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Coherence in innovation and industrial policy in South Africa

Magolego, Tando

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Coherence in Innovation and Industrial Policy in South Africa

Tando Magolego

587029

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management specialising in Innovation Studies

Johannesburg, 2015

ABSTRACT

It has been stated in literature on National Systems of Innovation, growth theory and competitive advantage, that there has been an emergence of a consensus on the impact of technology on economic prosperity and competitiveness. The systems approach, with its emphasis on knowledge, learning and institutions has stressed the need for institutional change and greater integration between technology policy, industrial policy, and other aspects of public policy. There is also a need for greater coordination and integration between technology and industrial policy, and of employment and income distribution policies on each other. The ability of the government (policy makers and implementers) to achieve this intergration and coherence is key in ensuring achievement of the goals.

The study assessed and evaluated the processes set up by the South African government to achieve coherence in the formulation and implementation processes.

Research Questions:

- Does coherence exist between the Innovation and Industrial Policy? What is the extent of the coherence?
- What are the factors hindering or promoting coherence?
- What is the impact of coherence or lack thereof on the achievement of goals?

The methodology used in this study was document review and analysis, combined with elite interviews of senior managers in the government departments that are custodians of the policies being studied.

Having coherent policies leads to achievement of set objectives and priorities. In order to achieve this coherence, there must be political leadership and commitment. It must be a general objective in all action taken by government. In South Africa, the intention is there and the

structures have been set up. The evidence of Political leadership is in the Constitution, the highest law of the land.

It is stipulated in the Constitution (RSA, 1996) that the policies of the government-of–the day should be executed in a cooperative manner, because in the Republic of South Africa, government is constituted as national, provincial and local spheres that are distinctive, interdependent and interrelated. The Constitution further stipulates that all spheres of government and all organs of state within each sphere must exercise their powers and perform their functions in a manner that does not encroach on the geographical, functional or institutional integrity of government in another sphere, and co-operate with one another in mutual trust and good faith.

In order to manage and address the challenges of policy coherence and coordination, the South African Government has established a cluster system. These clusters are called Ministerial Clusters, which were established to foster an integrated approach to governance that is aimed at improving government planning, decision making and service delivery. The main objective is to ensure proper coordination of all government programmes at national and provincial levels. The main functions of clusters are to ensure alignment of government wide priorities; facilitate and monitor the implementation of priority programmes; and provide a consultative platform on cross-cutting priorities and matters being taken to Cabinet (SA Government, 2015).

Regulations have been also put in place to foster intergovernmental relations through the Intergovernmental Relations Framework Act, Act No. 13 of 2005. Challenges of capacity and resources exist in the goverment in terms of policy coordination.

Monitoring, evaluation and reporting structures have been created in the form of a ministry in the presidency, the Department of Performance Monitoring and Evaluation (DPME). This monitoring is confined to the monitoring and evaluation of the performance of the departments and the clusters against the outcomes stated in the Plan of Action.

More reviews need to be undertaken by policy scholars to assess the impacts of the policies on the overall governmental goals.

DECLARATION

I, Tando Magolego, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Tando Magolego

Signed at ……

On the …….. day of …… 2015

DEDICATION

To my husband Gandhi Magolego and children Ngwaketsi and Bonang.

ACKNOWLEDGEMENTS

This study was made possible through the support, encouragement and participation of various individuals and organizations. Various mentors, scholars and colleagues at the University of Witwatersrand contributed to the research process by inspiring me intellectually through formal and informal interactions. In particular, I would like to thank the supervisors, for building my capacity to undertake advanced academic research through their dedicated supervision of this work.

The moral support and encouragement from my family and friends is appreciated. Special thanks are due to my for enduring my absence, as I carried out this research, away from them. I remain indebted to my husband Gandhi for his support in ways too numerous to mention.

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1. INTRODUCTION

1.1. Purpose of the study

The purpose of this study was to investigate the extent to which coherence in the design and implementation of innovation and industrial policies exists for the achievement of the economic development goals of the South African government; and the factors motivating and hindering coherence in South Africa.

1.2. Context of the study

The research took place in the context of the design and implementation of the South African Innovation Policy and Industrial Policy; policy makers and implementers acknowledgement of the need for policies across domains to be coherent in order to achieve the long-term goals set out by the government; and supporting evidence which shows that innovation and industrial policies are among the policies that have been identified as needing to be coherent in order to achieve the government's long-term goals of competitiveness and economic growth.

South Africa operates within the framework of the National System of Innovation(NSI). The importance of a National System of Innovation is articulated as follows by the (OECD, 2007)

"The existence of favourable framework conditions enables and facilitates innovation. The macroeconomic framework, the general business environment, the intensity of competition, product and labour market regulations, as well as the degree and quality of entrepreneurship – which

is shaped by institutional and cultural factors – are all of key importance for a country's innovative performance."

When the term *"innovation system"* was first introduced by Freeman (1987), it referred largely to the institutions involved in research and innovation. In recent years it has become more clearly understood that overall innovation performance depends on many more actors and capacities as well as on a range of framework conditions. This is not "merely" a question of getting the theory and our understanding right. It has major implications for the balance and mix of policies needed in order to improve innovation system performance and for the amount of communication and co-ordination required to create the required holistic innovation policies (OECD, 2007).

Policy coherence is about acknowledging the interdependence and interrelations between different policies. Innovation and policy studies theory suggests that a number of policies in any country, which can be considered as a system, would affect or be affected by other policies in trying to achieve their goals. This calls for better governance of the policies where policy makers have to ensure that in addressing the issues to achieve government objectives there is alignment and harmonisation.

In South Africa this has been recognised and identified in a number of publications and presentations by scholars, policy developers and implementers. Ramirez, Scott and Golden (2004) conducted a project that took place in the context of discussions on the need for a new generation of innovation policies, which acknowledge the links between innovation policy and a number of other sectoral policy domains.

The changes in the policy landscape have necessitated a re-look at policy design and implementation and further interrogation of governance in order to achieve policy goals and targets. When considering governance the issue of capacity becomes key. In this regard, capacity refers to public

officials ability to design and implement coherent policy frameworks that enable a coordinated and integrated effort.

The Ten Year Innovation Plan (DST, 2007) states that “The economic cluster of government departments, which includes the DST, has identified a number of key national targets to meet over the decade leading up to 2018. The Ten-Year Innovation Plan helps to map this critical trajectory and supports the National Industrial Policy Framework (NIPF) by encouraging sectoral growth to enhance the competitiveness of the economy.”

The National Industrial Policy Framework (DTI, 2007) also highlights coordination in that “Industrial policy is not the domain of a single government department but requires intensive coordination across a range of government departments. The framework can only be implemented successfully if it is aligned with four associated and supporting sets of policies.” The policies are listed as, a stable and supportive macroeconomic and regulatory environment, an appropriate skills development and education systems, which are integrated with the needs of the industrial economy. Also required is sufficient, reliable and competitively priced traditional and modern infrastructure and, adequate support for various forms of technological effort within the economy”.

However, challenges exist, in South Africa, in establishing policy coherence. In order to manage and address these challenges, the government has established structures such as Intergovernmental relations, which foster an integrated approach to governance and is aimed at improving government planning, decision making and service delivery. The main objective is to ensure proper coordination of all government programmes at national and provincial levels.

Kayal (2008) proposes a framework for developing countries, which is depicted below in **Figure 1**.

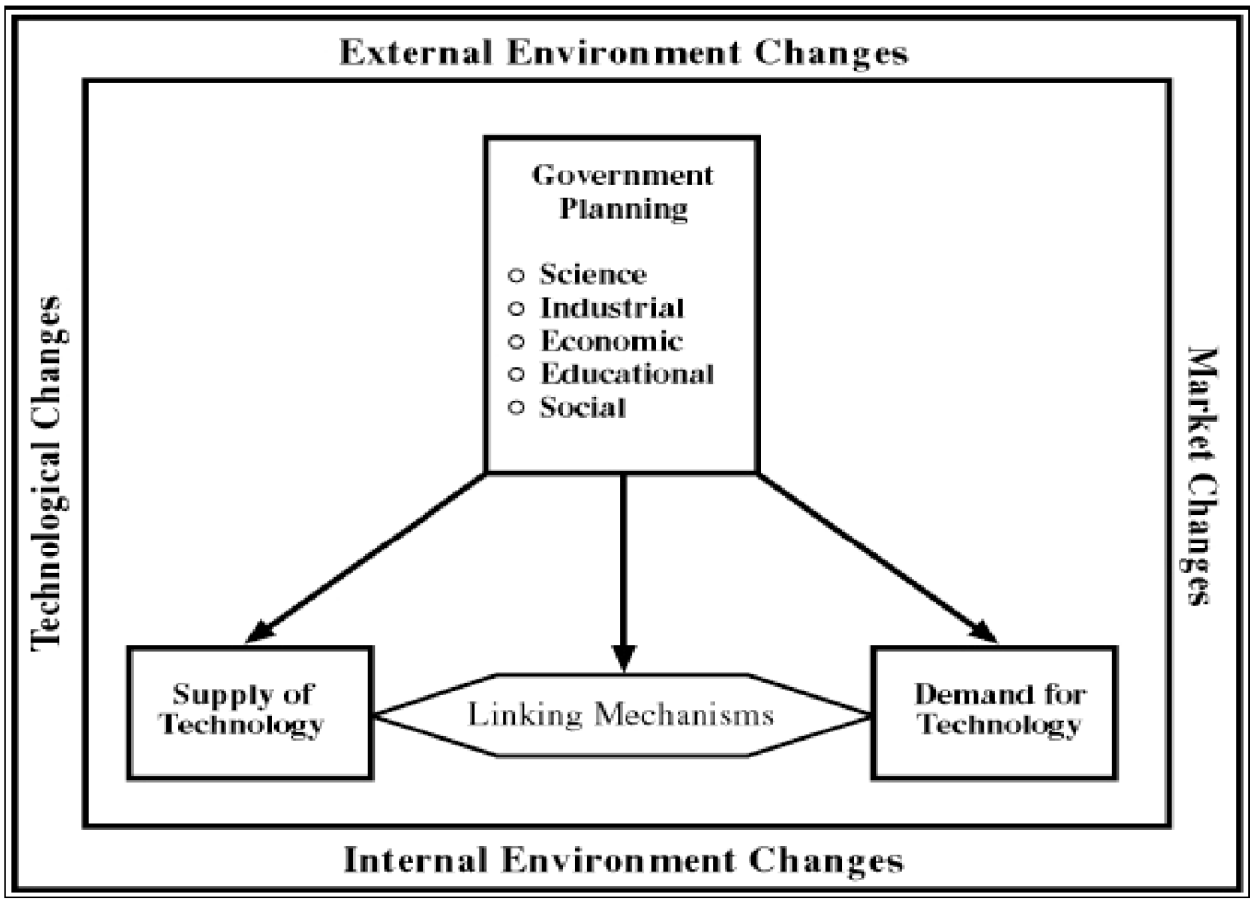


Figure 1: Framework of National Innovation System (NIS) for developing countries *(Kayal, 2008)*

The framework looks at:

- Drivers of the system
- Components of the system
- Boundaries of the system
- Integration of the system

The central challenge for any nation-state is the effective design and implementation of key policy directions, which require a consistent approach to policy making, agreement on the broad societal outcomes the policies seek to achieve; and a shared vision and clarity on policy objectives, which should result in coherent policy prescriptions. The central assumption is that coherence is particularly important in developmental

democratic states, such as South Africa, which are confronted by many serious challenges while facing resource constraints (Rivett-Carnac ,2008).

