

The Knowledge Gap in Private Public Partnerships – a Sensemaking analysis in the case of Eskom

by

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DECLARATION:

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OPSOMMING

Die tesis behels die volgende hoofstukke:

Hoofstuk 1 beskryf die navorsingstema, probleemstelling en navorsingsplan. Die basiese probleem word gedefinieer as dat daar 'n "kennisgaping" bestaan in enige Public Private Partnership model.

Hoofstuk 2 gee 'n inleiding tot die teoretiese konsepte van KE Weick se Sensemaking teorie.

Hoofstuk 3 bied 'n oorsig oor Public Private Partnership modelle en bespreek belangrike perspektiewe daarop soos dit in literatuur aangebied word.

Hoofstuk 4 verskaf 'n hoofsaaklik chronologiese oorsig oor die verskillende stadia in die sage met betrekking tot Eskom. Verskillende opsies om elektrisiteit in SA te genereer word ook bespreek.

Hoofstuk 5 handel oor die belangrikste analitiese bevindinge met betrekking tot die rol van kennis in die geval van Eskom en maak op grond daarvan gevolgtrekkings ten opsigte van die rol van kennis in Public Private Partnerships.

Hoofstuk 6 verhoog die analise na 'n groter mate van veralgemening ten opsigte van die kennisgaping in die algemeen en bied voorstelle oor hoe die impak daarvan beter beheer kan word.

SUMMARY

This thesis contains the following chapters

Chapter 1 focuses on the research objective, the problem and also details the research approach. The fundamental problem that the thesis discusses, is defined as a “knowledge gap” as a given characteristic of any Public Private Partnership model.

Chapter 2 introduces the theoretical concepts of the Sensemaking theory of KE Weick.

Chapter 3 contains an overview of the Public Private Partnership model and references some key aspects about Public Private Partnerships as reported on in literature.

Chapter 4 provides a mainly chronological outline of the various stages of the saga around Eskom and outlines the strategic options as to electricity generation that a South African government faces.

Chapter 5 presents the most significant analytical findings on the role of knowledge and sensemaking in the case of Eskom and draws some conclusions from the analysis for knowledge in Public Private Partnerships.

Chapter 6 elevates the conclusions to a higher level of generalisation and suggests some possibilities to mitigate the destructive effect of the knowledge gap.

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LIST OF ABBREVIATIONS

AsgiSA – Accelerated and Shared Growth Initiative for South Africa

BOT – Build Operate Transfer

CCS – Carbon Capture Storage

CEF – Central Energy Fund

Cogta – Corporate Governance and Traditional Affairs

CS – Civil Society

DME – Department of Minerals and Energy

DoE – Department of Energy

DRC – Democratic Republic of Congo

DST – Department of Science and Technology

DWAS – Water Affairs and Sanitation

ESI – Electricity Supply Industry

GEAR – Growth, Employment and Redistribution

HFCT – Hydrogen and Fuel Cell Technologies

IG – Interest groups

IPA – Independent Participatory Agents

IRP – Integrated Resource Plan

KM – Knowledge Management

MACE – Ministerial Advisory Council on Energy

MFMA – Municipal Finance Management Act
NDP – National Development Plan
NPM – New Public Management
OAU – Organisation of African Union
PA – Independent Participatory Agents
PFI – Public Finance Initiative
PFMA – Public Finance Management Act
PFP – Public Financed Projects
PPP – Public Private Partnership
PWRs – Pressurised Water Reactors
RDP – Reconstruction and development Programme
RET – Radical Economic Transformation
SA – South Africa
SADC – Southern African Development Community
SoE – State-Owned Enterprise
SPV – Special Purpose Vehicle
UK – United Kingdom
US – United States
WMC – White Monopoly Capital
WSSD – World Summit on Sustainable Development

Chapter 1

The Knowledge Gap in Public Private Partnerships

“The greatest enemy of knowledge is not ignorance, it is the illusion of knowledge.”

– Stephen Hawking

1.1 The question – the knowledge gap in Public Private Partnerships

In the evolution of economic models (and their theories), Public Private Partnership (PPP) is a newcomer. The notion of PPPs made an entry in the early 1990s. Since then, many countries have undertaken some or other PPP project.

South Africa was one of the enthusiastic early adopters of the PPP model. Given the core characteristic of a PPP being a long-term cooperation between private companies and government agencies to deliver and maintain key infrastructure, the South African enthusiasm is understandable. After all, the country was (and is) in need of substantive – and substantively expensive – infrastructural development.

But, as chapter 3 will describe in greater detail, in many countries, PPPs have turned out to suffer from a range of frictions and disagreements, ending in some cases in the disillusion of partnerships. In its very essence, a PPP is like one kitchen with two cooks trying to serve one meal. Neither can do without the other, but each one has different views on the partnership. By now a host of literature attests to the many managerial, financial and strategic problems that accompany PPP implementations.

This thesis does not discount such problems, but draws attention to the fact that, in all contemporary literature regarding the issues, virtually no attention has been given to the *knowledge* factor. This is quite strange to say the least.

Firstly, more or less contemporaneous with the entry of PPPs into economic thought, the managerial world became aware of the core role that knowledge plays in advanced

organisations. The first book that established Knowledge Management (KM) as a real discipline was published in 1995.¹ The KM and PPP discourses, therefore, run parallel over the past two decades. Over that period, KM studies have been done on just about every aspect of organisational life, private as well as public, but not on PPPs.

The second point carries more weight. In fact, it points at the significance of this thesis. The essential reason for the emergence and existence of KM is the growing recognition that contemporary economic conditions (and societies) have reached a level of complexity that cannot be comprehended by mere “common sense” or “traditional practices” any more. It is now common to talk of a knowledge economy and society.² It is the proposition of this thesis that the emergence of PPPs can be ascribed to the same reason. In the complex world of today, neither governments nor private companies have the wherewithal to operate independently. This is not applicable only to managerial practices and finances, but also (perhaps more) to the knowledge that is required to achieve a useful outcome. Particularly in the area of infrastructure, the scale of required interventions and projects have become so large that neither a government nor single companies can comprehend the totality of this socio-economic complexity. Therefore, a new type of organisation (new public engagement)³ is indispensable to organise economic activities of such a project scale and to reinforce implementation.

The new type of organisation, a PPP, is a *composite organisation*. Contrary to conventional organisation theory, a PPP has two heads. It is self-evident that such a structure can easily lead to tensions. But even on good days, there is a structural gap in the organisation. It is across this gap that the reported problems related to management, finances and performance have to be dealt with. But it is also across this gap that the dynamics of active knowledge have to be negotiated for the same reasons.

Consequently, this thesis focuses on the dynamics of knowledge in the gap between public and

¹ Nonaka, I. & Takeuchi, H. (1995). *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation?* Oxford University Press, New York.

² European Commission (2000). South Africa among other developing countries that adopted PPP concept as a guiding model to implement national and regional development plans namely; the Millennium Development Goals (MDGs), Accelerated and Shared Growth Initiative for South Africa (AsgiSA) and National Development Plan (NDP) that maps the strategic planning of a knowledge-based economy that the country seeks to achieve in 2030.

³ Cheema, GS. (2005). *From Public Administration to Governance: The paradigm shift in the link between government and citizens*. 6th Global Forum on reinventing government towards participatory and transparent governance, Seoul, Korea.

private in PPPs. By applying this focus, the thesis very early on found that not only could:

a) fundamental incongruences in knowledge between the public and private sectors be observed, but also

b) that these incongruences widened the gap and created more tensions. What, on the surface of it looks like a functional inefficiency, is turned by contradictory ‘knowledges’ into a structural blockage.

The *knowledge gap* in a PPP turns out to be more than the structural gap which is inherent in the composite nature of a PPP.

1.2 Thesis objective and significance

When research on this thesis started, it was of course not possible to offer the explanation above. The insights previewed there were gained during a long research process. What was clear, however, was that there was a *prima facie* case to investigate the role and nature of knowledge to see if it contributed to tensions between public and private partners. Consequently, the starting axiom of the research process was as follows:

Much of the disruption and discontinuities observed in the life of PPPs can be linked to a knowledge gap between the partners.

The research very soon found enough evidence to confirm this axiom as a solid starting point for the research. But merely confirming a link between organisational efficiency and the dynamics of knowledge is not a very useful outcome of any research. Of much greater importance was to try to understand the nature of the particular dynamics of knowledge in the context of a PPP. This is what the research set out to investigate and bring about substantive interpretation and conclusion.

This thesis, therefore, reports on research that was done with regard to the following two objectives:

- a) to understand and *profile* the *nature* and contours of the knowledge gap, and
- b) to contribute to *theorising* with respect to knowledge dynamics in PPPs.

The research highlights key features of the dynamics of knowledge in a PPP, seen as an organisation, when it is subjected to high levels of ambiguity and cognitive dissonance. It is probably not unfair to assume that most PPPs on the scale of the case presented here, will show

similar features.

1.3 Research design and methodology

The objectives of this thesis determine that a *conceptual* approach in general, and an *interpretivist* one in particular, be followed to explicate the centrality of the research.

This differs from most KM studies (at least in South Africa not so much in other parts of the world) where the objectives are predominantly descriptive. While such approaches are useful to trace the actual impact in organisations of particular knowledge applications, they do not afford us tools to profile the *nature* of knowledge in such contexts. And while such approaches are useful to help shape organisational practices, they do not afford us tools to *theorise* about knowledge itself as a concept.

An interpretivist approach revolves around “understanding” and “interpretation”⁴ of the case. It also implies a “text” to be read and a framework against which the interpretation is done.

1.3.1 The interpretive “text” – The case of Eskom in South Africa

For the past 20 years, since 1998, South Africa has been caught up in the long running (and still not resolved) saga of Eskom and electricity generation. Even by world standards this is a large-scale PPP and it is not surprising that a study of its evolution shows it to be a good example of all the defects and problems that literature report with regard to PPPs.

The Eskom saga has been with us for the past two decades, therefore, it is a good choice for a case study for this thesis. The amount of documentation of events and perspective is enormous. Unlike other PPPs in South Africa, Eskom and the electricity saga is still very much in the public eye as the phenomenal financial amounts at stake make it everyone’s business. From a case-study point of view, the case of Eskom thus can be seen as a “rich” case that needs to be explicated.

In chapter 3 an overview of the evolution of the case since 1989 will be given. It is important to note that only events up to March 2018 are included in the case description. Although the saga is noticeably continuing, this thesis focuses on the establishment of the saga.

1.3.2 The interpretive framework – Sensemaking theory

One of the very few theorists on the nature of knowledge in organisations is Karl E Weick who has become the doyen of sensemaking theory after the publication of his book *Sensemaking in*

⁴ Marsh, D & Stoker, G (eds.). *Theories and Methods in Political Science*. Second edition. London, Macmillan, 2000, forthcoming.

Organizations in 1995.⁵

His theory stands out for the fact that, to date, he is the only theorist who has tried to present a systemised account of the dynamics of knowledge *inside* organisational life. It is also notable for its entry point into the topic. It sees knowledge as an interpretive interaction between participants (and not as so many KM authors do as an exchange of data or information).

It is particularly the latter point that makes Weick's work the appropriate frame of reference for the interpretation required in this thesis.

In chapter 2, such aspects of the theory of sensemaking in organisations as are relevant to this thesis as espoused by Weick will be briefly reviewed.

1.3.3 Theory building and Grounded Theory Analysis

As is clear from section 1.1, this thesis could not start on the basis of existing analyses and/or theorising with regard to knowledge in PPPs. Such a platform was non-existent. Clearly the more conventional research approach of developing hypotheses based on existing knowledge and tested in an actual context could not be followed in this case. Instead, the research project had to turn to grounded theory analysis for support.

The notion of grounded theory comes from Glaser and Strauss in 1967.⁶ It is used to develop a theoretical rendering of the general features of a phenomenon, while simultaneously grounding the rendering in some form of empirical data.⁷ The theory is inductively derived from the phenomenon being studied by systematically collecting and analysing data in order to generate theory about patterns of human behaviours in social events and contexts.

Grounded theory does not attempt to understand social phenomena as the individual participants see it, but endeavours to uncover patterns in their experiences. As such, it is a methodology that develops data from simple description through to conceptualisation in order to explain the social phenomenon in question.

However, it must be noted that classic grounded theory understood theory to be the discovery of social patterns. This is not the theory intended in this thesis. This thesis intends to offer theory about the abstract factor of knowledge (in PPPs). Such theory can only be conceptual even if it is a form of interpretation based on observed patterns.

⁵ Weick, KE (1995). *Sensemaking in Organizations*. SAGE.

⁶ Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory*. Piscataway, NJ: Aldine

⁷ Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory*. Piscataway, NJ: Aldine

In that sense the thesis does not follow grounded theory entirely with respect to methodological practices. The thesis combines grounded theory with interpretation at a conceptual level.

1.4 Delimitations of the study

The first delimitation is self-evident. This research project investigated only one PPP. Whether the conclusions derived from this case can be replicated must still be shown.

The choice for a sensemaking framework obviously influences observations. However, to date, no serious alternative framework has been developed to investigate knowledge dynamics in organisations.

The case is analysed exclusively on the basis of published documentation from various sources. Given the large number of people (both in the public and the private spheres) involved in the process, it must be assumed that individual perspectives on the process would differ significantly if a survey of opinions was done. However, since the entire process is inherently a formal one, only formal documentation can claim to be truly public and official. Even so, one has to allow for some measure of speculation in the press and other non-governmental media. But that too is part of a very complicated process and subject to the interpretation of the researcher.

The volume of publications by parliament, government agencies, expert commentaries, some NGOs and journalistic media is so vast that it cannot be accommodated in full in a Master's thesis. Therefore, documentation is restricted to only the most official documents and the reactions to them from society.

1.5 Thesis layout and chapters exposition

Chapter 1 focuses on the research objective, background, the problem statement and also includes the detailed research approach.

Chapter 2 introduces the relevant theoretical concepts of the sensemaking theory of KE Weick.

Chapter 3 offers an overview of the PPP model and references some key aspects about PPPs as reported on in literature.

Chapter 4 provides a historical outline of the saga around Eskom and outlines the strategic options as to electricity generation that a South African government faces.

Chapter 5 discusses the most significant findings and draws some theoretical conclusions.

Chapter 6 suggests some possibilities to mitigate the destructive effect of the knowledge gap.

Chapter 2

Interpretive Framework: The Sensemaking Theory of KE Weick

2.1 Introduction

This chapter introduces the sensemaking theory of Karl Weick.⁸ Whenever we encounter⁹ an event that is surprising, puzzling, troubling, or incomprehensible, we try, more or less consciously, to interpret it, to assign meaning to it, that is, to make sense of it. In the process of interpretation and explanation of these concepts, we typically draw from our experiences and from our background, knowledge of a context within which the event occurred.

Although there are a number of people who today work in the area of sensemaking, most will agree that Weick's work forms the platform for present debates in this area. For the purpose of this thesis it is not necessary to get involved in the debates. The theoretical outline that Weick published in his 1995 book¹⁰ is sufficient to draw a theoretical framework for this thesis.

This chapter does not cover the full spectrum of Weick's work and theory. It also does not engage with Weick or other authors on the topic of sensemaking. This chapter only introduces into the thesis those aspects of Weick's theory that will be used in chapters 5 and 6 to interpret the case analysis. As his above-mentioned book is the most condensed version of his theory, we will restrict this introduction to that book as the thesis tries to focus on each aspect of Weick's theory.

⁸ Weick, KE. (born October 31, 1936) is an American organisational theorist who introduced the concepts of "loose coupling", "mindfulness", and "sensemaking" into organisational studies. He is the Rensis Likert Distinguished University Professor at the Ross School of Business at the University of Michigan. Get it from Wikipedia

⁹ Gallos, JV. (ed.). *Business Leadership: A Jossey-Bass Reader*. San Francisco: Jossey-Bass, 2008.

¹⁰ Weick, KE. (1995). *Sensemaking in Organisations*, Sage.

2.2 Identity Construction

With the above interpretation, this thesis focuses on Weick's concept of sensemaking, as this is imperative to interpretative analysis of identity construction in this context. The concept of identity for this research project contributes to the study of knowledge dynamics and explicates grounded identity construction as embedded in Weick's sensemaking theory. It analyses in general the field by offering a comprehensive way of conceptualising the identity construction. A number of theorists have cited the concept of identity and self-theory as a phenomenon. This is extrapolated by Weick cited by Mead saying, ¹¹a sensemaker is a collection of different selves. However, the re-emergence of the self-concept has been much more revitalised with interest in phenomena such as self-awareness, self-esteem and self-evaluation due to the "cognitive revolution" of psychology, generally at the expense of behaviourism.¹²

Individuals need a situated identity, or a clear sense of "who they are" in their local context, to function. Drawing largely from interpretivist research, this thesis describes the process of identity construction in organisations – and gives context to PPPs as a phenomenon. Generally, Ashforth, Blake & S. Schinoff, Beth. (2016) describe organisations as a set stage for members or individuals to construct their own identities through sensebreaking, rendering individuals more receptive to organisational cues conveyed via sensegiving.¹³ This means, individuals use sensemaking to interpret their situated identity as they progress toward a desired self-identity.

The identity construction analysis explicates how people in organisational settings come to define themselves, both as individuals and as members of groups, and both in the present and prospectively in the future. Furthermore, they can even associate themselves to their roles individually. The typical scenario for identity construction is a newcomer entering an organisation, as this is when identity tends to be the most salient and malleable.¹⁴ The newcomer goes through a different kind and stage of confusion while trying to identify him- or herself. In fact, sensemaking enables individuals to endure and thrive under conditions of ambiguity, equivocality and adaptation of dynamism. According to Pratt (2000), this process

¹¹ Mead, GH. (1934). Cited by Weick KE, 1995. p18.

¹² Dember, WN. (1974). Motivation and the cognitive revolution *Am. Psychol.* 29:161-68. Cited by Gecas, V. (1982). *The Self-Concept*. *Annual Review of Sociology*, Vol. 8 pg.1-33.

¹³ Ashforth, BE. & Schinoff, BS. (2016). Identity Under Construction: How Individuals Come to Define Themselves in Organizations. *Annual Review of Organizational Psychology and Organizational Behavior*. 3. 10.1146/annurev-orgpsych-041015-062322.

¹⁴ Ashforth, BE & Schinoff, BS. (2016). Identity Under Construction: How Individuals Come to Define Themselves in Organizations. *Annual Review of Organizational Psychology and Organizational Behavior*. 3. 10.1146/annurev-orgpsych-041015-062322.

may be triggered by organisational sensebreaking or sensegiving or just simply by events that induce individuals to question what is unfolding around them, prompting them to seek identity-relevant information.¹⁵

In the context of this thesis, the theoretical perspective sees identity construction as part of a person's ongoing sense-making process and understands identity as personally significant and highly generalised meta signs that become created in this process.¹⁶

However, given the interest of this thesis in the knowledge dynamics of identity construction, the study draws inference mainly on interpretivist studies. Also, the structural orientation tends to view identity as relatively stable, coherent, and unproblematic, whereas the acute orientation tends to view identity as relatively fragmented and contested. Ashforth et al. (2008) argue that, the interpretivist positioning, spans the great middle ground, emphasising social dynamism as individuals attempt to construct identities that at least they can view as relatively stable, coherent, and uncontested - whether or not they are in actuality.¹⁷ With the above discussion, this thesis locates the understanding from a simplified model for identity construction as a linear which explicates this perspective.

From the study of sociology, the sensemaking characteristic of identity construction theory is embedded in classical sociological and social-cognitive discourse. It is linked to what has been described as the awareness of an actor (sense-maker) with a desire of constructivist identity to interact with their own perception of self-thought or that which is held by other actors within an organised environment. Weick (1995 p23), argues that sensemaking is “grounded in identity construction”, therefore, the idea that sensemaking is self-referential reveals that the self, rather than the environment, may be the text in need of interpretation.”¹⁸ According to Maitlis (2009) and Pratt, (2000)¹⁹ identity is often the target of sensemaking and accordingly, is tied to the

¹⁵ Pratt, MG. (2000). The good, the bad, and the ambivalent: managing identification among Amway distributors. *Adm. Sci. Q.* 45(3):456–93.

¹⁶ Martsin, M. (2008). Identity construction as a personal sense-making process: A case study of Estonian students in the United Kingdom', Ph.D., University of Bath students in the United Kingdom', Ph.D., University of Bath.

¹⁷ (Ashforth et al. 2008). Somewhat confusingly, identification also refers to the process through which individuals internalise an identity and is thus both a verb (to identify with a target) and a noun (the state of being identified with a target).

¹⁸ Weick, KE. (1995). *Sensemaking in Organizations*: p. 23.

¹⁹ Maitlis (2009) & Pratt, (2000). Cited by Ashforth, BE & Schinoff, BS. (2016). Identity Under Construction: How Individuals Come to Define Themselves in Organizations. *Annual Review of Organizational Psychology and Organizational Behaviour*. 3. 10.1146/annurev-orgpsych-041015-062322.

identity motive Weick, (1995)²⁰. In order to reflect on the aforementioned motives, one needs to think about the questions that these individuals ponder on when really engaging sensemaking in a PPP. This aims to encapsulate the concept of what ‘Weick’ defines as “grounded identity construction”.

Similarly, Weick defines this as an established sense of identity by individuals as an integral aspect of sensemaking.²¹ Therefore, Weick acknowledges that identity construction is a continuous activity that is circumstantial by its nature and also draws a distinction between an individual identity and the communal identity, which can be associated with an organisational identity. With the above discussion, it is essential to introduce another aspect of Weick’s theory that shapes the framework for this thesis.

2.3 Ambiguity and confusion

The concept of ambiguity in general terms have different interpretations – but in simple terms can mean shock or confusion and lack of clarity, sometimes highly complex and paradoxical, which may cause uncertainty to individuals. It is concluded by Weick that ambiguity is a highly subjective experience and it’s said to be ambiguous when it is unclear or highly complex and paradoxical.²² The term is embedded and normally used within an organisation mostly associated with the confusion of employees.

A couple of concepts describe ambiguity to give many interpretations – confusion or shock is one among many that is available for these interpretations. However, Weick cited a number of authors with similar definitions of ambiguity. He further refers to ambiguity as confusion created by words or sentences with more than one interpretations, where experiential ambiguity implies stimuli that may take on more than one meaning or be unclear with regard to its very same meaning.²³ It also refers to the inability to interpret or to make sense of something, regardless of the amount of information available to make sense. From March’s view ambiguity develops when the reality is inconsistent or unclear, or further, there’s lack of causality or intentionality. Ambiguity also arises where situations cannot be coded into explicit categories of knowledge.²⁴

²⁰ Weick, KE. (1995). *Sensemaking in Organizations*.

²¹ Weick, KE. (1995). *Sensemaking in Organizations*, Sage: pg. 18-24.

²² Weick, KE. (1995). *Sensemaking in Organisations*, Sage.

²³ Levine, LD. (1985). Cited by Weick, KE. (1995). *Sensemaking in Organisations*, Sage, pg. 92.

²⁴ March, JG. (1994). Cited by Weick, KE. (1995). *Sensemaking in Organisations*, Sage, pg. 92.

The term is described in simple terms as just lack of clarity or some sense of vagueness, particularly in organisations. However, more broadly, it is defined as ²⁵an ongoing stream that supports several different interpretations at the same time. However, Martin (1992) argues that ²⁶“ambiguity is perceived when a lack of clarity, high complexity, or a paradox makes multiple (rather than single or dichotomous) explanations plausible. But what does it mean in the context of this thesis?

2.3.1 Ambiguity – as an organisational reality

Ambiguity in the context of this thesis not only refers to confusion, highly complex or paradoxical uncertainty. It also presents an opportunity for both leaders and employees to remain relevant in the workplace and to be able to embrace ambiguity events. Embracing ambiguity enables organisations to seize opportunities, take calculated risks to tackle previously uncharted territories. They back themselves when they don't have all the answers. They also diversify products and services, while remaining profitable²⁷ for private institutions and sustainable for public entities. The ability to embrace ambiguity relates to positive behaviours in organisations, such as more effective and efficient problem solving and decision-making and also increased appetite for creativity and risk-taking.

Ambiguity is resolved either by acquiring or creating explanatory knowledge, by reinterpreting a situation to be more meaningful, or by having an interpretation externally imposed by others. Ambiguity cannot be resolved by gathering more information. It typically requires repetitive cycles of interpretation, explanation and collective agreement. Hypotheses are iteratively created and discussed until some plausible explanation emerges.²⁸

The ability to make sense of the competitive environment earlier and better than competitors is an important advantage; it underlies better decision-making and better awareness of the kinds of strategic problems the organisation may face. Additionally, an organisation's decisions and activities, if perceived as ambiguous by competitors because they know and understand less, can provide a key source of competitive advantage by making it difficult for competitors to

²⁵ Weick, KE. (1995). *Sensemaking in Organisations*, Sage, pg. 91.

²⁶ Martin, J. (1992). *Cultures in organisations: Three perspectives*. New York: Oxford University Press.

²⁷ Fewster, K. & O'Connor, P. (2017). *Embracing Ambiguity in the Workplace*. Change2020, QUT Business School.

²⁸ Isenberg, DJ. Cited by Zack, MH. (1999). Managing Organisational Ignorance. *Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.

understand what the organisation is doing and imitate it.²⁹ Moreover, the government in this case faces the option to make a well-informed decision – they have enough information but the misunderstanding on technicalities and technological options is still an integral part of the problem.

To support this logic, it can be concluded as stated by Merkus et al (2017) that ‘ambiguity’ consists both an ‘intrinsic knowledge property’ to organisational rationale as well as a ‘social construction’ of organisational actors.³⁰ It can be emphasised that reality *is* equivocal, creating the need to make sense of an individual experience to act: this means an event is just elusive in itself. On the other hand, one could claim that different individuals give different connotations to the same experience thus actually *making* the experience vaguer.³¹ This view on ‘ambiguity’ explicates the focus on communal sensemaking as negotiated agreement. In most cases, information does not change the situation, but circumstances enforce some decisions and actions to be made. Therefore, at this point, the situation warrants that equivocality be introduced in the next.

2.4 Equivocality

The concept of equivocality in general terms refers to the extent to which organisational messages are ambiguous and/or unpredictable. It describes situations where there is an agreement on a set of descriptive criteria, namely a desirable market or undesirable market, but there is disagreement either on their boundaries or on their application to a particular situation (whether a particular market is desirable or undesirable).³²

Numerous self-contradictory conceptual frameworks arise. Because everyone’s experiences are exclusive; individuals or a group of people develop their own sets of principles and beliefs, and thus tend to understand experiences differently.³³ It may result from untrustworthy or incompatible information sources – deafening communication channels push for certain

²⁹ Reed, R. & DeFillippi, RJ. Cited by Zack, MH. (1999). Managing Organisational Ignorance. *Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.

³⁰ Merkus, S. et al (2017). A Storm is Coming? Collective Sensemaking and Ambiguity in an Inter-organizational Team Managing Railway System Disruptions, *Journal of Change Management*, 17:3, 228-248, DOI: 10.1080/14697017.2016.1219380.

³¹ Merkus, S. et al (2017). A Storm is Coming? Collective Sensemaking and Ambiguity in an Inter-organizational Team Managing Railway System Disruptions, *Journal of Change Management*, 17:3, 228-248, DOI: 10.1080/14697017.2016.1219380.

³² Weick, KE. (2005). Cited by Zack, MH. (1999). Managing Organisational Ignorance. *Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.

³³ Zack, MH. (1999). Managing Organisational Ignorance. *Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.

political interests.³⁴ Zack (1999) says that equivocality, like ambiguity, requires series of clarification, interactive discussion and negotiation, but to converge on a definition of reality rather than create one. “The goal is to achieve logical consensus rather than to leverage diversity.”³⁵

The following principles define the discourse of equivocality in three dimensions to give clarifications of this theory and contribute to the body of knowledge for this thesis.

An organisation must analyse the relationship among the equivocality of information, the rules the organisation has for removing equivocality, and the cycles of communication that should be used.

If the organisation has only a few guidelines that assist in dropping equivocality, a greater number of series will be needed. The more series that are used to obtain additional information and make adjustments, the more equivocality is removed.³⁶

Weick (1969:11) also describes “organising as the resolving of equivocality in an enacted environment by means of intertwined behaviours rooted in tentatively related process.”³⁷ Thus, organising is about reducing or manage equivocality (uncertainty) through information processing. This occurs through activities that are repetitive, reciprocal, contingent behaviours that develop and are maintained between two actors.³⁸ The two actors in this context can be defined as public and private institutions, which interaction should be able to manage this unique knowledge processing problem.

The organisation is "enacted" through the interpreted meaning of individual interactions that are found as part of organisational knowledge among other things.³⁹ However, Zack (1999) stated that the danger, is that overly precise or coherent policies and procedures for coordinating or imposing interpretation may misrepresent the contradiction or diversity of views inherent in a situation.⁴⁰ Zack (1999) further emphasised that, sustaining equivocality

³⁴ Zack, MH. (1999). Managing Organisational Ignorance. *Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.

³⁵ Woods, JA. & Cortada, J. (2013). *The Knowledge Management Yearbook 200-2001*. Routledge.

³⁶ Weick, KE. (1969). *Organisational Information Theory*.

³⁷ Weick, KE. (1969). *The Social Psychology of Organizing*. (p.11).

³⁸ Weick, KE. (1969). *The Social Psychology of Organizing*. (p.91).

³⁹ Weick, KE. (1969). *The Social Psychology of Organizing*.

⁴⁰ Zack, MH. (1999). Managing Organisational Ignorance. *Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.

may be useful to avoid premature closure, maintaining commitment, and addressing conflicting goals.⁴¹ Consequently, we can obtain additional information to make adjustments and intensify the cycle of communication, which can be the driver of reducing equivocality and uncertainty.

Nonetheless, given the prominent role that innovation within the energy sector is assuming in providing competitive advantage generally and in managing knowledge specifically⁴², the knowledge-problems framework can be used to identify areas where that innovation may make its most useful contribution. The key distinction is between problems oriented towards information - and those oriented towards knowledge.⁴³ Practically, “managing equivocality requires coordinating meaning among members of an organisation, and is an essential part of organising”⁴⁴ as a concept outlined by Weick (1995), (1969) in his work of *Sensemaking and Social Psychology of Organizing*.

Equivocality ascends because “everyone’s experiences are unique; individuals and communities develop their own sets of principles and beliefs and tend to interpret events differently.”⁴⁵ According to Zack (2002) & Weick (1995), “it may also result from unreliable or conflicting information sources, noisy communication channels, differing or ambiguous goals and preferences, vague roles and responsibilities, or disparate political interests.”⁴⁶

Like uncertainty, ambiguity must first be resolved, which often leads to equivocality as multiple interpretations emerge during the process.⁴⁷ To resolve equivocality one needs to create a communal context to deal with uncertainty, complexity and ongoing systematic organisational learning.⁴⁸

⁴¹ Weick, KE. (1969). Cited by Zack, MH. (1999). *Managing Organisational Ignorance. Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.

