organisation, unless otherwise stated.

- Department of Mineral Resources (DMR)

The mission of the DMR is to enable a globally competitive, sustainable and meaningfully transformed minerals and mining sector to ensure that all South Africans derive sustainable benefit from the mineral wealth. As a result of its constitutional mandate, the level of interest and support in the implementation of the beneficiation strategy is very high (interview with the DMR, 12 July 2013). Such interest relates to the departmental objectives of reducing poverty and unemployment and eliminating income inequality. The respondent suggested "we hope it [beneficiation of minerals] will increase employment as it stimulates more economic activity; it will shift South Africa's economic structure from an unsustainable one that is dependent on raw materials to one that is sustainable, dependent on the export of tradable goods" (Interview with the DMR, 12 July 2013).

- Department of Trade and Industry (DTI)

Among the responsibilities of the DTI is the promotion of economic and industrial development in the economy. Through policies and strategies such as IPAP, NIPF and MCEP the department has targeted the mineral sector to promote the competitiveness of value adding sectors and increase the labour absorption rate of the economy. While the department strongly supports the policy on mineral beneficiation, the advantage and interest to the DTI is also very high (interview with the DTI, 22 August 2013). During the in-depth interview, the respondent maintained that the beneficiation strategy is important to unlocking the growth potential of the economy. The respondent went on to reiterate that growing the economy through beneficiation is strategic in attaining their [the department's] mandate (interview with the DTI, 22 August 2013).

- Department of Science and Technology (DST)

As a state institution responsible for scientific research, the DST generally has an interest in the beneficiation policy. When asked to rate the level of interest of the DST, the respondent chose 'medium level of interest', indicating a neutral position on the beneficiation policy (Interview with the DST, 24 July 2013). One of the main reasons for selecting the option is highlighted by the level of support the DST exhibits for the policy. By stating that the department 'somewhat supports the policy', the respondent noted the policy had objectives that

sound reasonable but cautioned that beneficiation is not a job creator (interview with the DST, 24 July 2013). Based on the current project in the titanium sector, the respondent estimated that a titanium plant could generate a mere 1500 jobs. According to the respondent, generating 1500 jobs does not amount to "the creation of massive jobs as set out by the beneficiation policy" (Interview with the DST, 24 July 2013). The respondent concluded that benefit from economic activity in the mining industry is derived from foreign earnings obtained from exports. As such, it was stressed that mining and sidestream industries create more jobs than beneficiation, which is a high tech and specialist industry (interview with the DST, 24 July 2013).

- Economic Development Department (EDD)

The EDD is mandated to coordinate government economic policies in line with the NDP. The department aims to contribute to the growth, development and employment targets by ensuring coherence between the economic policies and plans of the state institutions (interview with the EDD, 27 July 2013). Based on this, the department has positive interest in the strategy, because it ensures attainment of the departmental mandates. According to the respondent the department's positioning on the policy is positive since it "benefits the mandate of job creation in collaboration with other government departments such as DTI" (interview with the EDD, 27 July 2013).

- Industrial Development Corporation (IDC)

As a developmental financing state institution, The IDC has an interest in the implementation of the beneficiation strategy (interview with the IDC, 19 July 2013). It has a dedicated Mining and Metals Beneficiation Business Unit, established to assist and finance mining activities, value addition and other projects that promote job creation. It was observed that the IDC has a very high level of interest in the policy since the policy of beneficiating minerals in South Africa provides an opportunity for the IDC "to continue supporting the developmental objectives of the state" (interview with the IDC, 19 July 2013).

- Chamber of Mines (COM)

On the macro-level, the COM represents and articulates the policy interests of the mining industry through various state organs. According to the respondent, the COM supports the noble objectives of the policy, but disagrees with section 26 of the 2008 Amended MPRDA Act No. 49 that compel mining companies to set aside a portion of mining output for use in local beneficiation (interview with the COM, 22 August 2013). Rather, the interest of the COM "lies in competitive supply agreements that support the sustainability of the mining industry"

(interview with the COM, 22 August 2013). Thus support of the policy is contingent upon the removal of the clause that compels mining companies to set aside a portion of mining output. According to the NUM respondent, the COM is not interested in the beneficiation policy because it threatens their interests such as profit maximisation and capital accumulation. The respondent from NUM reasons that setting aside 10 per cent of mining output for use in South Africa is a loss because that 10 per cent is a loss in billions of foreign earnings for the mining companies (interview with NUM, 10 July 2013). In principle, the position of the COM towards the beneficiation strategy is one of a conditional supporter given its level of interest as observed by the researcher.

- National Union of Mineworkers South Africa (NUM)

NUM facilitates a meaningful role in protecting worker interests in the mining industry. Such interests are related to health and safety issues in the mines, wage negotiations and protecting workers from retrenchments. According to the NUM respondent, beneficiating minerals will lead to the creation of "massive jobs and of course NUM membership will increase" (Interview with NUM, 10 July 2013). It stands to reason that the interest of NUM is two-fold. On the one hand, NUM's interest is tied to maintaining if not increasing its membership base, considering it lost a considerable portion of its membership base to AMCU and NUMSA following the August 2012 Marikana Massacre (Steyn, 2013). The second interest for NUM relates to retaining or regaining its status as the union with the largest membership base in Cosatu. According to the statistics released by Steyn (2013), the membership losses of NUM moved it to the fourth largest Cosatu affiliate while NUMSA became the largest Cosatu affiliate. As a result, another official from NUM acknowledged that there are "politics" between NUM and NUMSA, which limit the extent of engagement and communication between the two COSATU affiliates (Anonymous, 21 July 2013).

- United Association of South Africa (UASA)