Various individual reviews (OECD 2007, DST Ministerial Committee 2011, Sunil Mani 2001) and analyses (Ha-Joon 1998 and Rustomjee & Havinal 2008) have been commisioned on the policies, yet whether these policies are coherent, coordinated and intergrated through to implementation has not been assessed. It is in this context that this study of policy coherence has been undertaken on South Africa's Innovation and Industrial Policies, which has had various iterations for almost eighteen years now.

1.3. Problem statement

In recent years the development of the national systems of innovation literature, as well as the literature on endogenous growth theory and competitive advantage have led to the emergence of a consensus on the impact of technology on economic prosperity and competitiveness. The national systems approach to innovation has done much to enhance understanding but has also highlighted the complexity of the relationships and the need for further research, including 'systems' analysis at the regional and sectoral levels (Nelson 1996, Lundvall, 1999, Cooke 1998, Howells, 1999). Clearly, greater understanding of these issues is necessary in order to inform the design and implementation of public policies to promote competitiveness (OECD, EC, 1994, DTI, 1998, 1996, 1994).

Furthermore, Oughton, Landabaso & Morgan (2002), argue that thereotical developments have led to a re-evaluation of traditional approaches to policy. Particularly the systems approach, with emphasis on knowledge, learning and institutions, has stressed the need for institutional change and greater integration between technology policy, industrial policy, and other aspects of public policy. For example Lundvall (1999) in Oughton et al, argues that there is a need for greater coordination and integration between technology and industrial policy on

the one hand and employment and income distribution policies on the other:

> "….technology policy and industrial policy now have become more important also in relation to issues related to employment and income distribution and ... they have to be integrated, or at least coordinated, with policies relating to infrastructure, social justice and not least education and training." Lundvall (1999). (Oughton, Landabaso & Morgan, 2002)

1.3.1. Main problem

With respect to the statement above, in South Africa there is clarity and understanding of the importance of coherent policies and coordinated implementation efforts. This is referred to in various policy documents, implementation plans and policy reviews. The difficulty is in achieving this coherence and coordination.

Moreover, this study was embarked upon to analyse policy coherence with specific reference to the Industrial Policy and Innovation Policy. It is an attempt to analyse the extent to which coherence exists in the implementation of Innovation and Industrial policies of South Africa; and identify relevant motivating and hindering factors for coherence in the implementation.

1.3.2. Sub-problems

The first sub-problem was to evaluate the extent to which South African Innovation and Industrial policies are coherent.

The second sub-problem was to identify the motivating and hindering factors of coherence in implementing these policies.

The third sub-problem was to ascertain the extent to which coherence or lack thereof affects the achievement of government's economic development goals.

1.4 Significance of the study

The study is relevant in that it will add to the body of knowledge on policy coherence. There is currently limited significant research addressing the level of coherence in developing countries.

In South Africa some studies have been dedicated to policy coherence, with examples being Maile (2008) on Education Policy and Rivett-Carnac (2008) on Industrial Policy, Sustainable Development and Local Economic Development.

Given that South Africa considers itself "making great progress" in catching up with developed countries, especially with policy formulation, and in its reviews of the system it is considered to be very advanced and comparable to developed countries in the policy area (Mani, 2001; OECD Review, 2007); it is a step in the right direction to examine this concept.

In the innovation policy and growth and competitiveness literature, coherence between the Industrial Policy and Innovation Policy is considered to be a key issue as the two policies are interelated. The study will provide valuable information and evidence to policy makers on what to address and what to take further in their formulation processes of coherent policy for achieving long-term goals.

1.5. Delimitations of the study

This research will be limited to public policy that is concerned with the industrial growth and competitiveness of the Republic of South Africa. It is further limited to studying areas of coherence between two policies in particular, Industrial Policy and Innovation Policy.

1.6 Definition of terms

Innovation Policy is defined by FarHorizon background paper (2010) "[as] any policy which seeks to help firms or other organisations, singly or collectively, to improve their capacity or incentive to innovate. This includes the provision of scientific infrastructure in research and education and direct and indirect support for research and technological development. It also includes a wide range of policies which aim to build networks, to make markets more conducive to innovation, to facilitate the transfer of technology, to help firms to acquire relevant capabilities, and to provide supporting framework conditions in areas such as standards and intellectual property. Such policies are implemented through improving the resources, incentives, capabilities and opportunities available to innovators. Many other public policies also affect innovation, though this is not their main object. This group includes macro-economic policies, education more generally, public procurement, regulation (environmental or health and safety), and competition policy."

Industrial Policy - According to (Pack & Saggi, 2010) industrial policy is basically any type of selective intervention or government policy that attempts to alter the sectoral structure of production toward sectors that are expected to offer better prospects for economic growth than would occur in the absence of such intervention.

Policy Coherence - is the degree of consistency and lack of conflict in the policy system; it describes the state of a system (*Ramirez, Scott and Golden, 2004).* They (*Ramirez, Scott and Golden, 2004)* distinguish between three basic dimensions to coherence as:

Horizontal coherence - ensuring that individual, or sectoral policies, build on each other and/or minimise inconsistencies in the case of conflicting policy goals;

Vertical coherence - ensuring that public outputs are consistent with the original intentions of policy makers;

Temporal coherence - ensuring that today's policies continue to be effective in the future.

Coordination - is the explicit activities of players to align aims, harmonise policy instruments and actions, etc., and is one of the most important elements for bringing about coherence.

1.7. Assumptions

The research is based on a detailed literature survey on policy-making and implementation in the Industrial and Innovation Policies domain. Inputs from senior policy practitioners, obtained through interviews, with the assumption that they are familiar with the need for policy coherence and are able to give valuable insight into how they undertake to achieve it.

2. LITERATURE REVIEW

2.1 Introduction

This chapter outlines the literature used to explore policy coherence in general as well as the concept of policy effectiveness. From the literature, sources research themes for content analysis, and questions for the interviews were derived and provided a framework against which the research was conducted.

2.2 Policy Effectiveness

Fox and Meyer (1995) as found in Roux (2002) defined policy as *"authoritative statements made by legitimate public institutions about the way in which they propose to deal with policy problems"*... Roux (2002) however finds Anderson's 1997 definition of policy more acceptable which states that policy is "a proposed course of action of a person, group, or government within a given environment providing obstacles and opportunities which the policy was proposed to utilize and overcome in an effort to reach a goal or realize an objective".
Roux (2002) goes further and argue that policy can never be static and should always relate to current issues in society. It should constantly be adapted to match the impact of environmental variables and influencing factors.

Roux (2002) further contends that policy should be dynamic and should include influencing factors such as the following:

- circumstances, which include the total environment, as determined by time and place
- technological developments
- population increase and effect of urbanisation
- natural disasters

- international relations and trends, as well as the effects of globalisation
- economic and industrial development
- public needs and aspirations
- party political dynamics
- views of interest and pressure groups
- research and investigations by commissions and committees
- personal views of public officials and political role players.

2.2.1. Policy making process

Howlett and Rayner (2014) describe “policy design [as] an activity which unfolds in the policy process as policy actors deliberate and interact over the construction of both the means or mechanisms through which policy goals are given effect and the goals of policy themselves. It is “the effort to more or less systematically develop efficient and effective policies through the application of knowledge about policy means gained from experience, and reason, to the development and adoption of courses of action that are likely to succeed in attaining their desired goals or aims”.

Howlett et al (2014) state that “policies are composed of several elements distinguishing between abstract or theoretical/conceptual goals, specific programme content or objectives, and operational settings or calibrations” as illustrated in **Figure 2**. They further argue that the central criteria which the design literature has developed for dealing with how these multiple parts of a policy *should* be related was ‘*integration*’ or “the idea that goals and means within policy mixes should not work against each other but mutually reinforce each other”. They argue, for a relatively small number of criteria to be identified to help assess the extent of this integration.

From previous work on policy design had identified evaluative criterion proposed for a superior policy design as follows:

"*Consistency*" - the ability of multiple policy tools to reinforce rather than undermine each other in the pursuit of policy goals.
"*Coherence*" - or the ability of multiple policy goals to co-exist with each other and with instrument norms in a logical fashion was developed.
'*congruence*" - the ability of goals and instruments to work together in a uni-directional or mutually supportive fashion.

			Policy Content	
		High Level Abstraction	*Programme Level Operationalization*	*Specific On-the-Ground Measures*
	Policy Ends or Aims	**GOALS** **What General Types of Ideas Govern Policy Development?** (e.g. environmental protection, economic development)	**OBJECTIVES** **What Does Policy Formally Aim to Address?** (e.g. saving wilderness or species habitat, increasing harvesting levels to create processing jobs)	**SETTINGS** **What are the Specific On-the-ground Requirements of Policy** (e.g. considerations about the optimal size of designated stream-bed riparian zones, or sustainable levels of harvesting)
Policy Focus				
	Policy Means or Tools	**INSTRUMENT LOGIC** **What General Norms Guide Implementation Preferences?** (e.g. preferences for the use of coercive instruments, or moral suasion)	**MECHANISMS** **What Specific Types of Instruments are Utilized?** (e.g. the use of different tools such as tax incentives, or public enterprises)	**CALIBRATIONS** **What are the Specific Ways in Which the Instrument is used?** (e.g. designations of higher levels of subsidies, the use of mandatory vs voluntary regulatory guidelines or standards)

Figure 2:Components of a policy mix source Howlett and Rayner (2014)

2.2.2. Policy implementation processes

Dye (1995) describes policy implementation as involving all the activities designed to carry out the policies enacted by the legislative branch. These activities include the creation of new organisations – departments, agencies, bureaus and so on – or the assignment of new responsibilities to existing organisations. These organisations must translate laws into operational rules and regulations; and hire personnel, draw up contracts, spend money and perform tasks.

In section 41 of the Constitution of the Republic of South Africa stipulates the legal framework for the government to execute its policies in a cooperative manner between all spheres of government i.e. national, provincial and local spheres that are distinctive, interdependent and interrelated. The Constitution further stipulates that all spheres of government and all organs of state within each sphere must exercise their powers and perform their functions in a manner that does not encroach on the geographical, functional or institutional integrity of government in another sphere, and co-operate with one another in mutual trust and good faith by:

a) fostering friendly relations;
b) assisting and supporting one another;
c) informing one another of and consulting one another on matters of common interest;
d) co-ordinating their actions and legislation with one another;
e) adhering to agreed procedures; and
f) avoiding legal proceedings against one another.