⁴² Mata, FJ. W L. Fuerst, & Barney, JB. "Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis", *MIS Quarterly*, Vol.19, No. 4, 1995.

⁴³ Zack, MH. (2002). "An Architecture for Managing Explicated Knowledge", *Sloan Management Review*, forthcoming.

⁴⁴ Weick, KE. (1995) & (1969). Cited by Woods, JA & Cortada, J. (2013). *The Knowledge Management Yearbook 200-2001*. Routledge

⁴⁵ Zack, MH. (2002). "An Architecture for Managing Explicated Knowledge", *Sloan Management Review*, forthcoming.

⁴⁶ Zack, MH. (2002). "An Architecture for Managing Explicated Knowledge", *Sloan Management Review*, forthcoming.

⁴⁷ Zack, MH. (2002). "An Architecture for Managing Explicated Knowledge", *Sloan Management Review*, forthcoming.

⁴⁸ Zack, MH. (1999). *Managing Organisational Ignorance. Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.

2.5 Frames and cues

Weick (1995, 49ff) uses a metaphor of “cues within frames” to describe how the human brain makes sense. Through all sorts of experiences, the brain builds up an array of “frames.”⁴⁹ According to Kinghorn, J. (2018), these become reference points when the brain reacts to cues that are encountered at any given moment. If the brain succeeds to fit a cue into a frame, sense was made as the frame had managed to identify the cue.⁵⁰ Therefore, cues and frames are largely important in the case of this thesis since they shape the argument by describing the type of leadership in general. The cues, by their nature, exist in frames and not the other way round. Frames include ideologies, paradigms, theories, tradition and stories. The character of cues depends on the situational milieu and what feels right at the time. The situational context serves not only as a basis for the extraction of cues but also for their interpretation. Smircich and Morgan argue that, leadership largely generates a point of reference against which a feeling of organising and direction can emerge.⁵¹

People by and large do what they think and that signifies that they differ in approach and ideology. This can be influenced by background and which organisation or sector they’re coming from. Weick’s work, by contrast, “is deeply grounded in dissonance theory and a dual processing model of cognition.”⁵² The central question of ‘how do I know what I think before I see what I say?’ is its iconic representation.⁵³ The link between “thinking and acting (including speaking) in Weick’s sensemaking perspective is more complex than the linear model of cognitive constraint implies.”⁵⁴

Weick (1995), state that sensemaking is reflective and driven by cues and plausibility⁵⁵. Rooted in sensemaking properties, is a dual-processing model that differentiates perceptual processes of action formation from more cautious reasoning processes.⁵⁶ “Considerable action is

⁴⁹ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

⁵⁰ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

⁵¹ Smircich, C. & Morgan, G. (1982). Leadership: ‘The management of meaning’. *The Journal of Applied Behavioural Science*, p.258.

⁵² Weick, KE. (1995). *Sensemaking in Organisations*, Sage.

⁵³ Weick, KE. (1995). *Sensemaking in Organisations*, Sage.

⁵⁴ Weick, KE. (1995). *Sensemaking in Organisations*, Sage.

⁵⁵ Weick, KE. (1995). *Sensemaking in Organisations*, Sage.

⁵⁶ Endsley, (1995); Kahneman 2003 & Klein (1998). Cited by Weber, K. & Glynn, MA. (2006). Making Sense with Institutions: Context, Thought and Action in Karl Weick’s Theory. *Organization Studies* 27(11): 1639–1660 ISSN 0170–8406 Copyright © 2006 SAGE Publications (London, Thousand Oaks, CA & New Delhi).

activated by cues that induce certain personalities, frames and equivalent performance scripts without much deliberate thought.”⁵⁷ In this case, institutions, in the form of institutionalised combinations of identities, frames and performance expectations, may in fact ‘steer’ action in a direct, taken-for-granted way.

Weick’s sensemaking follows from “an understanding of action creation mentioned previously⁵⁸”. Perceptual filters lead people to extract cues that activate identities, frames and role expectations for particular situations.⁵⁹ Once noticed, cues set in motion sensemaking processes that cumulate in “a general situational framing and identity, which then, in turn, carry implications for action and further attention.”⁶⁰ What’s key is that the process is steady and increasing rather than instant. This is supported by study that proves how, the link between cues and action is neither instant nor essentially straightforward.⁶¹

Therefore, people extract cues from the context to help them decide on what information is relevant and what explanations are acceptable.⁶² Weick (1995) reminds us that extracted cues provide ‘points of reference’ for connecting ideas to wider networks of meaning.⁶³ They are ‘simple, familiar structures that are seeds from which people develop a larger sense of what may be occurring⁶⁴ and prepare to engage, based on the information they have at their disposal.

2.6 Uncertainty and Ignorance

Generally, the concept of ambiguity is most readily associated with situational uncertainty. It is when a ‘messy’ situation is difficult to identify and evaluate. In these circumstances, using

Accessed on: August 15, 2018.

<https://pdfs.semanticscholar.org/f174/7bad3e8d3cff03425c7b7d72adf4d6bd1ece.pdf>

⁵⁷ Weber, K. & Glynn, MA. (2006). Making Sense with Institutions: Context, Thought and Action in Karl Weick’s Theory. *Organization Studies* 27(11): 1639–1660 ISSN 0170–8406 Copyright © 2006 SAGE Publications.

⁵⁸ Weber, K. & Glynn, MA. (2006). Making Sense with Institutions: Context, Thought and Action in Karl Weick’s Theory. *Organization Studies* 27(11): 1639–1660 ISSN 0170–8406 Copyright © 2006 SAGE Publications.

⁵⁹ Weick, KE. (1995). *Sensemaking in Organisations*, Sage, pg. 49 - 55.

⁶⁰ Weber, K. & Glynn, MA. (2006). Making Sense with Institutions: Context, Thought and Action in Karl Weick’s Theory. *Organization Studies* 27(11): 1639–1660 ISSN 0170–8406 Copyright © 2006 SAGE Publications.

⁶¹ Weber, K. & Glynn, MA. (2006). Making Sense with Institutions: Context, Thought and Action in Karl Weick’s Theory. *Organization Studies* 27(11): 1639–1660 ISSN 0170–8406 Copyright © 2006 SAGE Publications.

⁶² Brown, AD., Stacey, P. & Nandhakumar, J. (2007). Making sense of sensemaking narratives. *Human Relations*, 61(8): 1035–1062.

⁶³ Weick, KE. (1995). *Sensemaking in Organisations*, Sage.

⁶⁴ Weick, KE. (1995). *Sensemaking in Organisations*, Sage, pg. 50

the term ‘uncertainty and ambiguity’ appropriately exemplifies the existing problem. However, Weick, (1979b) in contrast to uncertainty and ambiguity refers to the existence of multiple and conflicting interpretations about a situation within the organisation.⁶⁵ Uncertainty can be simply defined as not knowing at all or not having enough information to make a decision. This is a different situation in the case under discussion. But what does it mean in the context of sensemaking and organisations for PPPs? This means not having enough information to describe the current state or to predict future, preferred outcomes, or the actions needed to achieve them.⁶⁶

Turning to organisational science readings, one quickly discovers that it’s not easy or simple⁶⁷ to define uncertainty. However, to state this definition in a somewhat more scientific approach: uncertainty is the absence of information and more specifically, the difference between the amount of information required to “execute a task and the information possessed by the organisation”.⁶⁸ Weick (1979 et al) further argue that the ambiguity of existing information due to the multiplicity of meanings that can be imposed on a situation, has been considered an element of uncertainty, sometimes also referred to as equivocality, which is discussed later in this chapter.⁶⁹

To make the abovementioned definitions operationally useful, one needs to specify further what information or lack thereof is relevant for the functioning of an organisation. One should also choose a definition that fits the nature of the organisation and the question of study, thereby to develop the theoretical framework to contribute to the body of knowledge of the PPP. Beckert (1999 et al), argue that, normally, uncertainty is described as a characteristic of decisions that individual decision-makers in organisations need to undertake to circumvent the causes of uncertainty.⁷⁰ Therefore, uncertainty does not only imply complex or vague situations or relationships; it can exist even when the range of possibilities is small, simple and well

⁶⁵ Weick, KE. (1979). *The social psychology of organizing* (2nd ed.). Reading, MA: Addison-Wesley

⁶⁶ Garner, WR. Cited by Zack, MH. (1999). *Managing Organisational Ignorance. Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.

⁶⁷ Grote, G. (2009). *Management of Uncertainty: Theory and application in the Design of Systems and Organisations*.

⁶⁸ Galbraith (1973). Cited by Grote, G. (2009). *Management of Uncertainty: Theory and application in the Design of Systems and Organisations*.

⁶⁹ Weick et al (1979). Cited by Grote, G. (2009). *Management of Uncertainty: Theory and application in the Design of Systems and Organisations*.

⁷⁰ Beckert (1999) et al. Cited by Grote, G. (2009). *Management of Uncertainty: Theory and application in the Design of Systems and Organisations*.

defined.

In this context, decisions are understood as a choice being made between alternatives differing in the usefulness and likelihood of the expected outcomes of their utility. Some notable descriptions of uncertainty indicate that uncertainty is located in one of the three factors of content, namely:

1. State uncertainty, effect uncertainty and response uncertainty. From this perspective, uncertainty may concern the probability of an event (state uncertainty);
2. lack of knowledge of how components of the environments are changing (effect uncertainty);
3. or lack of information about the outcomes of an event and the underlying cause-effect relationships, or what consequences the change of environment will hold for the organisation, the available response options and their likely consequences (response uncertainty).⁷¹

The theoretical concept of ignorance refers to lack of knowledge, education and sometimes awareness. However, in this context, 'ignorance' is described as the general absence of knowledge, which can occur in various forms, e.g. "inevitable ignorance, not-yet-knowledge, non-knowledge-ability or conscious non-know-intention."⁷²

There are two significant effects of ignorance that contribute to the body of knowledge.

Positive impact ignorance - ignorance leads to gaining knowledge through learning, it enables stability on social functions.

Negative impact ignorance - ignorance can serve as a medium and a tool for manipulating and maintaining power.

According to Dorniok research studies show that ignorance has developed from 'ignorance' on the individual level to the construction of ignorance, the distinction between different forms of ignorance, the special importance of "structural ignorance, to the potential social consequences, risks and threats of ignorance".⁷³ Therefore, "ignorance is no longer regarded only as a lack of

⁷¹ Milliken, FJ. (1987). Three Types of Perceived Uncertainty about the Environment: State, Effect and Response Uncertainty. *Academy of Management Review*, 12(1), 133-143.

⁷² Beck, (1996) & Wehling, (2006) cited by Dorniok, D. 2012. *What is Ignorance? A Chronological Overview of the Discourse on Ignorance in a historical context*. Accessed: November 19, 2017. <https://pdfs.semanticscholar.org/b0a4/da8886594feaa5e832e19c2fe7d6ccee9db8.pdf>.

⁷³ Dorniok, D. (2012). What is Ignorance? A Chronological Overview of the Discourse on Ignorance in a

knowledge that can be converted into knowledge, but as a partly durable and not removable phenomenon that arises in parallel with knowledge and can have various consequences on society”.⁷⁴ Like in the concept of knowledge, one can locate ignorance from individuals or collective ignorance, which this thesis calls distributed ignorance. This thesis adopted the phrase that knowledge is not shared but distributed.⁷⁵ But exactly this means that ignorance is also distributed across PPPs. For each person who is an expert in X, that person is ignorant – per definition – in Y, and vice versa.⁷⁶

The research shows that different perspectives have developed over time (from the early 20th century until 2010), which highlight different interpretations, forms and effects of ignorance in organisations. This leads to the next section, which shows that where there’s ignorance, false knowledge dominates the discourse.

2.7 Plausibility rather than accuracy

According to Weick sensemaking is less a matter of accuracy and completeness than plausibility and sufficiency.⁷⁷ We simply have neither the perceptual nor cognitive resources to know everything exhaustively, so we have to move forward as best as we can.

Plausibility and sufficiency enable action-in-context that suits our understanding at the time, Weick reminds us that when information is incomplete, or facts fit imperfectly at times, people rely on plausibility, and “go beyond directly observable consensual information, to form ideas and understanding, that provide enough certainty to act.”⁷⁸ Therefore, accuracy is a nice to have but not necessary, it becomes secondary. To respond to the question of plausibility, one will need to respond to the concept and its entity. People favour plausibility over accuracy in accounts of events and contexts⁷⁹ “in an equivocal, postmodern world, infused with the politics of interpretation and conflicting interests and inhabited by people with various identities, an

historical context. Accessed on: June 19, 2017.

⁷⁴ Dorniok, D. 2012. What is Ignorance? A Chronological Overview of the Discourse on Ignorance in a historical context. Accessed on: June 19, 2017. <https://pdfs.semanticscholar.org/b0a4/da8886594feaa5e832e19c2fe7d6ccee9db8.pdf>.

⁷⁵ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

⁷⁶ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

⁷⁷ Weick, KE. (1995). Sensemaking in Organisations.

⁷⁸ Weick, KE. (1995). Sensemaking in Organisations.

⁷⁹ Currie, G. & Brown, A. (2003-5) and Abolafia, (2010). Cited by Basic knowledge on Sensemaking. Accessed on: May, 24 2018. <http://www.basicknowledge101.com/pdf/Sensemaking.pdf>

obsession with accuracy seems fruitless, and do not help, either”.⁸⁰

According to Weick sensemaking does not only rely on accuracy, but rather plausibility, realism and sensibleness.⁸¹ Weick further argues that it is about the embellishment and elaboration of cues and that “accuracy is meaningless when used to describe a filtered sense of the present, linked with a reconstruction of the past that has been edited in hindsight”.⁸² It is not so much about the truth, but rather the continuous redrafting of a story so that it becomes more sensible over time.⁸³ Accuracy is not as important as sufficiency and plausibility in the enhancement and elaboration of extracted cues in the sensemaking process.

2.8 Conclusion

This chapter discussed Weick’s concepts for sensemaking and how they shape the discourse of incomprehensible events. It has been noted that the theoretical framework can be analysed under the banner of sensemaking as a study of organisational science and knowledge in particular. The popular contributor to this study is that Weick uses a number of sensemaking concepts to interpret, a theoretical approach. This approach focused on organisational events and analysed the PPP as a concept of knowledge dynamics.

From the above discussion, the conceptual theories of sensemaking that describe knowledge dynamics in public and private institutions are evident. The emergence and features of the PPP, sensemaking and knowledge approach will be analysed in the next chapters to expose observation of events. It is part of developing a theoretical framework to build and support this research’s hypotheses and event cases. Having analysed Weick’s Sensemaking concepts, it is now appropriate in the next chapter to give a historic discussion of the PPP phenomenon in South Africa since the early 90’s.

⁸⁰ Weick, KE. (1995). *Sensemaking in Organisations*. London: Sage. Cited by Basic knowledge on Sensemaking. Accessed on: May, 24 2018. <http://www.basicknowledge101.com/pdf/Sensemaking.pdf>

⁸¹ Weick, KE. (1995). *Sensemaking in Organisations*.

⁸² Weick, KE. (1995). *Sensemaking in Organisations* (p.57).

⁸³ Weick, KE, Sutcliff, KM & Obstfeld, D. (2005). *Organizing and the process of sensemaking* (451).

Chapter 3

The Phenomenon of Public-Private Partnerships.

3.1 Introduction

In chapter 1 it was indicated that Public Private Partnerships (PPP) have proliferated in the past two decades. Yet they are very specific recent additions to the economic mainstream of the world.

PPPs are often confused with outsourcing by governments or simply mega-projects funded by the state. But this ignores the third P. PPPs are partnerships with an intent for collective or shared responsibility. As such, they are not only new economic models, but also a new form of organisation, which in this thesis is called a “new public management”. In chapter 1, this was called a composite organisation with multiple layers of decision-making.

This chapter covers some aspects from literature about PPPs to provide a more nuanced understanding of this new type of organisation. That will contribute to a more nuanced analysis of the case of Eskom.

3.2 What is a Public-Private Partnership?

*A Public-Private Partnership (PPP) is any medium to long-term relationship between the public and private sectors, involving the sharing of risks and rewards of multi-sector skills, expertise and finance to deliver desired policy outcomes.*⁸⁴

The concept of PPPs emerged in the early 1980's, in the context of privatisation, at the time when the role of governments in the economy and society was intensely debated.⁸⁵ It gave birth

⁸⁴ Navarro-Espigares, JL. & Hernandez-Torres, E. (2009). Public and private partnership as a new way to deliver healthcare services. *XVI Encuentro de Economía Pública*, 2009-01-01, ISBN 978-84-691-8950-4.

⁸⁵ Fourie, F. CvN & Burger, P. (2000). An economic analysis and assessment of public private partnerships (PPPs). *South African Journal of Economics*, 68(3), 694-725.

to the concept of New Public Management (NPM) that aimed to use competition mechanisms and market-based reasoning in the public sector, and that considered “the inclusion of the private sector in the delivery of public services”.⁸⁶ As part of the trend, they grew strong popularity during the 1990s in developed countries such as United Kingdom (UK) as well as in some emerging countries in Latin America, Eastern Europe and Asia (China).⁸⁷ Over the years, PPPs have inherited different definitions to deduce the concept to local interpretations and ensure it is understood correctly.

From the ‘Efficient Unit, (2006)’ the concept is defined as an arrangements where the public and private sectors both bring their complementary “skills to a project, with varying levels of involvement and responsibility, for the purpose of providing public services or projects”.⁸⁸ This implies rethinking the traditional role of the state in the drawing-up, financing and implementation of covenants, policies and programmes.

While the Canadian Council for PPP, (2007), defines it as “a joint venture between the public and private sectors, built on the expertise of partners that best meets clearly defined public needs through allocation of resources, risks sharing and beneficiation of parties”.⁸⁹

However, since 1990, PPPs in South Africa have been regulated by the Public Finance Management Act (PFMA), 1999, (Act No.1 of 1999 amended by 29 of 1999), Regulation 16; and PPPs for Local Government are governed by the Municipality Systems Act, 2000 (Act No. 32 of 200) and Municipal Finance Management Act (MFMA), 2003, (Act No. 56 of 2003).⁹⁰ Though municipalities are not subject to PFMA or Treasury Regulation, provincial treasuries can advise municipalities on appropriate and proper procedures to follow and adhere to. The act is used as a guide to regulate project initiation. Therefore, PPP is one mechanism utilised by governments globally to meet the growing demands of public services to deliver quality.

⁸⁶ Ghobadian, A et al, (2004). PPP: the instrument for transforming the public services.

⁸⁷ Maskin, E. & Tirole J. (2007). Public-Private Partnerships and Government Spending Limits. *International Journal of Industrial Organization*, 26(2), 412-420.

⁸⁸ Efficiency Unit (2006), Cited by: Cheung, E., Chan, A.P.C & Kajewski, S (2009) "Reasons for implementing public-private partnership projects: Perspectives from Hong Kong, Australian and British practitioners", *Journal of Property Investment & Finance*, Vol. 27 Issue: 1, pp.81-95, <https://doi.org/10.1108/14635780910926685>.

⁸⁹ The Canadian Council for Public-Private Partnerships. Alinaitwe, H. & Ayesiga, R. (2013). Success Factors for the Implementation of Public-Private Partnerships in the Construction Industry in Uganda. *Journal of Construction in Developing Countries*, 18(2), 1–14, 2013.

⁹⁰ PPP Manual, (2004). Public Private Partnership Manual. Pretoria. National Treasury. Accessed by: April 13, 2017 <http://www.ppp.co.za>

This complements the fact that,⁹¹ the human population, over the past two centuries, has drastically increased and this is coupled with globalization, communication and technological advancements.

PPPs have been around from the early 1990's, when the then Minister of Finance, Trevor Manuel (2006) pronounced that the PPP concept in South Africa is an important mechanism for service delivery and fosters the rapid delivery of infrastructure initiatives as envisaged by the Accelerated and Shared Growth Initiative for South Africa (AsgiSA).⁹² However, the former President Thabo Mbeki also argued that, ⁹³upgrading infrastructure alone could not suffice or change socio-economic challenges. With the above discussion, it is clear that, Public-Private Partnership (PPP) goes a long way to support innovation and development for social development to benefit humanity. This concept has been at the centre of economic development in a number of democracies around the world. In 1999, the South African government adopted the concept through the legislative framework for PPPs, championed by the National Treasury with its PPP Unit, which acts as a knowledge centre for PPPs.

In Latin America it is defined as an initiative in which the state not only retains the key roles of supervising, providing incentives and regulatory frameworks,⁹⁴ but also ensures the provision of quality goods and services. New opportunities and governance mechanisms to do so jointly with the private sector with a view to optimising outcomes, impact and sustainability⁹⁵ are also defined. However, an official definition in South African terms is that a PPP is a contract between a public sector institution/municipality and a private party, in which the private party “assumes the substantial financial, technical and operational risk in the design, financing, building and operation of a project”.⁹⁶

⁹¹ Public Private Partnerships – Change, Leadership and Management Approach. www.palama.gov.za/MediaLib/Downloads/Home/DocumentsPublications/Speeches/Public-Private%20Partnership%20-%20change%20leadership%20and%20%20management%20approach.pdf (pg. 4).

⁹² PPP Manual, (2004). Public Private Partnership Manual. Pretoria. National Treasury.

⁹³ Mbeki, Thabo (1998). The Democratisation of Knowledge: the Role of Knowledge in the Betterment of Society. Speech delivered by the former President of the Republic of South Africa. University of Stellenbosch Business School “*Knowledge Management Conference*”: Bellville, January 16, 2012.

⁹⁴ World Economic Forum (2014). Creating New Models Innovative Public-Private Partnerships for Inclusive Development in Latin America. World Economic Forum Global Agenda Council in Latin America.

⁹⁵ World Economic Forum (2014). Creating New Models Innovative Public-Private Partnerships for Inclusive Development in Latin America. World Economic Forum Global Agenda Council in Latin America.

⁹⁶ PPP Manual, (2004). Public Private Partnership Manual. Pretoria. National Treasury.

It is an effective and sustainable delivery of strategic infrastructure development and is embedded in effective Public Private Partnership (PPP) initiatives. It's an important policy mechanism that both the public and private sectors use to alleviate the existing backlog and ineffective management of projects to deliver infrastructure initiatives in developing countries.

Hence, in 1996 the concept of long-term, ongoing partnerships between public service organisations and private companies, particularly in the field of infrastructure, was introduced. Since then, PPPs have multiplied.⁹⁷ As this has been seen as a new form of organisation, it triggered a large number of studies. According to Kinghorn, most studies approach this phenomenon from the perspectives of economics, engineering, construction management, development finance, and organisational behaviour.⁹⁸ But virtually no exhaustive study analyses of the *knowledge dynamics* inside a PPP has been done.⁹⁹ Therefore, this thesis will focus on the theoretical framework for the PPP as an organisation of a new public engagement with private enterprise and civic organisations; and the dynamics of distributed knowledge within organisations in a case study in South Africa.

3.3 Recent evolution of Public-Private Partnerships?

For decades, countries around the world continuously experienced significant challenges to meet the fast-growing demand to rehabilitate social infrastructure for public services. This challenge was steadily triggered by an ever-growing population and expansion of communities stretching government resources to meet their constitutional imperative.¹⁰⁰

Since 1994, South Africa has experienced a drastically increasing demand for socio-economic services. This raised critical questions of capacity and innovation to improve infrastructure development in general and, therefore, lack of adequate and appropriate skills to manage social infrastructure projects.¹⁰¹ In this instance, infrastructure is understood to be key to economic growth and quality of life, by providing jobs and most businesses, trade and investment depend on infrastructure development, .¹⁰² Hence, the policy and promotion of PPPs are needed to

⁹⁷ Kinghorn, J. (2018). *The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study.*

⁹⁸ Kinghorn, J. (2018). *The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study.*

⁹⁹ Kinghorn, J. (2018). *The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study.*

¹⁰⁰ Alfen, H.W., Bernd, F.H., & Wüdsch, B. (2006). *Structured Approach for Public Private Partnership Infrastructure Research. Symposium: Public Private Partnerships in Transport: Trends & Theory- Research Roadmap* (Bauhaus-Universität Weimar, Construction Economics)

¹⁰¹ Alfen, HW, Bernd, FH., & Wüdsch, B. (2006). *Structured Approach for Public Private Partnership Infrastructure Research. Symposium: Public Private Partnerships in Transport: Trends & Theory- Research Roadmap* (Bauhaus-Universität Weimar, Construction Economics)

¹⁰² Alfen, HW, Bernd, FH., & Wüdsch, B. (2006). *Structured Approach for Public Private Partnership*

form a sustainable market to improve economic growth. This is one critical aspect of the knowledge gap that public entities are required to understand in order to conduct oversight and scrutiny, and to monitor the progress of project deliverables.

A number of studies highlight different cases in respect of the strengths and weaknesses of the PPPs. Therefore, it's imperative to look at some of these in the context of this thesis and for future reference.

Countries around the world have recognised the importance of collaborating with the private sector to efficiently deliver services. It is clear that the lack of requisite skills and capacity to deliver services require knowledge capacity and sustainability. Typically, government ventures deliver socio-economic services by utilising a PPP contractual arrangement to take the following advantages:

- a) Risk management and transfer
- b) Skills transfer and improved human resource excellence.
- c) Engaging private entities to deliver certain government services, e.g. non-core government services to allow the government the space to focus on strategic core-government business.
- d) Capital investment in the delivery of government services and resources
- e) Improving service delivery in a cost-effective manner.
- f) Improving the level of service, especially for projects requiring road user charges (tolls or other).
- g) Promotion of economic and social growth by private direct investment.
- h) Transfer of modern technology to domestic public and private sectors.
- i) Extending private ownership and adopting a market-economy approach.
- j) Stimulating domestic capital and debt markets.

3.4 Reported issues in Public-Private Partnerships

PPPs have been praised around the world as a viable mechanism to deliver public and complex projects. However, PPPs have their own challenges and shortcomings, which this thesis acknowledges in general. Some have described PPPs as hybrids, controversial, complex¹⁰³ and

Infrastructure Research. Symposium: Public Private Partnerships in Transport: Trends & Theory- Research Roadmap (Bauhaus-Universität Weimar, Construction Economics. Accessed by: May, 24, 2018.

¹⁰³ Villani et al (2017) & Wu et al (2016). Cited by Cited by Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

even as expressions of “public failure”¹⁰⁴ where strategic projects prolong beyond projected timelines, impacting the budgetary controls and becoming a burden to the fiscus. Contrary arguments in favour include better overall quality of public service delivery¹⁰⁵; higher levels of creativity and value as a consequence of the diversity of skills and insights inherent to a PPP¹⁰⁶; and as relief to the public purse (at least in the capital formation stage).¹⁰⁷ Below are some of the disadvantages and challenges for PPPs from various experiences and previous research studies on public management and governance.

- a) Infrastructure or services delivered become more expensive.
- b) Public sector payment obligations are postponed for later periods and negatively affect future public sector fiscal indicators.
- c) Service procurement procedure is longer and more costly in comparison with traditional public procurement.
- d) Agreements are long term, complicated and comparatively inflexible because of impossibility to envisage and evaluate all particular events that could influence the future activity.
- e) Unequal partnership – the powerful partner can dominate the partnership and if it is the private sector, it can be propelled by the profit motive and exploit the public partner.
- f) Lack of trust – where both private and public spend time fighting over approaches. Government normally sees the private sector as a cash cow and uses a political mechanism to delay processes.
- g) There is often a lack of capacity to originate or implement PPPs, and a lack of resources to foster PPPs.
- h) The policy is biased toward traditional public procurement.
- i) Consistent political resolve lacks.

¹⁰⁴ Smith (2010). Cited by Kinghorn, J (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

¹⁰⁵ Cheung et al, Lammam, C., & Macintyre, H. (2013). Cited by Kinghorn, J (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

¹⁰⁶ Villani et al (2017). Cited by Kinghorn, J (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

¹⁰⁷ Sarmiento & Renneboog (2016). Cited by Kinghorn, J (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

- j) There is a lack of high level for policy direction – in municipalities, policy direction on PPPs is confused because of overlapping responsibilities between the Department of Corporate Governance and Traditional Affairs (Cogta), the PPP Unit, and other national departments such as the Department of Waters Affairs and Sanitation (DWAS)

3.5 Public-Private Partnerships in South Africa

After the fall of the apartheid regime in 1994, South Africa had the first democratic election. This caused a shift in the philosophy of the South African state, from “government” to “governance”,¹⁰⁸ and new mechanisms such as concessions, PPPs and privatisation emerged in the second half of the 1990’s.¹⁰⁹ Since then, a number of partnerships have been formed between the public and private sector, and also the civil society is said to have grown steadily. A number of studies reveal that the very first PPP projects that opted for this approach were to simply bring or raise in private investment for public services. In South Africa, PPPs have been perceived as an obvious mechanism to deliver successful projects.¹¹⁰ However, to understand PPP one will also need to understand the role that the market can play to deliver the public service, it is necessary to describe some of its essential features.¹¹¹ The markets must be understood to be any situation where potential buyers and sellers come into contact with one another to exchange goods or transactions.¹¹² Swart (1992:43) observed that “most countries rely on the market mechanism, rather than government controls, to allocate most goods, services, and factors of production”.¹¹³ In a number of cases, markets have shown to be more effective when allocating goods through the price mechanism. Over the years, Gillis, Perkins, Roemer & Snodgrass (1992:102) we have observed that “the market can allocate thousands of different products among consumers, according to their preferences, and thousands of

¹⁰⁸ Burger, P. (2006). Cited by Bruchez, N. (2014). Public-Private Partnerships (PPP) in South Africa: To what extent are PPPs suitable for the long-term development of infrastructure in South Africa?

¹⁰⁹ Burger, P. (2006). Cited by Bruchez, N. (2014). Public-Private Partnerships (PPP) in South Africa: To what extent are PPPs suitable for the long-term development of infrastructure in South Africa?

¹¹⁰ Grimsey, D. & Lewis, MK. (2004), *Public Private Partnerships: The Worldwide Revolution in Infrastructure Provision and Project Finance*, Edward Elgar, Cheltenham.

¹¹¹ Gillis, P, Roemer & Snodgrass (1992:102). Cited by Esther Cheung, Albert P.C. Chan, Stephen Kajewski, (2009) "Reasons for implementing public private partnership projects: Perspectives from Hong Kong.

¹¹² Sedisa, KN. (2008). *Public-Private Partnership in the provision of secondary education in the Gaborone City area of Botswana*. Accessed on: September 24, 2017.
<http://uir.unisa.ac.za/bitstream/handle/10500/2156/thesis.pdf>

¹¹³ Swart (1992:43). Cited by Cheung, E, Chan, APC & Kajewski, S. (2009) "Reasons for implementing public private partnership projects: Perspectives from Hong Kong, Australian and British practitioners", *Journal of Property Investment & Finance*, Vol. 27 Issue: 1, pp.81-95, <https://doi.org/10.1108/14635780910926685>

productive inputs among producers and get the maximum output from available inputs.”¹¹⁴ Clearly, PPPs are complex systems, and if all these were to be handled or financed through government, it would have posed an enormous strain on government fiscus.¹¹⁵ Therefore, the idea is for the public to get the services without the government paying through taxpayers’ purse but at the same time creating business and investment opportunities for the private sector. This means, since the development of PPP we’ve seen that the success of its adoption goes beyond just relieving government financial burden but raising capital investment to finance these massive infrastructure projects.¹¹⁶ This is a sufficient justification for advocating the use of private capital to deliver public services. It is also clear that lack of the requisite skills and capacity to deliver services requires knowledge capacity and sustainability.