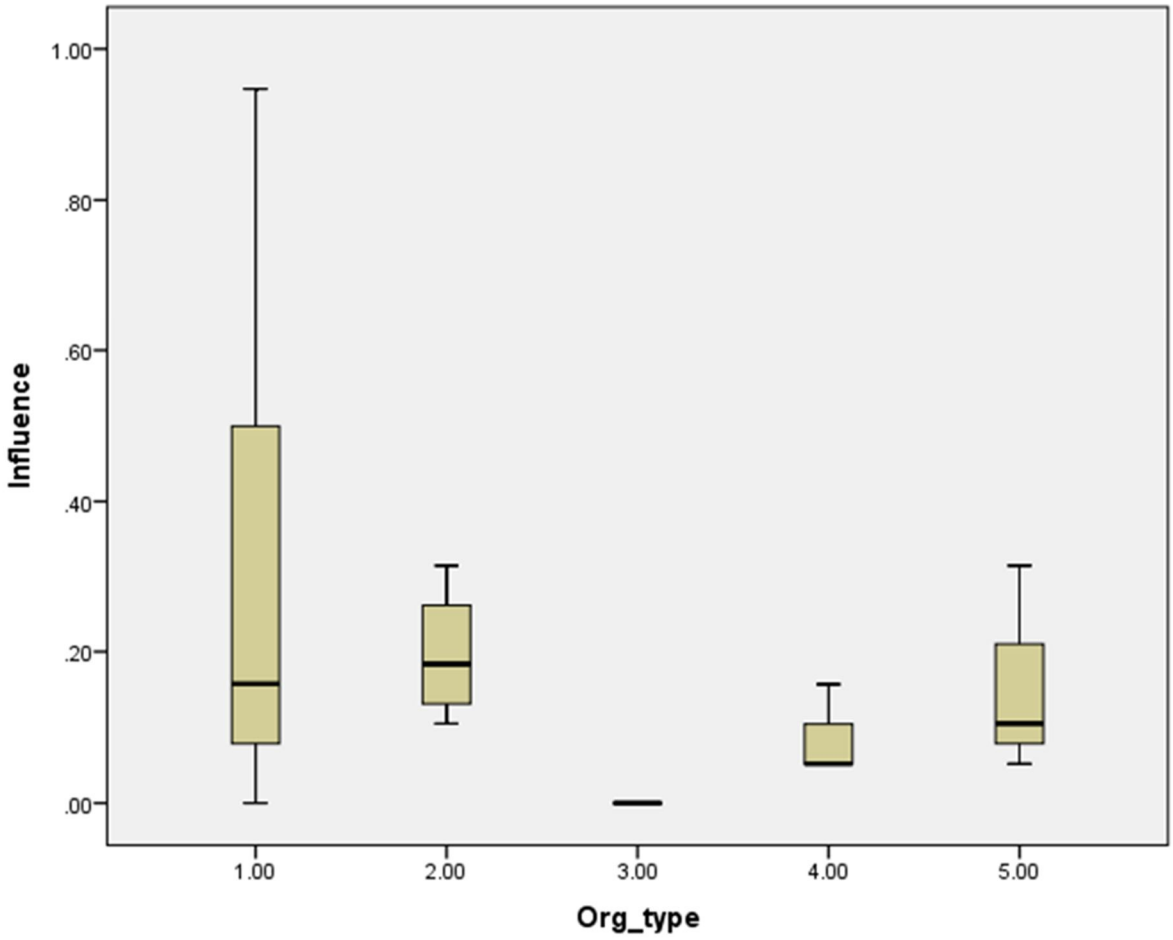
Much like NUM, UASA has an interest in the beneficiation policy since its implementation will solve the job crisis in the country and advantage their members who will get jobs (interview with UASA, 19 July 2013).

With the exception of the DST, the above discussion reveals that the DMR, the DTI, the EDD, the IDC, NUM and UASA and COM have high levels of interest and support in the objectives and the implementation of the policy.

5.3.3. Stakeholder levels of influence in the implementation of the beneficiation policy

Influence, as conceptualised in Section 1.7 of the thesis, entails the ability of the stakeholder to shape policy decisions in alignment with the policy preferences of the stakeholder. In effect, influence empowers stakeholders with the ability to control decision-making processes and affect policy outcomes (Young, Lewis & Sanders, 2010, p. 30). Within policy networks, stakeholders possess different degrees and levels of influence to control, shape and affect the public policy-making processes. Some have financial resources needed in the implementation of a policy while others have technical information required in the implementation of public policies. Figure 16 illustrates that the distribution of influence varies across organisations.

Figure 16: The distributional influence scores across organisational affiliation in a boxplot



Note: In Figure 16 the x-axis represents the organisations where 1.00 = Group one, the government departments, 2.00 = Group two, organised labour, 3.00 = Group three, Governing party, 4.00 = Group four: Public institutions and 5.00 = Group five: Organised business associations. The y-axis is the total level of influence of each Group in the implementation of the policy based on summing up the number of times an organisation was mentioned, then dividing this by the number of organisation in the network

Source: Results from fieldwork

The distribution of influence scores across organisations is shown in Figure 16 in the form of box plot depicting the mean, second and third quartiles (Q2 and Q3, respectively) as the box and the first and fourth quartiles as the whiskers (Q1 and Q4 respectively). The first observation is that the upper quartile or 75th percentile of Group one is relatively higher than the other groups. Secondly, Group two stakeholders have the second highest influence scores, followed by Group five and Group four. This suggests that government institutions have higher influence relative to other groups in the implementation of the beneficiation policy. As the policy network theorists in section 3.3.2 argued, stakeholders influence policy based on policy relevant resources such as information, funding, technical skills and experience policy implementation (Knoke et al., 1996; Klijn & Koppenjan, 2000).

In all interviews conducted in round two of data collection, respondents acknowledged that the influence of the DMR lies in its regulatory and legislative authority in the mining industry. As custodians of the policy, the DMR respondent argued that the main objective of the department in relation to the beneficiation policy is to ensure security of supply by compelling mining companies to set aside a portion of production at developmental prices (interview with the DMR, 12 July 2013). Thus, regulatory authority is the main source of power for the DMR in relation to the implementation of the policy. Furthermore, the respondents from the DMR, the DST (24 July 2013), the EDD (27 July 2013), NUM (10 July 2013), the IDC (19 July 2013), and the DST (24 July 2013) highlight funding as an important resource for the implementation of the policy. In that regard, the six respondents acknowledged the importance of the DTI.

Interestingly, respondents representing the DMR and the DST questioned the institutional relevance of the EDD, with the DST citing the establishment of the department as an example of state patronage (interview with the DST, 24 July 2013). The DMR noted that the institutional mandate of the EDD is to coordinate economic policies and "unblock any constraints that may arise in policy processes" (interview with the DMR, 12 July 2013). However, the DMR assessed that the "coordination role of the EDD duplicated the functions of the Economic Sector and Employment Cluster, which by and large coordinates policy-making among government departments in the economic sector" (interview with the DMR, 12 July 2013). With the exception of the DTI (interview with the DTI, 22 August 2013) none of the respondents interviewed in phase two acknowledged the importance of the DST as government department mandated with R&D. In many respects this supports the proposition of the DST respondent that this department has low levels of influence in the implementation of the policy (interview with the DST, 24 July 2013).

Accordingly, “the DST is a small department compared to the others; the department does not have regional and provincial departments in South Africa. So in the hierarchy of economic departments DST is extremely small compared to the DMR and the DTI” (interview with the DST 24 July 2013). The respondent lamented that the annual budget for the Mining and Minerals Beneficiation unit is “R 40 million, the DMR’s budget is about R 4 billion, SKA gets more money than me” (interview with DST 24 July 2013). This response suggests that the national government is yet to recognize the important role played by the DST in the policy implementation process relative to the DTI and the DMR. The significance of the DST is to foster R&D, which is important for developing the skill set and world-class technology needed by the mineral beneficiation sector.