For the purposes of this study, the theory of policy analysis literature is reviewed to provide a background understanding of policy analysis and what will be assessed in the policy making and implementation processes of the two policies. A comparison of the two policies will be undertaken on intent and implementation. This will be done with the understanding that the process should allow for integration and coherence on common objectives.

2.3. Policy Coherence

Hoebink (2005) states that Policy coherence is a relatively new concept both in politics and political sciences and that in political science literature on policy evaluation, it is noted that a causal link between policy and policy results is often hard to determine. Moreover he adds that political

science literature in general does not deal with how government policy may interfere with each other's results or even frustrate the policy altogether. He adds that only in the literature on economic policy is the credibility of government action linked to its ability to ensure that policy fluctuates as little as possible.

He offers a possible definition of coherence of policy as being "*the non-occurrence of effects of policy that are contrary to the intended results or aims of policy".* He argues that there is a narrow and broad definition. The narrow definition being that objectives of policy in a particular field might be undermined or obstructed by actions or activities in that field. The broad definition as being that objectives of policy in a particular field might be undermined or obstructed by actions or activities of government in that field or in other policy fields.

Hoebink (2005) further argues that policy coherence is, in principle, important to every field of government policy because if there is incoherence certain intended policy results may be partially or completely frustrated. In addition, that the attainment of objectives in a particular policy field could be hampered by action taken in that particular field or in other fields. In addition, government authorities might lose their legitimacy and credibility if they frustrate or hamper the attainment of objectives in a particular field by means of activities in a different field. It therefore follows that incoherence has the effect of undermining the entire administration. Coherence of policy should therefore be a general objective in all action taken by government.

Policy coherence has become a "top of the agenda issue" in academic circles and the research agenda on policy, and institutions in economics, trade and other policy arenas are studying the concept. Many scholars have researched policy coherence (Galeazzi, Knoll, Kratke, Lein, Rosengren and Sherriff 2013; Hertog &Stroβ 2011; *Santos-Paulino,* 2010;

Flanagan, Uyarra &Larangja 2010; Schaper 2007; Hoebink 2005) and organisations such as the Organisation for Economic Cooperation and Development (OECD), World Bank, World Trade Organisation (WTO) and United Nations Conference on Trade and Development (UNCTAD) have commissioned studies. In all this literature, the views are very different and vast on the definition of coherence but there is convergence on what the intent is for the investigation of coherence and why coherence matters. These sources agree that coherence matters for the achievement of governments' goals, ultimately for development. If there is no coherence, government policies will pull in different directions.

Galeazzi, Knoll, Kratke, Lein, Rosengren and Sherriff (2013) demonstrate in Table 1 mechanisms developed by European Centre for Development Policy Management (ECDPM) in analysing the countries. "ECDPM decided to look at three mechanisms deemed essential for making progress on policy coherence for development (PCD). These three components have been identified by ECDPM in the past to analyse country systems for PCD and bear close resemblance to the "building blocks" for PCD, as defined by the OECD for Development Assistance Committee (DAC) members to strive towards." They are:

- Explicit policy statements
- Institutional and administrative mechanisms
- Knowledge input and assessment mechanisms

ECDPM	**OECD**
1. Explicit political and policy commitments	1. Political Commitment: setting, prioritising and articulating objectives
2. Administrative and institutional mechanisms for policy coordination	2. Ensuring effective policy co-ordination
3. Knowledge input and knowledge assessment mechanisms for analyses and assessing impact	3. Improving implementation, monitoring, analysis and reporting

Table 1: ECDPM and OECD approaches to analysing and understanding PCD components

Galeazzi et al (2013) add that "The system is made up of the dynamics of interaction between the three elements as depicted in **Figure 3**, and has in OECD guideline documents also been presented as a cycle as shown in **Figure 4**. These three components are influenced by the political context in the country, how governance is conducted on a day-to-day basis, pressure and level of influence from non-state actors (e.g. NGOs and CSOs), and various knowledge communities."

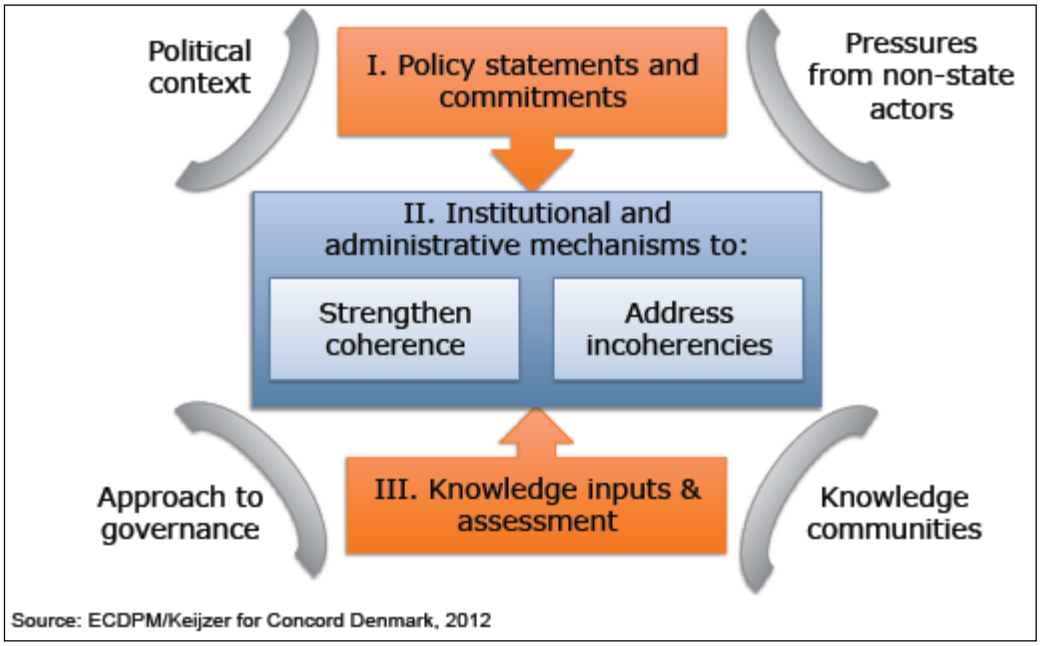


Figure 3 Interlinked PCD mechanisms

Each phase of the cycle below is supported primarily by one of three institutional building blocks; for a country to make good progress towards policy coherence, all three building blocks should be in place.

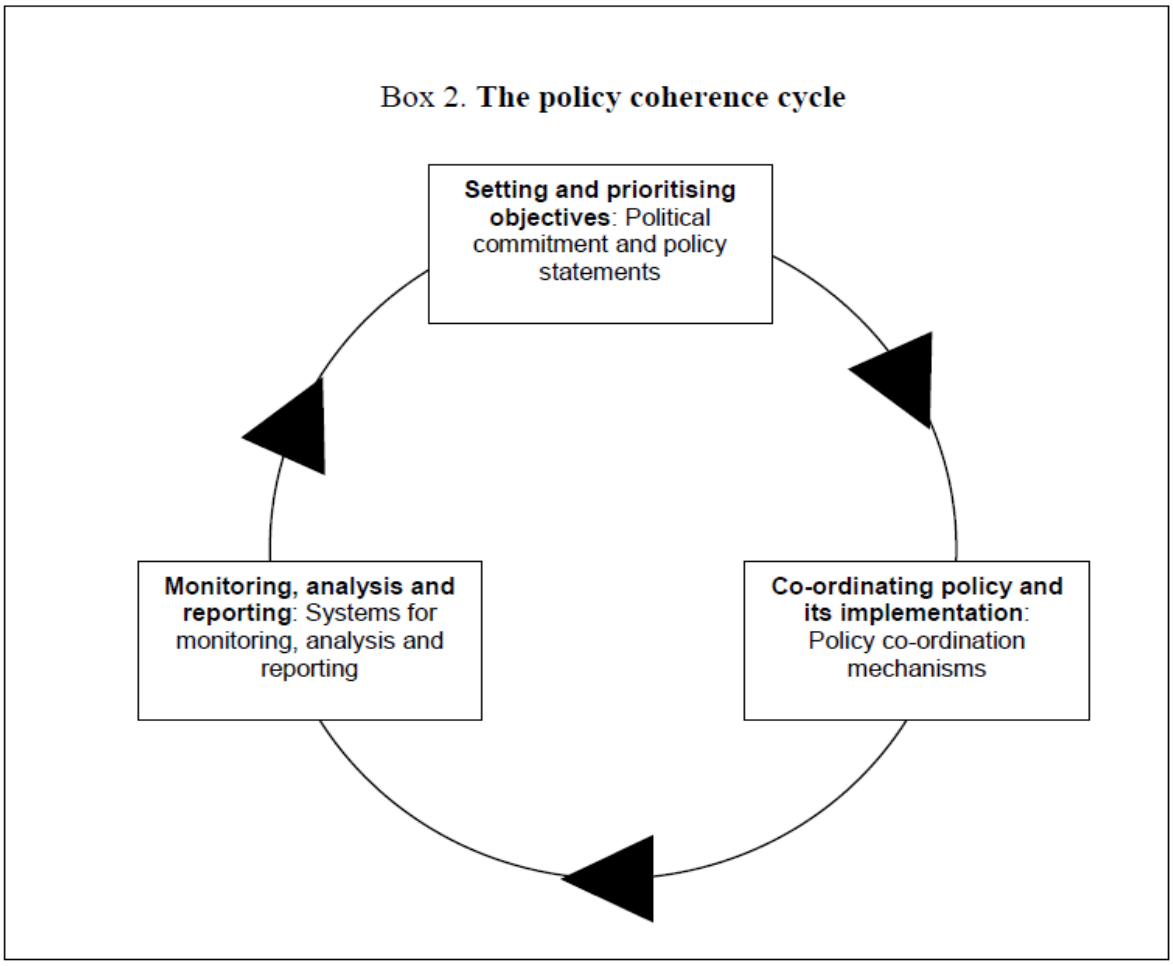


Figure 4: Building Blocks for policy coherence (OECD, 2009)

The first phase, setting and prioritising objectives, involves specifying the objectives of policies, and determining which policy objective takes priority in the event of incompatibility. The quality of the building block depends on the nature of the commitment, statements, and on the weight, they both give to development objectives.

The second phase, co-ordinating policy and its implementation, involves working out how policies and their implementation can be modified to maximise synergies and minimise incoherence. The quality of the building block depends on how effectively policy is co-ordinated and on the extent to which development interests are taken into consideration in the process.

The third phase, monitoring, analysis and reporting, involves collecting and analysing evidence about the impacts of policies, separately and in combination, and feeding the findings back to policy makers and those who hold policy makers and their political principals accountable. In a subsequent round of the cycle, policy makers can use such information to refine or re-prioritise their policy instruments and objectives. The quality of the building block depends on the effectiveness of these systems and the extent to which they monitor, analyse and report on development impacts. (OECD, 2009)

Hoebink (2005) argues that coherence can be classified in different ways. Coherence can have a narrow or a broad angle that means that it can focus on one terrain or field of policy only, or try to make links with other fields or domains of policies. The restricted definition places coherence within one terrain of government policy, which could also be called *internal* coherence, because the assessment of policy coherence stays within the limits of the domain of a given policy. In contrast, the broad definition will look at the way the attainment of a given set of goals of government policies in a certain field are stimulated or hampered by government policy or policies in another field or other terrains.