Normally, governments venture to PPP to deliver socio-economic services. Walker et al. (1995) suggested three main reasons for using the PPP approach.¹¹⁷

- a) Generally, the private sector possesses better mobility than the public sector. This means the private sector can save the costs of projects, avoid the bureaucracy and relieve the administrative burden.
- b) The private sector can provide better services and maintain a balance of risk-return structure
- c) The government cannot raise capital to finance large-scale projects whereas the private sector’s participation can mitigate government’s financial burden.

The approach of PPP, usually uses the mode called Build Operate Transfer (BOT) which is a familiar term within the construction industry. Walker et al. (1995) supported the term and thought it provided a win-win solution and the following benefits.¹¹⁸

- a) Relief of financial burden
- b) Relief of administrative burden

¹¹⁴ Gillis, Perkins, Roemer & Snodgrass (1992:102). Cited by Cheung, E, Chan, APC & Kajewski, S. (2009) "Reasons for implementing public private partnership projects: Perspectives from Hong Kong, Australian and British practitioners", *Journal of Property Investment & Finance*, Vol. 27 Issue: 1, pp.81-95, <https://doi.org/10.1108/14635780910926685>

¹¹⁵ Cheung, E, Chan, APC & Kajewski, S. (2009) "Reasons for implementing public private partnership projects: Perspectives from Hong Kong.

¹¹⁶ Cheung, E, Chan, APC & Kajewski, S. (2009) "Reasons for implementing public private partnership projects: Perspectives from Hong Kong.

¹¹⁷ Walker et al. (1995). Cited by Cheung, E, Chan, APC & Kajewski, S. (2009) "Reasons for implementing public private partnership projects: Perspectives from Hong Kong.

¹¹⁸ Walker et al. (1995). Cited by Cheung, E, Chan, APC & Kajewski, S., (2009) "Reasons for implementing public private partnership projects: Perspectives from Hong Kong.

- c) Reduction in bureaucracy
- d) Improved services to the public
- e) Stimulated growth
- f) Greater government focus on other social issues (education, health, pension, etc.).

The abovementioned benefits share a pleasing picture, which includes better quality of public service delivery¹¹⁹, higher levels of creativity and value as a consequence of the diversity of skills and insights inherent to a PPP¹²⁰, as well as relief to the public purse (at least in the capital formation stage.¹²¹ Additionally, despite a number of studies from professional bodies and academic institutions, the PPP approach remains an intriguing phenomenon to say, the least. Some argue that the approach does not fit the templates for conventional organisations or the role of the state.¹²² It is not a partnership of like-minded participants as we know it. The studies observed that it looks like a forced marriage or partnership experience. However, even so, it is a partnership in its original intent, which is different from a simply outsourced service to the government.¹²³ Given the multi-decade character of this approach to partnerships, it is appropriate to see it as a new form of organisation,¹²⁴ which can be viewed as a political and organisational response to the shortcomings of the traditional mode of public service delivery. Hope and Choked (2000:26) observed that “the conceptualisation and the development of the New Public Management (NPM) were based on the growing reality of government failure, ineffective delivery of public service and the enhancement of an environment conducive to sustainable development.”¹²⁵

¹¹⁹ Cheung et al (2009), Lammam and MacIntyre (2013). The case for public-private partnerships. Fraser Forum, 15-17, 14.

¹²⁰ Villani et al (2017). Understanding Value Creation in Public-Private Partnerships: A Comparative Case Study. *Journal of Management Studies*, 54(6), 876-905.

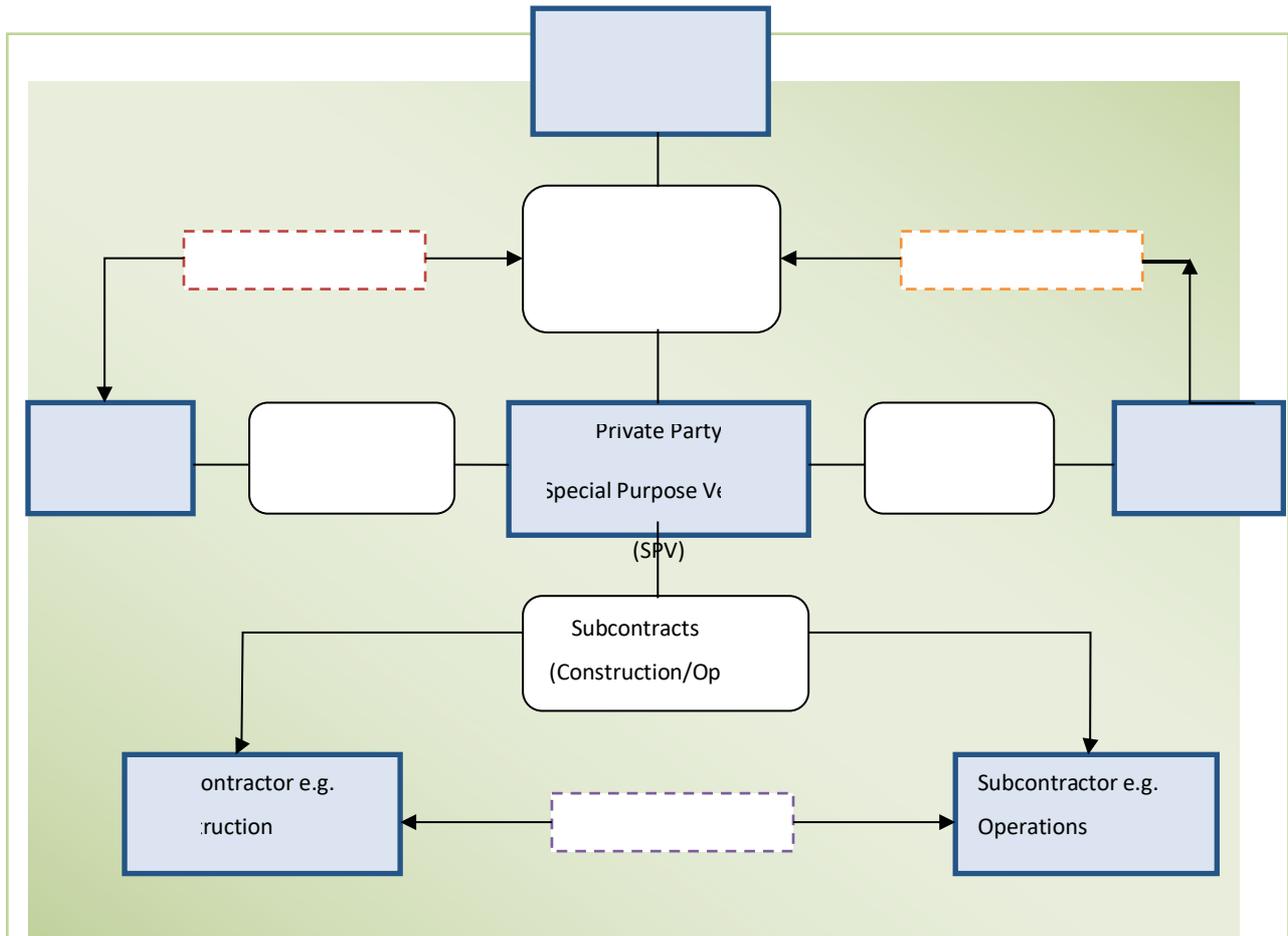
¹²¹ Sarmiento and Renneboog (2016). Anatomy of public-private partnerships: their creation, financing and renegotiations. *International Journal of Managing Projects in Business*, 9(1), 94-122.

¹²² Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study.

¹²³ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study.

¹²⁴ Villani et al (2017) & Rao et al (2003). Power Plays: How Social Movements and Collective Action Create New Organizational Forms. *Research in Organizational Behaviour*. 22, 237-281

¹²⁵ Hope and Choked (2000:26). Sedisa, KN, (2008). Public-Private Partnership in the provision of secondary education in the Gaborone City area of Botswana. Accessed on: September 24, 2017. <http://uir.unisa.ac.za/bitstream/handle/10500/2156/thesis.pdf>

Figure 1: The generic PPP Model

**The generic PPP Model is shown in Figure 1.
 (Typical Special Purpose Vehicle SPV structure)
 Adopted from the PPP Unit website**

Source: Treasury PPP Unit

With the above reasons it is clear that there's a need for a knowledge bank (centres) which both public and private sector can leverage from to minimise the knowledge gap and build knowledge trade-off. These will improve governance and proper monitoring mechanism of PPP initiatives, thus, elevating knowledge sharing and organisational learnings.

In South Africa, the National Treasury has a generic PPP model or framework used to safeguard public-private initiatives. However, this research acknowledges the knowledge gaps – and seeks to analyse and argue by presenting a tentative model recommendation, which I believe should be integrated to close the gap and strengthen governance of PPP initiatives.

This signifies that there is a need to converge credible policies, knowledge capacity building,

skills transfer, regulatory reform and institutional change that will bring about social inclusiveness. Therefore, PPPs have not only been seen as cost-efficient and effective mechanisms for the implementation of public policy across the public sector, but an early proponent of PPPs, Osborne, S “has also raised their important benefits in their own right, particularly in terms of developing socially inclusive communities”.¹²⁶

Noticeably, a number of studies and recent research analyses on the approach of PPP suggest that there’s a new form of organisation called New Public Management (NPM). However, to understand this form, one would need to explain the underlying principles embedded in this paradigm reform namely; the concept of management and public management, since these are located within as theoretical pillars for this new paradigm reform. Kalimullah, et al (2012) argued that, “the advent of NPM should, by and large, be viewed as a political and organisational response to the shortcomings of the traditional mode of public service delivery”.¹²⁷ These will be discussed further under distributed knowledge at a later stage of the research.

Consequently, a fair number of recent analyses investigate PPPs from typical organisational perspectives such as workflow, trust, financial discipline, accountability and other aspects of governance, information asymmetry, value creation and general strategizing.¹²⁸ But noticeably absent, are studies of PPPs on the basis of knowledge management considerations. This includes functions, types and exchange of knowledge in PPPs as an organisational concept and it’s dynamism to influence decision making. This raised remarkable questions, since PPPs normally operate around the advanced and scientific skills, as well as organisational knowledge. In fact, only one attempt to understand the phenomenon of PPPs as a *structural system of knowledge engagement* could be found.¹²⁹ In most studies, PPPs are seen as two sector entities partnering to share the risk or raise capital investment for projects. Not much have been said, about the structural system of knowledge dynamics in PPPs. However, one can be located from the work of Stafford Beer, Yolles and Iles (2006), which employs a very rigorous knowledge cybernetic framework, which is conceptually rich but difficult to replicate

¹²⁶ Osborne, S. (2000:1). *Public – Private Partnerships: Theory and Practice in International Perspective*. New York: Routledge.

¹²⁷ Kalimullah, et al (2012). *New Public Management: Emergence and Principles*.

¹²⁸ Sarmiento & Renneboog (2016). Anatomy of public-private partnerships: their creation, financing and renegotiations. *International Journal of Managing Projects in Business*, 9(1), 94-122.

¹²⁹ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

in practice.¹³⁰

Clearly, the knowledge dynamics, and indeed other dimensions of knowledge processing, in PPPs, are still under-researched¹³¹ and not given the attention of research analysis they deserve. Many studies report the failures or positive outcomes for PPPs, which are normally embroiled in planning and financial management challenges for socio-economic infrastructure projects. Nonetheless, this thesis goes further to postulate that an important reason for such challenges is the absence of knowledge, which creates a vacuum for a ‘*knowledge gap*’ that is inherent in the current organisational model of PPPs.¹³²

3.6 Historical perspective on PPPs

From an earlier discussion, it is evident that governments and political leaders support PPPs as a new mechanism to promote innovation to deliver economic infrastructure and improve social programmes. While leaders have adopted the use of PPPs, however, it was a continuous debate during the eighties in the industrialised countries, such as the United Kingdom (UK) and United States (US). The role of PPPs in the development process was debated. And the discussed what they called a ‘welfare reform’ concept.¹³³ The UK government introduced ‘privatisation of services’, deregulation and a ‘new public management’ took shape as a novel administration reform to reinvent government activities in the early nineties. Notably, the US and UK over the past two decades increased the recognition of what they called a “third sector” or “*économie sociale*”.¹³⁴ It was an attempt to explore complex issues of inter-institutional coordination to which new systems of provision gave rise.¹³⁵

This comes from the different roles that the actors of PPP could play and the different forms PPPs can take on. Gentry and Fernandez¹³⁶ argue that the choice depends on a number of

¹³⁰ Yolles, M., Iles, P. (2006). Exploring Public–Private Partnerships through Knowledge Cybernetics. *Systems Research and Behavioural Science*. 23, 625-646.

¹³¹ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

¹³² Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

¹³³ Mitchell-Weaver, C.; Manning, B. (1992). “Public-Private Partnerships in Third World Development: A Conceptual Overview”, in *Studies in Comparative International Development* Winter, 26 (4), pp. 45-67.

¹³⁴ Mitchell-Weaver, C.; Manning, B. (1992). “Public-Private Partnerships in Third World Development: A Conceptual Overview”, in *Studies in Comparative International Development* Winter, 26 (4), pp. 45-67.

¹³⁵ Mitchell-Weaver, C.; Manning, B. (1992). “Public-Private Partnerships in Third World Development: A Conceptual Overview”, in *Studies in Comparative International Development* Winter, 26 (4), pp. 45-67.

¹³⁶ Gentry, B. & Fernandez, L. (1998). “Evolving Public-Private Partnerships: General Themes and Examples from the Urban Water Sector”, in *OECD Proceedings: Globalisation and the environment. Perspectives from*

issues, namely:

- The degree of control desired by the government;
- The government’s capacity to provide the services;
- The capacity of private partners to provide the services and much-needed knowledge;
- The legal framework for monitoring and regulation;
- The availability of financial resources from public or private sources.

These issues need to find expression in the generic framework of PPP. A specific focus requires this thesis to look at the knowledge question in the context of South African energy generation - electricity for Eskom. There has been a significant mechanism to capture lessons learned from PPP initiatives to enhance sustainability and drive innovation. Since neither public nor private has the financial muscle to carry out bankable projects on their own, the model of PPPs came as a viable and most reliable mechanism to carry such projects. Remarkably, PPP is not a regional, but an international concept, which still remains a curious phenomenon and has enjoyed a significant financial boost. Different names around the world are used to describe PPPs¹³⁷. In the UK, this concept is known as Project Finance Initiative (PFI), whereas in Australia it is known as Privately Financed Projects (PFP), while in the US, SA, Canada and European countries, it is known as Public-Private Partnerships¹³⁸. Despite different names, the underlying factor is that the focus is based on a collaborated service. However, different governments have pursued this approach based on specific projects and in some cases for different reasons.

Governments from the developed world, such as US, UK Australia and other industrialised economies opted for partnerships to reduce operating cost while maintaining a high level of quality service delivery and customer satisfaction.¹³⁹ In emerging developing markets such as South Africa, Malaysia, Hungary and Thailand, governments have engaged in PPP to seek resources, knowledge production, long-term investment, management and new technologies

OECD and Dynamic Non-Members Economies. Paris, pp. 99-125.

¹³⁷ White, N. (2006:1). Structuring Effective Public Private Partnerships in Water and Sanitation: Case Studies and Lessons Learnt.

¹³⁸ White, N. (2006:1). Structuring Effective Public Private Partnerships in Water and Sanitation: Case Studies and Lessons Learnt.

¹³⁹ Osborne, S. (2000:14). Public Private Partnerships: Theory and Practice in International Perspective. London Routledge.

with a hope of sustainability. This alone cannot support the state of affairs in the public sector, as it can only promote knowledge dependency from private entities. Therefore, it requires a change of method and approach to the infrastructure development projects model (PPP) in terms of funding, monitoring and scope of implementation.¹⁴⁰ Clearly, there's a need to invest in knowledge production and management to sustain infrastructure development projects and minimise knowledge gaps in PPPs.

3.7 Conclusion

In this chapter, the concept of PPP has been described. The chapter looked at the historical background for PPP in South Africa, the challenges and opportunities thereof. PPP is viewed by some as a form of privatisation, since the private sector in some way actually delivers the service. But the concept is primarily based on the 'partnership' that the private sector offers through its technological prowess and on its completion of the project with resources that can enhance the delivery of public services. Then the public sector, being government, will champion the policy direction. Furthermore, this chapter recognised that the studies sufficiently demonstrate that PPPs are no partnerships of like-minded participants. It is more a forced partnership of convenience. However, it is a *partnership* and not simply an outsourced service to the government. Given the multi-decade character of these relationships, it is appropriate to see them as a new form of organisation.¹⁴¹ The challenge is that both public and private need to have an enabling upstream environment to reach financial agreement on time. This is, in most cases, difficult as they do not equally share the risks and the rewards.¹⁴² Furthermore the fact they are drawing from different ideological approaches poses a challenge.

The chapter also concedes that the PPPs are cross-sectoral functions that are based on three critical functions of information – guidance, advisory support and funding.

With the above perspective, PPP has been seen as an appropriate mechanism to respond to the knowledge disconnects in South African infrastructure development. Therefore, the next chapter illuminates the case of Eskom as a national utility in the saga of electricity generation.

¹⁴⁰ Osborne, S. (2000:14). *Public Private Partnerships: Theory and Practice in International Perspective*. London Routledge.

¹⁴¹ Villani et al (2017) & Rao et al (2003). Cited by Kinghorn, J (2018). *The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. Theory and Applications in the Knowledge Economy (TAKE) International Conference, Poland 2018*

¹⁴² Public Private Infrastructure Advisory Facility (2011).

The cases describe Weick's Sensemaking Theory concepts such as 'ambiguity' in terms of its reasoning for resource options of energy and the dynamics of knowledge that stirring the case in the PPP context.

Chapter 4

The Case of Eskom in South Africa

4.1 Introduction

This chapter is not about the company known as Eskom, but about the past 20 years of wrangling, and often bungling, about electricity generation in South Africa. In all of this, Eskom takes a central role, however, as it is at the same time a state-owned enterprise (SoE) *and* an independent company, which falls under the auspices of the South African Companies Act and is expected to operate similarly to other private companies. It is in the latter capacity that Eskom functions as the assembly point for a wide number of local and international private companies who deliver services to the power generation plants of Eskom. Although the chapter is not about the organisation of Eskom, it is clear that Eskom is the theatre stage of the electricity saga of the past two decades. Therefore, it is important to defined Eskom in the context of this thesis.

The special position of Eskom – state owned and monopolistic on the one hand, and competitive in market conditions on the other – lends a special character to the Eskom centred PPP that government entered into in 1998. At the same time, the dual nature of Eskom illustrates the composite nature of PPPs when seen in terms of their organisational structures. Eskom was founded in 1923 and has as a national organ ever since. But when South Africa became a democracy, it assumed a developmental role.¹⁴³ It had to deliver electricity to a majority of the population who were not serviced up to then. It was in the 1990s that the present status of Eskom as both an SoE and as an independent company was established.

Eskom as an SOE is guided by the principles of the Code of Corporate Practices and Conduct contained in the King Report on Corporate Governance for South Africa 2002 (King II Report), as well as the Protocol on Corporate Governance in the Public Sector 2002.¹⁴⁴ While it is a

¹⁴³ Eskom Heritage. <http://www.eskom.co.za/sites/heritage/Pages/1990.aspx>

¹⁴⁴ Eskom Heritage. <http://www.eskom.co.za/OurCompany/CompanyInformation/Pages/Legislation.aspx>

state owned company, its strategic intent is to maintain a financially viable and sustainable company. This means it has to act as an agent or consultant of state to attract direct and sustainable investment. It has to be self-sustainable and partner with the private sector such as Independent Power Producers (IPPPs) to provide reliable, predictable and affordable electricity in line with approvals and regulatory model by the National Energy Regulatory of South Africa (Nersa). As such Eskom is at once a representative of the public and the private sectors of the economy. It functions as the location where the interface between public and private becomes real.

In this chapter, we trace the outline of the energy saga in which Eskom has been the theatre stage since the 1990s. In so doing, this chapter demonstrates the significance of policy articulation and shift by government as a key stakeholder in Eskom. The chapter also exemplifies the spectacular neglect to implement policy as articulated in the 2008 White Paper for Energy and tempered with Eskom's independence to expand capacity to service the majority of the population.

4.2 Resource options for South Africa

For decades, South Africa faced an abundance of energy resource options compared to what is usual in other countries. This has been a formidable case in the history of South Africa in terms of policy formulation. Since early 1990s and through the dawn of democracy, the issue of electricity generation has been a chaotic journey, engulfed by political convictions (ideological knowledge) more than scientific knowledge. Obviously, it has been a nightmare for policymakers to legislate a viable energy resource option for South Africa. But, if these diverse resource options had been systematically considered, South Africa's energy security could have contributed to the Republic's economic development.

According to former President Kgalema Motlanthe, there is a huge potential for economic benefits from pursuing the green energy route, including the continuation of searching for clean coal technologies and solar technology.¹⁴⁵ This could open up regional development in the Northern Cape, and the pursuit of a knowledge economy through the beneficiation of shale gas, hydropower, platinum fuel cell, uranium and even the nuclear programme.¹⁴⁶ This logic can be described as promoting what the previous administration called 'mix energy

¹⁴⁵ Kgalema Mothlante (2013). South African Green Energy Youth Summit, organised South African Youth Council.

¹⁴⁶ Kgalema Mothlante (2013). South African Green Energy Youth Summit, organised South African Youth Council.

policy’, which intended to explore available resources with a certain degree of utilisation as part of energy capacity expansion. Furthermore, the former President Motlanthe pronounced that the mix option is coupled with the potential for regional interconnection within the SADC (Southern African Development Community) sub-region. This would have the potential to position the country and the region as one of the fastest growing economic hubs in the world, on the back of our environmentally balanced and sustainable energy resources.¹⁴⁷

The 1998 White Paper on Energy Policy is a blueprint for energy policy and what approach should be explored for electricity generation. It said the resource options had the potential to increase the capacity of energy generation to meet the complex socio-economic demands¹⁴⁸. However, this reality was faced by a squabbling, most often inept, and indecisiveness from the executive. The National Development Plan (NDP) also emphasises the need to have a thorough investigation of energy resource options that are efficient, cost-effective and reasonable, environmentally friendly¹⁴⁹ and also suitable for our social structure to choose from. With the above discussion on resource options, the following section outlines the diverse energy resource options to support the essence of this thesis and energy saga since 1998.

4.2.1 Coal

Currently, SA has the world’s 5th biggest mining economy and reserves of coal and other minerals (excluding gas and oil fields)¹⁵⁰ that have not yet been explored. To mine these and to support a digitally-led economy obviously require extensive electricity capacity. Yet today, 70% of electricity is still generated by coal-fired stations. Most of these station are nearing the end of their lifetime and have become costly to maintain. Obviously, coal is the primary source of energy in South Africa. The social and physical infrastructure supporting coal generation is hardwired in the economy.¹⁵¹ Moving away from coal generation will have a major impact on employment, mining and export earnings. Also, it has the potential to destabilise the industry if it is not well managed.¹⁵²

¹⁴⁷ Kgalema Mothlante (2013). South African Green Energy Youth Summit, organised South African Youth Council.

¹⁴⁸ White Paper on Energy Policy, (1998)

¹⁴⁹ National Development Plan. (2012)

¹⁵⁰ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study.

¹⁵¹ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study.

¹⁵² Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study.

However, environmental concerns are also pressing to ensure that South Africa produces clean coal to reduce CO₂ emission. According to the Department of Energy, South Africa is committed to efficient use of its coal through employment of clean coal technologies such as carbon capture storage (CCS) and the stabilisation of CO₂ emissions.¹⁵³ As a member of the G20, South Africa is an enthusiastic supporter of the Kyoto Protocol and the Paris Accord. Already in 1997, the Clean Development Mechanism was promulgated.¹⁵⁴ In 2004 the Designated National Authority to oversee the reduction of green-house emissions was enacted. South Africa has a roadmap with a plan and is committed to reduce CO₂ emission and– in 2020, South Africa should have a commissioned demonstration plant. In time, large parts of informed civil society came to throw their weight behind “clean” technology, but trade unions strongly support coal generation. This looks like it will be the biggest threat to the industry and could destabilise functioning and electricity supply.

According to the energy department, South African coal is nearly all bituminous, with very little anthracite. “It is generally of low quality with high ash content”.¹⁵⁵ However, sulphur levels are low at about 1%. South African coal enjoys a competitive advantage over northern coals in that it is laid down in thick, level seams at shallow depths and is relatively free of faulting¹⁵⁶.

Furthermore, according to SA Energy Synopsis Report (2010) the country has proven coal reserves of 48 Gt, representing 5.7% of total global reserves.¹⁵⁷ The bulk of these reserves are located “in the central basin, which consists of the Witbank, Highveld, Ermelo, South Rand and other KwaZulu-Natal coalfields”.¹⁵⁸ The below illustration indicates the primary sources of energy as it was in 2006.

study.

¹⁵³ Department of Energy, South Africa

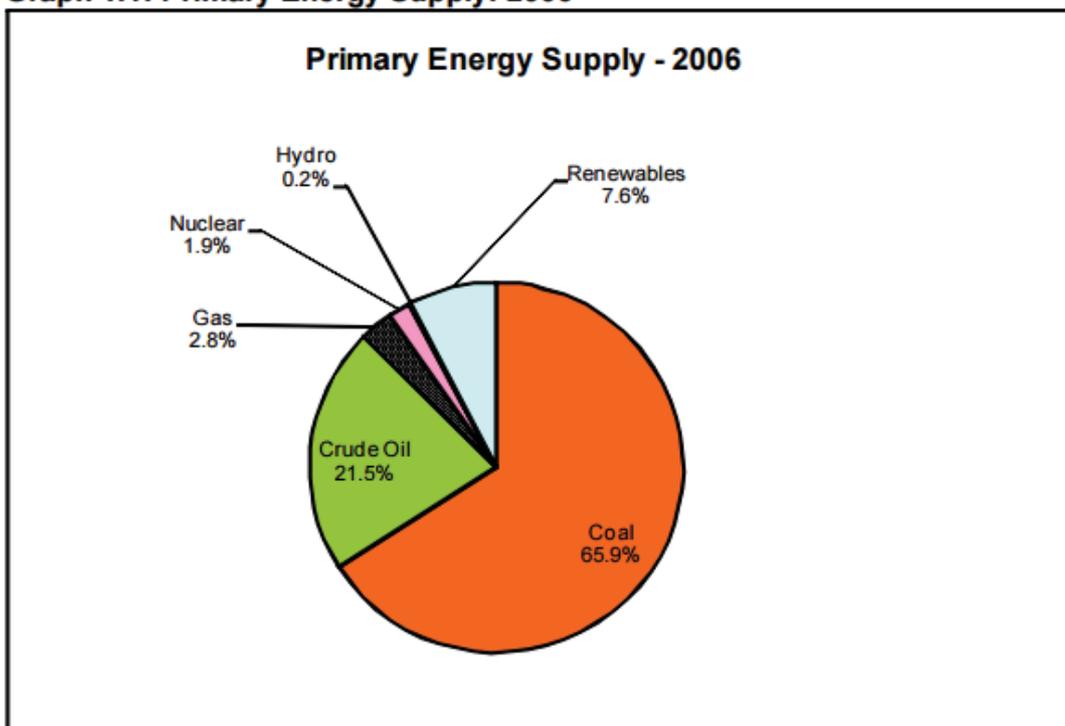
¹⁵⁴ Kinghorn, J. (2018). *The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study.*

¹⁵⁵ SA Energy Synopsis Report. (2010).

¹⁵⁶ South African Energy Synopsis. (2010).

¹⁵⁷ SA Energy Synopsis Report. (2010).

¹⁵⁸ Department of Mineral Resources Report (2008). Cited by South African Energy Synopsis (2010).

Graph 1.1: Primary Energy Supply: 2006**Figure 2.** Source Primary Energy Supply 2006

4.2.2 Wind and solar

According to the SA Energy Synopsis Report (2010), South Africa is well endowed with renewable energy resources with the potential to produce energy from biomass, wind, solar, small-scale hydro and waste. These resources remain largely untapped. It is ranked as one of the countries with the highest photovoltaic penetration on earth and at times is dubbed the future “solar energy capital of the world”. “SA Energy Synopsis Report (2010) says,”the main use for the renewable energy would be power generation and non-electric technologies such as solar water heating and bio fuels”.¹⁵⁹ The White Paper on Renewable Energy, approved by cabinet in November 2003, states that: “10 000 GWh (0.8 Mtoe) renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, solar and small-scale hydro”.¹⁶⁰ The coastal regions of South Africa have the highest potential for power generation from wind. The Waste Handbook Volume 2 (2015) also reports that, ”other areas such as the Eastern Highveld, Bushmanland and the Drakensberg foothills show moderate

¹⁵⁹ South African Energy Synopsis (2010).

¹⁶⁰ White Paper on Energy Policy (1998).

potential for wind generation”¹⁶¹. Whereas SA Energy Synopsis (2010) tells us that, the “total onshore wind generation has an estimated potential to provide 1% of the required electricity in South Africa”.¹⁶² Furthermore, the “applications of wind energy also include water pumping, wind farms for hydroelectric systems, solar-hydro hybrid systems and distributed power generation”.¹⁶³ Biomass wood fuel is another major energy resource in rural areas for domestic cooking and other needs. The current consumption of wood is unsustainable because it is being consumed faster than it is replenished and therefore, requires human resources for reloading. Bagasse from sugarcane production and waste from the pulp and paper industry are other energy sources used to provide energy within these industries, but can be used “to a greater extent to provide energy for nearby consumers”.¹⁶⁴ There is a large potential for bio fuels from energy crops such as sugarcane and maize, which can be supplied to rural communities and commercial farmers for food production.

4.2.3 Hydropower

In September 2014, the Department of Energy signed an agreement with the Democratic Republic of Congo (DRC) on the Grand Inga Hydro Power Project Treaty. According to Energy Advocacy, South Africa’s Energy Situation (2015), the agreement promotes cooperation in the fields of electricity, hydroelectricity, renewable energy, and energy efficiency”.¹⁶⁵ This is done through various mechanisms, such as the exchange of information on the respective electricity policies of our countries, institutional arrangements and regulatory frameworks; technology transfer, research and development cooperation. “The project has the potential of generating 40 000 megawatts of hydroelectricity”.¹⁶⁶ The project is “divided into seven phases, and as part of the first phase, South Africa will have a 2500 MW offtake”¹⁶⁷ of energy supply.