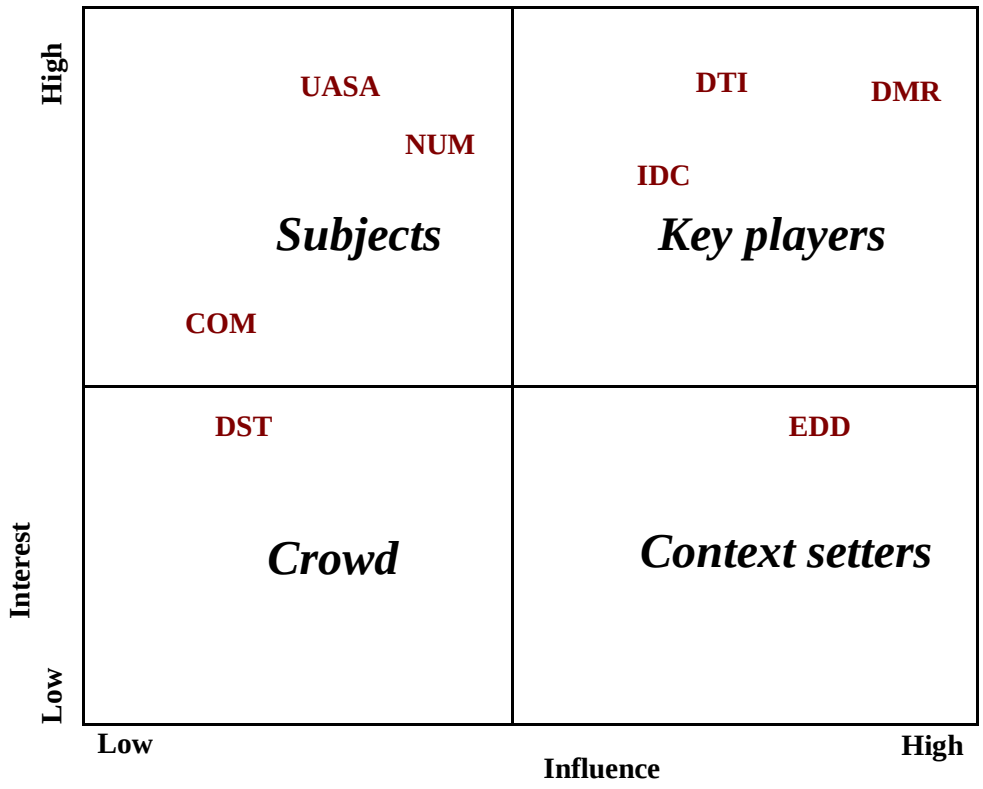
Overall, the findings generated from the in-depth interviews highlight that the respondents perceived the DMR and the DTI as the most influential government departments in the implementation of the beneficiation policy. The respondents highlighted that the DMR is in possession of information resources such as scientific knowledge, legal authority and political authority. In line with the theoretical premise developed in section 3.3.2, the possession of these resources does not result in the loss of power for the possessor, as Knoke et al. (1996, p. 18) theorise. Thus, the DMR retains its privileged position of power in the MEC policy network. Additionally, respondents identified the DTI as an equally important actor in the implementation of the policy (interviews with the DMR, 12 July 2013; the EDD, 27 July 2013; the DST, 24 July 2013). For theses respondents, the DTI is in possession of physical resources such as funding for the implementation of the beneficiation policy. Additionally, three government departments – the DST, the EDD and the DTI – cited the IDC as an instrumental stakeholder in funding beneficiation projects (interviews with the DST, 24 July 2013; the EDD, 27 July 2013; the DTI, 22 August 2013).

The six interviewed stakeholders – the DMR, the DTI, the EDD, the DST, the IDC as well as the COM – neglected to recognise the role of organised labour in the implementation of the policy (interviews with the DMR, 12 July 2013; the DTI, 22 August 2013; the EDD, 27 July 2013; the DST, 24 July 2013; the IDC, 19 July 2013; the COM, 22 August 2013). This highlights the argument in Section 5.2.2 that actors tend to focus on actors similar to them (Hanneman &Riddle, 2005). For example, UASA in this round of interviews focussed another organised labour union by relating the importance of NUM to the level of worker representatively which the union has in the mining industry (interview with UASA, 19 July 2013).

NUM did not reciprocate this to UASA. Rather, the NUM respondent noted that NUMSA was an important stakeholder in the implementation of the policy. The NUM respondent reasoned that the "political muscle and ability to shape policy in the manufacturing sector is an important resource of NUMSA." When probed further on the structure of the MEC as a policy network, the NUM respondent argued that NUMSA was "never part of these official processes and I do not remember them participating in the official processes" (interview with NUM, 10 July 2013). In his view, NUMSA is important and influential because the union organises in "that end of the [mineral] value chain". During stage one of data collection the respondent from NUMSA charged that the government side-lined the union during the official policy formulation processes (interview with NUMSA, 20 May 2013). This observation was corroborated by the DMR in the interviewee's statement that "[they] do not engage NUMSA" (interview with the DMR, 12 July 2013).

Be that as it may, stakeholders such as CSIR and MINTEK were seen by the DST (24 July 2013), the DTI (22 August 2013), the EDD (27 July 2013), the IDC (19 July 2013) and UASA (19 July 2013) as important actors due to their R&D functions. Based on the responses and findings of the data analysis, Figure 17 illustrates the eight policy network stakeholders (DMR, the DTI, the EDD, the DST, the IDC, UASA, NUM as well as the COM) in an influence interest matrix. The stakeholder matrix summarises stakeholder attributes based on their respective levels of influence and interest in the implementation of the policy. The stakeholder analysis matrix presented in Figure 17 shows that the key players quadrant of those with high influence and high interest in the policy includes the DMR, the DTI and the IDC; the subjects (have low levels of influence but high interest in the policy) includes non-state actors the NUM, the COM and UASA. Furthermore, the EDD is the context setter based on the findings that it exerts a high influence level but low interest in the policy and finally the DST is a stakeholder in the crowd quadrant as it has both low levels of influence and interest in the policy.

Figure 17: The influence interest stakeholder analysis matrix of the influential stakeholders in the MEC policy network



Note: This grid arrays stakeholder on a two-by-two matrix where the dimensions on the x-axis represent the level of influence in the policy, and the y-axis, the level of interest in the implementation of the policy. In the interest category, the stakeholder respondent were asked to indicate, their own the level of interest in the implementation of the beneficiation policy. The researcher scored these responses on a Likert-type scale where 5 represented a high level of interest in the implementation of the policy, 4 represented a high level, 3, showed a medium level, 2 a low level and 1 indicated the stakeholder had a very low level of interest in the implementation of the beneficiation policy. Similarly, in the influence category, the responses were scored on a scale of 1-5 to show that a 5 indicated a very high level of influence in the implementation, a 4(high level of influence, 3 (medium level of influence), 2 (low level of influence) 1 (very low level of influence). Following this the categories were summed up and tabulated into the influence interest matrix

Source: Results from fieldwork

Based on the findings of Figure 17, the remainder of the discussion details the interpretations of the stakeholder analysis. The contents of these following sub-sections represent the author's interpretation of interview data.