Hoebink (2005) identifies causes for incoherencies in and between policies. He argues that governments have to deal with a multitude of stakeholders with different views and needs and an optimal solution would be needed to satisfy all parties. These negotiated solutions may lead to incoherencies, which should not always be regarded as a negative factor. They can be a compromise in which the relative importance of the actions and actors has been duly weighed.
The second incoherence may arise from the fact the government generally consists of a large number of departments, institutions and corporations. These departments and institutions take a large number of

policy measures, monitor their implementation and are quite often faced with conflicting interests.
This therefore puts central government in a position where it becomes difficult to keep a grip on the policy of all these different bodies.
It is difficult to weigh all the factors, the parties, and their reactions to an initial policy decision. Consequently, it is often unclear what will be the precise effects or side effects of the policy.
In some cases administrators and politicians, can be shortsighted or required to be short-sighted, in other words they focus entirely on the particular policy field for which they are expected to take measures at the time in question or have to remedy short-term negative effects at the expense of optimal policy in the long term. Under such circumstances, undesired effects in other domains of policy are easily produced.

Hoebink (2005) further argues “that causes for incoherencies exist and can be grouped together in several categories: intended/unintended, structural/fictive/temporary, institutional/political as depicted in **Table 2**. Intended incoherence would be a form in which an authority consciously accepts that the objectives of policy in a particular field cannot be achieved because the policy involves conflicting interests and to protect the interests of one group of stakeholders might go at a cost of another group of actors or stakeholders. A further distinction can be made here between an intended incoherence to correct adverse effects in the short term while adhering to the longer-term objectives and an incoherence which is intended purely to remedy certain negative effects for particular parties in the short term”.

In the case of unintended incoherence, policies in a particular field frustrate the objectives or results of other policies although this is not noticed because the results of the different policies are never compared.

A second set of causes are described as structural, temporary or fictive. Structural causes may occur when different interest groups stand at both sides of the possible range of policies, in particular when it is difficult to find compromises, where the gain of one might be the loss of the other. Causes might be temporary if different parties may only need time to adjust to new circumstances; and causes may be fictive if they only exist in the ideas or ideologies of some of the parties involved.

Causes for incoherence can also be found in institutional differences, inter-institutional competition, or in politico-economic contradictions. Government institutions differ in organisational culture, and ideologies within these bureaucracies are often one-sided and not very comprehensive. Because bureaucracies tend to be inward looking and build up arguments from within their institution. There is often a lack of coordination between government departments and complementarity is not a given but most often a result of inter-institutional competition. All these factors could lead to incoherencies."

Table 2 illustrates causes for incoherencies, which range from the unintended to economic and corresponding suggested remedies.

	Cause	**Remedy**
Unintended	* interests of other policies not weighed/left aside * no clear representation of other policy's interests * knowledge of effects absent	* impact study * mechanisms for better weighing
Intended	* other policies' interests set aside * specific policy interests of more importance * better lobbying by competing interests	* impact study * mechanisms for better weighing * compensation * accept incoherence

	* no clear assessment available	
Structural **a. general** **b. differentiated**	* consumers versus producers * producers versus environment * producers versus producers * consumers versus consumers	* accept incoherence * compensation
Temporary	* producers versus producers * producers versus environment	* compensation for modernisation * additional/flanking policy
Fictive	* producers versus producers * consumers versus producers	* mediation * information
Institutional	* cultural differences between institutions * ideological differences between institutions * compartmentalisation of policy departments (horizontal) * lack of co-ordination (vertical)	* transparency/information * co-ordination
Political/ Economic	* conflicting interests (inside member states, between member states) * complexity of issues * deregulation/liberalisation * internationalisation/globalisation	* tolerate incoherence * mitigation * compensation * additional/flanking policy

Table 2 Causes for incoherencies (source Hoebink, 2005)

2.3.1. Political Commitments

Objectives and goals are set, prioritised and articulated explicitly to show political leadership and commitment. Correspondingly, policy statements should be explicit about coherence or explicitly show coherence with each other. Galeazzi,Knoll, Kratke,Lein, Rosengren and Sherriff (2013) state that the most usual form political commitment is an official policy

statement or strategy paper. The authories have also gone further and passed legislation of some form. Certain governments have taken a more sector-by-sector approach (in addition to general policy statements) by concluding inter-ministerial agreements of different forms with ministries responsible for policy areas that can have a significant impact on [other policies]."

Hofmeyer and Mclennan (1992) (in Maile, 2008) argue that attempts to unravel policy coherence should begin with facts about distribution. A good starting point is the integration of the quantitative and qualitative problems of policy implementation in the past, as well as an analysis of residual challenges emanating from past policy practice.

De Coning and Cloete (2006) (in Maile, 2008) state that policy coherence focuses on the relationship and continuity between policies. As such, coherence is broad in scope and includes the following:

a) inter-governmental relations;

b) the relationship between a political system and a policy-making system;

c) the resonance between organisations' values and the policy making processes;

d) appropriate links between organisational structures;

e) processes and methods of policy-making;

f) consistency of decision-making with policy guidelines;

g) political leadership and commitment;

h) strategic-policy framework's consistency with government's goals and priorities;

i) horizontal consistency among policies;

j) reconciliation between policy priorities and budgeting imperatives;

k) the provision of room for adjustment; and

l) awareness of cross-cutting problems and issues

Maile (2008) argues that according to a report by The House of Commons International Development Committee (2004), the world does not come neatly packaged into issue areas ripe for policy intervention; and that policies designed to address one issue are bound to have an impact in other areas, and policy coherence is fundamentally concerned with assessing this impact. He argues that policy coherence is achieved when policies across a range of issues support the attainment of a government's goals.

He adopts the OEDC (2004) definition of four types of policy coherence:

Type 1- concerned with internal consistency

Type 2- coherence of all government policies

Type 3- coherence and co-ordination between agencies within government.

Type 4- ensuring alignment of government's policies with those outside of government.

Maile further proposed steps towards policy coherence as adapted from OECD (2007):

a) Initial recognition of interdependence between issues and the objectives and policies relating to those issues.

b) The development of an understanding of the nature and strength of the relationship between issues.

c) The specification of how policies impacts on another government with similar development characteristics.

d) The assessment of scope for enhancing policy coherence by balancing or harmonising competing or complementary interests.

e) The modification of the objectives or policies designed to achieve government's strategic goals in order to ensure that they take likely impacts into account and are as coherent as possible.

Maile (2008) contends that the importance of policy coherence has long been recognised in development and other spheres. What has been lacking in the developing world is effective mechanisms to enable governments to move towards it. In his view, policy coherence requires monitoring and evaluation mechanisms to ensure that lessons are learnt and practice is continually improved.

Van der Hoeven (2008) states that "Hoebink (1999 and 2004) and others (especially Winter 2002) have indeed argued that any meaningful discussion on policy coherence should first indicate policy coherence of what, by whom and for what".
Van der Hoeven further argues that any assessment of whether policies are coherent, depends on what such policies are supposed to achieve and on who can take action to implement them.

Van der Hoeven (2008) further argues that most analysts and commentators view policy coherence as a system to achieve better policy coordination among different actors. But often actors have different objective functions and that is what is actually observed in many case.
Van der Hoeven (2008) reconfirms the observation by Tinbergen (1952) and Arrow (1963) that it remains difficult to achieve policy coherence at the national level and that this difficulty is actually reinforced by a current process of globalization, which amongst others is leading to greater

inequalities within most countries. This is sometimes resolved through a political process which may or may not be democratic.

Hoebink (2005) states that policy coherence is important to every field of government policy; if there is incoherence, certain intended policy results may be partially or completely frustrated The attainment of objectives in a particular policy field could be affected by action taken in the relevant field or in other fields, which could produce an adverse effect. Moreover, Hoebink, affirmed that government authorities might lose their legitimacy and credibility if they frustrate or hamper the attainment of objectives in a particular field with activities in a different field. It therefore follows that incoherence has the effect of undermining an entire administration, and policy coherence should be a general objective in all action taken by government.

2.3.2. Effective Policy Coordination (Governance)

Effective policy coordination refers to institutional and administrative mechanisms to achieve policy coordination. Galeazzi, Knoll, Kratke, Lein, Rosengren and Sherriff (2013) explain it as inter-ministerial or inter-departmental arrangements for promoting policy coherence at national level; and the mechanisms involve civil society, independent bodies and parliament in different ways.

Ramirez, Scott and Golden (2004) highlight coordination, as a key indicator to measure to assess coherence. They state that *"conscious coordination efforts are needed to ensure that all affected interests are involved at appropriate stages of policy development and to ensure collaborative working relations within and among all sectors of the administration. On the other hand, political leadership sets the strategic overview of governmental policy activities and views new policy proposals in relation to overall government objectives and in relation to other existing policy areas. Effective communication and information networks are needed for informed*

decision making, to guarantee good feedback and to coordinate policies and institutions. All three factors discussed above are necessary to challenge administrative cultures of departmentalisation that prioritise sectoral rather than common goals. The activities of strong players, system drivers or change agents, who strongly influence the activities of other actors can also lead to greater coherence. In this case coherence arises through adjustment to the strategy of the system driver."

Ramirez, Scott and Golden (2004) looked at why coherence is important and how to achieve it. The argue that the governance capabilities of national policy making systems will have an important impact on the degree of policy coherence of the system. They therefore raise the issue of the relationship between innovation policy and other areas. These relationships may be supportive or unsupportive, creating challenges for balancing the links between them. Governments will also need to learn more about options and barriers to integrating diverse policy areas and thereby develop a policy environment that is coherent and conducive to innovation in the economy. Ramirez et al offer the policy co-ordination scale which is illustrated in **Figure 5**. The scale shows different levels of horizontal coordination in the policy making system. The assumption is that the higher on the coordination scale, the more horizontal the policy will be.