The Inga hydropower generation project is in the world’s most voluminous waterfall in the Congo River of the Democratic Republic of Congo. According to studies by the World Bank (and others) the potential generating capacity of Inga can exceed the Three Gorges project in

¹⁶¹ The Waste Handbook Volume 2 (2015).

¹⁶² South African Energy Synopsis (2010).

¹⁶³ South African Energy Synopsis (2010).

¹⁶⁴ South African Energy Synopsis (2010).

¹⁶⁵ Energy Advocacy, South Africa’s Energy Situation – Fuel Pricing South Africa (2015). Issue 1, May 2015

¹⁶⁶ Energy Advocacy, South Africa’s Energy Situation – Fuel Pricing South Africa (2015). Issue 1, May 2015

¹⁶⁷ Energy Advocacy, South Africa’s Energy Situation – Fuel Pricing South Africa (2015). Issue 1, May 2015

China. It has the potential to provide 50% of Africa's electricity needs.¹⁶⁸ Support for Inga was always the policy of SA and, in 2014, a treaty was signed with the Congo guaranteeing a substantive uptake of electricity when Inga is completed.¹⁶⁹ However, the project was put on hold due to geopolitical issues. Then, in 2016 the World Bank withdrew and the latest indication is that the project has been postponed to 2024. But recently, the South African government, through the Department of Energy, revitalised the treaty and they announced the new Integrated Resource Plan (IRP) that is being listed as another electricity resource plan. With the new IRP treaty, SA is recommitting itself to explore another way to expand electricity generation to support the digital-led economy.

4.2.4 Gas

For oil and gas, South Africa has very limited oil reserves and about 95% of its crude oil requirements are met by imports from the Middle East and Africa "(Saudi Arabia, Iran, Kuwait, the United Arab Emirates, Yemen, Qatar, Iraq, Nigeria, Egypt and Angola)".¹⁷⁰

However, according to the Energy Advocacy Report (2015) there has recently been a number of gas discoveries on the continent - including in Mozambique, Tanzania and on our West Coast.¹⁷¹ The lack of gas infrastructure, however, including pipe lines and storage facilities, has made it a challenge for gas to feature as a major energy carrier in our current mix¹⁷². According to Energy Advocacy, SA Energy Situation (2015), government seeks to expect the infrastructure necessary to open up the gas market for the residential, commercial and industrial sectors through the Gas Utilisation Master Plan¹⁷³ which advocate to expand gas market. Furthermore, it is estimated that the country possesses large quantities of untapped gas (according to American estimates perhaps the 5th most globally). At present, gas turbines are used for electricity generation, but the gas is imported from Mozambique.

According to the Policy Budget Speech by the former Minister of Energy Ms Tina Joemat-Pettersson, "the prospect of gas replacing imported crude oil in the transport sector is very high on the government agenda, since it bodes well for our macro-economic outlook, particularly in

¹⁶⁸ Inga Falls. World Waterfalls Database.

¹⁶⁹ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study.

¹⁷⁰ Energy Accounts for South Africa: 2002-2009 (2012).

¹⁷¹ Energy Advocacy, South Africa's Energy Situation – Fuel Pricing South Africa (2015).

¹⁷² Energy Advocacy, South Africa's Energy Situation – Fuel Pricing South Africa (2015).

¹⁷³ Energy Advocacy, South Africa's Energy Situation – Fuel Pricing South Africa (2015). Issue 1, May 2015.

the balance of payments”¹⁷⁴. With the new IRP, gas exploration for electricity generation is listed as one of the options available. Presumably, it will become the most common energy carrier for public transport, freight and domestic heating and cooking in the near future. According to South African energy Statistics (2009), refined petroleum products such as petrol, diesel, residual fuel oil, paraffin, jet fuel, aviation gasoline, LPG¹⁷⁵ and refinery gas are produced by the following methods:

- Crude oil refining (oil refineries)
- Coal to liquid fuels and gas to liquid fuels by Sasol; and
- Natural gas to liquid fuels by PetroSA.¹⁷⁶

4.2.5 Fuel Cell

The abundance and affordability of fossil fuels have made them major sources of energy around the world. South Africa is no exception to this energy technology. However, with the global energy demand expected to grow more than 60 percent by 2030 and green evolution posing the main challenge to fossil fuels as energy sources, security of energy supply has become a concern, leading to the need to diversify energy sources. This has opened doors for fuel cell technology, a pollution-free electricity generation technology that is expected to compete with traditional fossil fuels. South Africa, together with Zimbabwe, has a practical monopoly on the world’s platinum stock. This is important if cell fuel technology proves to be commercially viable in future. State sponsored research in this respect between 2007 and 2017 reported substantive progress.¹⁷⁷

Fuel cells use a variety of feed streams, such as hydrogen, ammonia and liquid petroleum gas, to generate electricity, and uses platinum as a catalyst for the conversion of hydrogen into electricity.¹⁷⁸ Fuel cells therefore have the potential to become one of the main drivers of global platinum demand in the future. Therefore, SA’s abundant platinum group metal resources are expected to stand the country in a good stead to be both an active participant and a beneficiary.¹⁷⁹

¹⁷⁴ Policy Budget 2014 Speech by the Minister of Energy, Ms Tina Joemat-Pettersson

¹⁷⁵ Digest of South African Energy Statistics 2009

¹⁷⁶ Digest of South African Energy Statistics 2009

¹⁷⁷ Campbell, K. (13 April 2017) South Africa’s hydrogen fuel cell programme making steady progress. *Engineering News*.

¹⁷⁸ Department of Mineral Resources (2013). Fuel Cells and the future role of South Africa through its Platinum Resources.

¹⁷⁹ Department of Mineral Resources (2013). Fuel Cells and the future role of South Africa through its Platinum

According to Fuel Cell Today Industry Review, (2011) the fuel cells were invented more than a hundred years ago, but were only commercialised in 2007.¹⁸⁰ Therefore, “it has been a slow but steady progress, with several sales experiencing delays”¹⁸¹. However, a change in certain sectors began in 2011, particularly in the stationary market when large orders were announced and completed on time, even exceeding expectations at times. “As a result, fuel cell system sales continued to grow worldwide in 2011, rising by 39 percent to reach a high of 24 600 units”.¹⁸² The Department of Mineral Resources Report (2013) says that, “SA is exploring alternative energy sources to fossil fuels, to reduce the dependence on other energy resources such as coal and to find cleaner, more sustainable energy alternatives”.¹⁸³ Furthermore, the report stated that, the “Department of Science and Technology (DST) has established three national competence centres through its National Hydrogen and Fuel Cell Technologies (HFCT) flagship project, also known as (Hydrogen South Africa or HySA)”.¹⁸⁴ Objectives of HySA are portable sources of power (that are cleaner and less noisy than power generators), combined heat and power sources (for heating buildings and industries) and possibly also for fuel-cell driven vehicles¹⁸⁵.

4.2.6 Nuclear

South Africa hosts the only nuclear generation plant on the African continent and together with Namibia, SA is a dominant player in uranium mining (having constructed 6 nuclear bombs during the 1980s, but these have since been dismantled).¹⁸⁶ Currently, South Africa has one nuclear power station, Koeberg, about 30 km north of Cape Town. Koeberg has a nominal capacity of 1 840 MWe and consists of two 920 MWe pressurised water reactors (PWRs) built by a French company.¹⁸⁷ According to the Department of Energy’s report, the first unit was

Resources.

¹⁸⁰ Fuel Cell Today Industry Review 2011.

¹⁸¹ Fuel Cell Today Industry Review 2011.

¹⁸² Fuel Cell Today Industry Review 2011.

¹⁸³ Department of Mineral Resources Report (2013). Fuel Cells and the future role of South Africa through its Platinum Resources.

¹⁸⁴ Department of Mineral Resources Report (2013). Fuel Cells and the future role of South Africa through its Platinum Resources.

¹⁸⁵ Department of Mineral Resources, (2013). Fuel Cells and the future role of South Africa through its Platinum Resources.

¹⁸⁶ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study.

¹⁸⁷ South African Energy Synopsis (2010).

commissioned in 1984. Due to technical maintenance, Koeberg's electricity costs are now comparable to those of the coal-powered stations, although its capital costs were higher as is to be expected for nuclear power plants¹⁸⁸. According to Nuclear Energy Policy and Strategy, government is committed to promote nuclear energy as an important electricity supply option through the establishment of a national industrial capability for "the design, manufacture and construction of nuclear energy systems".¹⁸⁹ Therefore, nuclear energy forms part of the energy mix policy plan by government. This will also bring balance and diversity to ensure energy security and supply. As mentioned, since SA together with Namibia dominates uranium mining, the future of nuclear energy is still looking bright. It is intended that nuclear will comprise 17% of South Africa's base load energy mix by 2030 and will add 9 600 MW by 2030¹⁹⁰. One hopes, it will not be hijacked by those who are more interested in pursuing political ideology as happened under former President Zuma.

4.3 A history of a White Paper and system failures

For decades the electricity supply industries across the world have been going through restructuring and remodelling to respond to socio-economic imperatives. The main aim of the remodelling in almost all cases is to provide a reliable, efficient and competitive electricity supply market, yet there are as many electricity market models as there are restructured countries. According Economic and Political and Weekly (2005), quoted by Thembanani Bukula from Nersa during 2008 Electricity Distribution Maintenance Summit says, a number of market models demonstrate compellingly that the electricity supply industry and its institutions are shaped by history and politics, as well as by the social and cultural aspects of each country and not by pure generalisation or abstraction.¹⁹¹ This is an observation and common trend across countries in the world.

The Constitution of South Africa (1996) provides the legal basis for allocating powers to different spheres of government (national, provincial and local government) and contains a number of rights specifically relevant to energy policy. The Constitution of South Africa (2006) stipulates that government must establish a national energy policy to ensure that national energy resources are adequately tapped and delivered to cater for the needs of the nation. Furthermore, it instructs that, energy should be made available and affordable to all citizens,

¹⁸⁸ Department of Energy, South Africa.

¹⁸⁹ South African Energy Synopsis (2010).

¹⁹⁰ Department of Energy, South Africa.

¹⁹¹ Economic and Political Weekly, (2005)

irrespective of geographic location¹⁹². The Constitution also determines that the production and distribution of energy should be sustainable and lead to an improvement in the standard of living of citizens. This is also enshrined in the Bill of Rights of the Constitution, which provides that, “Everyone has the right:¹⁹³

- To an environment that is not harmful to their health or well-being; and
- To have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures¹⁹⁴

These rights give government an opportunity to partake in a scientific research to determine the type of energy generation options as stipulated on the 2008 White Paper on Energy as it is enshrined in the Bill of Rights of the Constitution. To provide reliable and cost-effective to all citizens.

4.3.1 The first White Paper on electricity generation 1998

Following the 1994 elections, government had a general review of policy.¹⁹⁵ According to the White Paper on Energy Policy (1998), the interests of South Africa’s majority have found expression through new social and economic policies, particularly the Reconstruction and Development Programme (RDP). The government’s new macro-economic strategy - Growth, Employment and Redistribution (GEAR) - places emphasis on two core strategies.¹⁹⁶ a) promoting growth through exports and investment; and b) promoting redistribution by creating jobs and reallocating resources through the budget.¹⁹⁷

South Africa (SA) had just emerged from the apartheid era and was influenced by international pressures. “As the economy opened up to the market, energy sector decisions required to ensure appropriate energy supply and use”.¹⁹⁸ Beside that, SA has the world’s 5th biggest mining economy and reserves of coal and other minerals (excluding gas and oil fields). The economy is becoming more diverse, not only in South Africa but around world. The 4th industrial

¹⁹² Constitution of the Republic of South Africa (2006). Cited by Energy Policy White Paper – Department of Minerals and Energy (1998).

¹⁹³ Constitution of the Republic of South Africa (2006). Cited by Energy Policy White Paper – Department of Minerals and Energy (1998).

¹⁹⁴ Energy Policy White Paper – Department of Minerals and Energy (1998).

¹⁹⁵ Energy Policy White Paper – Department of Minerals and Energy (1998).

¹⁹⁶ Growth, Economic And Redistribution - GEAR (1996).

¹⁹⁷ Energy Policy White Paper – Department of Minerals and Energy (1998). White Paper the Energy Policy of the republic of South Africa, Government Printers, Pretoria.

¹⁹⁸ White Paper on Energy Policy – Department of Minerals and Energy (1998).

revolution economy is fast approaching and some heavy industrial innovations will obviously require an extensive electricity capacity to sustain this type of an economy.

In 1989, it was pronounced to double energy generation capacity in the next 20 years with the aim to meet the demand of those areas that were not electrified during the apartheid era. At the same time, a number of old (coal) power stations were nearing the end of their lifetime. This meant that, a large expansion of energy generation was required but also large-scale replacement of failing energy infrastructure. The budget projections were immense and have escalated over time. However, the question how to expand the electricity infrastructure is far from self-evident. Unlike most other countries, SA has a long list of energy options, each with its proponents and opponents.¹⁹⁹ It is evident that there is a huge interest with each group in having their preferred option. However, the Department of Minerals and Energy (DME) under the leadership of Penuell Maduna wrote in December 1998 that Eskom's present energy generation capacity surplus would be fully utilised by about 2007.

The first White Paper on the Energy Policy explained that Eskom's forecasts assumed demand growth of 4.2%. It further outlined the state of South Africa's energy sector and warned that, although 2007 seemed like a long way off, long capacity expansion lead times require plans be put in place "in the mid-term" so that the needs of South Africa's growing economy can be met. It turned out that the department (DME) and Eskom were spot on in their predictions and the executive was wrong not to invest properly in energy generation. It was also concurred by the Former President Thabo Mbeki when he said, "*When Eskom said to government, 'We think we must invest more in terms of electricity generation', 'we said, 'no, but all you will be doing is just to build excess capacity'.*" *Former President Thabo Mbeki said at the time, "We said, 'not now, later'²⁰⁰. We were wrong. Eskom was right".²⁰¹*

the white paper added: "To ensure the success of the electricity supply industry as a whole, various developments will have to be considered by government over time, namely:"²⁰²

¹⁹⁹ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

²⁰⁰ Vermeulen, J. 2015. Here is how government was warned in 1998 about SA's electricity crisis. Accessed on: April, 4, 2015. <https://mybroadband.co.za/news/energy/122710-here-is-how-government-was-warned-in-1998-about-sas-electricity-crisis.html>.

²⁰¹ Vermeulen, J. 2015. Here is how government was warned in 1998 about SA's electricity crisis. Accessed on: April, 4, 2015. <https://mybroadband.co.za/news/energy/122710-here-is-how-government-was-warned-in-1998-about-sas-electricity-crisis.html>.

²⁰² White Paper on Energy Policy (1998) – Department of Minerals and Energy.

- “giving customers the right to choose their electricity supplier;
- introducing competition into the industry, especially the generation sector;
- permitting open, non-discriminatory access to the transmission system; and
- encouraging private sector participation in the industry”.²⁰³

According to Andrew Kenny’s article published in 2015 on Politicsweb says,” the abovementioned proposals are perfectly sound. However, they failed to address the fundamental problem of electricity in South Africa as it was outlined by the White Paper on Energy Policy (1998)”²⁰⁴, and this led to the present crisis. The article further states that, “The problem is this: how do we price electricity, plan future electricity supply, and frame electricity policy so as to get constant, reliable, affordable electricity at all times for our people and grow the economy at the same time?”²⁰⁵

In keeping with the white paper’s ideas, the government then ordered Eskom not to build new stations – an instruction that some key Eskom managers were delighted to accept but some were not. At the same time, however, the price of electricity was kept much too low for any private power producer to have an interest in entering the supply market. Clearly, this was a deliberate decision to keep the dominance of Eskom to be the only producer of electricity in the market. In addition, the government’s policies on privatisation were unclear and strongly resisted by its alliances (trade union and communist allies).²⁰⁶ Consequently, no privatisation took place – and no power station building began until after 2004, when policy changed. But “by then it was too late to prevent blackouts”.²⁰⁷ By 2007, the demand of electricity demand exceeded supply and Eskom’s capacity. Therefore, South Africa’s power utility was forced to start implement load shedding scheduling to prevent a national blackout²⁰⁸ and the collapse of the grid. Yet, notwithstanding clear recommendations from the DME’s white paper, the government didn’t act quickly to start building additional capacity. The White Paper suggest

²⁰³ Energy Policy White Paper – Department of Minerals and Energy (1998). White Paper the Energy Policy of the republic of South Africa, Government Printers, Pretoria.

²⁰⁴ Andrew Kenny (2015). The rise and fall of Eskom - and how to fix it now. Politicsweb. Accessed on: 30 June 2017. <http://www.politicsweb.co.za/documents/the-rise-and-fall-of-eskom--irr>.

²⁰⁵ Andrew Kenny (2015). The rise and fall of Eskom - and how to fix it now. Politicsweb. Accessed on: 30 June 2017. <http://www.politicsweb.co.za/documents/the-rise-and-fall-of-eskom--irr>.

²⁰⁶ Kenny, A. (2015). The rise and fall of Eskom - and how to fix it now. Politicsweb. Accessed on: 30 June 2017. <http://www.politicsweb.co.za/documents/the-rise-and-fall-of-eskom--irr>.

²⁰⁷ Kenny, A. (2015). The rise and fall of Eskom - and how to fix it now. Politicsweb. Accessed on: 30 June 2017. <http://www.politicsweb.co.za/documents/the-rise-and-fall-of-eskom--irr>.

²⁰⁸ Kenny, A. (2015). The rise and fall of Eskom - and how to fix it now. Politicsweb. Accessed on: 30 June 2017. <http://www.politicsweb.co.za/documents/the-rise-and-fall-of-eskom--irr>.

that “Appropriate steps will have to be taken to ensure that demand does not exceed available supply capacity and that appropriate strategies, including those with long lead times, are implemented in time,”²⁰⁹ the paper said.

The paper also states that, “the next decision on supply-side investments will probably have to be taken by the end of 1999 to ensure that the electricity needs of the next decade are met.”²¹⁰ Unfortunately, “the next supply-side decision was only made in 2004, and further delays at Eskom caused construction of Medupi power station to only begin just before South Africa’s power woes began in 2007”.²¹¹

4.3.2 Integrated Resource Plans up to 2008

The publishing of the White Paper on Energy Policy in 1998 was a milestone that would have taken South Africa to greater heights if it had not been overtaken by political grandstanding and lack of political commitment and leadership. One of the key objectives pronounced by the White Paper 2008 under subheading “electricity”, was that government should establish IRPs to be annually updated by a technical expert unit in government to accommodate and prepare for technological advancement²¹². It further stated that, government would require the use of integrated resource planning methodologies in evaluating further electricity supply investments and the decommissioning of older power stations, which were largely based on coal electricity generation. The IRP as a decision-making process focused on acquisition of least-cost energy resources, taking into account the need to maintain adequate, reliable, safe, and environmentally sound energy services for all consumers. This proposed the need to have a mix energy generation which was later championed by government and introduced us into other technologies of electricity generation and supply, such a renewables. The IRP approach includes:²¹³

- *“The evaluation of all candidate energy supply and demand resources in an unbiased manner;*
- *The systematic consideration of a full range of economic, environmental, social, and technological factors;*

²⁰⁹ Vermeulen, J. (2015). Here is how government was warned in 1998 about SA’s electricity crisis. Accessed on: April, 4, 2015. <https://mybroadband.co.za/news/energy/122710-here-is-how-government-was-warned-in-1998-about-sas-electricity-crisis.html>.

²¹⁰ Vermeulen, J. (2015). Here is how government was warned in 1998 about SA’s electricity crisis

²¹¹ Vermeulen, J. (2015). Here is how government was warned in 1998 about SA’s electricity crisis

²¹² Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. Theory and Applications in the Knowledge Economy (TAKE) International Conference, Poland 2018.

²¹³ Integrated Resource Plan - 2009

- *The consideration of risks and uncertainties posed by different resource portfolios and external factors, such as fluctuations in fuel prices and economic conditions; and*
- *The facilitation of public consultation in the utility planning process”.*²¹⁴

Sadly, over the years, the IRPs transmuted into a weatherglass of which political conviction held power at the time, albeit clad in formal and technical language. During the Mbeki administration (1999 to 2008) virtually no capacity increase took place. He openly set store by the development of the Inga project. This, to him, was an important ingredient of the “African Renaissance”.²¹⁵

According to the White Paper on Energy Policy, the use of IRP methodologies was to ensure that utilities avoid or delay electricity supply investments, or delay decommissioning decisions, when it is economical to do so. This was to be done by optimising existing energy capacity and increasing the efficiency of energy supply and consumption. It meant to contribute to meeting the electricity supply industry’s environmental performance. Therefore, government had to establish the guidelines for the IRP approach through new energy legislation and regulations and required the National Electricity Regulator to oversee its implementation.²¹⁶ Government accepted the proposal, but failed to provide personnel and properly finance the unit. In the years to come, the IRPs were to become the converging point of all disputes with abundance of knowledge for decision making. But they should also have diversity as it was articulated by the Energy White Paper of 1998. This indicated the preference for decreased reliance on coal as the primary fuel source for electricity. It expected that government policy and Eskom directives would promote greater diversity on energy mix to promote additional energy options such as nuclear, renewables and gas.

4.3.3 The first electricity system collapse

“Over the past 10 years, the electricity reserve margin, has been steadily declining, due to increasing demand for power and limited new generation capacity being commissioned”.²¹⁷ Since government ignored the 1999 warning by the Eskom report, severe load shedding had to be implemented as a measure to stabilise the electricity situation. In 2006, regional load shedding was essential due to network shortages and insufficient regional generation

²¹⁴ Integrated Resource Plan - 2009

²¹⁵ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

²¹⁶ Integrated Resource Plan - 2009

²¹⁷ Chettiar, M, Lakmeeharan, K & R G Koch, RG. Eskom (2009). Review of the January 2008 electricity crisis. *2009 Cigré 6th Southern Africa Regional Conference*, Somerset West.

resources”.²¹⁸ Then in early 2007, “the first collapse of the system or load shedding occurred due to the inability to supply demand with the operational generation capacity”.²¹⁹

There was a political and energy crisis in South Africa. It was evident that Eskom as a national utility company and governments at large failed the people and this was a result of bad political decision making. The energy crisis in 2008 happened against the backdrop of the community uprisings, strikes, student boycotts and other forms of mass action that proliferated in the country indicating the dissatisfaction and anger at the government’s slow pace of “service delivery” of a better life for all.²²⁰

However, as mentioned above, the ignorance of government resulted in the historic electricity problems, which caused economic destruction by impacting industries such as hospitality, construction, mining and other small businesses. According to Altman (2008:12), South Africa faced three dimensions of the electricity challenge.²²¹

- “the connected (or operational) generating capacity and the peak demand of South Africa
- consumer consumption levels and Eskom’s ability to supply power
- the availability of coal for the output of electrical energy”

When stocks of coal are exhausted, it can only be rebuilt if coal purchases exceed usage. This can only be achieved in part by reducing consumers’ electricity consumption. But to further understand the first electricity collapse – one has to refer to the Committee Briefing and Meeting Report (Eskom and Nersa) where the then CEO of Eskom, Mr Jacob Maroga, outlined the challenges faced by Eskom during the first collapse. He described two components to the reserve margin –the operating reserve margin and the generation capacity net reserve margin. Therefore, in order to stabilise the system and save electricity, Eskom utilised colour coding for its load shedding programme plan.²²² This was used in the winter of the previous year. With this in mind, there was an appetite to review the planned load shedding as it proved be more

²¹⁸ Chettiar, M, Lakmeharan, K & R G Koch, RG. Eskom (2009). Review of the January 2008 electricity crisis. *2009 Cigré 6th Southern Africa Regional Conference*, Somerset West.

²¹⁹ Chettiar, M, Lakmeharan, K & R G Koch, RG. Eskom (2009). Review of the January 2008 electricity crisis. *2009 Cigré 6th Southern Africa Regional Conference*, Somerset West.

²²⁰ Sangonet Pulse, (2008). Electricity Crisis in South Africa.

²²¹ Altman, M. (2008). The impact of electricity price increases and rationing on the South African economy. United Kingdom: Department for International Development (DFID) initiative.

²²² Parliamentary Monitoring Group (2008). Electricity Crisis and Pricing: briefing by Eskom and Nersa Minerals and Energy Portfolio Committee Meeting.

damaging to businesses than it was stabilising the system.

The plan also had a negative impact on industries; therefore load shedding was reviewed. This was based on the evidence of savings, agreements with customers and the impact upon key economic industries. Based on the abovementioned historic discussion, one acknowledges that there were different school of thought on this crisis; from civic organisations, to researchers, government and even Eskom itself.

The Soweto Electricity Crisis Committee strongly believed that the roots of the energy crisis lay in the very structure of the South African capitalist economy. The Electricity Crisis Committee further believes that, “it is an economy historically built to produce and distribute goods and services for the benefit of a minority at the expense of the majority”.²²³ The former CEO of Eskom in his presentation to the parliamentary committee, said that he believed that the crisis was a result of financial instability, hence they requested the pricing hike. Others believed that higher load factors resulted in a need for more regular maintenance. The situation was exacerbated by poor quality coal being used. However, the primary causes were firstly, the economic and electricity growth projections were underestimated by government, and secondly, decision-making processes around new generation capacity were not aligned and resulted in timely decisions not being taken as it was articulated by the 1998 White Paper on Energy Policy.

4.3.4 Integrated Resource Plans up to 2012

According to Chris Yelland, electricity is the biggest energy carrier in South Africa. “As such, an up-to-date national IRP for electricity is essential for the country’s overall economic and energy planning process for the provision of adequate electricity generation capacity to meet demand for the next 20 to 40 years”.²²⁴ Following the 2008 electricity crisis government was mandated to develop and expand the IRP and update it periodically. This will be in line with the demand and ever changing environment and growth of the country’s population. The IRP is a long-term plan meant to expand the capacity of power generation and supply for electricity. The first draft was released in 2012 for comment and was aimed to look at the long-term expansion to resolve the crisis and relieve the strain from the national grid. The plan was developed and guided by the White Paper on Energy Policy 1998 with the department as the

²²³ Sangonet Pulse, (2008). Electricity Crisis in South Africa.

²²⁴ Yelland, C. (2016). Analysis: The Draft 2016 Integrated Resource plan – lightweight, superficial and downright dangerous.

custodian of policy formulation and Eskom as the national power utility for energy generation and supply. The focus in 2012 was on the Integrated Energy Plan as a critical input into the next round of IRP.

The dramatic shift of policy direction was around this time. The Zuma administration pursued nuclear power generation. After load shedding, the saga continued under the Zuma administration. It was clear that the decision was not based on scientific information, but was driven by political ideology, which served the narrative for the administration at the time. This further delayed Eskom building new capacity to expand the supply. According to Kinghorn (2018) another delay was caused by labour unrest, a change of contracts with major suppliers, subsequent court cases, and a growing public unease with perceived corruption. But all of these were symptoms of the political change of focus that came with the Zuma administration (2008 to 2018).²²⁵ Seeing that, no further IRPs were issued since the IRP 2010 Policy Adjusted Electricity Plan. There's a growing opposition from civil societies and other interested parties who were against nuclear procurement. They believed the process was not transparent and aimed to deviate from renewable energy (solar and wind power generation).

Accordingly, the approved IRP 2010 Policy Plan had four commitments with a three-phase update process (2012 and 2013) respectively. These commitments were:

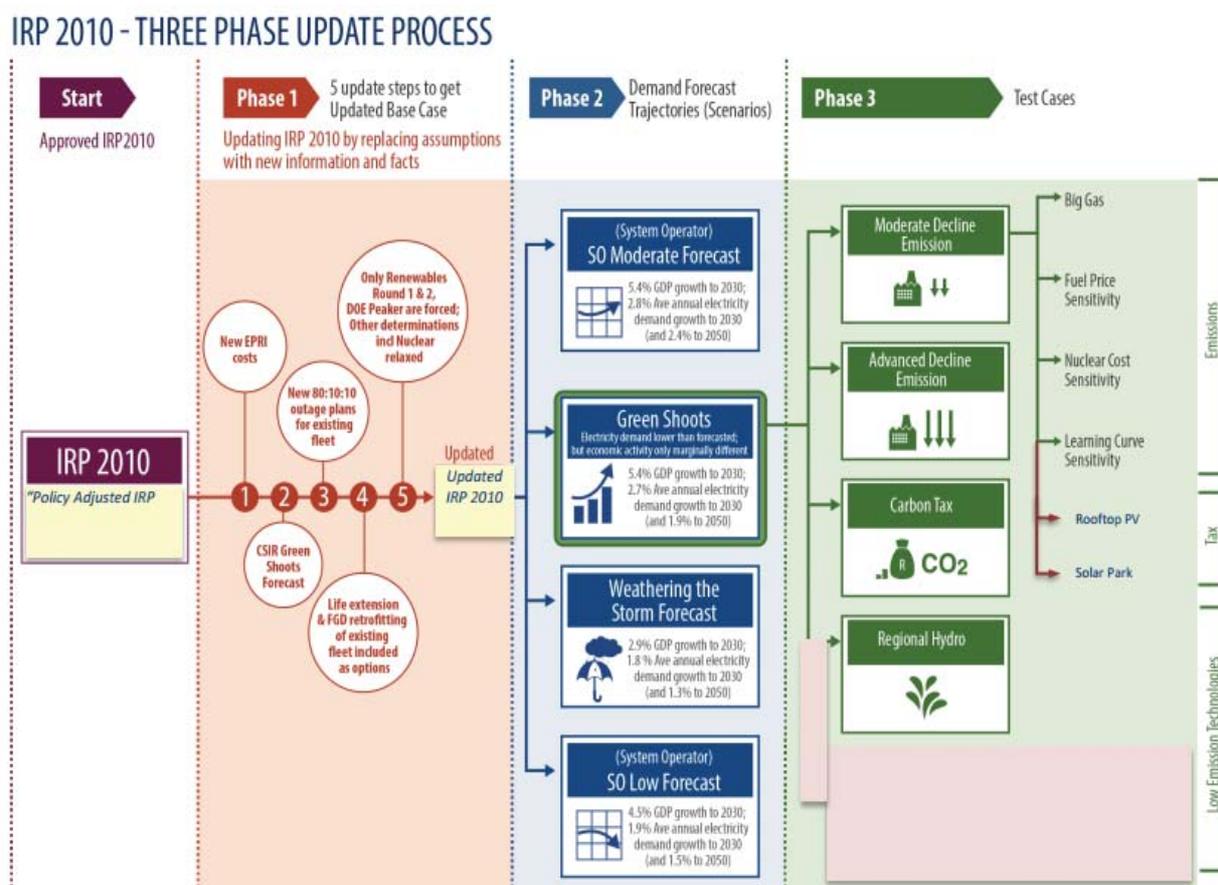
- Built, owned and operated by IPPs
- Necessary due to required high-voltage infrastructure, which has long lead times
- Necessary due to required gas infrastructure, which has long lead times
- Necessary because possibly required grid upgrade has long lead times

According to the Department of Energy (DoE), the proposal had to be reviewed instead of a full iteration, including new scenarios and some changes in inputs and assumptions to assess impact on IRP outcomes²²⁶. The below infographic illustrates the phases of IRP update.