- The key players quadrant: the DMR, the DTI and the IDC

The key players' quadrant in Figure 17 includes the DMR, the DTI and the IDC. As central nodes in the information network, the power of the DMR and the DTI emanates from their constitutional mandates. The DMR possesses the legal authority to compel mining companies to set aside a portion of mining output. Furthermore, it has discretion over resource use in that it has the ability to articulate a credible threat or withdrawal of resources such as awarding mining licenses to mining companies. Based on the conceptualisation of section 1.7 and the theoretical framework guiding the thesis, it can be argued that the DMR has the power to persuade and influence behavioural outcomes of stakeholders in the mining industry in general and with regard to beneficiation policy in particular, such as the COM, UASA and NUM.

The power of the DTI is understood as utilitarian, based on the ability to mobilise physical resources such as funding toward the implementation of beneficiation-related projects. Both the interests of the DMR and the DTI are driven by the normative objectives of achieving economic and industrial development in the economy of South Africa. Unlike government departments such as the DMR and the DTI, the IDC has no power to persuade or compel stakeholder behaviour. Rather, the IDC possesses influence which stems from its ability to mobilise physical resources toward the implementation of the beneficiation policy.

- The subjects quadrant

In this quadrant, UASA, NUM and the COM form part of the subjects in this policy network. The term subject describes stakeholders who have high interest in the implementation of the policy, but possess low levels of influence when compared to the key players. The COM has an interest in the normative objectives of the policy, but claims the policy may adversely affect the sustainability of the mining industry and investor confidence. UASA and NUM are driven by the shared belief of protecting worker interests and maintaining their representation in the mining industry.

- Context setters

As a context setter, the EDD has influence in policy-making through coordinating the economic policies of the government. However, interest in the implementation of the policy is low as the respondent indicated the department could not commit physical or utilitarian resources to the implementation, as this would divert resources away from the "day-to-day" operations of the

department (interview with the EDD, 27 July 2013). Effectively the EDD has other concerns that are perceived to be more important than the beneficiation policy.

- Crowd

Since the respondent representing the DST highlighted that the DST has low levels of influence in the implementation of the policy, the respondent also outlined that the DST has a medium level of interest in the implementation of the policy. The respondent indicated the policy does not affect their core functions of R&D (interview with the DST 24 July 2013).

5.3.4. Emerging stakeholder perceptions: the implementation of the beneficiation policy

During the stage two interviews, the subject of institutional arrangements emerged as an important theme in evaluating whether the current institutions provide a supportive framework for the implementation of the policy. For example, the respondent from the IDC argued that under the DMR, the beneficiation policy is misplaced "because miners do what they do best, which is to dig (the mineral) out of the ground, process it, upgrade it, crush it and get it to the right size, increase concentration, and refine it, but further on it is a manufacturing" (interview with IDC, 19 July 2013). The respondent postulated that the DMR is a regulatory body governing the mining industry. Since the IDC respondent views beneficiation as a manufacturing process, the DTI, in this context is the most appropriate institutional body to provide support for the beneficiation policy. The respondent from the DST advanced a similar observation but observed that the economic government departments functioned independently on cross-cutting issues.

The respondent illustrated that South African Airways (SAA), an SOE under the DPE, purchased fleets from Boeing and Airbus (interview with the DST 24 July 2013). These aircraft manufacturing companies, as discussed, purchase titanium from South Africa and in turn use the titanium to manufacture the aircraft. Since South Africa has producer dominance in titanium, the respondent suggested the government ought to negotiate off-take agreements that encourage the companies to assist in developing the productive capacity across various segments of the manufacturing sector in the country. Furthermore, the respondent adopted a critical stance regarding the institutional arrangements governing the transport industry in the country. The Department of Transport does not govern the entire transport industry, but only commuter transport; the DTI on the other hand governs the movement of cargo; and the DPE through Transnet governs ports, harbours and aviation. Due to the lack of an integrated

transport system, he asked whether "it any wonder we do not have a public transport system in South Africa?" (Interview with the DST 24 July 2013).

Furthermore, the respondent alluded to the need for a coordinating super-ministry that can oversee the functioning of the economy. The respondent cited Finland as an example of a resource rich country that successfully industrialised through the coordinating ministry called the Department of Employment and the Economy (Interview with the DST 24 July 2013). The Finish government department, in view of the respondent is a combination of the DTI, DPE, DST and the DHET in South Africa. Based on the institutional alignment of the Finish regime the respondent remarked "it makes you realise why Nokia became one of the powerhouses it is today" (Interview with the DST 24 July 2013). The discussion on the economic super-ministry elicited controversial remarks from the respondents, many of whom opted not to respond to the question. Nonetheless, the IDC remarked that they "support an overall coordination role, but the beneficiation policy does not require a super-ministry, because there would be some duplication as the EDD facilitates that role" (interview with IDC, 19 July 2013). Likewise, the DMR respondent argued that the EDD facilitates an important role in coordinating policy domains in the economic sector (interview with DMR, 12 July 2013).

5.3.5. The results on the secondary research question

What do the central stakeholders perceive as advantages and disadvantages of the beneficiation policy?

In the main the stakeholders alluded to some challenges facing the policy. In line with section 2.3.2 and 2.3.3 of the literature review, stakeholders such as the DMR and the NUM noted that access to raw material for use in local beneficiation whereas the DST proposed that institutional arrangements posed challenges to the implementation of the policy. While these challenges pose significant disadvantages to the implementation of the policy, the stakeholders identified a number of advantages in implementing the policy. Firstly, the influential stakeholders understood beneficiation as a series of production processes where value is added to the mineral in question at each stage of the mineral value chain. Secondly, the stakeholders were in favour of the policy, noting it represents an important policy intervention that seeks to strengthen the linkages between the mining and manufacturing sector in South Africa. The findings suggest that the stakeholders perceive the beneficiation as an apt policy that seeks to increase the absorption rate of the labour market and contribute to transforming the economy from a

producer and exporter of raw materials to that of a manufacturer of products higher up the mineral value chain. In many respects, the stakeholders perceived this as a major advantage in strengthening the industrialisation strategy and the competitive advantage of the economy.

5.4. Conclusion

The data generated from phase one of the research projects identifies the DMR and the DTI as crucial actors in the information exchange policy network. These stakeholders display high measures of degree centrality, which influences how stakeholders network in information exchanges. In the section on brokerage analysis, the data showed that NUM, the DMR, the DTI and the EDD take on important brokerage roles which connect actors from different sub-groups. Furthermore, the UCINET analyses identified that the DTI, the DMR, the EDD, the DST and the ANC form the core of the information network. Viewed from the policy network theory, these actors form part of the dominant coalition which controls the process of networking and resource exchange (Rhodes, 1997). On the other hand, the funding network exhibits a star-like structure because funding flows in a hierarchical manner from the DNT. Furthermore, the findings reveal that the linkages between the DNT, the DTI, the EDD and the IDC have considerable bearing on the flow of financial resources in relation to the beneficiation policy.