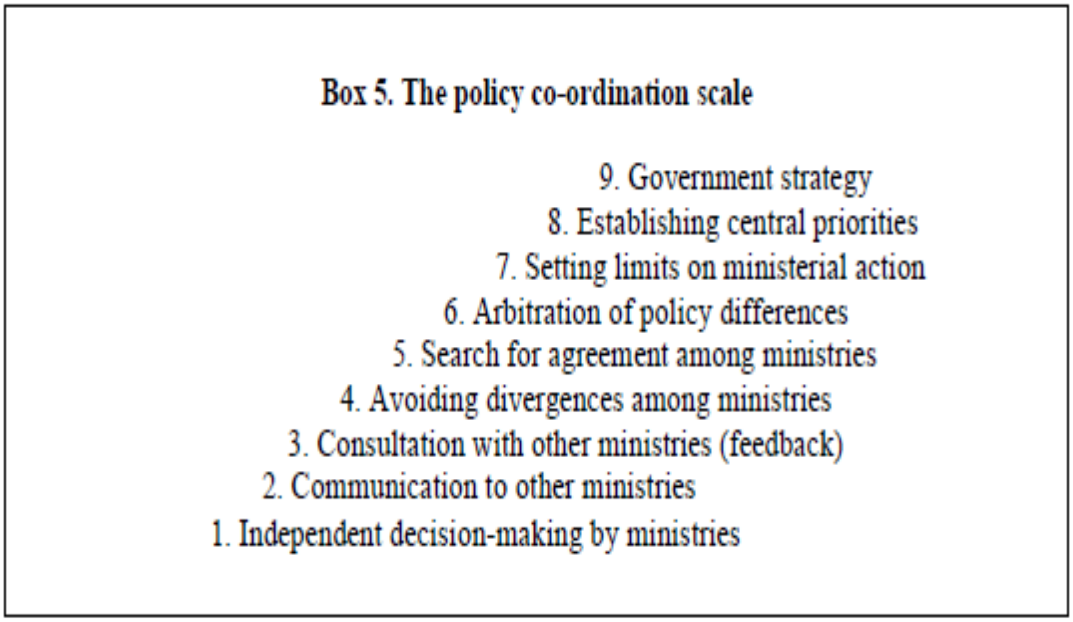


Figure 5: Policy co-ordination scale Source: OECD 2002 (in Ramirez et al, 2004)

Guy Peters (1998), writing from a public policy and administration perspective, describes policy coordination as an "administrative Holy Grail" that has become more difficult to achieve in pace with the growth and structural elaboration of modern governments. According to Peters, policy coordination refers to "the need to ensure that the various organisations… charged with delivering public policy work together and do not produce either redundancy or gaps in services" .Policy integration is thus framed as an organisational issue mainly and Peters approaches it from a more practical perspective. Rather than provide a definition of the state of being coordinated, Peters argues that there is a spectrum of coordination options, ranging from minimalist to maximalist" (Persson, 2004). **Figure 5** *is adapted from the scale by Metcalfe(1994) as shown in* Table 3. The table is used to illustrate Peters' view of policy integration.

Step 1:	*Independent decision making by ministries:* Each ministry retains autonomy within its own policy domain.

Step 2:	*Communication to other ministries (information exchange)*: Ministries keep each other up to date about issues arising and how they propose to act in their own areas. Reliable and accepted channels of regular communication must exist.
Step 3:	*Consultation with other ministries*: A two-way process, as well as informing other ministries of what they are doing; individual ministries consult other ministries in the process of formulating their own policies or position.
Step 4:	*Avoiding divergences among ministries:* Ensuring that ministries do not take divergent negotiating positions and that government speaks with one voice.
Step 5:	*Interministerial search for agreement (seeking consensus)*: Beyond negative co-ordination to hide differences, ministries work together, through, for example, joint committees and project teams, recognising their interdependence and mutual interest in resolving policy differences.
Step 6:	*Arbitration of inter-organisational differences*: Where inter-organisational difference of views cannot be resolved by the horizontal coordination processes, defined in levels 2 to 5, central machinery for arbitration is needed.
Step 7:	*Setting parameters for organisations:* A central organisation or inter-organisational decision-making body may play a more active role by setting parameters on the discretion of individual organisations. These parameters define what organisations must not do, rather than prescribing what they should do.
Step 8:	*Establishing government priorities:* The centre of government may play a more positive role by instituting policy mainlines and establishing priorities.
Step 9:	*Overall governmental strategy:* This case is added for the sake of completeness, but is unlikely to be attainable in practice.

Table 3: The internal management of external relations: policy coordination scale (*Source*: Metcalfe 1994 in Peters, 1998, in Persson, 2004)

Peters (1998) notes other important conceptual aspects, such as the difference between policy coordination and administrative coordination. The latter represents a bottom-up orientation towards making government policy outputs more coherent and easily absorbed for the target group, and stems from an implementation perspective. The former orientation rests on the assumption that it is more effective to coordinate from the very beginning, in a top-down manner, and that clear overarching priority setting is more important than implementation concerns at the policy formulation stage. Peters argues that the ownership aspect of policy coordination is most effective when it is imposed on policy-makers or when they are left to bargain among themselves.
Different views lead to different conclusions on appropriate means; imposition is most effective in a hierarchical organisation while bargaining is the natural option in market and network organisations. (Persson, 2004)

2.3.3. Improving Implementation,Monitoring, Analysis and Reporting

Knowledge input and assessment mechanisms are implements used in improving implementation, monitoring, analysis and reporting. Galeazzi, Knoll, Kratke, Lein, Rosengren and Sherriff (2013) explain that “commonly multi-stakeholder reference groups of different types provide assessment and knowledge inputs on policy coherence to the policy formulation structures and processes. In some approaches, knowledge mechanisms are linked to academic analysis or to existing evaluation systems.”

In her doctoral dissertation, “The search for policy coherence: Australian regional governance in a Federal framework, 1996-2007” Helen Swan (2009) developed a policy coherence model (Table 4) to assess

coherence, with a set of indicators of each of the four dimensions, presented in [**Figure** 5] “To indicate the strength to which the observed and reported experience corresponded with the criteria in the PCM the rule used is as follows: where one component of each dimension was considered to be aligned with the evaluation findings, a low level of assessment was allocated; where two components of the dimension were considered to align, a medium assessment was allocated; where three to four components of the dimension were considered to align, a medium-high assessment was allocated; and if all four components were considered to align, a high assessment was allocated”

Dimension	Criteria	Indicators
Localism	• Bottom-up/locally driven • Comprehensive strategic regional planning and policy development • Intergovernmental leadership/support • Sustainable outcomes as planned by the leadership group	Evidence of effective representative consultative/participatory structures and processes; a shared interface or interfaces; collegiate behaviour and expertise. Degree of alignment with stated Federal government priorities Evidence of timely advice, relationship management, engagement and planning Extent to which outcomes conform to those planned.
Legitimacy	• Consensual and integrative leadership • Transparency • Local leadership in planning and implementation • Sustainable approaches/outcomes	Evidence of inter- and intra-governmental relationships and collective program and/or policy development, implementation and accountability. Degree of openness and accountability; articulation of policy and/or program framework and roles and responsibilities; degree of equity and equality in processes. Degree of local leadership in planning and implementation Extent to which approaches and outcomes achieve sustainability

Logistics	• Comprehensive and cooperative resource allocation • Flexibility of funding • Intergovernmental monitoring mechanisms • Sustainable resourcing	Evidence of comprehensive and cooperative resource allocation Extent of flexibility of funding and management arrangements Evidence of timely advice, relationship management, engagement and planning Extent to which resourcing provided is sustainable
Performance	• Best practice comparative measures • Evidence base • Transparency and accountability guides • Sustainable outcomes and future prospects	Extent of equity, efficiency, effectiveness and economy in the program/policy initiative Extent and quality of data to assess performance Extent of openness and accountability in guides and associated documents Extent to which the outcomes are sustainable and/or offer potential to be sustainable

Table 4: coherence dimensions, criteria and indicators (source: Swan, 2009)

2.4 Conclusion of Literature Review

The literature review identified the main themes that inform the research study and also helps formulate and refine the research questions. Two themes have been highlighted:

- content in the policy, and
- governance systems.

These themes provide an analytical focusing device or dimension of analysis in answering the research questions and are further explained:

- Policy content occurs throughout the formulation stage. Content should reflect the intentions, objectives and outcomes of the policy, which must be aligned with overall government objectives and goals.
- The governance system should promote coherence, and consist of structures established to enhance coherence and coordination among implementation mechanisms. There should be mechanisms to feedback and mediate on issues of conflict, and central coordination structures should be established and the system should be monitored.

This study is concerned with policy coherence across two policy domains– innovation and industrial policies. The arguments found in literature suggest that this can be achieved, albeit not absolutely, with proper balancing and management. Furthermore, the literature provides a theoretical basis for the analysis and monitoring of policy coherence.

The literature review supports the need for policy coherence. Achieving coherence will result in government realising thier objectives and development aspirations. Literature also shows that there are a number of factors that promote or hinder efforts to achieve coherence; some of which may not be relevant in the South African context. By presenting factors

experienced by the policy makers and implementors in the dti and DST, government may identify areas of focus.

The questions that need to be answered the by this research are:

Research Question 1:

Does coherence exist between the Innovation and Industrial Policy? What is the extent of the coherence?

Research question 2:

What are the factors hindering or promoting coherence?

Research Question 3:

What is the impact of coherence or lack thereof on the achievement of goals?

3 RESEARCH METHODOLOGY

This chapter describes the research strategy, methodology, the aspects of data collection and analysis applied in this study. The limitations of the study and ethical considerations are also discussed.

3.1 Research Strategy

The primary research aim is to create an understanding of how the South African government achieves coherence in their policy and coordination of implementation efforts, through a detailed literature review and evaluation of the policies, strategy and action plans . This was supplemented by elite interviews of senior policy practioners to ascertain their understanding of policy coherence and their roles in achieving it. A qualitative methodology was used, as it is “a methodology which is designed to tell the researcher how and why things happen as they do. The method includes an array of interpretive techniques which seek to describe, decode, translate and otherwise come to terms with the meaning, not frequency, of certain naturally occurring phenomena in the social world” (Cooper & Schindler, 2011).

Denzin and Lincoln (2000) state that “Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self. At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of or to interpret, phenomena in terms of the meanings people bring to them”.

Denzin and Lincoln(2000) state that “qualitative research involves the studied use and collection of a variety of empirical materials – case study, personal experience, introspective, life story, interview, observational, historical, interactional, and visual texts – that describe routine and problematic moments and meanings in individuals’ lives. Accordingly, qualitative researchers deploy a wide range of unconnected methods, hoping always to get a better fix on the subject matter at hand”.

(Cooper & Schindler 2011,p. 162) describe the purpose of qualitative research “[as] based on “researcher immersion in the phenomenon to be studied, gathering data which provide a detailed description of events, situations and interactions between people and things, thus providing depth and detail.”

The qualitative method research was tought appropriate as this study will be seeking to provide depth and detail regarding the making and implementation of policy in a coherent and coordinated manner. The South African context may provide new insights into policy coherence.

3.2. Research design

A document analysis was undertaken with the method used being qaulitative content analysis. The document analysis was supported by individual topical interviews used as a form of triangulation to confirm the findings of the document analysis. “Document analysis is a systematic procedure for reviewing or evaluating documents—both printed and electronic (computer-based and Internet-transmitted) material. Like other analytical methods in qualitative research, document analysis requires that data be examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge” (Bowen,2009).

Bowen (2009) argues that “documents can serve a variety of purposes as part of a research undertaking”. Some of the purposes are “providing data

on the context within which research participants operate. Bearing witness to past events, documents provide background information as well as historical insight. Additionally, documents provide a means of tracking change and development. Where various drafts of a particular document are accessible, the researcher can compare them to identify the changes. Even subtle changes in a draft can reflect substantive developments in a project, for example (Yin, 1994). The researcher may also examine periodic and final reports (where available) to get a clear picture of how an organisation or a program fared over time" (Bowen, 2009).