²²⁵ Kinghorn, J (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. TAKE Conference 2018.

²²⁶ Department of Energy (2013). IRP Update Scenarios. Cape Town Workshop.

Figure 3.



Source: Department of Energy

Phase 1: To update IRP 2010 with new information and facts through 5 steps to get updated base case

Phase 2: Demand forecast of energy

Phase 3: Test Cases for IRP sources

But following the first attempt by the Department of Energy (DoE) in 2009 to discredit IRP1, a new version of the IRP for electricity was set for the next 20 years. The IRP 2010-2030 was promulgated by the DoE in March 2011, based on work done in 2009 and 2010. Based on the above discussion, the IRP should then have been updated annually (or at the very least, every two years) by the DoE, based on new economic data, revised technology costs, actual electricity demand growth in previous years, and a revised electricity demand forecast for the years ahead.²²⁷

This should have been in line with the IRP 2010 Phase Update Process as part of the 1998

²²⁷ Yelland, C. (2016). Analysis: The Draft 2016 Integrated Resource plan – lightweight, superficial and downright dangerous. Daily Maverick.

White Paper on Energy Policy. However, the new draft for IRP 2013 as an update to IRP2010-2030 was published in 2013 by the DoE, but for various reasons it was never accepted by the cabinet or government. “It has been widely reported in a number of publications including newspaper articles from different energy enthusiast and expert “the Draft IRP2013 recommended a reduced and delayed nuclear new-build for South Africa”.²²⁸ Against this background, “the latest update to IRP2010-2030, known as Draft IRP2016, has been awaited with great expectation, as well as concern about the repeated delays and extensions to the date of release of the Draft by the DoE for input and comment through a public participation process before promulgation”.²²⁹ One can assume that the reasons might be that it was not in contract with the Zuma administration’s ideological conviction. Hence, we saw pro-nuclear groups such as the public relations company in UK (Bell Pottinger) running a social media campaign on White Monopoly Capital (WMC), resisting transformation of the industry by blocking new businesses to participate in the economy. In hindsight, this can be classified as ‘ideological fake news’²³⁰ (similar to what happened prior to the Brexit referendum vote) where alternative facts were purported at the expense of scientific data.

4.3.5 The second electricity system collapse

With the above discussion, it is clear that the role of planning in the energy sector is of critical importance to ensure adequate supply of electricity. Sadly, this is also shaped by the market structure of the electricity market in South Africa, which is dominated by the national state-owned utility.²³¹ This anticompetitive structure, a global feature of electricity industries prior to the 1990s, has continued unchallenged in an open market. Therefore, it has resulted in the collapse of the electricity system. Furthermore, while other countries have reformed their electricity supply industry (ESI) to introduce other sources and open up more competition in terms of electricity generation and supply, South Africa has maintained the dominance of the national utility.²³² What it means is that Eskom operates across the entire electricity value

²²⁸ Yelland, C. (2016). Analysis: The Draft 2016 Integrated Resource plan – lightweight, superficial and downright dangerous. Daily Maverick.

²²⁹ Yelland, C. (2016). Analysis: The Draft 2016 Integrated Resource plan – lightweight, superficial and downright dangerous. Daily Maverick.

²³⁰ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. Theory and Applications in the Knowledge Economy (TAKE) International Conference, Poland 2018.

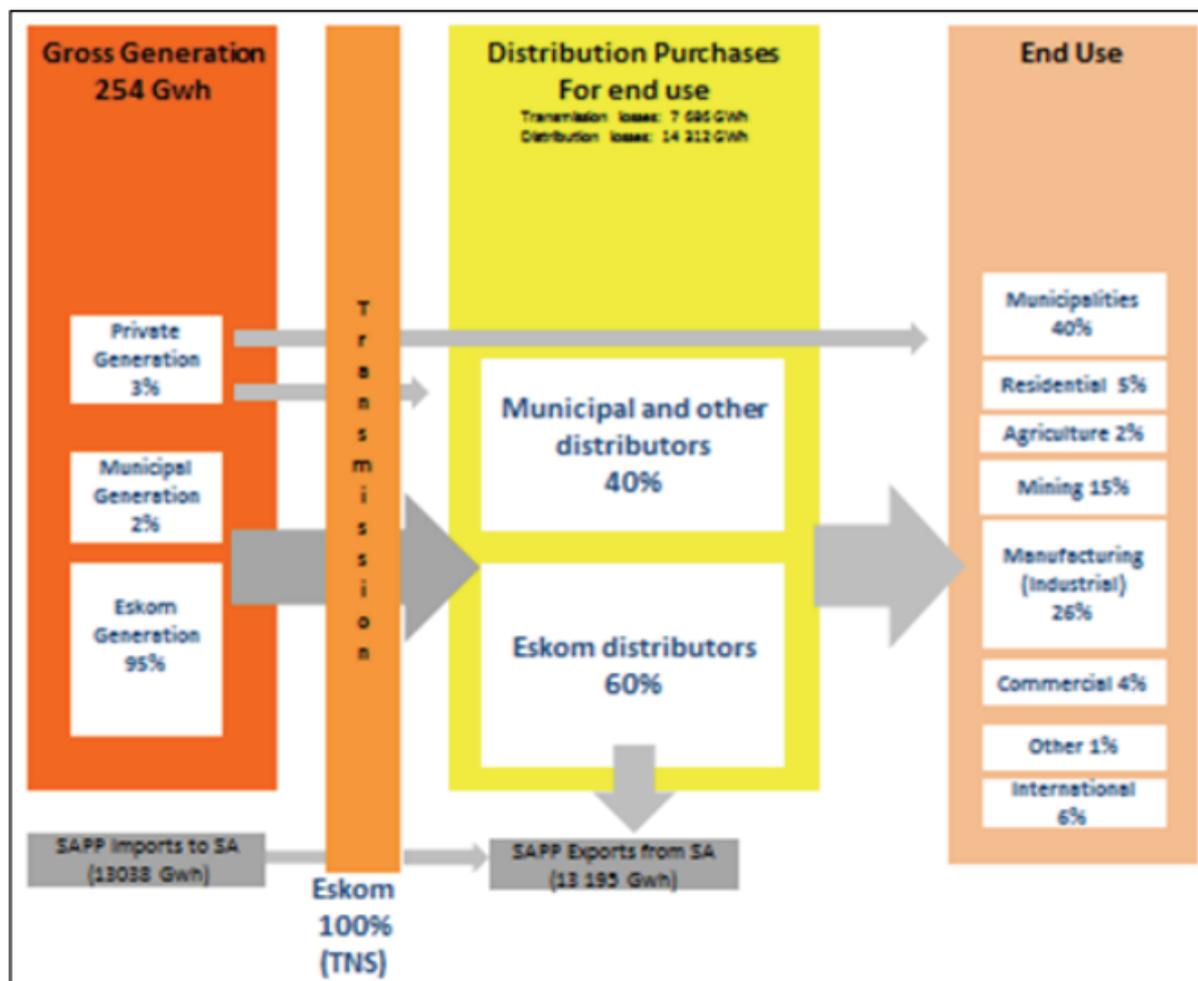
²³¹ Montmasson-Clair & Ryan (2014). Repositioning electricity planning at the core: An evaluation of South Africa’s Integrated Resource Plan. TIPS and Nedlac.

²³² Montmasson-Clair & Ryan (2014). Repositioning electricity planning at the core: An evaluation of South Africa’s Integrated Resource Plan. TIPS and Nedlac.

chain, i.e. generation, transmission and distribution.

As illustrated in Figure 4.2 below, “Eskom generates 95% of the electricity consumed in the country with IPPs representing a small portion of electricity generation”.²³³ In the medium term, a capacity target of an additional 42 GW by 2030 was set to meet the demand of the ESI, according to the Department of Energy.²³⁴

Figure 4: Structure and flow of electricity in South Africa in 2012



Source: Gaylor Montmasson-Clair and Georgina Ryan (2014) from (TIPS) and (Nedlac)

An early discussion indicates that the policymakers only realised too late that installed generation capacity was insufficient to service current and future demand comfortably. To be exact, it was from 2002, while experts were united that investment in additional capacity should

²³³ Montmasson-Clair & Ryan (2014). Repositioning electricity planning at the core: An evaluation of South Africa's Integrated Resource Plan. TIPS and Nedlac.

²³⁴ Department of Energy, (2013a). Integrated Resource Plan for Electricity (IRP) 2010-2030. Update Report 2013. Pretoria: Department of Energy.

have been initiated as early as 2000²³⁵ as was recommended by the White Paper on Energy Policy 1998 to avoid the tightening of the supply-demand balance from 2006 and the associated significant load shedding, which saw a negative economic impact on the country. However, the second collapse saw the electricity grid almost implode. This led to the announcement of what was called the “war room”, which was the Ministerial Advisory Council on Energy (known as MACE) by government led by the Minister of the Department of Energy. The advisory council was formed by “a combination of a broad-based group of academics, scientists, industrialists, representatives of various business and industry associations, energy intensive users, energy experts and other stakeholders”²³⁶ to salvage the energy crisis”. As the crisis of the load shedding programme persisted for a number of months, it was followed by a severe and long-lasting impact on the country’s economic indicators and growth. We saw industries such as manufacturing and mining reduce their earnings in 2017, which negatively impacted the South African economy and eventually let it enter a technical recession and a string of rating agency downgrades.

4.3.6 Integrated Resource Plans up to March 2018

The first IRP 2010 that was released and gazetted in 2013 has been engulfed by controversies and bungled by what can be called external ideological interference, which had nothing to do with energy but was more concerned with political convictions. The plan should have been updated periodically and in phases as outlined in the energy policy. The draft IRP 2013 as an update on IRP 2010-2030 was published by the DoE, but based on various reasons it was not accepted by cabinet and government. It has been widely reported that this was because “the Draft IRP 2013 recommended a reduced and delayed nuclear new-build for South Africa”.²³⁷ This led to further iterations, which resulted in policy uncertainty on energy and a snap to the economic forecasts.

An article titled, ‘Irrational IRP madness grips the energy sector in SA’, by energy expert, Chris Yelland, published: December 2017, highlights an ideological approach more than scientific outlook.

²³⁵ Montmasson-Clair & Ryan (2014). Repositioning electricity planning at the core: An evaluation of South Africa’s Integrated Resource Plan. TIPS and Nedlac.

²³⁶ Yelland, C. (2016). Analysis: The Draft 2016 Integrated Resource plan – lightweight, superficial and downright dangerous. Daily Maverick.

²³⁷ Yelland, C. (2016). Analysis: The Draft 2016 Integrated Resource plan – lightweight, superficial and downright dangerous. Daily Maverick.

The article highlights a media briefing on December 7 during the so-called “Energy Indaba”, where Energy Minister David Mahlobo announced that the long-awaited IRP 2017, had been finalised and approved by the cabinet the night before.

“[He further outlined that, IRP 2017 sets the course for the technology mix, quantum and timing of new generation capacity required to meet South Africa’s electricity demand forecast for the years from 2017 to 2050, and it therefore has massive economic, social and cost implications.]”²³⁸

However, Chris believed that the Energy Indaba had been hastily arranged by the Department of Energy (DoE) and its subsidiaries, CEF and Necs, for 7 and 8 December, shortly before “the ANC elective conference scheduled from 16 to 20 December”.²³⁹

“[It is thus clear that the deliberations of the Energy Indaba had no influence on IRP 2017, and cannot be considered to be any form of stakeholder or public consultative process for the IRP, Chris said. Minister Mahlobo also made it clear that there would be no further stakeholder or public consultations on the various scenarios modelled, on the electricity price trajectories of the scenarios, or any cost/benefit analyses of these scenarios.]”²⁴⁰

“[The stated purpose of the Energy Indaba was to engage with the energy sector with the aim of stimulating economic growth, industrialisation, jobs, black economic empowerment and radical economic transformation. The Energy Indaba was also punted by the DoE as a process of listening to the energy sector – but clearly not as input for IRP 2017.]”²⁴¹

“It became apparent that, in reality, the Energy Indaba was something of a show, intended to promote the “energy mix” policy of government and to reinforce and drive through a predetermined, irrational decision to force new nuclear power into the mix”.²⁴²

In essence, the Energy Indaba was a continuation of political persuasion of a much advocated

²³⁸ Yelland, C. 2017. Irrational IRP madness grips the energy sector in SA. Accessed on: <https://www.moneyweb.co.za/news/industry/irrational-irp-madness-grips-the-energy-sector-in-sa/>

²³⁹ Yelland, C. 2017. Irrational IRP madness grips the energy sector in SA. Accessed on: <https://www.moneyweb.co.za/news/industry/irrational-irp-madness-grips-the-energy-sector-in-sa/>

²⁴⁰ Yelland, C. 2017. Irrational IRP madness grips the energy sector in SA. Accessed on: <https://www.moneyweb.co.za/news/industry/irrational-irp-madness-grips-the-energy-sector-in-sa/>

²⁴¹ Yelland, C. 2017. Irrational IRP madness grips the energy sector in SA. Accessed on: <https://www.moneyweb.co.za/news/industry/irrational-irp-madness-grips-the-energy-sector-in-sa/>

²⁴² Yelland, C. 2017. Irrational IRP madness grips the energy sector in SA. Accessed on: <https://www.moneyweb.co.za/news/industry/irrational-irp-madness-grips-the-energy-sector-in-sa/>

radical economic transformation (RET) or energy mix policy to be smoothed inside policy by government, which had no significant value to the IRP. It clearly indicates that government is planning for electricity on the basis of RET but not on proper scientific knowledge and financial outlook.

The long-awaited new draft of IRP 2018 follows the process of what was promulgated in 2011. The government assured the country at the time that it was a “living document” based on regular updates. One assumed that the purpose was to align the plan towards the practical conditions and realities of energy demands, but also to the scale of other energy sources as stipulated in the energy policy. Unfortunately, with the former ministers, the plan had not been updated based on scientific knowledge. But we saw a lot of delays by political interference and ambitions to have a nuclear energy programme over renewable energy without thorough investigation of the pros and cons envisaged by the National Development Plan. As a result, the plan attracted a great deal of resistance from the pro renewable energy industry – because of the limitations set on wind and solar energy generation.

What is noticeable about the new IRP is that it adds 25 GW of electricity generating capacity and excludes the new nuclear programme, pumped storage or CSP. Independent energy providers are set to benefit and seem to have emerged significantly. The renewables such as solar and wind farms bounced back, and the dream of hydro power through Inga was rekindled²⁴³. This means by 2018 approximately 10% of power came from renewables generated by independent power producers. Instead, with the new IRP, we see that, gas and wind power are to contribute more than half of the extra capacity. Coal-fired power generation will drop from over 80% currently to less than 50% by 2030 according to the new plan²⁴⁴ (see **Table 1** below).

Table 1: Adjusted plan with resultant installed capacity mix for the period up to 2030.

Technology	New additional capacity	Resultant installed capacity	% of total installed capacity
Coal	1000 MW	34 000 MW	46
Nuclear	–	1860 MW	2,5
Hydro	2500 MW	4696 MW	6

²⁴³ Kinghorn, J. (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

²⁴⁴ Integrated Resource Plan (2018).

Pumped storage	–	2912 MW	4
PV	5670 MW	7958 MW	10
Wind	8100 MW	11 442 MW	15
CSP	–	600 MW	1
Gas	8100 MW	11 930 MW	16
Totals	25 370 MW	75 098 MW	100

Source: IRP, Department of Energy, (2018). Cited by Chris Yelland, EE Publishers

With the new IRP, we will see a decrease in use of nuclear energy up until the year 2030, Minister Radebe said, during a question and answer session in the briefing. According to the IRP, nuclear will contribute 4% to energy volumes for the period. Surprisingly, we saw the reintroduction or the inclusion of 2500 MW of hydro power for 2030 as part of facilitating the RSA-DRC treaty on the Inga Hydro Power Project. According to the new plan, the project is key to energise and unlock regional industrialisation. The Minister's IRP speech further explained that support for Inga has always been the policy of SA and in 2014 a treaty was signed with the Congo guaranteeing a substantive uptake of electricity when Inga was completed. However, in 2016 the World Bank withdrew its funding of the project due to disagreements on the timelines and the latest indication is that the project has been postponed to 2024²⁴⁵. Now the big question for this country, based on the latest reintroduction, is whether the DRC can meet the Inga 3 completion deadline as stipulated in the SA-DRC treaty.

We have known this since the Mbeki administration. He had a vision for this project. When he was newly elected in 1999 he gave a speech to the Organisation of African Unity (OAU) where he highlighted the development of the Inga Falls for hydropower as a necessary development of Africa's economic infrastructure²⁴⁶. He believed that the project would fit the broader plan to turn an interconnected African grid into an electricity-export powerhouse, eventually supplying Europe and the Middle East.²⁴⁷

With the above discussion, one needs to better understand the implications of recent or future investment decisions on electricity generation for South Africa's economic, social and

²⁴⁵ Integrated Resource Plan Update Draft Report (2018). Cited by Kinghorn, J (2018). The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

²⁴⁶ Mbeki, Thabo (1999). "[Podium: The globalization of Africa](#)". London: The Independent. Accessed on: September 17, 2018.

²⁴⁷ Hale, Briony (2002). "[Africa's grand power exporting plans](#)". BBC News. Retrieved September 17, 2018.

environmental structures. To take stock of the significance of the review and analyse the embellishment and implementation of an updated IRP is an essential exercise. With the latest IRP draft update, this has not gone unnoticed by a number of critics who are concerned about the geo-political complexity as a potential risk. The Mail & Guardian article by Siphos Kings, titled *The Grand Inga delusion*, cited the University of California, Berkeley study, “Renewable Energy Alternatives to Mega-hydropower: “A Case Study of Inga 3 for Southern Africa” which concluded that South Africa’s commitment could let the country end up spending an unnecessary R13 billion per year, which is over budget”.²⁴⁸ It is also not based on the need and on the fact that the same amount could be used to build the renewable energy capacity inside South Africa.

Be as it may, there’s a need for a new energy architecture framework to illuminate the complex social, economic and political dimensions of future energy choices. This should:

- Satisfy the need to urgently improve the data quality and collection in the South African energy landscape
- Improve our ability for framework and to model demand sensitivities
- Enhance the stakeholder management process to ensure that the trade-offs are understood and accepted

However, the “new” IRP 2018 indicates that solar, wind and hydropower will replace new coal and nuclear as the core focus for energy generation. After all these years of indecisiveness and with the recently published new IRP, the energy saga continues for a new phase. The *Transform SA* has already hinted that, the IRP 2018 policy plan is a disaster waiting to happen. Their observation is that worker unions will not support the plan (IRP 2018) because it is anti-state-owned enterprise, anti-workers, anti-poor and anti-jobs. With this, we are clearly set for another phase of the energy saga, which might risk the full potential of IRP implementation.

4.4 Overview of the South African energy generation

For decades energy generation and utilisation in South Africa (SA) have been characterised by high dependence on cheap and abundantly available coal. Therefore, South Africa imports a large amount of crude oil.²⁴⁹ A limited amount of natural gas is also available as part of the

²⁴⁸ Kings, S. (2018), titled, ‘*The Grand Inga delusion*’. Mail & Guardian.

²⁴⁹ Digest of South African Energy Statistics (2009).

energy mix. The country mines uranium, which is exported, and imports enriched uranium for its nuclear power plant at Koeberg.²⁵⁰ South Africa also uses renewable energy in the form of electricity generated by hydropower, most of which is imported. Electricity is also generated from other renewable energy sources, mainly biomass and to a lesser extent solar energy.²⁵¹ The government intends to diversify energy supply and hence it is promoting the use of renewable energy technology as well as other new energy technologies. In addition, it aims to improve energy efficiency throughout the economy.

According to SA Energy Synopsis (2010), South African coal mining began in 1870 when the first coal was used in the newly discovered Kimberley diamond mine.²⁵² As of April 2008, South Africa was generating the 20th most electricity in the world. This was due to an inheritance from, first gold and then platinum, mining since 1886²⁵³, which gave the country an edge and footprint for energy generation. The fact that the country possessed the 6th largest deposits of coal in the world made coal-fired stations attractive for investment and the cheapest in the 20th century. South Africa is blessed with an abundance of natural resources (Thopil & Pouris, 2015). It holds the world's largest natural reserves of gold, platinum group metals, chrome ore and manganese ore (UNEP, 2013). According to (EIA, 2013), South Africa also has the world's ninth-largest amount of recoverable coal reserves, holding the majority of total coal reserves in Africa.²⁵⁴ It is therefore not surprising that South Africa's energy sector is coal intensive. As a relatively energy intensive economy, "many industries such as mining and mineral beneficiation depend on a reliable supply of base load electricity".²⁵⁵

According to a Deloitte & Touche report (2017), by the early 1990s SA offered the cheapest electricity in the industrial world. However, since 2008 the cost has increased significantly though it's still the 9th cheapest in the world.²⁵⁶ Until the 1980s, South Africa's energy has been based around a single technical economic system: it has been generated from coal, which has

²⁵⁰ Digest of South African Energy Statistics (2009).

²⁵¹ Digest of South African Energy Statistics (2009).

²⁵² South African Energy Synopsis (2010).

²⁵³ Deloitte. (2017). An overview of electricity consumption and pricing in South Africa. An analysis of the historical trends and policies, key issues and outlook in 2017. Report prepared for Eskom Holdings SOC Ltd.

²⁵⁴ Energy International Agency (2013).

²⁵⁵ Bohlmann, JA., Bohlmann, HR. and Inglesi-Lotz, R. (2015). An Economy-Wide Evaluation of New Power Generation in South Africa: The Case of Kusile and Medupi. Accessed on: June, 14 2018. https://www.up.ac.za/media/shared/61/WP/wp_2015_40.zp58417.pdf.

²⁵⁶ Deloitte. (2017). An overview of electricity consumption and pricing in South Africa. An analysis of the historical trends and policies, key issues and outlook in 2017. Report prepared for Eskom Holdings SOC Ltd.

been developed over 100 years to match South African conditions. Then, when nuclear was commissioned around 2000, at least 92% of electricity was generated through coal, around 6% was generated from the nuclear plant, Koeberg, and the rest from hydroelectricity and other sources.²⁵⁷

As Energy StatsSA (2009) mentioned, “the South African energy sector is dominated by coal, which is abundant and relatively cheap by international standards”.²⁵⁸ However, most of South Africa’s liquid fuel requirements are imported in the form of crude oil²⁵⁹ and refined in South Africa. Approximately 30% is sourced from coal through Sasol and 100% of the natural gas production from PetroSA is converted into liquid fuels, supplying about 7% of liquid fuel requirements. According to SA Energy Synopsis (2010), renewable energy comprises biomass and natural processes that are refilled and can be used as an energy source.²⁶⁰ However, biomass is used commercially in the pulp and paper mills and sugar refineries by burning bulk from logs, black liquor and bagasse to produce process heat. The energy produced is used by the industries concerned to meet their needs.²⁶¹

History tells us that the development of the energy system unfolded in two phases. In the first phase, it was developed regionally, and largely based in local authorities, with the exception of a privately-owned system, which meant to serve only the emerging goldfields mining region on the Witwatersrand. Then later, the state energy utility was created (Eskom) which developed a regionally-based system to supply local authorities, industry and mining.²⁶² As time went by, these regional systems were gradually integrated into the national grid, and the national grid was completed in the second phase of development.

The third phase aimed to distribute electricity across the country, but with the concentration to supply mining and heavy industries. Since the development was controlled by local authorities, it was fundamentally affected by apartheid; where white households were almost entirely electrified and black households were largely not. During the transition to democracy, Eskom

²⁵⁷ Eskom Annual Report (2000).

²⁵⁸ Digest of South African Energy Statistics (2009)

²⁵⁹ Digest of South African Energy Statistics (2009)

²⁶⁰ South African Energy Synopsis (2010)

²⁶¹ South African Energy Synopsis (2010)

²⁶² Marquard, A. (2006). The origins and development of South African Energy Policy. Accessed on: July, 14 2018 http://www.erc.uct.ac.za/sites/default/files/image_tool/images/119/Papers-2006/06Marquard-PhD_Thesis.pdf

assumed a drive to supply electricity to every black households while it developed a significant presence in the distribution of industry. This was later affirmed in 1996 by the Constitution, which provided the legal basis for allocating powers to different spheres of government and contains a number of rights specifically relevant to energy policy.

The Constitution (1996) states that “government must establish a national energy policy to ensure that national energy resources are adequately tapped and delivered to cater for the needs of the nation”²⁶³. Therefore, energy should be made available and affordable to all citizens, irrespective of geographic location. It further instructs that, “the production and distribution of energy should be sustainable and lead to an improvement in the standard of living of citizens”.²⁶⁴

4.5 The role of Eskom in Energy generation

Eskom as a national utility, is an essential player in the governance of electricity in South Africa, it operates within a framework that is largely dominated by the needs of mining and other large manufacturing industries. Since 1937, electricity generation and distribution in SA has been a monopoly held by the company Eskom of which the state is the only shareholder. Until 1990, it enjoyed considerable autonomy, but since the democratic constitution of 1996 it became an essential part of government’s model for economic development.

According to Eskom’s Annual Report (2011), Eskom as a national utility has undergone some major changes from its origins in 1923: the utility has seen periods of almost complete autonomy, greater regulation, an oversupply crisis²⁶⁵, rolling blackouts, and massive electricity price hikes. The result is that, in 2012, the utility was almost entirely dependent on coal²⁶⁶, remained most responsive to mining and large corporate interests, due to its central mandate of ‘driving economic development²⁶⁷’, and continued to invest in large-scale, centralised electricity generation. “However, the country simultaneously faces a host of major development challenges, exacerbated by the legacy and structures of past”²⁶⁸ which had just

²⁶³ Constitution of RSA (1996)

²⁶⁴ Marquard, A. (2006). The origins and development of South African Energy Policy. Accessed on: July, 14 2018 http://www.erc.uct.ac.za/sites/default/files/image_tool/images/119/Papers-2006/06Marquard-PhD_Thesis.pdf

²⁶⁵ Eskom. (2011). Integrated Annual Report 2011. Johannesburg: Eskom

²⁶⁶ Eskom. (2011). Integrated Annual Report 2011. Johannesburg: Eskom.

²⁶⁷ Koen, M. (2012). Based on the unpublished research report: The Electricity Governance Complex. Civil Society Research and Support Collective.

²⁶⁸ Koen, M. (2012). Based on the unpublished research report: The Electricity Governance Complex. Civil

enough capacity to supply to the minority and left the majority outside grid.

According to Koen (2012), the gap between rich and poor, lack of infrastructure, high levels of urbanisation and unemployment, had a huge backlogs in service delivery.²⁶⁹ But one need to ask as to what is the real story behind Eskom's decisions making process for expand electricity generation? This document seeks to outline Eskom's role in South Africa, its evolution as a state-owned company, and its current status as a key player in South African political landscape²⁷⁰. "The investment recommendations and decisions made by Eskom are particularly important, for all South Africans".²⁷¹ The Eskom Climate Change 6 Point Plan (2010) states that, the utility has publicly acknowledged the potentially negative impacts of climate change and the need to reduce the coal content of the electricity generation mix in South Africa.²⁷² However, only a tiny proportion of Eskom's electricity portfolio is currently contributing to this fundamental solution, as it was referred to by the then Eskom CEO Brian Dames. According to Eskom Integrated Annual Report (2011), of the utility's 237,000 GWh total generation, the electricity output from wind was only 2 GWh in 2010.²⁷³ The report further states that, the initially a commitment was made to reduce coal reliance by 10% by 2012 at the 2002 World Summit on Sustainable Development (WSSD).²⁷⁴ Instead, coal intensity has increased over the years.

As mentioned above, Eskom enjoyed considerable autonomy as a statutory body. However, following the Eskom Conversion Act in 2002, Eskom was converted from a statutory body to a public company (Eskom Holdings Limited), with the South African government as the sole shareholder. A board was then established, "it comprised almost entirely big business, with a handful of academics and a sole representative of the DPE"²⁷⁵.²⁷⁶ The impacts of the

Society Research and Support Collective.

²⁶⁹ Koen, M. (2012). Based on the unpublished research report: The Electricity Governance Complex. Civil Society Research and Support Collective.

²⁷⁰ Koen, M. (2012). Based on the unpublished research report: The Electricity Governance Complex. Civil Society Research and Support Collective.

²⁷¹ Winkler, H., & Marquand, A. (2009). Changing development paths: From an energy-intensive to low-carbon economy in South Africa. *Climate and Development* 1 (2009) 47-65.

²⁷² Eskom. (2010). Climate Change and Sustainability Department, Eskom's 6 point plan. Available: http://www.eskom.co.za/content/GI0004_6_POINT_PLAN~2~1.pdf. Accessed on: July 14, 2018

²⁷³ Eskom. (2011). Integrated Annual Report 2011. Johannesburg: Eskom.

²⁷⁴ Eskom. (2006). Annual Report 2006. P.74. Johannesburg: Eskom.

²⁷⁵ Greenberg, S. (2008). Market liberalisation and continental expansion: The repositioning of Eskom in Post-Apartheid South Africa. In *Electric Capitalism*. Johannesburg: HSRC Press.

²⁷⁶ Koen, M. (2012). Based on the unpublished research report: The Electricity Governance Complex. Civil

government's approach are clear, "with the Eskom Conversion Act attempting to balance the competing narrative of Eskom's 'developmental role' and the need for 'affordable electricity'".²⁷⁷ In reality, these competing interests have never been resolved.²⁷⁸ It was then that the relationship between Eskom and the state began to be seen and promoted as a PPP to attract investment and capital to expand the energy programme as articulated by the White Paper on Energy Policy (2008). As a consequence, Eskom being both a public and a private company became subjected to both private and public regulation. The net effect is that it has no leeway for any form of competitiveness, technological innovation and flexible business practices and, since 1998, became the subject of a political milieu in the hands of successive administrations. It has also seized completely to be a strategic asset and independent body to champion energy generation and invest in research for new energy sources.

4.6 Conclusion

This chapter gave a comprehensive analysis of the energy saga and what caused the collapse of the grid. It indicates lack of urgency and leadership on policy direction, accompanied by contradicting statements on policy articulation. Already in 2007, electricity demand exceeded supply and South Africa's power utility was forced to implement load shedding to prevent a national blackout. Yet, despite clear recommendations from the DME, the government didn't act quickly by beginning to build additional capacity. And that the appropriate steps will need to be taken to improve capacity and that appropriate strategies will have to be implemented. Unfortunately, the next supply-side decision was only made in 2004, and further delays at Eskom caused construction of Medupi to only begin just before South Africa's power woes began in 2007.²⁷⁹

Society Research and Support Collective.

²⁷⁷ South Africa. (2001). Statutes of the Republic of South Africa, Eskom Conversion Act, No. 13 of 2001. Pretoria: Government Printers.

²⁷⁸ ²⁷⁸ South Africa. (2001). Statutes of the Republic of South Africa, Eskom Conversion Act, No. 13 of 2001. Pretoria: Government Printers.