Phase two conducted an analysis of the stakeholders identified as influential in the implementation of the policy. Stakeholders were then categorised into a stakeholder matrix based on attributes such as influence and interest in the implementation of the policy. The key player quadrant specified the DMR, the DTI and the IDC as stakeholders with high levels of influence and interest in the implementation of the beneficiation policy. Due to the information resources of the DMR and DTI and material resources at the disposal of the DTI and IDC, the three stakeholders have considerable bearing on the implementation of the policy. Analysed from the policy network theory (see Knoke et al., 1996; Klijn & Koppenjan, 2000) these actors are indeed indispensable to the policy network and the objectives of the beneficiation policy. The implications of the trends that emerged from the data results are presented in Chapter 6.

Chapter 6

Summary and conclusions

6.1. Introduction

This exploratory sequential thesis unpacked how the MEC as a *policy network of stakeholders* is constituted and operates in terms of the resource exchanges around the beneficiation policy. The research proposition argued that stakeholders in possession of highly valued resources in the MEC policy network are likely to exercise higher levels of influence in the implementation dynamics of the beneficiation policy. This proposition proved true as the results generated from phase one revealed a limited number of influential stakeholders in the MEC policy network. Moreover, phase two detailed the policy perceptions of the influential stakeholders along with the stakeholder level of interest and influence in the implementation of the beneficiation policy. The objectives of this chapter are to summarise the findings of this exploratory sequential thesis. Section 6.1.1 recounts the theoretical framework and the findings of the literature survey in order to position the research findings. Section 6.1.2 and section 6.1.3 summarise the findings of phases one and two, respectively, while section 6.2 concludes that this application of the network analytic techniques offered significant insights on the process of mineral policy development and implementation in South Africa.

6.1.1. Interpretations of the literature survey and theoretical framework

Among the principle conclusions drawn in the literature survey was the finding that the MEC is to be seen as a system of capital accumulation particular to South Africa (Fine & Rustomjee, 1996). Viewed as a system of accumulation, the MEC inhibited the adoption of policies that targeted diversification of the economy beyond mineral resource dependence. Secondly, the literature detailed the historical process behind mineral policy development, which involved an intimate relationship between the state and organised business associations, such as the COM in the MEC. Thirdly, a key argument proposed by Fine and Rustomjee is that the MEC has evolved over time to include new actors in the process of mineral policy development and implementation in South Africa. This thesis found evidence that the MEC, as it exists today,

has evolved into a policy network of participant stakeholders in mineral policy development and implementation.

The literature surveyed in chapter two of the thesis illustrated that the key interests of the MEC as a system of accumulation lay in resource extraction. Initially the MEC arose to preserve the economic interests of English capital in the mineral, energy and financial sectors of the South African economy. Over time, the MEC evolved to incorporate both Afrikaner and African stakeholders in the process of mineral policy development and implementation.

In terms of the theoretical framework guiding the study – that of policy network theory – policy is formulated in a network of policy stakeholders. Under this interpretation, policy networks comprise stakeholders from government departments, business organisations civil society organisations as well as other groups with an interest in a policy domain. It is theorised that stakeholders participate in policy networks to influence the outcomes of policy in line with the interests of the stakeholder organisations or institutions. Based on the above, policy networks represent instrumental tools for policy stakeholders. Another rationale for stakeholder participation in policy networks stems from the lack of the necessary resources to achieve their preferred policy goals. Thus, participation in policy networks centres on resource exchange (Bevir & Richards, 2009). In the process of resource exchange a network of mutually dependent actors emerges (Klijn & Koppenjan, 2000). These dependencies result in power relationships in which various actors aim to maximise influence and attain their policy preferences (Rhodes, 1997).

Within the policy network theory, theorists either view policy networks as interest intermediation or as new governance. Conceptions that view policy networks as interest intermediation share common understandings of policy networks as power dependency relationships between the government and interest groups in which resources are exchanged (Börzel, 1998). The scholarship that emerged from the British school of thought on interest intermediation argued that power in policy networks is the result of the resources of each stakeholder. Furthermore, the powerful actors in policy networks determined the distribution of those resources (Rhodes, 1997, p. 37). As a result of the relative power and distribution of resources, influence in policy favours the preference of the actors with more power and control over material and non-material resources (Robinson & Keating, 2004).

6.1.2. Phase 1 findings

The thesis found that the dominant exchanges within the MEC policy network centres on the exchange of information and financial resources. These findings generated two types of exchange networks: the information exchange network and the financial resources network. The findings illustrated a centralised network with regard to financial resource exchanges in relation to the beneficiation policy. The funding network exhibited star-like characteristics with high levels centralisation and the hierarchical distribution of funds. Due to the institutional framework of the South African government, funding is channelled from the DNT, through to various government departments that in turn channel funds to their respective state agencies. In essence, the results point to the asymmetrical distribution of power since the government controls the key financial resources in the MEC policy network. Essentially, the DTI, the EDD, the DNT and the IDC are strategic channels for financing beneficiation related projects in the mineral sector.

Klijn and Koppenjan (2003, p. 147) theorise that coordinating actors do not exist in policy networks. However, the results generated from UCINET reflect the contrary in terms of information exchanges of the beneficiation policy. UCINET measures revealed that government departments such as the DMR, the DTI, and the EDD facilitate significant brokerage roles that enable the stakeholders to control the flow of information among policy network stakeholders. As the measures of centrality analysis have shown, these government departments possess relatively higher number of ties than any other stakeholders such as organised labour and business organisations. Based on the results computed in UCINET, it can be concluded that the government is relatively powerful in the dissemination of information in the policy network. Furthermore, there is evidence that stakeholders closely aligned to the DMR received information on the policy, a dynamic that suggests selective sharing of information with similar organisations.

Unlike stakeholders located in the periphery of the network, those aligned to the DMR are either drawn from the Economic Sector and Employment Cluster or from the mining industry. As a result of sectoral alignment and jurisdictional frameworks, organised labour unions such as the NUM, Solidary and UASA and business organisations such as the COM and SAMDA have representation on advisory committees and decision-making bodies established around mineral policy development. Apart from the aforementioned government departments, the DMR engages its own stakeholders, those in the mining industry. The engagement of such stakeholders, who are impacted by mining policy and the regulatory framework promulgated

by the DMR, represents normative stakeholder engagement since these stakeholders have legitimate rights in policy processes. The peripheral stakeholders, such as the Manufacturing Circle and NUMSA, are drawn from the manufacturing sector and as a result they have minimal engagement with the DMR.

Arguably, the stakeholders from the manufacturing sector do not speak the same language as the mining industry stakeholders; there are different policy frameworks guiding sectors that are linked in a rather "messy and unpredictable" way (Richardson, 2000, p. 1008). As a result of this, it is tempting to view the isolation of the marginal actors along the theoretical premise that these actors lack relational ties to key actors (as suggested by Marsh & Smith, 2000). However, the two stakeholders exchange resources with the DTI, a central stakeholder in both the funding and the information exchanges network. Both stakeholders have considerable industry knowledge and technical experience on the manufacturing end of the mineral value chain. Where NUMSA represents workers in the manufacturing and related sectors, Manufacturing Circle is an industrial employers' organisation. Within this context, the relational ties to the DTI centre on exchanging information resources about the manufacturing and beneficiating sectors of the South African economy.