Document analysis has certain characteristics that made it appropriate for the research study. When compared to other qualitative research methods, document analysis has advantanges and limitations. Bowen (2009) describes the advantages as:

- Efficient method, because document analysis is less time-consuming. It requires data selection, instead of data collection.
- Availability: Many documents are in the public domain, especially since the advent of the Internet, and are obtainable without the authors' permission. This makes document analysis an attractive option for qualitative researchers.
- Cost-effectiveness: Document analysis is less costly than other research methods and is often the method of choice when the collection of new data is not feasible. The data (contained in documents) have already been gathered; what remains is for the content and quality of the documents to be evaluated.
- Lack of obtrusiveness and reactivity: Documents are 'unobtrusive' and 'non-reactive' that is, they are unaffected by the research process. Therefore, document analysis counters the concerns related to reflexivity (or the lack of it) inherent in other qualitative research methods.
- Reflexivity—which requires an awareness of the researcher's contribution to the construction of meanings attached to social interactions and acknowledgment of the possibility of the

investigator's influence on the research—is usually not an issue in using documents for research purposes.

- Stability: As a corollary to being non-reactive, documents are stable. The investigator's presence does not alter what is being studied (Merriam, 1988). Documents, then, are suitable for repeated reviews.
- Exactness: The inclusion of exact names, references, and details of events makes documents advantageous in the research process (Yin, 1994).
- Coverage: Documents provide broad coverage; they cover a long span of time, many events, and many settings (Yin, 1994)."

"Document analysis involves skimming (superficial examination), reading (thorough examination), and interpretation. This iterative process combines elements of content analysis and thematic analysis. Content analysis is the process of organising information into categories related to the central questions of the research. Some qualitative research experts may object to content analysis, contending as Silverman (2000) did, that it obscures the interpretive processes that turn talk into text. Those research experts should bear in mind that documents include more than transcriptions of interviews and other forms of talk" (Bowen, 2009).

The kind of content analysis that is recommended in Bowen (2009) excludes the quantification typical of conventional mass media content analysis. Rather, it entails a first-pass document review, in which meaningful and relevant passages of text or other data are identified. This is the analysis used in this study.

Thematic analysis is a form of pattern recognition within the data, with emerging themes becoming the categories for analysis (Fereday & Muir-Cochrane, 2006). The process involves a careful, more focused re-reading and review of the data. The reviewer takes a closer look at the

selected data and performs coding and category construction, based on the data's characteristics, to uncover themes pertinent to a phenomenon.

The analytical aim was to compare the two domains' view on policy coherence, by looking at the contents of the policies, governance structures and processes to achieve coherence and coordination. In doing so it is possible to excavate patterns of similarities and differences across the domains, juxtaposing these to sculpt an explanation of the misalignments in terms of views on the need for coherence, drivers and barriers of coherence.

3.3 Sampling

According to Bernard (2006), "There are two components to sampling in content analysis. The first is identifying the *corpus* of texts; the second is identifying the units of analysis *within* the texts." The research is focused on coherence in the design and implementation processes of Innovation and Industrial policy in the South African context. The corpus of texts in this study are the policy documents, strategy documents, programme of action documents and any reports relating to the design, implementation and performance of the two policy domains.

"Qualitative research involves nonprobability sampling , where little attempt is made to generate a representative sample." (Cooper & Schindler, 2011). Of the types of nonprobability samples, text analysis is often based on purposive sampling as states by Bernard (2006). In purposive sampling, the participants are chosen arbitrarily for their unique characteristics or their experiences, attitudes, or perceptions (Cooper & Schindler, 2011).

This purposive sampling method was used in choosing the respondents for the interviews. The sample consisted of senior policy makers and

implementers. They were selected from each domain for their knowledge and experience of policy formulation and implementation.

3.4. The research instrument

In support of the document analysis, individual topical interviews were conducted, which are more narrowly focused on a particular event or process, and are concerned with what happened, when and why, were used to gain information from respondents involved in the study about the policy processes experience.

The research instrument has been designed from themes identified from the literature during literature review. The literature review was used as a means to determine and structure the questionnaire and its variables. The questions will be open-ended so as to allow the interviewee opportunity to give as much information as possible. These types of questions force me to ensure that the questionnaire is not too long as they pose a problem for interpretation and are costly in terms of data analysis. (Cooper & Schindler, 2011)

3.5 DATA COLLECTION

Documents range from public through private to personal documents. The list of public document sources used in this study include government publications such as Acts of Parliament, policy statements, ministerial or departmental annual reports, consultancy reports, etc. Private documents included minutes of meetings, board resolutions, interdepartmental memos and other annual reports, etc.

Two types of documents are used in documentary study, namely *primary documents* and *secondary documents*. Primary documents refer to eye-witness accounts produced by people who experienced the particular

event or the behaviour we want to study. On the other hand secondary documents are documents produced by people who were not present at the scene but who received eye-witness accounts to compile the documents, or have read eye-witness accounts (Bailey, 1994).Another source of primary data were Individual depth interviews conducted with senior policy makers and implementers from both domains.

Once the appropriate respondents were identified, they were contacted telephonically or via email in order to describe the purpose and importance of the research, the estimated time requirements to complete the questionnaire in addition, request participation. If the respondent was willing to participate, a meeting was arranged to complete the questionnaire by means of a face-to-face interview. Not all the respondents were able to participate in a face-to-face interview. In these instances, the facility of a telephone interview was made available, which exactly replicated the questionnaire completed during a face-to-face interview.

3.6 Data Analysis

Qualitative content analysis method analysing the content of documents was undertaken in this study. Mouton(2001) defines " 'Content' refers to words, meanings, pictures,symbols, thems or any messages that can be communicated."

In Zhang and Wildemuth (2008,p.1) "qualitative content analysis has been defined as:

- "A research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005, p. 1275),
- "an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytic rules

and step by step models, without rash quantification" (Mayring, 2000, p.2), and

- "Any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings" (Patton, 2002, p.453)."

"Qualitative content analysis goes beyond merely counting words or extracting objective content from texts to examine meanings, themes and patterns that may be manifest or latent in a particular text. It allows researchers to understand social reality in a subjective but scientific manner." (Zhang and Wildemuth, 2008)

According to (Zhang and Wildemuth, 2008) "qualitative content analysis was developed primarily in anthropology, qualitative sociology, and psychology, in order to explore the meanings underlying physical messages. It is mainly inductive, grounding the examination of topics and themes, as well as the inferences drawn from them, in the data. In some cases, qualitative content analysis attempts to generate theory." (Zhang and Wildemuth, 2008) also state that "the qualitative approach usually produces descriptions or typologies, along with expressions from subjects reflecting how they view the social world. By this means, the perspectives of the producers of the text can be better understood by the investigator as well as the readers of the study's results (Berg, 2001). Qualitative content analysis pays attention to unique themes that illustrate the range of the meanings of the phenomenon rather than the statistical significance of the occurrence of particular texts or concepts. Moreover, qualitative analysis deals with the forms and antecedent-consequent patterns of form, while quantitative analysis deals with duration and frequency of form (Smith, 1975, p.218)".

Hsieh & Shannon (2005) identified **"**three distinct approaches to qualitative content analysis: conventional, directed, and summative. All

three approaches are used to interpret text data from a predominately-naturalistic paradigm."

The directed approach to content analysis was considered appropriate for this study. **Hsieh & Shannon (2005)** states "The goal of a directed approach to content analysis is to validate or extend conceptually a theoretical framework or theory. Existing theory or research can help focus the research question. It can provide predictions about the variables of interest or about the relationships among variables, thus helping to determine the initial coding scheme or relationships between codes. This has been referred to as deductive category application (Mayring, 2000). Content analysis using a directed approach is guided by a more structured process than in a conventional approach (Hickey & Kipping, 1996). Using existing theory or prior research, researchers begin by identifying key concepts or variables as initial coding categories (Potter & Levine-Donnerstein, 1999). Next, operational definitions for each category are determined using the theory."

To be able to validate an existing theory requires the following actions as stated by Bernard (2006) starting with a theory that you want to test; creating a set of codes for variables in the theory; applying those codes systematically to a set of texts; testing the reliability of coders when more than one applies the codes to a set of texts; creating a unit-of-analysis-by-variable matrix from the texts and codes; and analysing that matrix**.** The theory in this study is extent of coherence between Innovation and Industrial policy. The factors promoting or hindering coherence is another. Once a sample of texts is established, the next step is to identify the basic, non-overlapping units of analysis. This is called **unitizing** (Krippendorf 1980) or **segmenting** (Tesch 1990). The units may be entire texts (books, interviews, responses to an open-ended question on a survey) or segments (words, wordsenses, sentences, themes, paragraphs). If you want to compare across texts—to see *whether or not* certain themes occur—the whole text (representing a respondent or an

organization) is the appropriate unit of analysis." Therefore, policy documents, along with organizational documents concerned with the design, implementation and performance of Innovation policy and Industrial Policy have been chosen as the unit of analysis because the study is comparing across text to see whether certain themes occur. Also the transcripts from the interviews with senior policy makers and implementers' will provide other units of analysis.

3.7 Limitations of the study

Bowen (2009) describes a number of limitations inherent in documents below.

- Insufficient detail: Documents are produced for some purpose other than research; they are created independent of a research agenda. Consequently, they usually do not provide sufficient detail to answer a research question.
- Low retrievability: Documentation is sometimes not retrievable, or retrievability is difficult. As Yin (1994) has noted, access to documents may be deliberately blocked.
- Biased selectivity: An incomplete collection of documents suggests 'biased selectivity' (Yin, 1994, p. 80).

Bowen(2009) argues that "These are really potential flaws rather than major disadvantages. Given its efficiency and cost-effectiveness in particular, document analysis offers advantages that clearly outweigh the limitations. In this study the documents were available and because of the researcher's line of work, the Industrial policy documentation was readily available.

Sampling limitations are present as the research makes use of purposive sampling. Purposive sampling does not attempt to sample in such a way as to be representative of the population (Cooper and Schinlder, 2011). A generalisation of the population can only be made if the sample is

representative of the population (Cooper and Schindler, 2011). The research focused only on text that is in the public domain and respondents that hold senior positions in the government departments. This may have resulted in a sample that is not representative of the population and may limit the degree to which the results can be applied to other contexts.