²⁷⁹ Vermeulen, J. 2015. Here is how government was warned in 1998 about SA's electricity crisis. Accessed on: April 4, 2015. <https://mybroadband.co.za/news/energy/122710-here-is-how-government-was-warned-in-1998-about-sas-electricity-crisis.html>

Chapter 5

The Dynamics of Knowledge in the Case of Eskom

5.1 Introduction

In this chapter the theory about sensemaking, as was outlined in chapter 2, is used to try to determine the role of knowledge inside the dynamics of a PPP. This is done by subjecting the Eskom saga to analysis on the basis of sensemaking theory.

Where possible and sensible the analysis is amplified by specific references and anecdotes, but the foundation of the analysis is the comprehensive story that was presented in the previous chapter.

5.2 The knowledge gap is situated in hyper-ambiguity

Ambiguity is an unavoidable characteristic in a participatory process where different people are engaged in a collaborative approach. As we have seen in chapter 2, ambiguity describes a situation where multiple possible and credible meanings exist.²⁸⁰

As was shown in the previous chapter, the South African government has more options from which to choose than most governments in the world when formulating an energy policy. It is well resourced in each of the possible cases (except the Inga option). What is more, if costs are considered over a 50-year period, there seems to be little difference. Start-up costs may vary (like the nuclear option compared to renewables) but over the lifetime of the techniques the costs seem to average out.

This is a classic situation of ambiguity. But because of the scale of the choices on offer and the fundamental impact any such choice will have over almost the length of one person's lifetime, one can call it hyper-ambiguity.

As we have seen in the discussion of Weick's sensemaking theory, in such a situation a decision

²⁸⁰ Weick, KE. (1995). *Sensemaking in Organisations*. Sage.

cannot be made on the grounds of technological facts or finances alone. Nor is it a matter of collecting more facts which would make the correct choice clear. More facts simply make the ambiguity bigger. Decisions must be made on the basis of values and beliefs. Since the final decision is made by the government, it is evident that the values and beliefs that inform the government of the day will play the decisive role in the choice.

An example of how political values operative at a given time becomes the measurement instrument to direct the choice is how the President of the Republic, Jacob Zuma established close relations with the Russian President, Vladimir Putin. When the Russian President offered Russia's nuclear generation knowledge President Zuma started to promote nuclear generation in South Africa. That he was vehemently opposed by, in particular, the renewables lobby was not so much on the grounds of cost or technology, but on the grounds of a value system and beliefs that hold "organic" lifestyle as the ideal.

The basic factor of ambiguity plays a decisive role in all the factors that will be described below. It is not a factor or situation that can be managed. A PPP is inherently characterised by ambiguity. Otherwise the government would have operated on its own, and so also the participating companies and private enterprises.

It would be the wrong approach to try and reduce ambiguity. The only way to deal with it, is to explore ambiguity to its fullest possibility, including the fact that different participants hold vastly different values and beliefs. This would imply that a great deal of collaborative discussions be held between the public and private partners, in which not only technical facts are tabled but also values and beliefs. In chapter 6 this point is taken up again.

There is, however, the counter side of ambiguity which needs to be emphasised next: equivocality.

5.3 Equivocality

Equivocality literally means that what is said is the same. In practical terms it means that the same word holds more than one meaning or a single word is given more than one meaning.

In terms of sensemaking theory, one can see equivocality as the interpretation of an object or event in such a way that its meaning corresponds with a set of frames that the interpreter holds dear. Of course, in very well-defined situations, this adaptation to one's frames of reference will be difficult, but in ambiguous situations it happens all the time. After all, if multiple meanings can be attached to a situation, why can my own not be one of them?

In the Eskom saga one can point out a number of times where equivocality played a role.

Unfortunately, in each case it had negative impacts.

In 2008, we had witnessed the total paralysis and the reaction of the then president Mbeki when South Africa was hit by electricity blackout also known as “load shedding”. This was a direct outcome of Mbeki’s preference for Inga. Shortly afterwards president Zuma redirected the focus to nuclear, thereby stalling all previous momentum in terms of energy planning.

But equivocality does not only come in the form of personal frames of reference of the president. In 1998 when the White Paper was made public there was a different mood with respect to organisational structures. In line with organisational theories of the time government wanted to break up the monopoly of Eskom.

“For many decades Eskom has carried the responsibility of supplier of last resort, effectively enjoying a de facto monopoly on the construction of new generation capacity,” the White Paper said.²⁸¹ It explained that the government intended to steadily increase competitive pressures in the power generation sector with the aim to improve efficiencies and reduce electricity prices.

While in 1989 the ideological pendulum was closer to a free market liberal ideal, things went the other way by 2017. The events of December 2017 demonstrate how much naked ideology easily frames government’s positions.

Chris Yelland²⁸² discusses the media briefing on December 7 during the so-called “Energy Indaba”, where Energy minister David Mahlobo announced that the long-awaited Integrated Resource Plan for electricity, IRP 2017, had been finalised and approved by the cabinet the night before. The minister stated that IRP 2017 would set the course for the technology mix, quantum and timing of new generation capacity required to meet South Africa’s electricity demand forecast for the years from 2017 to 2050.

Yelland, however, believed that the Energy Indaba had been hastily arranged by the Department of Energy for December 7 and 8, shortly before the ANC elective conference scheduled from December 16 to 20. According to Yelland, it is clear that the deliberations of the Energy Indaba had no influence on IRP 2017, and cannot be considered to be any form of stakeholder or public consultative process for the IRP. Minister Mahlobo also made it clear

²⁸¹ Vermeulen, J. (2015). Here is how government was warned in 1998 about SA’s electricity crisis. <https://mybroadband.co.za/news/energy/122710-here-is-how-government-was-warned-in-1998-about-sas-electricity-crisis.html>

²⁸² Yelland, C. (2017). Irrational IRP madness grips the energy sector in SA. Accessed on: <https://www.moneyweb.co.za/news/industry/irrational-irp-madness-grips-the-energy-sector-in-sa/>

that there would be no further stakeholder or public consultations on the various scenarios modelled, on the electricity price trajectories of the scenarios, or any cost/benefit analyses of these scenarios.²⁸³

It became apparent that in reality the Energy Indaba was something of a show, intended to promote the “energy mix” policy of government and to reinforce and drive through a predetermined, irrational decision to force new nuclear power into the mix.²⁸⁴ In essence, the Energy Indaba was a continuation of the attempt to further entrench the socialist policy of Radical Economic Transformation.

5.4 Equivocation devalues expertise

The impact of equivocality (within the context of ambiguity) is felt in another factor which is at first not evident: the loss of the value of expertise.

The review of the Eskom saga looks on the surface as if it is a matter of scientific (logical) knowledge on the one hand and political expediency and ideology on the other. Consequently, the experts in the field of energy consistently bombarded government with “updated” technological perspectives and cost calculations. And government responded with plans and IRP’s that looked equally technical (albeit based on other cost assumptions). But as we have seen in the previous point, as well as in chapter 4, government’s version of the IRP reached farcical dimensions in the end, as the figures were manipulated to underscore an ideological position. The IRPs since 2012 (after the decision was taken to align with Russia and opt for nuclear) continued to present impressive tables and graphs, as if the content was rooted in scientific analysis only. As such the IRPs seem to be expert responses to the concerns raised by non-governmental experts. In reality they were not. They were formulations of ideology.

It helps to bear in mind that a similar process played out in the United Kingdom over a period of time not dissimilar to the Jacob Zuma presidency. This eventually culminated in the decision to “Brexit” from the European Union. There too the decision was driven ideologically, but presented in terms of facts and figures to oppose the concerns of the opposing experts.

In general terms this will to drive through personal preferences, even at the cost of factual truth, seems just childish.

²⁸³ Yelland, C. (2017). Irrational IRP madness grips the energy sector in SA.
<https://www.moneyweb.co.za/news/industry/irrational-irp-madness-grips-the-energy-sector-in-sa/>

²⁸⁴ Yelland, C. (2017). Irrational IRP madness grips the energy sector in SA.
<https://www.moneyweb.co.za/news/industry/irrational-irp-madness-grips-the-energy-sector-in-sa/>

But when the matter is analysed from the point of sensemaking theory, the picture becomes a different one. In situations of hyper-ambiguity, which allows for a great deal of flexibility in terms of equivocality, expertise becomes only one of the many options. In fact, there is no single “expertise” any more. One is given the option to choose “alternative facts” and “alternative knowledge”. The expert becomes only one of the voices, and one can easily shift to an alternative school of thought. In fact, the infamous Mbeki position on HIV and AIDS was “expertly” defended in precisely this way.

Before this devaluation of traditional expertise is rejected, we have to face the fact that it is not as easy as traditional experts want it to be, to accept their perspectives. Big questions about the future are always ambiguous. No expert can claim to be “right” about the future. The data may be factual, because it comes from the past, but the interpretation of the future cannot be derived only from the data.

What is more, the rapid changes in technology make predictions over a range of decades just not sensible. Who really knows what new opportunities might be around the corner, particularly due to artificial intelligence and automation?

5.5 The role of frames of reference

The core metaphor of sensemaking theory is described by Weick as cues generated by the context that are given meaning by frames of reference which a person or a group has built up over a lifetime.

In the world of information technology it has become standardised belief that data constitute our world. This is also endorsed by people who subscribe to science as the core knowledge basis of our lives. But sensemaking theory point to a different source of meaning and truth. The frames that people build up over a lifetime make more sense than contemporary data on its own. In fact sensemaking theory shows how eclectic people go about dealing with contemporary data. They select what fits the sense, and ignores what does not fit.

Organisations also have their frames of reference. Often there is little difference between organisations, but in the case of PPPs the difference between the two partners is clear and essential. The Public and the Private are subject to the same laws, but not the same objectives or operational codes. Perhaps the biggest difference is the audience that they have to satisfy.

It is obvious that in a country where the frames of reference of the partners are close to each other, the knowledge divide between them will be small. But in a country such as South Africa the divide is very big. This is particularly true in the Zuma presidency where the frames of

reference of business were very far removed from the Zuma traditionalist and socialist world. However, all through the saga none of the discussions ever touched on these fundamental issues. As was mentioned above, the debate was always conducted in terms of facts and figures. This is a deficit that any model for bridging the knowledge gap in future must take seriously. In the case of the Eskom saga a different kind of bridging took place though.

5.6 The bridging factor – and the knowledge impostor

In any complex environment or system such as the PPP, the knowledge gap is inevitable. It, therefore, is a situation which is ripe for a bridging factor. The knowledge gap can be easily filled with an actor who purports to have the ability to link the worlds of business and politics together or business and end-users. The actors in Eskom saga would be the Gupta Brothers and their network. In this case they started out as bridge builders, but soon became gatekeepers.

The bridging factor is not inherently negative. Kessler²⁸⁵ shows how a bridge can be a positive factor. He tells the story of Uganda's small farmers who struggled greatly with unsustainable land management practices and soil degradation. The problem for governments and NGOs was not a lack of relevant information but the difficulty of getting it out of academic journals and universities and into the hands of the poor small farmers in the rural areas. "It's a classic case of market shortfalls. If you go to most of the African languages, there's simply nothing published," says Philip Parker, Professor of Management Science. "The people who are the absolute poorest intersect with the people for whom nothing is published in local languages".²⁸⁶ Parker²⁸⁷ then created TotoGEO (a dashboard to help farmers and NGO's).

The abovementioned evidence confirms that the bridge factor as an actor between parties is necessary to bridge to the knowledge gap and divide. The Uganda's small farmer's story cannot be compared with the negative experience of South Africa's State Capture. It is a similar effort yet, it did not produce the outcome as everybody envisaged.

In the case of Eskom the bridging demonstrates what can go wrong in the form of mismanagement, corruption and collusion in what came to be known as 'State Capture'.

²⁸⁵ Kessler, B. (2015). A bridge for the Knowledge Gap. Source: INSEAD, the School of Business for the World. <https://knowledge.insead.edu/entrepreneurship-innovation/a-bridge-for-the-knowledge-gap-3961>

²⁸⁶ Kessler, B. (2015). A bridge for the Knowledge Gap. Source: INSEAD, the School of Business for the World. <https://knowledge.insead.edu/entrepreneurship-innovation/a-bridge-for-the-knowledge-gap-3961>

²⁸⁷ Kessler, B. (2015). A bridge for the Knowledge Gap. Source: INSEAD, the School of Business for the World. <https://knowledge.insead.edu/entrepreneurship-innovation/a-bridge-for-the-knowledge-gap-3961>

Government or certain individuals started to collude with the Gupta Brothers who in the process implicated trustworthy individuals including a number of reputable corporate companies such as KPMG, SAP, and McKinsy. The point here is that certain people became bridges but there was no knowledge bridge.

In this respect it is instructive to zoom in on former civil servant Themba Maseko's words at the launch of Johan van Loggerenberg and Adrian Lackay's book "The inside story of SARS' elite crime-busting unit". Maseko first described state capture in India and Russia.²⁸⁸

*I started to get a case study in one of the states that is known to be the most corrupt state. It was unbelievable. They owned members of parliament, civil servants and ministers. Even the prime minister of that state was owned by corrupt businesspeople. Meaning they get told what to do, how to do their jobs, which tenders get issued by which office and when they get issued.*²⁸⁹

He then continues about his experience in South Africa.

I get a call from a family that I call the G-Force. They tell me to award work worth R600m to one of their media companies. They say '[there is] R600m, you're going to place adverts here and you don't have a choice'. I say 'no, things don't work like that in government' and they say 'you don't understand, we are not asking you, but we are telling you'

*What upset me the most was that when I was going to have a meeting with them, as I'm driving to the famous 'Saxonwold shebeen', I get a call from someone higher up to say 'there are these kinds of individuals who want to talk to you, please help them out'. Essentially the picture they created in my head was that they are in charge.*²⁹⁰

The evidence confirms that the knowledge gap can be easily filled with what this thesis calls the 'knowledge impostor'. The knowledge impostor pretends to embody both the values and frames of government and of private enterprise. Therefore, the impostor becomes the bridge –

²⁸⁸ Ngoepe, K. (2016). State capture not unique to SA - former GCIS boss. News24. Accessed on: March, 28, 2018. <https://www.news24.com/SouthAfrica/News/state-capture-not-unique-to-sa-former-gcis-boss-20161111>.

²⁸⁹ Ngoepe, K. (2016). State capture not unique to SA - former GCIS boss. News24. Accessed on: March, 28, 2018. <https://www.news24.com/SouthAfrica/News/state-capture-not-unique-to-sa-former-gcis-boss-20161111>.

²⁹⁰ Ngoepe, K. (2016). State capture not unique to SA - former GCIS boss. News24. Accessed on: March, 28, 2018. <https://www.news24.com/SouthAfrica/News/state-capture-not-unique-to-sa-former-gcis-boss-20161111>.

and soon becomes the gatekeeper for all private interactions with the state (public sector).

Two aspects emerge from this analysis. Firstly, the necessity of a bridge cannot be denied. But it must be better conceived.

Secondly, in all knowledge interactions trust is essential. Even the best knowledge is meaningless if it is not trusted. But in the era of fake news and alternative facts, in the era where ambiguity and equivocality dominate, what are the foundations on which trustworthy knowledge can be built?

5.7 The factor of trust

Many authors emphasize the importance of trust for achieving organizational success. Various literature show that many see trust as necessary in contexts of high ambiguity and uncertainty and in contexts of high complexity.²⁹¹ Frédérique Elisabeth Six argues that, trust can provide a sense of security that will help survival in these contexts, and on the other hand, it can help with the risk-taking necessary for survival in complex environments. Therefore, when there's trust, it is said to enhance the ability to change and supports (radical) change.²⁹² This is because trust assist in learning, creativity and innovation. Furthermore, it is a lubricant for social relations which improves efficiency, or as John Locke declared, trust is 'the bond of society', the *vinculum societatis*.²⁹³

In the literature of organisational studies and social psychology, trust is seen as both a type of behaviour²⁹⁴ and an underlying disposition.²⁹⁵ Deutsch, defined trusting behaviour as consisting of actions that increase one's vulnerability to another whose behaviour is not under one's control in a situation where the penalty one suffers if the other abuses that vulnerability is greater than the benefit one gains if the other does not abuse that vulnerability.²⁹⁶ Bradach and Eccles defined trust as 'a type of expectation that alleviates the fear that one's exchange partner will act opportunistically'. Trust has extrinsic, instrumental value in helping to reduce

²⁹¹ Six, FE, (2004). Trust and trouble: Building interpersonal trust within organisations.

²⁹² Six, FE, (2004). Trust and trouble: Building interpersonal trust within organisations.

²⁹³ Six, FE, (2004). Trust and trouble: Building interpersonal trust within organisations.

²⁹⁴ Deutsch, (1962). Cited by Nooteboom, B. (2006). Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. <https://pure.uvt.nl/ws/files/777935/35.pdf>.

²⁹⁵ Bradach and Eccles (1989), Sako 1992, Das and Teng 2001. Cited by Nooteboom, B. (2006). Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. Retrieved, <https://pure.uvt.nl/ws/files/777935/35.pdf>.

²⁹⁶ Deutsch, (1962). Cited by Nooteboom, B. (2006). Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. <https://pure.uvt.nl/ws/files/777935/35.pdf>.

the risks and transaction costs of relationships. This is particularly important when risks are difficult or expensive to manage by formal means, such as government control, legal contract and hierarchy. Formal means of control can eliminate relational risk, and hence some degree of trust is always needed. While trust may be built within relationships, on a personal basis, it may also arise outside relationships, more impersonally, based on institutions,²⁹⁷ and it may be facilitated by intermediaries or go-betweens.²⁹⁸ However, in the context of this thesis it is befitting that, trust is seen to foster and maintain cooperation, as it encourages knowledge sharing, enriches relationships, increases openness and mutual acceptance and enhances conflict resolution and integrative problem solving.²⁹⁹

The Dutch researcher, Nootboom, has contributed greatly to our understanding of trust in organisations. Nootboom notes that trust is indeed an issue in the context of ambiguity and uncertainty. He also poses the question why it matters socially and in organisations?

The answer is that trust matters because of relational risk.³⁰⁰ Risk is referred to as in ordinary language sense of being vulnerable to actions of others, and yielding a possibility of loss.³⁰¹ Some authors proposed that trust can be analysed as a subjective probability concerning outcomes.³⁰² However, the possible future behaviour of people is subject to more radical uncertainty, due to interactions between people that shift conditions, perceptions and preferences, so that there is no pre-established range of identifiable possible outcomes.³⁰³

Therefore, people may themselves be convinced that they will act in a trustworthy fashion until

²⁹⁷ Deutsch, (1962), et al. Cited by Nootboom, B. (2006). Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. Retrieved, November, 10, 2017: <https://pure.uvt.nl/ws/files/777935/35.pdf>.

²⁹⁸ Shapiro, (1987) and Nootboom, B. 2002. Cited by Nootboom, B. (2006). Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. Retrieved, November, 10, 2017: <https://pure.uvt.nl/ws/files/777935/35.pdf>.

²⁹⁹ Nootboom, B. (2006). Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. Retrieved, November, 10, 2017: <https://pure.uvt.nl/ws/files/777935/35.pdf>.

³⁰⁰ Nootboom, B. (2006). Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. <https://pure.uvt.nl/ws/files/777935/35.pdf>.

³⁰¹ Luhmann, (1988), Chiles and McMackin (1996). Cited by Nootboom, B. (2006). Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. <https://pure.uvt.nl/ws/files/777935/35.pdf>.

³⁰² Gambetta, (1988), Dasgupta (1988), Mayer et al. (1995), Gulati (1995). Cited by Nootboom, B. (2006). Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. <https://pure.uvt.nl/ws/files/777935/35.pdf>.

³⁰³ Nootboom, B. (2006). Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. <https://pure.uvt.nl/ws/files/777935/35.pdf>.

they meet with unforeseen temptations and pressures that impel them to break trust.³⁰⁴ An attitude of trust and concern amongst members of the organisation is a precondition for knowledge sharing.³⁰⁵ In essence, the public actor does not know the private well enough, and thus not knowing who to trust. This is where the gatekeeper comes in again. It becomes the object of trust. *Knowledge is no longer “know what”, and “know why”, but “know who”*. In other words, there is a trust shift from substance to person, from message to messenger.

The critical question resulting from this analysis of trust, for this thesis, is: in what way can a PPP be structured so as to ensure that the bridging factor is trustworthy and that the knowledge gap is bridged in a *substantive* way?

5.8 Plausibility – an gap for ‘alternative facts’

One of the most surprising properties of sensemaking is that sense is not necessarily made on the basis of accuracy or factuality, but on the basis of plausibility. To a person who does not rate scientific knowledge and who lives in the flat Karoo it might be entirely plausible that the earth is flat. Plausibility thus becomes the norm for truth, but also the dividing line between personal convictions and “falsehoods” that other people offer.

The problem here is that it is easy to equate one’s search for plausibility with real knowledge. But plausibility is about continued redrafting of an emerging story so that it becomes more comprehensible, incorporates more of the observed data, and is more resilient in the face of criticism.³⁰⁶ As the search for meanings continues, people may describe their activities as the pursuit of accuracy to get it right. However, that description is important mostly because it sustains motivation.³⁰⁷ Therefore, people may get better stories as they grapple with different interpretations to shape their conclusions, but they will never get the story. Furthermore, what is plausible for one group, such as managers, often proves implausible for another group, such

³⁰⁴ Nooteboom, B. (2006). Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. <https://pure.uvt.nl/ws/files/777935/35.pdf>.

³⁰⁵ Chester, S. (2002). Knowledge management in Canadian law firms. Pacific Legal Technology Conference Vancouver. October 18, Law Practice Management Journal, 25, ABA, John Hokkanen. <http://www.abajournal.com/blawgs/lawpracticemanagement>.

³⁰⁶ Weick, KE., Kathleen M. Sutcliffe, KM & David Obstfeld, D. (2005). Organizing and the Process of Sensemaking. *Organization Science* 16(4):409-421. <http://dx.doi.org/10.1287/orsc.1050.0133> Full terms and conditions of use: <http://pubsonline.inf>.

³⁰⁷ Weick, KE., Kathleen M. Sutcliffe, KM & David Obstfeld, D. (2005). Organizing and the Process of Sensemaking. *Organization Science* 16(4):409-421.

as employees.³⁰⁸ In an important study of culture change,³⁰⁹ found that stories tend to be seen as plausible when they tap into an ongoing sense of current climate, are consistent with other data, facilitate ongoing projects, reduce equivocality, provide an aura of accuracy and offer a potentially exciting future.

It means plausible must be credible, acceptable – just good enough – for the enactment of action, for individuals to accept the meaning and move forward.³¹⁰ There are a number of thoughts about what constitutes a meaning that is plausible, although there does not appear to be any agreed upon definitions that constitute an explanation as plausible.³¹¹ Furthermore, Golden-Biddle and Locke, 1993 posited that plausible meaning exists along a continuum that is large enough to answer just two key questions: 1) does this make sense to me in my current context and 2) does this offer something distinct.³¹² Others describe plausibility simply as “a feeling that something makes sense, feels right, is somehow sensible, and fits with what you know” this also has an element of alternative fact. A plausible meaning “essentially refers to a sense that one particular meaning or explanation is more meaningful than others.”³¹³

It is against this background that we must understand the surge in “alternative facts” and claims about “fake news” that has erupted into the open since president Trump entered office in the USA. However, he merely exhibits a tendency that was in the making for some time and can be demonstrated in the Eskom saga. Here are extracts from Chris Yelland’s article in FIN24 in

³⁰⁸ Weick, KE., Kathleen M. Sutcliffe, KM & David Obstfeld, D. (2005). Organizing and the Process of Sensemaking. *Organization Science* 16(4):409-421.

³⁰⁹ Mills, 2003, pp. 169–173. Cited by Weick, KE., Kathleen M. Sutcliffe, KM & David Obstfeld, D. (2005). Organizing and the Process of Sensemaking. *Organization Science* 16(4):409-421.

³¹⁰ Weick, KE. (2001b). Cited by Murray, WC. (2014). Making Sense of Plausibility: Understanding the Process of Plausible Meaning Constructions: A Case Study of the New Brunswick Post-Secondary Education <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.909.1738&rep=rep1&type=pdf>.

³¹¹ Thurlow & Mills, H. (2009). Cited by Murray, WC. (2014). Making Sense of Plausibility: Understanding the Process of Plausible Meaning Constructions: A Case Study of the New Brunswick Post-Secondary. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.909.1738&rep=rep1&type=pdf>.

³¹² Golden-Biddle & Locke, 1993. Cited by Murray, WC. (2014). Making Sense of Plausibility: Understanding the Process of Plausible Meaning Constructions: A Case Study of the New Brunswick Post-Secondary Education Commission. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.909.1738&rep=rep1&type=pdf>.

³¹³ Mills, H. & Mills, (2000b), p. 5. Cited by Murray, WC. (2014). Making Sense of Plausibility: Understanding the Process of Plausible Meaning Constructions: A Case Study of the New Brunswick Post-Secondary Education Commission. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.909.1738&rep=rep1&type=pdf>

November 2018.³¹⁴

For the first time, this latest work by Eskom incorporates the cost of transmission infrastructure, by including these costs for all the generation technologies and scenarios modelled. Eskom concludes that contrary to what is often heard, the total cost of grid integration of renewable energy, coal, gas or nuclear is actually minimal in comparison to the cost of the generation component.

Based on local and international studies, and real-world experience, and again contrary to what is often heard from nuclear evangelists (including those within Eskom itself), the latest Eskom study shows that the overnight capital cost of new nuclear in SA is the highest by far of all the generation technologies, significantly higher even than that of concentrating solar power with nine hours of energy storage.

The Eskom report was handed to government who at that stage was busy updating the IRP. It was pointed out previously that the rushed IRP that followed a few days later had only one objective, which was to ensure the “hardwiring” of nuclear in the IRP. For the first time, though, Eskom deviated from the script.

Yelland points out that the reasoning behind the new Eskom study was based on work that confirmed studies by other reputable research bodies in South Africa and abroad, but most importantly by finance minister Malusi Gigaba’s recent statements at the World Bank and International Monetary Fund, and in his medium-term budget policy statement, that the new-nuclear option for South Africa is both unnecessary and costly.³¹⁵

Yelland continues:

... after modelling numerous scenarios in the latest work by Eskom, the study focusses on five broad scenario options, referred to by Eskom as: the reference case; the optimum plan; the low growth scenario; the carbon budget plan; and the forced nuclear scenario.

This confirmed in the forced nuclear scenario, some 9.6 GW of new-nuclear power is “hardwired” into the IRP model in the years to 2050, because none of the other scenarios modelled come up with this particular outcome, which appears to be preferred by the DoE

³¹⁴ Yelland, C. (2017). Eskom’s latest work on energy policy plan rejects nuclear. Source: Fin24. <https://www.fin24.com/Economy/Eskom/eskoms-latest-work-on-the-irp-for-the-doe-rejects-nuclear-20171124>.

³¹⁵ Yelland, C (2017). Eskom’s latest work on energy policy plan rejects nuclear. Source: Fin24. Accessed on: November 11, 2014 <https://www.fin24.com/Economy/Eskom/eskoms-latest-work-on-the-irp-for-the-doe-rejects-nuclear-20171124>.

nuclear team and the Zuma administration.

The Eskom study goes further to show that from 2030 to 2050 the cumulative electricity cost to customers resulting from the R 0.15 per kWh higher electricity price of the forced nuclear scenario is some R 800bn higher than that of the optimum plan scenario, and R 500bn higher than that of the reference (base) case scenario.

In the carbon budget scenario modelled by Eskom, a median demand growth is assumed, and a more demanding approach to CO₂ emission reduction is taken. In addition, solar PV and wind capacity is artificially (i.e. politically) constrained at 1 GW and 1.8 GW per annum respectively. This forces 5.6 GW of new nuclear power into the IRP (made up of 4 x 1.4 GW reactors), but these are only required in 2039, 2040, 2045 and 2046 respectively.³¹⁶

To make it not too obvious that Eskom was changing its mind, its spokesperson claimed that the Eskom team was only involved in terms of providing modelling work based on inputs given by the Department of Energy. Yelland's comment was: "the modelling shows that the only way to getting new nuclear into the IRP is by artificially constraining renewable energy, or by taking a hardwired "forced nuclear" approach".³¹⁷

If ever there was an example of how the same data can be used to fit choices made on the basis of plausibility rather than accuracy, this is it. Of course, plausibility is deeply rooted in the frames of reference to which people and organisations subscribe.

Why then did Eskom, which for a long time shared the Zuma government's frames of reference, change its views? The answer is that the pressure from civil society, as well as economic decline resulted in 2017 in some changes of personnel in Eskom. The new incumbents brought with them frames of references that made adherence to standard auditing practices and scientific knowledge more plausible than their predecessors.

5.9 Knowledge monopoly and collusion

In the study of economics and market competition, collusion takes place within an industry when rival companies cooperate for their mutual benefit. Collusion most often takes place within the market form of oligopoly, where the decision of a few firms to collude can

³¹⁶ Yelland, (2017). Eskom's latest work on energy policy plan rejects nuclear. Source: Fin24. Accessed on: November 11, 2014. <https://www.fin24.com/Economy/Eskom/eskoms-latest-work-on-the-irp-for-the-doe-rejects-nuclear-20171124>.

³¹⁷ Yelland, (2017). Eskom's latest work on energy policy plan rejects nuclear. Source: Fin24. Accessed on: November 11, 2014. <https://www.fin24.com/Economy/Eskom/eskoms-latest-work-on-the-irp-for-the-doe-rejects-nuclear-20171124>.

significantly impact the market as a whole.³¹⁸ The problem is that many advanced economic activities, such as infrastructure construction, of necessity requires oligopolistic contexts. There is just no chance or justification for a large number of companies to specialise in, say, nuclear construction. In the context of a PPP the problem escalates. A PPP effectively matches one monopoly (government) with oligopolies. The road to collusion is virtually guaranteed.

Clearly, according to The Global Risks Report of 2016 the blurring of geopolitics and business is not new, but incidents in recent years of it appear to be on the rise,³¹⁹ where business and individuals in government collude to benefit themselves. “We have seen an increase in losses by corporations due to geopolitical risks, specifically damage to assets and business interruption after that damage occurs,” says Jim Thomas, Global Head, Credit and Political Risk, Zurich Insurance Group.³²⁰

There are multiple examples in the Eskom saga of how collusion happened, including some of the best-known auditing firms in the world. But perhaps the most instructive is the way in which media became complicit in supporting the Zuma frame of reference. The Gupta family is once again central, this time as media outlets. The investigative publication Amabhungane reported in November 2017:

MultiChoice.... made a questionable payment of R25-million to the Guptas' controversial ANN7 channel, the #GuptaLeaks show. In addition, MultiChoice increased its annual payment to ANN7 from R50-million to R150-million.

The payments came after the family seemingly assisted former communications minister Faith Muthambi in getting President Jacob Zuma to transfer certain broadcasting powers to her, something MultiChoice was lobbying the minister for.