Marsh and Smith (2000) also theorise that peripheral actors lack policy relevant resources. The data generated showed the DPE as another isolate in the information exchange network. The isolation of the DPE points to a lack of understanding on the importance of process management. As observed by Klijn and Koppenjan (2000) process management seeks to strengthen the policy process through the inclusion of peripheral actors in possession of key resources. Not only do the authors make this recommendation for normative reasons, but highlight the transaction costs of excluding stakeholders in possession of policy relevant resources (Klijn & Koppenjan, 2000). Section 2.3.1 of the literature survey highlighted the infrastructural constraints such as the provision of physical infrastructure in favour of raw material exports and the high electricity costs. The DPE governs the SOCs such as Eskom and Transnet. As a result of the legislative authority and facilities at the disposal of the DPE, it is in possession of the power to influence the operations of the SOCs.

In many respects, isolating the DPE highlights a weakness in the policy alignment of overlapping economic policy issues in South Africa. More importantly it reflects shortcomings in how the DMR and the EDD fulfil their brokerage roles in the network constituted around the beneficiation policy. Considering the mining industry stakeholders lack the wherewithal to

implement the policy, what is required of the policy brokers is facilitating dialogue and communication with stakeholders that transcend other sectors pivotal in the policy. Without input from these stakeholders, the policy will stagnate, resulting in transaction costs such as jobless growth and stakeholder conflict that manifests in different avenues. Chief among them is the NUMSA 2013 resolution to organise a series of wild cat strikes calling for radical policy transformation in mineral beneficiation.

6.1.3. Phase 2 findings

The results generated in the analysis of the stakeholders illustrated the different levels of interest and influence stakeholders have in the implementation of the beneficiation policy. Based on these attributes, Figure 17 categorised the stakeholders into four groups, namely, the key players, the subjects, the context setters, and the crowd. This revealed significant differences in stakeholder levels of interest in the policy. For example, two government departments, the DST and the EDD, exhibited lower levels of interest in the implementation of the policy. At the very least, the comments from the two respondents signify what Rhodes refers to as "the tunnel vision" dynamic where government departments "do not see beyond the boundaries of their areas of specialisation" (Rhodes, 2011, p. 227). In other words, these government departments focus insularly on their own organisational objectives despite the fact that the beneficiation policy cuts across departmental boundaries.

In response to this silo mentality, Rhodes (2011) suggests the concept of joined-up government. The term describes a situation of joining up government departments horizontally in pursuit of policy coordination. Accordingly, the joined up government concept works on the premise that joining up government departments enables them to share information, coordinate actions towards the achievement of cross-cutting policy goals (Rhodes, 2011, p. 227). One such example as defined by Kraak (2009) is horizontal coordination of government departments at the macro level. In essence, "horizontal coordination is the management of a set of activities between two or more organisational units, where the units do not have hierarchical control over each other and where the outcomes cannot be achieved by the units working in isolation" (Kraak, 2009, pp. 13-14).

The aforementioned Economic Sector and Employment Cluster system is a case in point where departments in areas of economic policy are grouped together or 'clustered' due to complementary mandates of several government departments, "to ensure cohesive and coordinated policy-making across and between different government departments" (Gumede,

2010, p. 176). While the cluster system represents significant attempts towards the joined-up government concept, policy analysts have hinted at the establishment of a coordinating super ministry to coordinate sectors that drive economic growth and industrialisation (Kraak, 2009; Jourdan et al., 2012). Even though these discussions have manifested different viewpoints, at the heart of debates is the fact that industrialisation starts with a dedicated unit that oversees the processes.

During the data collected for the thesis, divergence was observed amongst respondents over the necessity of a super-ministry. Where the IDC and the DMR reasoned that the super ministry was superfluous since the EDD facilitates the coordinating role, the DST respondent alluded to the need for an empowered ministry to oversee departmental alignment in the implementation of the policy. While the call for a super-ministry is an ideal and attractive response to the problem of institutional misalignment, its establishment is not without political consequence given the strong entrenched interests in maintaining the status quo in the mineral sector. Since the coordinating institution does not exist in South Africa, one option is to establish it with all the associated challenges and politics described in section 2.3.3 of the literature survey. The second alternative is for the policy to be managed by an existing institution such as the EDD. Although the EDD fulfils a brokerage role in the MEC policy network and in the broader macro-economy, its political legitimacy within the other government departments needs to be anchored.

Within the context of the beneficiation policy, the institutional arrangement debate is closely related to an understanding of the productive processes in beneficiating minerals down the mineral value chain. This thesis adopted the definition that beneficiation entails a series of value addition activities through various manufacturing processes of the mineral value chain. Respondents interviewed reached similar conclusions on the definition of beneficiation, noting that the policy represents an important intervention for strengthening the competitiveness of the South African mineral sector. As a result of the findings, this thesis has contributed towards the understanding of beneficiation from a policy perspective.

The thesis distinguished stakeholders as key players, subjects, context setters and the crowd based on their levels influence and interest in the implementation of the beneficiation policy. The subject quadrant included the NUM, the COM, and UASA. The context setter quadrant included the EDD based on the findings that it exerts a high influence level but low interest in

the policy and finally the crowd quadrant included the DST as it has both low levels of influence and interest in the policy. Furthermore, the stakeholder matrix showed that the DMR, the DTI and the IDC are the key players of the MEC policy network in relation to the beneficiation policy due to their high levels influence and interest in the policy. The stakeholder analysis showed that indeed stakeholders have varying levels of influence, based on the resources at their disposal and their level of interest in the policy.

For example, the COM, an influential lobby group in the mining industry has low levels of influence in the implementation of the beneficiation policy because beneficiation extends beyond the mining industry interests, which centre on raw material extraction. Although organised labour unions in the mining industry such as the NUM and UASA exhibit high levels of interest in the implementation of the policy, these stakeholders do not possess the resources to implement beneficiation, as the process of adding value falls beyond the mining industry and resides in the manufacturing sector, where NUMSA organises and possesses labour power in the sector. In terms of the government departments, the data showed that influence in this network resides with the IDC, DTI and the DMR.

The main significance of the results generated in the thesis is in the finding that there is a strong connection between the position of the actors in the resource exchanges of the MEC policy network and their level of interest and influence in the implementation of the beneficiation policy. Simply, the DMR and the DTI emerge as key figures in both phase one and two findings of the thesis. Both stakeholders are heavily involved in the networking and the resource exchanges concerning the beneficiation policy, as phase one data revealed. Secondly, both stakeholders are key players in the implementation of the beneficiation policy. Equally important is the finding that the DTI is a central stakeholder in both the funding and information exchange networks and a key player according to the stakeholder matrix. This not only points to the importance of the DTI in the policy network as it is constituted around the beneficiation policy, it also illustrates the fact that power and influence in policy processes differ according to the resources stakeholders possess and their ability to mobilise the resources towards a policy activity.