3.8. Validity and reliability

In order to address issues of validity, in this study interviews have been used as another source of data for triangulation. “It is important to recognize that a methodology is always employed in the service of a research question. As such, validation of the inferences made on the basis of data from one analytic approach demands the use of multiple sources of information. If at all possible, the researcher should try to have some sort of validation study built into the design. In qualitative research, validation takes the form of triangulation. Triangulation lends credibility to the findings by incorporating multiple sources of data, methods, investigators, or theories.” (Stemler, 2010)

Creswell (2000) describe “triangulation [as] a validity procedure where researchers search for convergence among multiple and different sources of information to form themes or categories in a study. The term comes from military navigation at sea where sailors triangulated among different distant points to determine their ship’s bearing (Jick, 1979). Denzin (1978) identified four types of triangulation: across data sources (i.e., participants), theories, methods (i.e., interview, observations, documents), and among different investigators. As a validity procedure, triangulation is a step taken by researchers employing only the researcher’s lens, and it is a systematic process of sorting through the data to find common themes or categories by eliminating overlapping areas. A popular practice is for qualitative inquirers to provide corroborating evidence collected through multiple methods, such as observations, interviews, and

documents to locate major and minor themes. The narrative account is valid because researchers go through this process and rely on multiple forms of evidence rather than a single incident or data point in the study.”

4. PRESENTATION OF RESULTS

This chapter presents the study results in detail. There were two methods of data collection used namely: (1) content analysis of policies, strategies and reports on innovation and industrial policies and government system; (2) elite interviews with senior managers in the government.

The chapter is organised as follows: the background discussion on the two policies selected for the purpose of this study. This is then followed by the findings of the content analysis before presenting the findings of the interviews.

4.1. Background discussion

The section provides a brief background on the policies that were selected for this study. The background covers the responsible departments, history of the policies selected for this study from the change of government to a democratic system in the country (1994).

4.1.1 South Africa Government system

The South African government system is a three tier system, which has national, provincial and local levels of government. The system also has an independent judiciary. The three levels all have legislative and executive authority in their sphere. These levels are defined in the Constitution as *"distinctive, interdependent and interrelated"*.

The system consists of:

- Legislature which is Parliament that has two houses: National Assembly and National Council of Provinces.
- Judiciary which consists of Constitutional court,

- Executive authority which has the cabinet that consists of the president, deputy president and ministers. In the Presidency there are three political principals: President, deputy President and minister of performance, monitoring and evaluation.

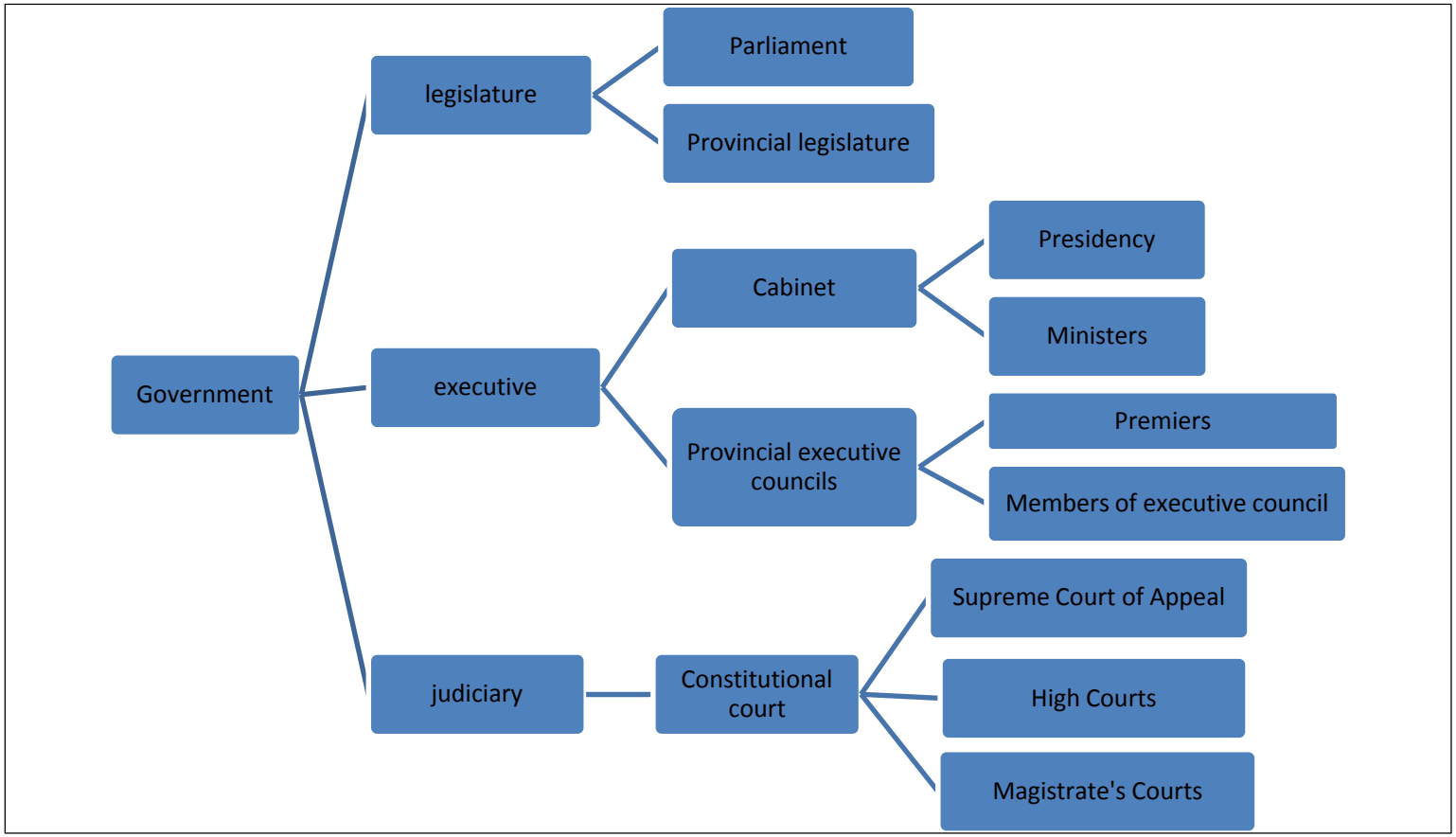


Figure 6: Structure of South African government system

4.1.2. Industrial Policy

In 1994, the new African National Congress (ANC)-led government introduced an approach to Industrial Policy to facilitate the industrialisation trajectory in South Africa. The new government decided to adopt some of the experiences from the East Asian newly industrialised countries.

The new ANC-led government adopted three important policies between 1994 and 2006. These include Reconstruction and Development Programme (RDP) in 1994 which identified meeting basic needs, building the economy, democratising the State and society, developing human resources and nation building as its objectives.

The Growth, Employment and Redistribution (GEAR) replaced RDP in 1996. GEAR covered the following policies , amongst others, fiscal policy, monetary and exchange rate policy, trade, industrial and small enterprise policies. GEAR favoured a shift away from demand-side interventions such as tariffs and subsidies to supply-side measures designed to lower unit costs and expedite progress up the value chain (National Treasury, 1996).

The Accelerated and Shared Growth Initiative for South Africa (AsgiSA) was launched in 2006 and its main objectives were to reduce unemployment and poverty, it aimed to bridge the with the “Second “ economy with intention of ultimately reducing it. The “challenge” that needed to be addressed was reduced to six “Binding constraints” which were to be addressed by responses that fell into six catergories of infrastructure programmes, sector investment (or industrial) strategies, skills and education initiatives, Second Economy interventions, macro-economic issues and public administration issues.

In 2007, the South African Government adopted a National Industrial Policy Framework (NIPF). According to the dti (2007), the core objective of the NIPF was to set-out government's approach to industrialisation trajectory and help align both private sector and public sector efforts.Its aims are to support the process of 'self-discovery' in developing and strengthening the sector strategies.

The NIPF was published with an action, the Industrial policy action plan (IPAP). The IPAP is developed and launched annually as a revised three-year rolling Ipap with a ten year outlook. The first Ipap was developed and launched in 2007 for the financial year 2007/08 and the latest Ipap, which is a sixth iteration is for the financial year 2014/15 to 2016/17.

4.1.3. South African National System of Innovation

Following the 1994 elections, the new democratic government began a series of initiatives to transform the NSI and to ensure that it could once again be benchmarked favourably against its peer countries. These initiatives included new policies, restructuring of the institutional landscape, new funding instruments, new institutions and a new governance framework. In 1996 the Department of Arts, Culture Science and Technology (DACST) published the White Paper on Science and Technology. The white paper presented government's vision for Science and Technology within the overall framework of the RDP, its later and more detailed specification through the Growth and Development Strategy (GDS) and the Macroeconomic Strategy. The core vision of the White Paper was the conceptualisation of a national system of innovation which seeks to harness the diverse aspects of science and technology (S&T) through the various institutions where they are developed, practised or utilised.

The white paper seeked to highlight the relationships between the different mechanisms of delivery of services to the people of South Africa and to

outline the way the Department of Art, Culture, Science and Technology (DACST) could play a co-ordinating role in effective and efficient implementation of interventions. It outlined the requirement for a S&T policy that is consistent with South African vision of a National System of Innovation into the following five themes:

- Promoting competitiveness and employment creation
- Enhancing quality of life
- Developing human resources
- Working towards environmental sustainability
- Promoting an information society.

In 2002 the Department of Science and Technology (the DST) was established, this coincided with the publication of the National Research and Development Strategy. The strategy operated within the context of the S & T white paper. It was meant to be a key enabler of economic growth and articulate with other strategies, such as the Human Resource Development Strategy, the Integrated Manufacturing Strategy and the Strategic Plan for South African Agriculture. It was indicator based and the following objectives:

- Innovation
- Science, engineering and technology (SET) human resources and transformation
- Creating an effective government S&T system

In 2007 the DST published the Ten Year innovation plan (TYIP) which charts the course for the enhancement of innovation in the country, contributing to sustained economic growth on the basis of pillars of a properly functional knowledge economy - human capital development, R&D and knowledge infrastructure. The TYIP identified “Grand challenges” that need to be

addressed. This plan is to help to drive transformation towards a 'Knowledge-based' economy.

4.2. Political Commitment

This section is a summary of the content of the Industrial policy, innovation policy and government objectives.

4.2.1. Policy Content

Section 40 to 41of the Constitution of South Africa, talks about all spheres of government as being interdependent and interrelated and that shall follow principles of co-operative government. The one of the principles stated is one of providing an effective, transparent, accountable and coherent government for the Republic as a whole.

It also states that all spheres of government and all organs of state shall inform and consult one another on matters of common interest and co-ordinate their actions and legislation. Also the mission of the Presidency is:

To realise the strategic agenda of government and the enhanced integrity of state by: - Ensuring coherence in planning, co-ordination, policy development and implementation and to enhance policy development, co-ordination and integrated strategic planning across all spheres of government

The economic cluster of government departments, which includes the DST and the dti, has identified a number of key national targets to meet over the decade leading up to 2018. These include achieving 6 percent economic growth by 2010 and halving poverty and unemployment by 2014.