Following the transfer of powers, Muthambi controversially pushed through a decision in favour of unencrypted set-top boxes, which benefitted MultiChoice. Muthambi's decision

³¹⁸ Anticompetitive Practices. http://www.cuts-ccier.org/7up4/pdf/NTW-Anti-competitive_practices_examples-Ghana.pdf.

³¹⁹ World Economic Forum (WEF) & Zurich Insurance Group, (2016). The Global Risks Report 2016, published by WEF in collaboration with Zurich Insurance Group. https://biggerpicture.ft.com/global-risks/article/conflicts-of-business-interest/?utm_source=ft&utm_medium=spotible_text_heavy&utm_campaign=spotible_test&utm_content=300x600

³²⁰ World Economic Forum (WEF) & Zurich Insurance Group, (2016). The Global Risks Report 2016, published by WEF in collaboration with Zurich Insurance Group. https://biggerpicture.ft.com/global-risks/article/conflicts-of-business-interest/?utm_source=ft&utm_medium=spotible_text_heavy&utm_campaign=spotible_test&utm_content=300x600

*flouted her own party's policy on the issue. The ANC supported encryption – required for pay-TV – to promote competition in the sector. After a lengthy court battle, the Constitutional Court earlier this year ruled that it was within Muthambi's right to make policy decisions affecting the broadcasting sector.*³²¹

It is customary to interpret events like these in terms of money and profits, of attaining market share and market dominance. But what is missed in such interpretations is the fact that a desire to monopolise information, and ultimately knowledge permeates the whole. Collusion is only possible if there is some sort of fundamental agreement with respect to shared frames and values; or at least, there is some sort of suspension of values and frames in order to be able to cooperate. Either way, it leads to a monopolising of what is deemed knowledge. It should not be forgotten (although not specifically referenced in this thesis) that during the same period as the interactions between Multichoice and the government, there were a number of attempts in parliament to enact legislation that would severely curtail the media's freedom to oppose government policies or leak information.

Collusion flourishes where transparency is absent. But transparency is one of the key factors on which trust in general, and trust in knowledge in particular, rests.

5.10 Conclusion

The previous sentence brings us back to the importance of the knowledge bridge that is necessary in a PPP context.

This chapter has listed a number of knowledge factors that seem to be given with PPP environments. Above all it is clear that the Private and the Public in this partnership, of necessity, operate on diverging sets of values and frames of reference. Therein lies a structural gap that cannot be bridged only by organisational methods. It is in its core a knowledge gap when viewed from the point of view of sensemaking theory. The partners may face the same cues but the interpret them with different frames of reference.

The chapter has shown how the gap was bridged in the last decade or more by selected individuals who turned out to be not trustworthy. The chapter has hinted repeatedly that another approach to bridging the gap is required, one in which (disputed) knowledge is explicitly acknowledged to be a major factor.

³²¹ #GuptaLeaks: How MultiChoice paid the Guptas millions. Source: AmaBhungane, News24 reporters. Accessed on: November 24, 2017. <http://amabhungane.co.za/article/2017-11-24-guptaleaks-how-multichoice-paid-the-guptas-millions>.

Chapter 6

The Knowledge Gap in Public-Private Partnerships

6.1 Introduction

Having reviewed in detail the five areas of the knowledge gap, sensemaking theory, the curious phenomenon of a PPP, the energy saga in the case of Eskom and the dynamics of knowledge thereof, the thesis will be concluded by a discussion of the insights derived at. Therefore, the last chapter presents a summary, a number of conclusions, recommendations and future research opportunities.

6.2 Summary of findings

The analysis of the dynamics of a knowledge gap in PPPs showed the need to find structural mechanisms to manage knowledge flows, risks and knowledge capacities that are less dependent on ideological knowledge and less prone to alternative facts.

The knowledge gap in a PPP venture is not only a result of bad decision making, bad management or inadequate information or ineffective communication. The analysis has shown that it is inevitable due to the divergence of the frames of understanding of the partners. There is always a gap, but the question is how big it is. At times it is so big that partners even fail to understand how the other side's cues fit into their frames of reference. The gap cannot be closed, but it can be narrowed by building more robust bridges.

The actual experience of a knowledge gap is in fact an experience of complexity. Whether this is true in all PPPs must be researched, but certainly in the case of the Eskom saga it is (and literature provides enough details to assume that the same applies elsewhere). In the analysis we have seen how complexity manifests itself in ambiguity, equivocality, ignorance and the downgrading of expertise

A PPP is in all respects a complex organisation. This is true for the type of activities that PPPs are set up (mega projects that involve long time scales and advanced knowledge, as well as

advanced management). But it is also true for the organisational nature of a PPP. No other type of organisation exists in which the organisation operates on the assumption of two frames of reference.

This really brings about the question of how the managerial mechanism of a PPP is to be undertaken. Maserumule & Mathole remind us that the fundamental purpose of the public sector and the concomitant public administration is to improve the quality of life of the citizens³²². But that does not mean that the public sector possesses the requisite knowledge to take the best decisions or have the managerial skills to execute complex projects properly. As we have seen in the Eskom saga a PPP easily degenerates into a chasing of pet outcomes and a means of enriching pet friends.

Therefore, the crucial task for knowledge management is to formulate a systemic approach for sophisticated and inclusive deliberation on all possible cues and in so doing to raise the substance and usefulness of sensemaking in a PPP environment to levels that truly enhance society as a whole.

6.3 Frames, cues and knowledge dynamics in PPPs

The previous chapters have shown that a PPP is a broad and complex organisational phenomenon and can be described as a new public organization due to its structure.

The Eskom saga in the case of energy generation shows how complex such an organisation is, requiring expert knowledge, effective decision making and firm leadership to navigate the demands of both the public and the private domains. Therefore, what cues and frames are operational in the specific situation of a PPP are crucial for the quality of decision making in a complex environment. It will help leaders within PPPs to understand that accuracy is always secondary to plausibility in any organisation of decision making. For individuals and organisations to make sense of and develop meaning for any occurrence, frames and cues are used.

But cues and frames are in dispute. In reality, PPPs are so large in scope and are in themselves complex that they cannot be assumed to operate within a single frame or respond to the same cues. Various frames exist for each sectional level in the PPP structure while the availability and use of cues varies for each level.

³²² Maserumule, MH. & Mathole, BM. (2006). Franchising as a public-private sector partnership variation in South Africa. *Politeia*, 25(3):219-234.

All of the above comes with the nature of sensemaking. It is, therefore, not a case of trying to override the complexity and diversity of frames. Such an attempt merely stifles sensemaking and the result is a meaningless partnership. Once this understanding is accomplished, it becomes possible to appreciate the frames that other levels use and to bring synergy in the organisation to fit the cues. This requires cognizant and continual efforts before the manifestation of a major setback to make it work. Active bridging between the various frames is necessary – but it must be bridging, not fusing.

6.4 Communication as knowledge transfer

The nature of a PPP makes solid knowledge communication very important – given what was discussed above. According to Newman & Summer one of the most important definitions of communication is an exchange of facts, ideas or opinions by two or more persons³²³. But if other frames dominate the communication, knowledge communication moves from facts and ideas to ideology and propaganda very quickly. This is reflected in the case under research which shows how communication was distorted by the Gatekeepers (the Guptas and their cabal which included ministers, KPMG and corporate organisation who were involved in the modus operandi) thus violating the transparency criterion, enabling collusion and leading to distrust amongst the partners.

According to Williams Scott, communication is an important mechanism to transmit and accurately replicate ideas and ensure feedback for the purpose of eliciting actions to accomplish organizational goals³²⁴. Having analysed the case under investigation, it is clear that through a continuous flow of quality information and constant communication sensible knowledge transfer could have been achieved between the two sectors. But to do so, it had to reach all levels of the hierarchies in the PPP.

A number of communication channels could have been used to give context to share information. This could be through meetings, brainstorming session/workshops to harness communication. According to Nonaka, what makes sense in one context can change meaning when communicated to people in a different context.³²⁵ Furthermore, Donnellon who states that communication empowers people to create equational meaning from which organized

³²³ Newman, W. & Summer, C. (1977). *Process of Management in Doctor, R. and A. Doctor, Principles and Practice of Business Communication*, Bombay: Sheth Publishers.

³²⁴ William, S. (1977). *Organizational Theory in Doctor, R. and A. Doctor, Principles and Practice of Business Communication*, Bombay: Sheth Publishers.

³²⁵ Nonaka I. (1991). *Knowledge-Creating Company*. *Harvard Business Review*. 96-104

action can follow³²⁶ and eliminate distortion of information about choices of energy and what can work for South African energy generation.

6.5 Distributed knowledge in a new public organisation

A crucial question to ask, is why did good communication not happen?

Given the enormous amount of attention that the press and the public have given to the Eskom saga over more than 10 years, it would be tempting to say that the whole thing was just a matter of bad politics, ideological economics and incompetent management. All of this may be true to a larger or lesser extent. But are the problems around PPPs elsewhere not an indication that a deeper and more general insight is lacking?

This thesis holds the view that the root cause for the Eskom saga, and similar one's elsewhere, is the lack of understanding in organisational theory circles and in managerial practice of the demands on an organisation which has to operate in a *distributed knowledge* context.

The notion of distributed knowledge is fairly new, but it is sure to become more and more relevant. The reason is the growing complexity, and thus ambiguity, that organisations face. What does the concept mean?

Tsoukas points out that many organisations are faced with a problem of utilising the knowledge that cannot be known by a single agent. Therefore, no single agent can fully specify in advance what kind of practical knowledge is going to be relevant, when and where.³²⁷ In what this thesis call 'multi-agent system' research, distributed knowledge is all the knowledge that a community of agents possesses and might apply to solve a problem.³²⁸ The knowledge needed to cope with a task is distributed over the entire organisation, with no single person holding more central knowledge than anyone else.

But distributed knowledge is more. Normally, standard knowledge management will prescribe better information sharing systems and practices in such a case. But that is not only irrelevant but also counter-productive in a multi-agent situation. There is no purpose in trying to inform every employee of the knowledge that others have. Employees are there to exercise their own specialities without necessarily knowing what and why others do what they do. The breadth

³²⁶ Donnellon A, Gray B. & Bougon MG. (1986). "Communication, Meaning, and Organized Action". *Administrative Science Quarterly*, 31(1):43-55.

³²⁷ Tsoukas, H. (1996). The Firm as a Distributed knowledge system: A constructionist approach. *Strategic Management Journal*, Vol. 17(Winter Special Issue), 11-25.

³²⁸ Fagin, JY. Halpern, Y. Moses, & Vardi, MY. (1995) *Reasoning about Knowledge*, The MIT Press

and scope of what the organisation does, is too wide and big to expect every employee to be able to comprehend the whole. And if they were to try, they will be wasting their time. So, distributed knowledge means that the organisation operates only on the complementarity of knowledges.

Thirdly, a situation of distributed knowledge is one where there is *no central knowledge node*. The function of management is not to know the whole and to direct operations from the control room. In a distributed knowledge environment, the centre is the least knowledgeable with respect to technical product dimensions. The function of management is to ensure conditions for the smoothest possible liaison between the various knowledge actors in the organisation.

A PPP of the type discussed in the Eskom saga fits fully into the context of distributed knowledge.

Distributed knowledge is related to the concept “Wisdom of the crowd” which Aristotle is credited as the first person to write about the "wisdom of the crowd" in his work titled *Politics*.³²⁹ Therefore, firms are distributed knowledge systems in a strong sense: they are decentred systems, lacking an overseeing 'mind'. What it means is that the knowledge they need to draw upon is inherently indeterminate and continually emerging; it is not self-contained since there's a no central point of reference. Individuals' stock of knowledge consists of (a) role-related normative expectations; (b) dispositions, which have been formed in the course of past socialization; and (c) local knowledge of particular circumstances of time and place.³³⁰ A complex or multi-agent system inherently has different agents with different components interacts without any central command or without knowing the value chain.

To sum it up: a distributed knowledge context requires organisations who understand to operate as multi-agent systems. This will be explored further below.

6.6 Multi-agent organisational systems

A good example of a multi-agent system would be the universe. But a more down to earth example is a team in a sport which consists of continuous and simultaneous interaction between a set number of players (soccer, hockey, rugby, netball) or in a digital transformation context - it's an Agile or Scrum methodology where a team with different knowledge expertise in a

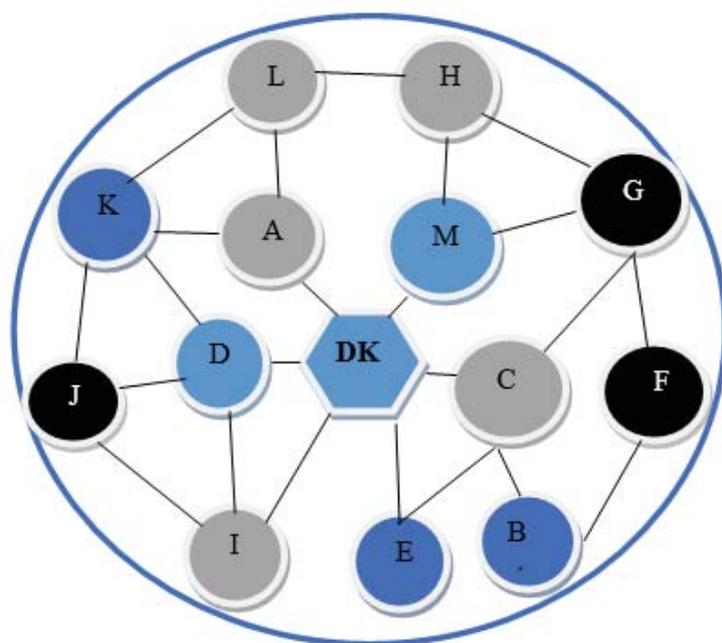
³²⁹ Ober, Josiah (2009). "An Aristotelian middle way between deliberation and independent-guess aggregation" (PDF). Stanford University.

³³⁰ Tsoukas, H. (1996). The Firm as a Distributed knowledge system: A constructionist approach. *Strategic Management Journal*, Vol. 17(Winter Special Issue), 11-25. <https://www.htsoukas.com/wp-content/uploads/2014/05/1996-The-firm-as-a-distributed-knowledge-system.pdf>

development environment self-organise to produce a product.

Below is a home made graphic to show the nature of the relationships. Each participant functions according to its own initiative, yet keeps relations to the other agents according to its needs to function.

Figure 5



The most important feature of a multi-agent system is the total absence of a central authority, a core directing office. Directionality is given by the sum total of all actions. The whole is more than the sum of the parts and no single part encompasses the whole.

All situations that are constituted by applications of advanced knowledge work on the basis of distributed knowledge and all organisations operating in that context ought to be structured according to multi-agent prescripts. This is certainly the case for power generation in the South African context.

But this view of organising clashes head on with the conventional ideas about bureaucratic organisations and even more with the embedded structures of public services. It also goes down very badly with politicians who clearly like to be seen as the VIP decisionmakers (and often as the know-alls) in society.

6.6.1 Broadcast decision making

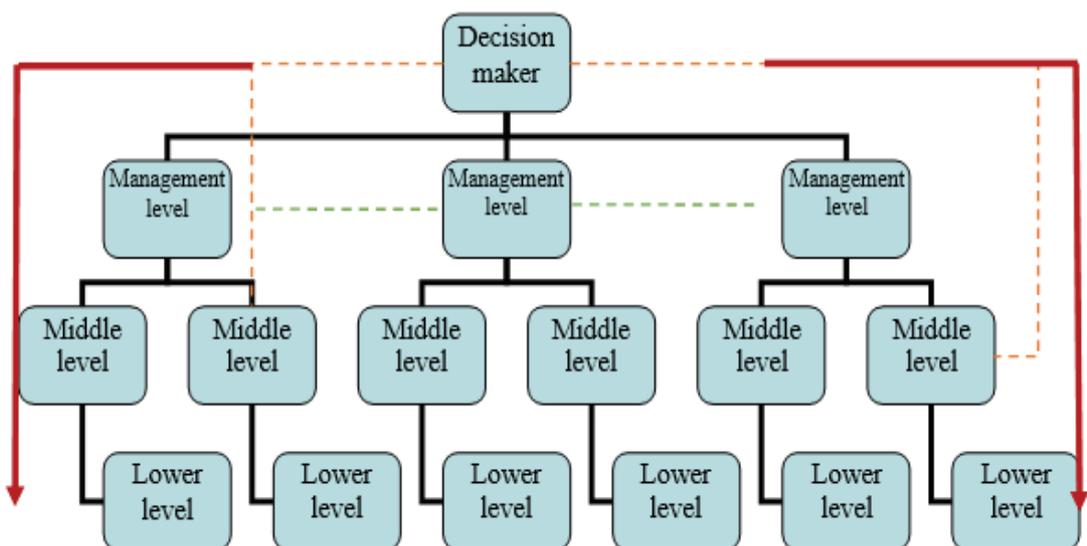
The activities of the first P in PPP in the Eskom saga unfortunately makes the previous point quite clear.

A PPP is what the last P suggests: a partnership. Even so government functioned as if it was the commander of the project. Of course, this rests on the legacy of using an authoritative type of leadership where in most cases decisions are made from top to down. This means, from the top decisions will be made without considerations of the subordinates or operational implementation thereof. Therefore, over-reliance on centralization is already a common flaw of modern socio-economic and political systems. In a PPP it is completely against the nature of a PPP as it swims against the principles of distributed knowledge in a multi-agent context. What's flawed about centralized systems is that top-down decision making by a few individuals cannot respond to the information flows or complex problems, embodying all the interdependencies within and outside the system, in real time.

The below illustration shows a graphic representation of a top to bottom decision-making process which this thesis sees as a major cause of the knowledge disconnect.

One may call this a Broadcast Decision making model.

Figure 6



6.6.2 Feedback decisionmaking

Contrast this with feedback decisionmaking (also known in Knowledge Management as “Double Loop Learning”)

In the case of feedback decision making most of the consultation takes place at the activity level and relies on a collective or a team input. Like in the case of soccer, rugby, hockey or netball, there is no central point that binds the team except one goal or commitment shared amongst individuals. Even in the case of a PPP, it functions as an organisation, there is no

organisational structure that binds the actors together other than defining the relationship between them as a *partnership*. In sensemaking terms, this amounts to an absence of a unifying identity.

The below illustration shows a teamwork for the decision-making process.

Figure 7



Source: South-western, a division of Cengage Learning

It symbolises the distribution of knowledge without a central point of command – it's a complex system. What binds them is a shared goal and commitment to achieve the objective.

6.7 A knowledge bridging model

At various points in the thesis mention was made of the need to develop a robust bridging structure to bridge the knowledge gap, not by reverting to plausible (but false) ideologies or underhand practices, but in a way that makes solid knowledge useful for the intended outcome of the PPP.

In order to do that, it was necessary to analyse some aspects of human sensemaking, but also to point out the nature of the context of a PPP as being one of distributed knowledge, requiring a multi-agent organisational structure. The question now is, what does such a bridging actor look like.

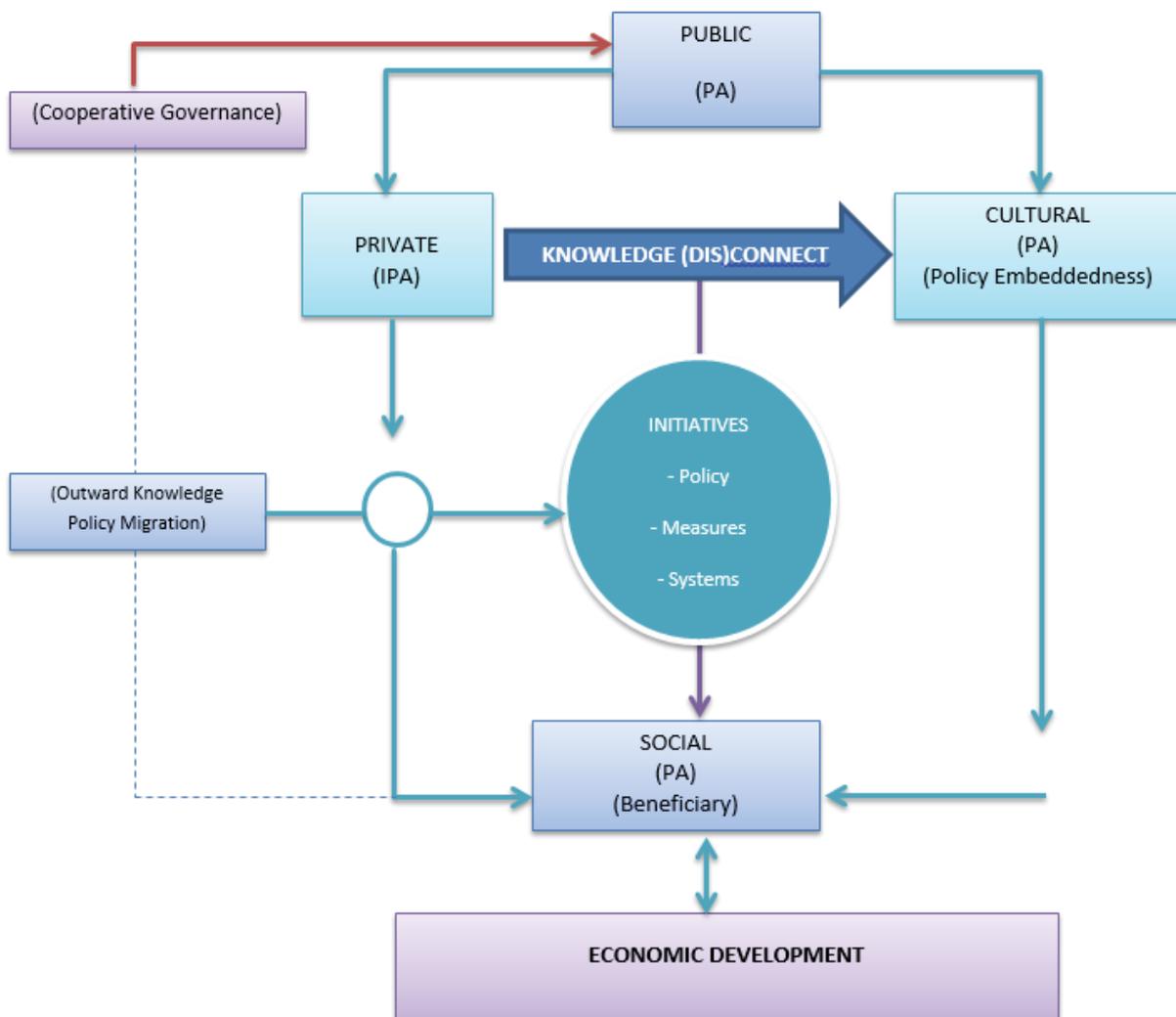
This thesis argues that in cases with the complexity that was demonstrated in the Eskom saga there is a need for a transparent body to act as a knowledge bridge between the Private and the Public. To leave it only to negotiations between the two P's leaves the door open to a knowledge impostor to take over and become a gate keeper.

An agency of the kind of a Chapter 9 institution might be the way to go.

At the same time the study of the Eskom case shows how many facets are involved. In the process of debating the relative merits of one electricity generation type versus another, it is not only the immediate technical knowledge that must be very deeply understood. The consequences of technical choices flow over into financial, economic, cultural and environmental areas.

The graphic below is an attempt to visualise the various factors, which might equally be considered knowledge domains which come into play.

Figure 8



- IPA - Independent Participatory Agents
- PA - Participatory Agents
- IG – Interest groups
- CS – Civil society

In considering a structured format for the knowledge bridge, the above picture reminds us that such a body must be consultative at its core. Only on such a basis can knowledge partnering between the public and private business be realised. But it must not be a body which is a micro version of the broad political discourse. It must be a body which is constituted by experts. It must be a body in which expertise is present from all the components as pictured above.

6.8 PPPs and the future of democracy

Ultimately the saga described in this thesis poses the question of how modern societies and governments “of the people” cope with a technological world which runs on complex and dynamic knowledge which far exceeds the comprehension of the politicians. But not only the politicians. It also poses the question how the complexity of diverse and opposing interests which characterise modern societies impact on what technical expertise pay attention to. Do the agents of technological innovation truly synchronise with the core needs of “the people”? Therein lies the seeds of the knowledge disconnect in PPPs.

For 20 years the practical questions that impact the South African society are still not addressed in any of the research documents and reports from experts or government. The following questions come to mind:

- Is the Eskom saga an example of the weaknesses of democracy and also a test of the functionality of democracy?
- Can a democracy manage the current type of complex society?
- Is democracy the reason for the challenges of Eskom and energy in general?

The suggested bridging body in this thesis is a way of arguing for a more sophisticated application of democracy. Instead of asking everyone at the ballot box to decide on “nuclear” or not (or “Brexit” or not), it is model where competent representatives of the people (the experts) take decisions in transparent way, but based on deep understanding of the advanced knowledge inherent in the relevant technologies as well as societal factors. They may still make big mistakes, but then it is not because of populist stampedes, or the ideologies of individual politicians.

6.9 Conclusion

Any government is a highly complex body, responsible for making decisions and acting on them. Its continuing success and even survival depend upon an ability to do those two things. With the PPP it is dependent on good leadership, smart decisions and scientific and data-driven knowledge to make it work.

Since 1998 the debates around various energy generation technologies (and their respective costs) have dominated the South African landscape. This was after the then Minister of Minerals and Energy, Mr Penuel Maduna presented the White Paper on Energy Policy in parliament. And it was followed by numerous IRPs, even more, reports and parliamentary investigations, and countless newspaper columns were produced. PPP was at the centre stage as it was seen as a mechanism for energy implementation, however, this came with its intricacies on the procurement process. It created more ambiguity and at times ignorance was evident when decisions were made.

The fact that governments sometimes prove to be incapable of dealing with problems before, during or after the fact, is an indication of the knowledge gap and lack of policy certainty. It is a mute question whether the South African government is capable of managing an enterprise such as Eskom which is mandated to produce energy and supply to the citizens. The scope of the operation is forever broadening due to the energy mix policy. The government seem to be indecisive about which energy sources to champion out of the list available. Therefore, it would add an unpredictable overflow of new cues to an already ambiguous situation and it would push minds who already cannot cope into total cognitive dissonance.

The knowledge gap in a PPP may be seen as bad management and insufficient information communication. But given the very nature of the difference of the frames of understanding of the other partners it is at bottom a knowledge problem. In the study of decision making, Kahneman et al. argue that if decision-making is based on bounded rationality it is a reflective process, but when it decision-making is based on our direct experience it is an intuitive process³³¹. Therefore, intuition acts as a pattern recognition process. In an excellent synthesis, Simon reminds us that “intuition is nothing more and nothing less than recognition³³²”.

In due consideration of this research and the interpretation of the phenomena and investigative stories, it is worth noting that, the true measure of success for a PPP is alignment of diverse knowledge, thus minimising the knowledge gap. The thesis acknowledges that knowledge management cannot be conceived separately from organisational learning processes and

³³¹ Kahneman et al., (2011). Cited by Constantin Bratianu, Elena-Mădălina Vătămănescu, & Sorin Anagnoste (2018), “The influence of knowledge dynamics on the managerial decision-making process”, in Bolisani, E., Di Maria, E., & Scarso, E. (Eds.), *Proceedings of the 19th Conference on Knowledge Management*, University of Padua, Italy, 6-7 September 2018, Vol. 1, pp. 104111, *Academic Conferences and Publishing International*, Reading.

³³² Simon, AH (1997). *Administrative behavior: A study of the decision-making process in administrative organization*, 4th edition, The Free Press, New York.

intelligence. Therefore, it is important to establish a knowledge centre as an advisory board to harmonise policy direction using scientific knowledge.

To reiterate the importance of knowledge dynamism for informed decision making the thesis ends with a quote from Karl Popper who said, “True ignorance is not the absence of knowledge, but the refusal to acquire it.”

Bibliography

- Aldrich, 2000. Cited by Blomme, RJ. 2012. Leadership, Complex Adaptive Systems, and Equivocality: The Role of Managers in Emergent Change.
- Alfen, HW. Bernd, FH. & Wüdsch, B. 2006. Structured Approach for Public Private Partnership Infrastructure Research. (Bauhaus-Universität Weimar, Construction Economics). Accessed by: May, 24, 2018.
<http://www.irbnet.de/daten/iconda/CIB15577.pdf>
- Allen, PM. 1989. Cited by Blomme, RJ. 2012. Leadership, Complex Adaptive Systems, and Equivocality: The Role of Managers in Emergent Change. *Organization Management Journal*, 9:1, 4-19.
- Altman, M. 2008. The impact of electricity price increases and rationing on the South African economy. United Kingdom: Department for International Development (DFID) initiative.
- Ashforth, BE. & Schinoff, BS. 2016. Identity under construction: How individuals come to define themselves in organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, vol. 2: in press. Palo Alto, CA: Annual Reviews.
- Beck, 1996 & Wehling, 2006 cited by Dorniok, D. 2012. *What is Ignorance? A Chronological Overview of the Discourse on Ignorance in a historical context*. Accessed on: November 19, 2017.
<https://pdfs.semanticscholar.org/b0a4/da8886594feaa5e832e19c2fe7d6ccee9db8.pdf>.
- Beckert 1999 et al. Cited by Grote, G. 2009. Management of Uncertainty: Theory and application in the Design of Systems and Organisations.
- Bettis & Prahalad 1995. Cited by Weick, KE, Kathleen M. Sutcliffe, OD. 2005. Organizing and the Process of Sensemaking. *Organization Science* 16(4):409.
- Blomme, RJ. (2012): Leadership, Complex Adaptive Systems, and Equivocality: The Role of Managers in Emergent Change, *Organization Management Journal*, 9:1, 4-1.
- Blomme, RJ. 2012. Leadership, Complex Adaptive Systems, and Equivocality: The Role of

Managers in Emergent Change. *Organization Management Journal*, 9:1, 4-19.

Bohlmann, JA. Bohlmann, HR. and Inglesi-Lotz, R. 2015. An Economy-Wide Evaluation of New Power Generation in South Africa: The Case of Kusile and Medupi. Accessed on: June, 14 2018.

https://www.up.ac.za/media/shared/61/WP/wp_2015_40.zp58417.pdf

Bratianu, C, Agapie, A & Orzea, I. 2011. Modelling Organizational Knowledge Dynamics: Using Analytic Hierarchy Process (AHP) *The Electronic Journal of Knowledge Management Volume 9 Issue 3* (pp236-247), available online at www.ejkm.com.

Bratianu, C. 2011b. A new perspective of the intellectual capital dynamics in organizations, in: Vallejo-Alonso, B., Rodrigues-Castellanos, A., Arreguy-Ayastuy, G. (eds.) Identifying, measuring, and valuing knowledge-based intangible assets. New perspectives, pp.1-21. New York: IGI Global.

Bratianu, C., Andriessen, D. 2008. Cited by Bratianu, C, Agapie, A and Orzea, I. 2011. Modelling Organizational Knowledge Dynamics: Using Analytic Hierarchy Process (AHP). *The Electronic Journal of Knowledge Management Volume 9 Issue 3* (pp236-247), available online at www.ejkm.com.