The DTI is in possession of resources such as regulatory authority, financial resources, information and expertise in the beneficiation end of the mineral value chain. While it is well recognised that the DMR has an important role in securing raw material supply to local

manufactures in the beneficiation value chain, the DMR is constitutionally incapacitated to provide incentives, let alone subsidise stakeholders beyond the mining value chain. Furthermore, the DMR lacks the technical information and expertise of sectors beyond the mining industry. Because the DMR lacks the resources required for the implementation of the beneficiation policy, it is the firm belief of the researcher that under the auspices of the DMR, the policy is misplaced. Therefore, what is required is careful examination of how existing institutions can be aligned to meet the transformation objectives and developmental goals of the beneficiation policy.

6.2. Concluding remarks

This thesis analysed the MEC as a *network of policy stakeholders* in the beneficiation policy. It employed network analytic techniques in the evaluation of relational and structural stakeholder embeddedness within the MEC policy network. It was achieved by analysing the roles that stakeholders assume in resource exchange, as well as the dominant resource exchanges amongst the policy network stakeholders. Additionally, the thesis sought to analyse the key stakeholder perceptions on the beneficiation policy along with stakeholder level of interest and influence in the implementation of the policy. These objectives were informed by the knowledge that in policy networks, policy-related interactions are often closely linked to perceived influence (or potential influence) on the policy subject matter.

The research found that in the development of the beneficiation policy, the DMR engages stakeholders for normative reasons. It engages stakeholders derived from the mining industry since mining policy affects these stakeholders.

An important tool the government should adopt in policy processes is network analytic techniques. In this way, the government would be able to identify central stakeholders with highly valued resources beyond their boundaries that can be committed towards the attainment of public policy goals. Such an analysis identifies the instrumental stakeholders that will contribute to the development and implementation of public policy in South Africa.

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Phase One Telephonic Interview Schedule

Title of Study*:*

Mineral energy complex on the beneficiation policy through the lens of network analysis

Interviewee organisation _____

Date_____ Location_____

- Note to Interviewer: Instructions to you are in *italics*. Questions for you to read out are in normal print.

Read out the following:

Good morning. My name is Khensane Hlongwane and I am a student at the Graduate School of Public and Development Management, University of the Witwatersrand. I am registered for the degree of Masters in Management of Public Policy. As part of the requirements for the degree, I am conducting research for my thesis on the stakeholders in the Beneficiation Policy Network.

While the beneficiation strategy is widely discussed and the opinions and recommendations of a number of actors available in the public domain, these have yet to be explored in relation to stakeholder and network analysis. The aim of this research interview is to explore and learn from your opinions on the relationships between the stakeholders as well as the characteristics of the stakeholders who have been engaged in the policy processes of the *Beneficiation Strategy for the Minerals Industry of South Africa*.

The phases of the policy process that are to be investigated are agenda-setting, policy formulation, policy adoption, and policy implementation. My preliminary research has identified you as an important stakeholder in the policy processes around beneficiation. Therefore, it is crucial for this study to obtain your opinion. I kindly wish to ask you seven questions about your perceptions regarding the characteristics of stakeholders in the beneficiation policy network.

Background

❖ (*Read out the following and record answers in the blank spaces)*

1. Gender

Female ☐

Male ☐

2. How many years have you worked for your organisation or company? _____ Years

3. What position do you occupy?

Executive Director ☐

Chief Executive Officer ☐

Managing Director ☐

Manager ☐

If other, please specify _____

General information

➢ **Stage 1: Name generator question**

❖ (*Read out the following and record answers in the space below.)*

- Please mention all organisations, groups or actors who have been engaged in the following policy processes of the *Beneficiation Strategy for the Minerals Industry of South Africa*
- *Provide the following examples:* The first organisations or groups that come to mind, that you have seen participating, or heard from someone else that they are or have been participating in the following policy processes – or phases of the policy process:

a) Who were the actors that were engaged in the problem structuring? (Agenda-setting)

_____

_____

_____

_____

b) Who were the actors that were involved in formulating policy options? Or, who were the actors that proposed alternative policy options and envisioned long-term consequences for the policy? (Policy formulation)

_____

_____

_____

_____

c) Who were the actors that were involved in the adoption of the policy? Or, who were the actors that were present and active when the policy was adopted? (Policy adoption)

_____

_____

_____

_____

d) Who are the actors in your opinion with the potential to affect the implementation of the policy? By implementation I mean the actors who will mobilise material and non-material resources carry out the policy.

_____

_____

_____

_____

_____

- **Stage 2: Name interpreter questions**

❖ (*Read out the following and record answers in below.)*

1. Please mention the names of the organisations/individuals/institutions which provide/ d your organisation with information on the policy. Information includes the following: information on the policy, meeting dates, invitations to seminars and workshops, networking events, strategies, ideas, terminology and documentation.

_____

_____

_____

2. Please mention the names of the organisations/individuals/institutions which your organisation provides/d information on the policy. Information includes the following: information on the policy, meeting dates, invitations to seminars and workshops, networking events, strategies, ideas, terminology and documentation.

_____

_____

_____

3. Please mention the names of organisations/individuals/institutions which provide/d your organisation with *non-material resources.* Non-material resources include and not limited to staff and personnel. Please mention all relevant organisations.

_____

_____

_____

4. Please mention the names organisations/individuals/institutions which your organisation provides/d *non-material resources* such as staff and personnel.

_____

_____

_____

5. Please mention the names of the organisations/individuals/institutions which provide/d your organisation with *material support.* Material support includes sponsorship, financial assistance, budgetary allowance, grants and aid.

_____

_____

_____

6. Please mention the names of the organisations/individuals/institutions to which your organisation provide/d material support. Material support includes sponsorship, financial assistance, budgetary allowance, grants and aid (funds).

_____

_____

_____

Thank you very much for taking the time to answer my questions.

Appendix

B

Phase One Interview Dates

Organisation	Interview Date
The Department of Mineral Resources	26 April 2013
The Department of Trade and Industry	7 May 2013
The Economic Development Department	7 May 2013
The Department of Science and Technology	27 May 2013
The Department of Higher Education and Training	7 June 2013
The Department of Public Enterprises	27 May 2013
The National Planning Commission	7 May 2013
The Department of the National Treasury	6 May 2013
Mintek	6 May 2013
Council of Scientific and Industrial Research	6 June 2013
Industrial Development Corporation	24 May 2013
African National Congress	20 May 2013
Chamber of Mines	19 June 2013
South African Mining Development Association	19 June 2013
Manufacturing Circle	30 May 2013
National Union of Metal Workers of South Africa	20 May 2013

National Union of Mineworkers	3 May 2013
United Association of South Africa	6 May 2013
Solidarity	6 May 2013

Appendix

C

Phase Two Interview Dates

Organisation	Interview Date
The Department of Mineral Resources	12 July 2013
The Department of Trade and Industry	22 August 2013
The Economic Development Department	27 July 2013
The Department of Science and Technology	24 July 2013
Industrial Development Corporation	19 July 2013
Chamber of Mines	22 August 2013
National Union of Mineworkers	10 July 2013
United Association of South Africa	19 July 2013

Appendix

D

Phase Two Interview Schedule

Date: _____ Location: _____

Interviewee organisation: _____

General information

- (*Read out the following and mark with a circle over letter)*

1. Beneficiation has been variously described as:

I. A variety of processes whereby extracted ores from mining are reduced to particles that can be separated into mineral and waste where the former is suitable for further processing or direct use.