Briony, H. 2002. [Africa's grand power exporting plans](http://news.bbc.co.uk/2/hi/business/2307057.stm). *BBC News*. Accessed on: September 17, 2018. <http://news.bbc.co.uk/2/hi/business/2307057.stm>.

Brown, AD., Stacey, P. & Nandhakumar, J. 2007. Making sense of sensemaking narratives. *Human Relations*, 61(8): 1035–1062.

Burger, P. 2006. Cited by Bruchez, N. 2014. Public-Private Partnerships (PPP) in South Africa: To what extent are PPPs suitable for the long-term development of infrastructure in South Africa?

Campbell, K. 2017. South Africa's hydrogen fuel cell programme making steady progress. *Engineering News*.

Cheema, GS 2005. From Public Administration to Governance: The paradigm shift in the link between government and citizens. *6th Global Forum on reinventing government towards participatory and transparent governance*, Seoul, Korea.

- Chettiar, MK., Lakmeharan & Koch, RG. Eskom, 2009. Review of the January 2008 electricity crisis. 2009 Cigré 6th Southern Africa Regional Conference, Somerset West.
- Cheung et al, 2009, Lammam & MacIntyre, H. 2013. The case for public-private partnerships. Fraser Forum, 15-17, 14.
- Cheung, E, Chan, APC & Kajewski, S. 2009. Reasons for implementing public private partnership projects: Perspectives from Hong Kong. Australian and British practitioners, *Journal of Property Investment & Finance*, Vol. 27 Issue: 1, pp.81-95, <https://doi.org/10.1108/14635780910926685>.
- Constitution of the Republic of South Africa, 2006. Cited by Energy Policy White Paper – Department of Minerals and Energy, 1998.
- Cook & Brown 1999: 385. Cited by Evans, N & Easterby-Smith, M. 2001. Three types of Organisational Knowledge: Implications for the Tacit-Explicit Knowledge Creation Debates. Lancaster University.
- Cotterill, J. 2018. McKinsey, KPMG accused of criminal breaches over South Africa Gupta scandal. Accessed on: January, 20, 2018
<https://www.ft.com/content/71c6f115-0c5c-33ed-bc00-812263f39d2f>.
- Currie, G. & Brown, A. 2003 et al. Cited by Sensemaking: source, Accessed on: November, 20, 2017. <http://www.basicknowledge101.com/pdf/Sensemaking.pdf>.
- Cyert & March, 1963; Pfeffer, 1994; Smith, 1988. Cited by Gallos, J.V. 2008, (ed). Making Sense of Organizations: Leadership, Frames, and Everyday Theories of the Situation. From J. V. Gallos (ed.). *Business Leadership: A Jossey-Bass Reader*. San Francisco: Jossey-Bass, 2008. Accessed on: April 23, 2018.
<http://www.joangallos.com/wp-content/uploads/2007/08/making-sense-of-organizations.doc>.
- Davies, W. 2011. Knowing the Unknowable: The Epistemological Authority of Innovation Policy Experts. *Social Epistemology* 25:401-421.
- Deloitte. 2017. An overview of electricity consumption and pricing in South Africa. An analysis of the historical trends and policies, key issues and outlook in 2017. *Report prepared for Eskom Holdings SOC Ltd*.
- Dember, WN. 1974. Motivation and the cognitive revolution *Am. Psychol.* 29:161-68 cited

by Gecas, V. (1982). The Self-Concept. Annual Review of Sociology, Vol. 8 pg.1-33.

Department of Energy, 2013a. Integrated Resource Plan for Electricity (IRP) 2010-2030. Update Report 2013. Pretoria: Department of Energy. Access on: September 10, 2018
http://www.energy.gov.za/IRP/irp%20files/IRP2010_2030_Final_Report_20110325.pdf.

Department of Energy, South Africa. Accessed on: May, 20 2018.
http://www.energy.gov.za/files/publications_frame.html

Department of Mineral Resources Report, 2008. Cited by South African Energy Synopsis (2010).

Department of Mineral Resources Report, 2013. Fuel Cells and the future role of South Africa through its Platinum Resources. Accessed on: August 12, 2018.
http://www.dmr.gov.za/LinkClick.aspx?fileticket=RLK8Tx_648%3D&portalid=0.

Deutsch, 1962. Cited by Nooteboom, B. 2006. Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. Retrieved, November, 10, 2017: <https://pure.uvt.nl/ws/files/777935/35.pdf>.

Digest of South African Energy Statistics, 2009.

Donnellon A, Gray B. & Bougon, M G. 1986. Communication, Meaning, and Organized Action. *Administrative Science Quarterly*, 31(1):43-55.

Dorniok, D. 2012. What is Ignorance? A Chronological Overview of the Discourse on Ignorance in a historical context. Accessed on: June 19, 2017.
<https://pdfs.semanticscholar.org/b0a4/da8886594feaa5e832e19c2fe7d6ccee9db8.pdf>

Efficiency Unit. 2006, Cited by: Cheung, E, Chan, A.P.C & Kajewski, S. 2009. Reasons for implementing public-private partnership projects: Perspectives from Hong Kong, Australian and British practitioners. *Journal of Property Investment & Finance*, Vol. 27 Issue: 1, pp.81-95.

Endsley 1995; Kahneman 2003 & Klein 1998. Cited by Weber, K. and Glynn, M.A. 2006. Making Sense with Institutions: Context, Thought and Action in Karl

Weick's Theory. *Organization Studies* 27(11): SAGE Publications (London, Thousand Oaks, CA & New Delhi). Accessed on: August, 15 2018.

<https://pdfs.semanticscholar.org/f174/7bad3e8d3cff03425c7b7d72adf4d6bd1ece.pdf>

Energy Accounts for South Africa: 2002-2009 (2012).

Energy Advocacy, South Africa's Energy Situation – Fuel Pricing South Africa, 2015. Issue 1, May 2015.

Energy International Agency, 2013. Accessed on: August 12, 2018.

<https://www.iea.org/countries/non-membercountries/southafrica/>.

Energy Policy White Paper – Department of Minerals and Energy, 1998. White Paper the Energy Policy of the republic of South Africa, Government Printers, Pretoria. Accessed on: October 20, 2017.

http://www.energy.gov.za/files/policies/whitepaper_energy_policy_1998.pdf

Ensor, L. 2017. Back to square one for Eskom as judge sets nuclear decisions aside. *Business Day live*. Accessed on: May, 10, 2017.

<https://www.businesslive.co.za/bd/national/2017-04-26-court-rules-on-nuclear-plans-and-it-is-not-good-news-for-eskom/>.

Eskom Annual Report, 2000. Accessed on: March 21, 2018.

<http://www.eskom.co.za/sites/heritage/Pages/Annual-Reports.aspx>

Eskom Heritage. <http://www.eskom.co.za/sites/heritage/Pages/1990.aspx>

Eskom. 2006. Annual Report 2006. P.74. Johannesburg: Eskom.

Eskom. 2010. Climate Change and Sustainability Department, Eskom's 6 point plan.

Accessed on: July 14, 2018:

http://www.eskom.co.za/content/GI0004_6_POINT_PLAN~2~1.pdf.

Eskom. 2011. Integrated Annual Report 2011. Johannesburg: Eskom.

European Commission, 2000. Building partnerships for change in developing countries.

Accessed on: April 12, 2016.

https://ec.europa.eu/europeaid/countries/south-africa_en.

Fewster, K. & O'Connor, P. 2017. *Embracing Ambiguity in the Workplace*. Change2020,

QUT Business School.

- Fourie, F. CvN & Burger, P. 2000. An economic analysis and assessment of public private partnerships (PPPs). *South African Journal of Economics*, 68(3), 694-725.
- Fuel Cell Today Industry Review 2011. Accessed on: October, 04 2018.
http://www.fuelcelltoday.com/media/1713685/fct_review_2012.pdf.
- Galbraith, 1973. Cited by Grote, G. 2009. Management of Uncertainty: Theory and application in the Design of Systems and Organisations.
- Gallos, JV(ed.). *Business Leadership: A Jossey-Bass Reader*. San Francisco: Jossey-Bass, 2008.
- Gambetta, 1988, Dasgupta 1988, Mayer et al. 1995, Gulati 1995. Nootboom, B. 2006. Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. Retrieved, November, 10, 2017:
<https://pure.uvt.nl/ws/files/777935/35.pdf>.
- Garner, WR. Cited by Zack, MH. 1999. Managing Organisational Ignorance. *Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.
- Gaudet, J. 2012. 'In praise of ignorance: Theoretically reconciling ignorance mobilization and knowledge mobilization towards network epistemic mobilization in collaborative science research networks'. Accessed: October, 12, 2017.
https://ruor.uottawa.ca/bitstream/10393/23095/3/Gaudet_2012_Poster--Ignorance_is_power.pdf.
- Gaziano, E. & Gaziano, C. 1999. Cited by Gaziano, C. 2013. Knowledge Gaps, Belief Gaps, Ideology, and Culture Wars. *Open journal of Political Science*, Vol. 3. Research Solutions, Inc., Minneapolis, USA. Accessed on: February, 22, 2018. https://file.scirp.org/pdf/OJPS_2013101511461647.pdf.
- Gentry, B. & Fernandez, L. 1998. "Evolving Public-Private Partnerships: General Themes and Examples from the Urban Water Sector", in OECD Proceedings: Globalisation and the environment. Perspectives from OECD and Dynamic Non-Members Economies. Paris, pp. 99-125.
- Ghobadian, A et al, 2004. PPP: the instrument for transforming the public services.
- Gillis, P, Roemer & Snodgrass 1992:102. Cited by Esther Cheung, Albert P.C. Chan, Stephen

- Kajewski, 2009. "Reasons for implementing public private partnership projects: Perspectives from Hong Kong.
- Glaser, BG. & Strauss, A. L. 1967. *The discovery of grounded theory*. Piscataway, NJ: Aldine
- Greenberg, S. 2008. *Market liberalisation and continental expansion: The repositioning of Eskom in Post-Apartheid South Africa*. In *Electric Capitalism*. Johannesburg: HSRC Press.
- Grimsey, D. & Lewis, M.K. 2004, *Public Private Partnerships: The Worldwide Revolution in Infrastructure Provision and Project Finance*, Edward Elgar, Cheltenham.
- Grote, G. 2009. *Management of Uncertainty: Theory and application in the Design of Systems and Organisations*.
- Growth, Economic And Redistribution – GEAR, 1996.
- GuptaLeaks: How MultiChoice paid the Guptas millions. Source: AmaBhungane, News24 reporters. Accessed on: Nov, 24 2017.
<http://amabhungane.co.za/article/2017-11-24-guptaleaks-how-multichoice-paid-the-guptas-millions>.
- Hamel, 1991. Cited by Cummings, J. 2003. *Knowledge Sharing: A Review of the Literature*. Accessed on: August, 23, 2017. <http://www.worldbank.org/oed>
- Harari, Y. 2014. *Sapiens: The Brief history of Humankind, The Industrial Revolution*.
- Hedberg, B 1981, 'How Organizations Learn and Unlearn', in P Nystrom & WH Starbuck (eds.), *Handbook of Organizational Design (Vol. 1)*, Cambridge University Press, London.
- Hoffman & Mcneese 2009. Cited by Rankin, A., Woltjer, R. & Field, J. 2016. *Sensemaking following surprise in the cockpit - a re-framing problem*. Published at Springerlink.com.
- Hoffman & Woods 2000; Klein et al. 2003. Cited by Rankin, A., Woltjer, R. & Field, J. 2016. *Sensemaking following surprise in the cockpit - re-framing problem*. Published at Springerlink.com.
- Hope, RK & Choked, 2000:26. Sedisa, KN, 2008. *Public-Private Partnership in the provision of secondary education in the Gaborone City area of Botswana*. Accessed

on: 24 September 2017.

<http://uir.unisa.ac.za/bitstream/handle/10500/2156/thesis.pdf>.

Inga Falls. World Waterfalls Database. Accessed on: August, 23, 2018,

<https://www.worldwaterfalldatabase.com/waterfall/Inga-Falls-660>

Integrated Resource Plan 2009. Department of Energy. Accessed on: August, 23, 2018.

<http://www.energy.gov.za/IRP/overview.html>.

Integrated Resource Plan Update Draft Report 2018. Cited by Kinghorn, J. 2018. The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018.

Integrated Resource Plan, 2009. Department of Energy. Accessed on: August, 23, 2018.

<http://www.energy.gov.za/IRP/overview.html>.

Isenberg, D. J. Cited by Zack, M.H., 1999. Managing Organisational Ignorance. *Knowledge Directions*. Volume 1, Summer, 1999, pp. 36-49

Joemat-Pettersson, T. 2014. Policy Budget Speech by the Minister of Energy. Accessed on June 25, 2018, <http://www.energy.gov.za/files/media/speeches/2014/2014-Budget-Vote-Speech-by-Minister.pdf>

Kahneman et al., 2011. Cited by Constantin Bratianu, Elena-Mădălina Vătămănescu, & Sorin Anagnoste (2018), “The influence of knowledge dynamics on the managerial decision-making process”, in Bolisani, E., Di Maria, E., & Scarso, E. (Eds.), *Proceedings of the 19th Conference on Knowledge Management*, University of Padua, Italy, 6-7 September 2018, Vol. 1, pp. 104111, Academic Conferences and Publishing International, Reading.

Kalimullah, et al, 2012. *New Public Management: Emergence and Principles*.

Kenny, A. 2015. The rise and fall of Eskom - and how to fix it now. Politicsweb. Accessed on: 30 June 2017. <http://www.politicsweb.co.za/documents/the-rise-and-fall-of-eskom--irr>.

Kessler, B. 2015. A bridge for the Knowledge Gap. Source: INSEAD. The School of Business for the World. Accessed on: February, 13, 2018. <https://knowledge.insead.edu/entrepreneurship-innovation/a-bridge-for-the-knowledge-gap-3961>.

- Kessler, B. 2015. A bridge for the Knowledge Gap. Source: INSEAD. The School of Business for the World. Accessed on: February, 13, 2018.
<https://knowledge.insead.edu/entrepreneurship-innovation/a-bridge-for-the-knowledge-gap-3961>.
- Kinghorn, J. 2018. The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. *Theory and Applications in the Knowledge Economy (TAKE) International Conference*, Poland 2018. Accessed on: September 21, 2018. <http://www.take-conference2018.com/wp-content/uploads/2018/07/TAKE2018-book-of-abstracts6sfinal-12072018docx.pdf>.
- Kings, S. 2018, 'The Grand Inga delusion'. Mail & Guardian. Accessed on: June 31, 2018.
<https://www.pressreader.com/south-africa/mail-guardian/20180907/281827169651449>.
- Koen, M. 2012. Based on the unpublished research report: The Electricity Governance Complex. Civil Society Research and Support Collective.
- Leedy, PD. and Ormrod, J. E. 2001. *Practical Research: Planning and Design*. (7th Ed.). Upper Saddle River, NJ: Merrill Prentice Hall.
- Levine, LD. 1985. Cited by Weick, K.E. 1995. *Sensemaking in Organisations*, Sage, pg. 92.
- Luhmann 1988, Chiles and McMackin 1996. Cited by Nooteboom, B. 2006. Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. Retrieved, November, 10, 2017:
<https://pure.uvt.nl/ws/files/777935/35.pdf>
- Maitlis, 2009, Pratt, 2000. Cited by Ashforth, Blake & S. Schinoff, Beth. 2016. Identity Under Construction: How Individuals Come to Define Themselves in Organizations. *Annual Review of Organizational Psychology and Organizational Behaviour*. 3.
- Mandrulleanu, A. 2008. Knowledge Dynamics. Academy of Economic Studies, Bucharest, România.
- March, JG. 1994. Cited by Weick, KE. 1995. *Sensemaking in Organisations*, Sage, pg. 92.
- Marquard, A. 2006. The origins and development of South African Energy Policy. Accessed on: July, 14 2018

http://www.erc.uct.ac.za/sites/default/files/image_tool/images/119/Papers-2006/06Marquard-PhD_Thesis.pdf.

Marsh, D. & Stoker, G. (eds.), *Theories and Methods in Political Science*. Second edition. London, Macmillan, 2000, forthcoming.

Martin, J. 1992. *Cultures in organisations: Three perspectives*. New York: Oxford University Press.

Martsin, M. 2008. *Identity construction as a personal sense-making process: A case study of Estonian students in the United Kingdom*', Ph.D., *University of Bath students in the United Kingdom*', Ph.D., University of Bath.

Maserumule & Mathole 2006:220; Box 2004:33. Cited by Sedisa, K.N, 2008. *Public-Private Partnership in the provision of secondary education in the Gaborone City area of Botswana*. Accessed on: 24 September 2017.

<http://uir.unisa.ac.za/bitstream/handle/10500/2156/thesis.pdf>

Maserumule, MH. & Mathole, BM. 2006. Franchising as a public-private sector partnership variation in South Africa. *Politeia*, 25(3):219-234.

Maskin, E. & Tirole J. 2007. Public-Private Partnerships and Government Spending Limits. *International Journal of Industrial Organization*, 26(2), 412-420.

Mata, FJ., Fuerst, WL. & Barney, J.B. 1995. Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis, *MIS Quarterly*, Vol.19, No. 4, 1995, pp.

Mbeki, T. 1998. *The Democratisation of Knowledge: the Role of Knowledge in the Betterment of Society*. Speech delivered by the former President of the Republic of South Africa. University of Stellenbosch Business School "Knowledge Management Conference": Bellville, January 16, 2012.

Accessed on: May 12, 2017

https://www.unisa.ac.za/static/corporate_web/Content/tmali/speeches/2012/TUSB_speech.pdf

Mbeki, T. 1999. [Podium: The globalization of Africa](https://www.independent.co.uk/arts-entertainment/podium-the-globalisation-of-africa-1107512.html). London: *The Independent*. Accessed on: September 17, 2018. <https://www.independent.co.uk/arts-entertainment/podium-the-globalisation-of-africa-1107512.html>

Mead GH. 1934. Cited by Weick KE. 1995. 18

- Milliken, FJ. 1987. Three Types of Perceived Uncertainty about the Environment: State, Effect and Response Uncertainty. *Academy of Management Review*, 12(1), 133-143.
- Mitchell-Weaver, C. & Manning, B. 1992. “Public-Private Partnerships in Third World Development: A Conceptual Overview”, in *Studies in Comparative International Development* Winter, 26 (4), pp. 45-67.
- Montmasson-Clair & Ryan 2014. Repositioning electricity planning at the core: An evaluation of South Africa’s Integrated Resource Plan. TIPS and Nedlac. Accessed on: August 23, 2018
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2747875
- Mothlante, K. 2013. South African Green Energy Youth Summit, organised South African Youth Council. Accessed on July, 12, 2018. <https://www.gov.za/opening-keynote-address-deputy-president-kgalema-motlanthe-south-african-green-energy-youth-summit>
- National Development Plan, 2012. National Planning Commission (NPC). Accessed on: June 15, 2017.
<https://www.nationalplanningcommission.org.za/Pages/NDP.aspx>.
- Navarro-Espigares, J. L. & Hernandez-Torres, E. 2009. Public and private partnership as a new way to deliver healthcare services. *XVI Encuentro de Economía Pública*, 2009-01-01, Accessed on: July 3, 2018.
https://www.researchgate.net/publication/28268723_Public_and_private_partnership_as_a_new_way_to_deliver_healthcare_services
- Newman, W. & C. Summer, 1977. *Process of Management in Doctor, R. and A. Doctor, Principles and Practice of Business Communication*, Bombay: Sheth Publishers.
- Ngoepe, K. 2016. State capture not unique to SA - former GCIS boss. News24. Accessed on: March, 28, 2018. <https://www.news24.com/SouthAfrica/News/state-capture-not-unique-to-sa-former-gcis-boss-20161111>.
- Nonaka I. 1991. The Knowledge-Creating Company. *Harvard Business Review*. 96-104
- Nonaka, I. & Takeuchi, H. 1995. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation?* Oxford University Press,

New York.

Nonaka, I. 1994. A dynamic theory of organizational knowledge creation, *Organization Science*, Vol.5, No.1, pp.14-37.

Nooteboom, B. 2006. Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. Accessed on: November, 10, 2017: <https://pure.uvt.nl/ws/files/777935/35.pdf>.

Ober, J. 2009. An Aristotelian middle way between deliberation and independent-guess aggregation. Stanford University.

Osborne, S. 2000:14. *Public Private Partnerships: Theory and Practice in International Perspective*. London Routledge.

O'Sullivan, A. & Sheffrin, SM. 2003. *Economics: Principles in Action*. Upper Saddle River, New Jersey 07458: Pearson Prentice Hall. p. 171. Wikipedia, Wikimedia Foundation Inc., Accessed on: November, 24, 2017. <https://en.wikipedia.org/wiki/Collusion>.

Parliamentary Monitoring Group, 2008. Electricity Crisis and Pricing: briefing by Eskom and Nersa Minerals and Energy Portfolio Committee Meeting.

PPP Manual. 2004. *Public Private Partnership Manual*. Pretoria. National Treasury. Accessed by: April, 13, 2017 <http://www.ppp.co.za>

Pratt MG. 2000. The good, the bad, and the ambivalent: managing identification among Amway distributors. *Adm. Sci. Q.* 45(3):456–93

Public Private Infrastructure Advisory Facility, 2011.

Public Private Partnerships – Change, Leadership and Management Approach. www.palama.gov.za/MediaLib/Downloads/Home/DocumentsPublications/Speeches/Public-Private%20Partnership%20-%20change%20leadership%20and%20%20management%20approach.pdf (p. 4).

Reed, R. & DeFillippi, R. J. Cited by Zack, M.H., 1999. Managing Organisational Ignorance. *Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.

SA Energy Synopsis Report, 2010.

Salter, A.J. & Martin, B.R. 2001. The economic benefits of publicly funded basic research: a

critical review, *Research Policy*, 30 (2001), pp. 509–532.

Sander Merkus, et al 2017 A Storm is Coming? Collective Sensemaking and Ambiguity in an Inter-organizational Team Managing Railway System Disruptions, *Journal of Change Management*, 17:3.

Sangonet Pulse, 2008. Electricity Crisis in South Africa. Accessed on: June 23, 2018.

<http://www.ngopulse.org/article/electricity-crisis-south-africa>.

Sarmiento & Renneboog, 2016. Anatomy of public-private partnerships: their creation, financing and renegotiations. *International Journal of Managing Projects in Business*, 9(1), 94-122.

Scott, W. 1977. Organizational Theory in Doctor, R. and A. Doctor, Principles and Practice of Business Communication, Bombay: Sheth Publishers.

Sedisa, KN. 2008. Public-Private Partnership in the provision of secondary education in the Gaborone City area of Botswana. Accessed on: September, 24 2017.

<http://uir.unisa.ac.za/bitstream/handle/10500/2156/thesis.pdf>

Shapiro, 1987 & Nootboom, B. 2002. Cited by Nootboom, B. 2006. Social Capital, Institutions and Trust. (CentER Discussion Paper; Vol. 2006-35). Tilburg: Organization. Accessed on: November, 10, 2017:

<https://pure.uvt.nl/ws/files/777935/35.pdf>.

Simon, AH. 1997. Administrative behavior: A study of the decision-making process in administrative organization, 4th edition, The Free Press, New York.

Simon, HA. The Architecture of Complexity, in *The Sciences of the Artificial*, second edition, (Cambridge, MA: The MIT Press, 1969/1981), pp. 193-229.

Smircich, C. & Morgan G. 1982 Leadership: 'The management of meaning'. *The Journal of Applied Behavioural Science*, p.258.

Smith, 2010. Cited by Kinghorn, J. 2018. The Dynamics of Knowledge in Public Private Partnerships – a sensemaking base study. Theory and Applications in the Knowledge Economy (TAKE) International Conference, Poland 2018.

Accessed on: September 21, 2018. <http://www.take-conference2018.com/wp-content/uploads/2018/07/TAKE2018-book-of-abstracts6sfinal-12072018docx.pdf>

South Africa, 2001. Statutes of the Republic of South Africa, Eskom Conversion Act, No. 13 of 2001. Pretoria: Government Printers.

South African Energy Synopsis, 2010. Accessed on: July 23, 2018.

http://www.energy.gov.za/files/media/explained/2010/South_African_Energy_Synopsis_2010.pdf.

Surowiecki, J. 2004. *Wikipedia: The Free Encyclopedia*. Wikimedia Foundation Inc., https://en.wikipedia.org/wiki/Wisdom_of_the_crowd. Accessed on: January, 21, 2018.

Swart, 1992:43. Cited by Esther Cheung, Albert P.C. Chan, Stephen Kajewski, 2009.

Reasons for implementing public private partnership projects: Perspectives from Hong Kong, Australian and British practitioners, *Journal of Property Investment & Finance*, Vol. 27 Issue: 1, pp.81-95, <https://doi.org/10.1108/14635780910926685>

The Canadian Council for Public-Private Partnerships. Alinaitwe, H. & Ayesiga, R. 2013. Success Factors for the Implementation of Public-Private Partnerships in the Construction Industry in Uganda. *Journal of Construction in Developing Countries*, 18(2), 1-14, 2013.

Tsoukas, H. 1996. The Firm as a Distributed knowledge system: A constructionist approach. *Strategic Management Journal*, Vol. 17 (Winter Special Issue), 11-25. Accessed on: May, 20 2018. <https://www.htsoukas.com/wp-content/uploads/2014/05/1996-The-firm-as-a-distributed-knowledge-system.pdf>.

Van Niekerk, D, Van der Waldt, G. & Jonker, A. 2001. Governance, Politics, and Policy in South Africa. Cape Town: Oxford.

Vermeulen, J. 2015. Here is how government was warned in 1998 about SA's electricity crisis. Accessed on: April, 4, 2015. <https://mybroadband.co.za/news/energy/122710-here-is-how-government-was-warned-in-1998-about-sas-electricity-crisis.html>.

Villani et al, 2017 & Rao et al, 2003. Power Plays: How Social Movements and Collective Action Create New Organizational Forms. *Research in Organizational Behaviour*. 22, 237-281.

- Villani et al, 2017. Understanding Value Creation in Public-Private Partnerships: A Comparative Case Study. *Journal of Management Studies*, 54(6), 876-905.
- Walker et al.1995. Cited by Esther Cheung, Albert P.C. Chan, Stephen Kajewski, 2009. "Reasons for implementing public private partnership projects: Perspectives from Hong Kong. Australian and British practitioners", *Journal of Property Investment & Finance*, Vol. 27 Issue: 1, pp.81-95
- Weber, K. & Glynn, MA. 2006. Making Sense with Institutions: Context, Thought and Action in Karl Weick's Theory. *Organization Studies* 27(11): SAGE
- Weick et al 1979. Cited by Grote, G. 2009. Management of Uncertainty: Theory and application in the Design of Systems and Organisations
- Weick KE. 1995. *Sensemaking in Organizations*. SAGE.
- Weick, KE, Sutcliff, KM & Obstfeld, D. 2005. Organizing and the process of sensemaking (451).
- Weick, KE, Sutcliffe, K.M & Obstfeld, D. 2005. Organizing and the Process of Sensemaking. *Organization Science* 16(4):409-421.
- Weick, KE, Sutcliffe, KM & Obstfeld, D. 2005. Organizing and the Process of Sensemaking. *Organization Science* 16(4):409-421.
- Weick, KE. & Roberts, K.H. 1993. Cited by Blomme, R.J. 2012. Leadership, Complex Adaptive Systems, and Equivocality: The Role of Managers in Emergent Change. Accessed Sep 14 2018:
https://www.researchgate.net/publication/238047119_Leadership_Complex_Adaptive_Systems_and_Equivocality_The_Role_of_Managers_in_Emergent_Change
- Weick, KE. 1969. Cited by Zack, M.H., 1999. Managing Organisational Ignorance. *Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.
- Weick, KE. 1969. Organisational Information Theory.
- Weick, KE. 1969. The Social Psychology of Organizing.
- Weick, KE. 1979. The social psychology of organizing (2nd ed.). Reading, MA: Addison-Wesley.
- Weick, KE. 1995 & 1969. Cited by Woods, J.A & Cortada, J. 2013. The Knowledge

- Management Yearbook 200-2001. Routledge.
- Weick, KE. 1995. Sensemaking in Organisations. London: Sage. Cited by Basic knowledge on Sensemaking. Accessed on: 24 May 2018
<http://www.basicknowledge101.com/pdf/Sensemaking.pdf>
- Weick, KE. 2005. Cited by Zack, M.H., 1999. Managing Organisational Ignorance. *Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49
- White Paper on Energy Policy. 1998. Department of Minerals and Energy. Access on: October 20, 2017.
http://www.energy.gov.za/files/policies/whitepaper_energy_policy_1998.pdf
- White, N. 2006:1. Structuring Effective Public Private Partnerships in Water and Sanitation: Case Studies and Lessons Learnt.
- Wiley, N. 1988. The Micro-Macro Problem in Social Theory. *Sociological Theory*, 6, 254-261.
- Winkler, H. & Marquand, A. 2009. Changing development paths: From an energy-intensive to low-carbon economy in South Africa. *Climate and Development* 1 (2009) 47-65.
- Woods, JA. & Cortada, J. 2013. The Knowledge Management Yearbook 200-2001. Routledge.
- World Economic Forum (WEF) & Zurich Insurance Group. 2016. The Global Risks Report 2016, published by WEF in collaboration with Zurich Insurance Group. Accessed on: March, 28, 2018. https://biggerpicture.ft.com/global-risks/article/conflicts-of-business-interest/?utm_source=ft&utm_medium=spotable_text_heavy&utm_campaign=spotable_test&utm_content=300x600.
- World Economic Forum (WEF). 2014. Creating New Models Innovative Public-Private Partnerships for Inclusive Development in Latin America. *World Economic Forum Global Agenda Council in Latin America*.
- Yelland, C. 2016. Analysis: The Draft 2016 Integrated Resource plan – lightweight, superficial and downright dangerous. Daily Maverick. Accessed on: May 12, 2017. <https://www.dailymaverick.co.za/article/2016-11-30-analysis-the-draft-2016-integrated-resource-plan-lightweight-superficial-and-downright->

[dangerous/](#)

Yelland, C. 2016. Proof that solar, wind, gas – not nuclear – is best for SA.

<http://www.fin24.com/Economy/Eskom/proof-that-solar-wind-gas-not-nuclear-is-best-for-sa-20161103>. Accessed on: November, 10, 2016.

Yelland, C. 2017. Irrational IRP madness grips the energy sector in SA. Accessed on:

<https://www.moneyweb.co.za/news/industry/irrational-irp-madness-grips-the-energy-sector-in-sa/>.

Yolles, M. & Iles, P. 2006. Exploring Public–Private Partnerships through Knowledge Cybernetics. *Systems Research and Behavioural Science*. 23, 625-646.

Zack, MH. 1999. Managing Organisational Ignorance. *Knowledge Directions*, Volume 1, Summer, 1999, pp. 36-49.

Zack, MH. 2002. An Architecture for Managing Explicated Knowledge, Sloan Management Review, forthcoming.