Or

II. The process or series of processes by which an ore containing a metal or mineral as it is found in nature is converted into a product containing a progressively higher concentration of the metal or mineral concerned. The final result is achieved when the metal or mineral reaches the highly beneficiated or chemically pure form required by the end-user. Beneficiation ends and manufacturing begins when the mineral commodity has been converted into a final usable product.

- Which of the above descriptions *best matches or captures* your understanding of beneficiation?
  a) I only
  b) II only
  c) None of the above

❖ (*Read out the following and record answers in the blank spaces)*

4. Based on your understanding of beneficiation, please specify the potential benefits the implementation of the beneficiation policy offers to your organisation, institution or company?

_____

_____

5. In your organisation's view, what are the potential disadvantages in the implementation of the beneficiation policy?

_____

_____

6. Following your organisational objectives, please indicate which ONE of the following categories best describes your organisation/company/ institution's level of interest in the beneficiation policy?

Very high	☐
High	☐
Medium	☐
Low	☐
Very Low	☐

7. Please specify which ONE of the following categories closely describes your opinion on the policy.

a) I strongly oppose it	☐
b) I somewhat oppose it	☐
c) I do not oppose it nor support it	☐
d) I somewhat support it	☐
e) I strongly support it	☐

- Note to interviewer:

  ❖ *If respondent answer is c, d or e, continue to question 9, (skip questions 14, 15, 16 and move on to question 17 to continue questionnaire).*

  ❖ *If respondent answer is a or b, move to question 14 and continue with rest of questionnaire.*

8. Which of the following aspects of the beneficiation policy do you support?

   ❖ (*Read out the following and mark with a circle over letter; multiple answers are allowed)*

   a) Promoting the creation of decent employment in South Africa.
   b) Enhancing the overall competitiveness of the economy by increasing the quantity and quality of exports.
   c) Promoting broad-based socio-economic empowerment.
   d) Diversification of the economy away from raw material dependence.
   e) Promotion of the green economy.

9. For those aspects of the beneficiation policy that you support,

   a) In what manner, if any, do you demonstrate this support?

_____

_____

_____

   b) Do you have material and or non-material resources to dedicate to supporting the beneficiation policy? If yes, please specify the resources (material and non-material) you will dedicate to the implementation of the policy.

_____

_____

_____

10. When it comes to implementing the policy, do you view your organisation/ institution/company as an actor who can influence (see below) the process in that regard?

♦ Influence here is understood as your ability to shape policy outcomes so that they are in alignment with your organisation/ institution/company policy preferences. Influence

includes your capacity to control the resources such as money that can be committed to bring about your organisation/ institution/company policy preferences.

Yes ☐ No ☐

a) Briefly tell me you main reason/s for believing your organisation/ institution/company is an influential actor?

_____

_____

11. In your response, please specify which ONE of the following categories best describes your organisation / institution's level of influence in the policy.

Very high	☐
High	☐
Medium	☐
Low	☐
Very Low	☐

12. In the first round of interviews in this project, the following actors have been identified as part of the beneficiation policy network.

- *Provide respondent with the list of the beneficiation policy network stakeholders gathered from the telephonic interviews.*
  a) With which of these organisations do you strategize, cooperate or share viewpoints regarding the beneficiation policy?

_____

_____

_____

13. Which of the following aspects of the beneficiation policy do you agree with?
    - (*Read out the following and mark with a circle over letter; multiple answers are allowed.)*

a) Beneficiating South Africa's minerals will not lead to the creation of decent employment
b) Beneficiating South Africa's minerals will not enhancing the overall competitiveness of the economy, instead it will decrease the quantity exports
c) Beneficiating South Africa's minerals will not promote Broad-Based Socio-economic Empowerment
d) Beneficiating South Africa's minerals will not diversify the economy away from raw material dependence
e) Beneficiating South Africa's minerals will not promote the green economy

14. For those aspects of the beneficiation policy that you do not support (if any), which aspects of the policy have to be amended in order for you to change to a position of supporting the policy?

_____
_____
_____
_____

15. In the first round of interviews in this project, the following actors have been identified as part of the beneficiation policy network
    - *Provide respondent with the list of the policy network stakeholders gathered from telephonic interview*

    b) Which of these organisations do you strategize, cooperate and share viewpoints points

_____
_____
_____

16. Based on the list from the previous round of interviews, please identify stakeholders with the potential to influence the policy's outcome and implementation?

_____

_____

_____

- *Once the respondent has identified the actors, move onto the question below*

17. Please rank the actors identified above according to their level of influence where 1= very low level of influence to 5= very high level of influence

	1 Very low	2 Low	3 Medium	4 High	5 Very high
Actor name:_____	☐	☐	☐	☐	☐
Actor name:_____	☐	☐	☐	☐	☐
Actor name:_____	☐	☐	☐	☐	☐
Actor name:_____	☐	☐	☐	☐	☐
Actor name:_____	☐	☐	☐	☐	☐

❖ *For the actors that have scored the intensity responses of 3, 4, or 5, continue to question 19.*

❖ *For the actors that have scored the intensity responses of 1 or 2, move to question 20.*

18. What factors, such as material resources, information or authority account for the actor's level of influence?

❖ *Fill in the name of the actor next to the number.*

- Actor 1

_____

_____

- Actor 2

_____

_____

- Actor 3

_____

_____

- Actor 4

_____

_____

- Actor 5

_____

_____

19. What factors such as material resources, information or authority account for the actor's low level of influence?

- Actor 1

_____

_____

- Actor 2

_____

_____

- Actor 3

_____

_____

- Actor 4

_____

_____

- Actor 5

_____

_____

21. Please describe to me the ‘structure’ of the beneficiation policy network

a) Do all the network actors work in one group or are there coalitions within the bigger policy network?

_____

_____

b) Which are the central and which are the smaller networks?

_____

_____

c) If present, how do they link with one another?

_____

_____

22. If you interpret this network, can you identify one or two particular organisations/ institutions/ individuals that are clearly the leaders of this network?

_____

_____

a) Or would you say all network actors operate on an equal footing?

_____

_____

23. To conclude, after we have now considered this network as it exists (from your perspective, if you were asked to redesign this network, please tell men what are a few of the most important changes you would make?

_____

_____

Thank you very much for taking the time to answer my questions.