4.2.2. Policy Intentions

The objectives and intentions of the policies are derived from overall government objectives. The ultimate outcome of both policies is to reduce poverty and enhancing the competitiveness of the country. The NIPF has its core objective as setting out government's approach to South Africa's industrialisation trajectory and hence help align both private and public sector efforts towards this end. (the dti,2007)

It aims to provide the strategic direction to the economy with respect to the issue of industrial development by providing greater clarity and certainty to the private sector and social partners with respect to investment decisions. It also provides a reference point for substantial improvements in intra-governmental coordination of the numerous and complex set of policies and projects that will form part of the NIPF. (the dti, 2007)

The Ten-Year Innovation Plan states its purpose as helping drive South Africa's transformation towards a knowledge-based economy, in which the production and dissemination of knowledge leads to economic benefits and enriches all fields of human endeavour. The Ten-Year Innovation Plan helps to map this critical trajectory and supports the National Industrial Policy Framework (NIPF)4 by encouraging sectoral growth to enhance the competitiveness of the economy.

The main objectives is to ensure that government investment in scientific research strengthens the effectiveness of our National System of Innovationand yield tangible socioeconomic benefits for the country. The TYIP states that it is supporting the National industrial Policy Framework.

The Plan charts the course for the enhancement of innovation in our country, contributing to sustained economic growth on the basis of human capital development, R&D and knowledge infrastructure.

The main objectives are presented as “grand challenges” that address social, economic, political, scientific, and technological benefits. These grand challenge areas are, the “Farmer to Pharma” value chain to strengthen the bio-economy, Space science and technology, Energy security, Global change science with a focus on climate change and Human and social dynamics

4.3. Governance System

In the governance structures a cluster system has been developed to achieve this. Clusters have been formed through inter-ministerial committees.

Clusters foster an integrated approach to governance that is aimed at improving government planning, decision making and service delivery. The main objective is to ensure proper coordination of all government programmes at national and provincial levels.

The clusters operate at different levels, which are ministerial, directors-general and communications. These clusters also report on the outcomes identified by government.

The main functions of the clusters are to ensure the alignment of government wide priorities, facilitate and monitor the implementation of priority programmes and to provide a consultative platform on cross-cutting priorities and matters being taken to Cabinet.

There are currently five clusters, namely:

Economic sectors, Employment and Infrastructure Development	**Social Protection, Community and Human Development**	**International Cooperation, Trade and Security**	**Governance and Administration**	**Justice, Crime Prevention and Security**
Rural Development and Land Reform. Science and Technology. Agriculture, Forestry and Fisheries, Telecommunications and Postal Services, The Presidency: Planning, Performance Monitoring and Evaluation, Economic Development, Finance, Higher Education and Training,	Social Development. Basic Education. Cooperative Governance and Traditional Affairs, Water and Sanitation, Human Settlements, Labour, Public Works, Rural Development and Land Reform Transport, Arts and Culture, Health,	Telecommunications and Postal Services International Relations and Cooperation Defence and Military Veterans Finance State Security, Tourism, Trade and Industry Environmental Affairs.	Home Affairs Public Service and Administration Cooperative Governance and Traditional Affairs, Justice and Correctional Services, Finance, The Presidency: Planning, Performance Monitoring and Evaluation, Department of Communications	Defence and Military Veterans. Police. Justice and Correctional Services Home Affairs State Security.

Labour, Mineral Resources, Public Enterprises, Tourism, Trade and Industry, Environmental Affairs, Transport Water and Sanitation, Public Works, Human Settlements, Cooperative Governance and Traditional Affairs, Energy Small Business Development	Higher Education and Training, Science and Technology Sport and Recreation The Presidency: Women			

Table 5: Inter-ministerial clusters

There is a Forum of South African Directors Generals (FOSAD) which is organised in the same manner as the ministerial clusters. The FOSAD clusters provide technical support to the Ministerial clusters. The FOSAD is chaired by the director general in the Presidency. FOSAD meets at least two times a year to consider reports from the Directors General Clusters as well as to deal with the broad issues of policy, planning and implementation of Government policies and programmes in an integrated, coordinated and co-operative manner as directed by Cabinet. The Management Committee of FOSAD, chaired by the Director General in The Presidency, meets monthly to monitor the progress of Clusters and to facilitate integration across Clusters.

As Secretary to Cabinet, the Director General in the Presidency facilitates the alignment of policy in departments with government's priorities. The Director General, assists the President through reports on oversight of the implementation of government's programmes; advice on interventions to facilitate the achievement of government's strategic agenda; and coordination of government through FOSAD, the National Security Council and sector clusters of directors general.

The two policies were discussed in the cluster before being approved In Cabinet. They at every stage were discussed and endorsed at the cluster level.

There is also a ministry in the Presidency for planning, monitoring and evaluation which performs all the monitoring and evaluation functions of the government outcomes and institutional performance.

The government has also constituted a President's Coordinating Council (PCC). Its purpose is to ensure the implementation of national policy and legislation in provinces and municipalities as well as the coordination and alignment of priorities, objectives and strategies across national, provincial and local governments. This is chaired by the President; it comprises of the Deputy President, the Minister in the Presidency, Minister of Cooperative Governance

and Traditional Affairs, Minister of Finance, Minister of Public Service and Administration, Premiers of the nine Provinces and the South African Local Government Association.

4.4. Policy Implementation

In order to implement the policies the departments had to create implementation mechanisms and tools. These can be in the form of documentation as well as institutions. The responsible departments have action plans, strategies and institutions that they have created in order to ensure successful implementation.

These have been decided upon in the clusters system. The policies are focusing on sector specific constraints and opportunities. The NIPF outlines thirteen strategic programmes to achieve it goals. These are: Sector Strategies, Industrial Financing, Trade Policy, Skills and Education for Industrialisation, Competition Policy and Regulation, Leveraging Public Expenditure, Industrial Upgrading, Innovation and Technology, Spatial and Industrial Infrastructure, Finance and Services to Small Enterprises, Leveraging Empowerment for Growth and Employment, Regional and African Industrial and Trade Framework and Coordination, Capacity and Organisation.

The Industrial Policy Action Plan (IPAP) was published to give effect to The NIPF. IPAP sets out in detail key actions and timeframes for the implementation of the industrial policy. It outlines a range of sectoral actions, including set of cross-cutting actions of particular importance for industrial policy and measure to improve government's organisation and capacity to implement industrial policy. IPAP is a three year rolling plan to be revised annually.

As an addition to its internal capacity, the Department of Trade and Industry (**the dti**) relies on a group of specialised, regulatory and financial development agencies and institutions in supporting its economic growth, employment and

equity ideals, and in delivering products and services to the economic citizens of the country.

These agencies or Council of Trade and Industry Institutions (COTII), are listed in the table below describing their legislative mandate and nature of operations.

Name of public entity	Legislative Mandate	Nature of operations
Companies and Intellectual Property Commission (CIPC)	Companies Act, 2008 (Act No. 71 of 2008), as amended	enforce intellectual property and company laws, registration of companies, promote voluntary resolution disputes arising between a company and a shareholder or director, without intervening in or adjudicating on the dispute; monitor patterns of compliance; evaluate complaints;
Export Credit Insurance Corporation (ECIC) SOC Limited of South Africa	Export Credit and Foreign Investments Re-Insurance Act,1957 (Act No. 78 of 1957)	facilitates and encourages South African export trade by underwriting export credit loans and investments outside South Africa to enable South African contractors to win capital goods and services in other countries. evaluates export credit and foreign investment risks and provides export credit and foreign investments insurance cover on behalf of the South African Government.
National Consumer Commission (NCC)	Consumer Protection Act, 2008 (Act No. 68 of 2008)	the Commission may review international developments in the field of consumer protection; or consult any person, organisation or institution with regard to any matter relating to consumer protection.
National Consumer Tribunal (NCT)	National Credit Act, 2005 (Act No. 34 of 2005)	The NCT adjudicates, and makes any order provided for in respect of such an application; or allegations of prohibited conduct by determining whether prohibited conduct has occurred and, if so, by imposing a remedy.
Companies Tribunal (CT)	Companies Act, 2008 (Act No. 71 of 2008)	The CT adjudicates in relation to any application that may be made to it in terms of this Act, and makes any order provided for in this Act in respect of such an application.

National Credit Regulator (NCR)	National Credit Act, 2005 (Act No. 34 of 2005)	The NCR is responsible for the promotion and supports the development, of a fair, transparent, competitive, sustainable, responsible, efficient, effective consumer credit market and promotes historically disadvantaged persons in the end-user credit market. It conducts research and proposes policies to the Minister in relation to any matter affecting the consumer credit industry, including but not limited to proposals for legislative, regulatory or policy initiatives that would improve access to credit for persons contemplated above.
National Empowerment Fund (NEF)	National Empowerment Fund Act, 1998 (Act No. 105 of 1998)	promote and facilitate black economic equality and transformation. It provides finance and financial solutions to black business across a range of sectors, and structures accessible retail savings products for black people based on state-owned equity investments.
National Gambling Board (NGB)	National Gambling Act, 2004 (Act No. 7 of 2004)	established to monitor and investigate the issuing of national licences by provincial licensing authorities entering into agreements with those authorities in respect of steps to be taken to correct any deficiencies, making recommendations, monitoring the socio-economic patterns of gambling activity within the Republic.
National Lotteries Board (NLB)	Lotteries Act, 1997 (Act No. 57 of 1997)	The NLB monitors and enforces the implementation of the national lottery and the establishment of private lotteries and promotional competition. It manages the National Lottery Distribution Trust Funds, which distributes proceeds from its share of the lottery sales to worthy causes.

National Metrology Institute of South Africa (NMISA)	Measurement Units and Measurement Standards Act, 2006 (Act No. 18 of 2006)	responsible for realising, maintaining and disseminating the International System of Unit (SI). It maintains and develops primary scientific standards of physical quantities for South Africa and compares those standards with other national standards to ensure global measurement equivalence.
National Regulator for Compulsory Specifications (NRCS)	National Regulator for Compulsory Specifications Act, 2008 (Act No. 5 of 2008)	The NRCS provides for the establishment of this institution. The Act protects consumers and promotes South Africa's competitiveness by ensuring that regulated products manufactured and sold in the marketplace meet minimum safety, health and fair trade requirements.
Small Enterprise Development Agency (seda)	National Small Enterprise Act, 1996 (Act No. 102 of 1996)	Its mission is to develop, support and promote small enterprises to ensure their growth and sustainability.
South African Bureau of Standards (SABS)	Standards Act, 2008 (Act No. 8 of 2008)	develops, promote and maintain South African National Standards; promote quality in connection with commodities, products and services; and render conformity assessment services.
South African National Accreditation System (SANAS)	Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice	The aim of the SANAS is to accredit or monitor, for Good Laboratory Practice (GLP) compliance purposes.

	Act, 2006 (Act No. 19 of 2006)	

Table 6: Entities that report to the Minister of Trade and Industry (the dti,2014)

the dti also provides financial support to qualifying companies in various sectors of the economy. The financial support is provided in the form of incentive schemes offered for various economic activities, including manufacturing, business competitiveness, export development and market access, as well as foreign direct investment.

- 12I Tax Allowance;
- Aquaculture Development and Enhancement Programme (ADEP);
- Automotive Investment Scheme (AIS);
  - Medium and Heavy Commercial Vehicles Automotive Investment Scheme (MHCV-AIS);
  - People-carrier Automotive Investment Scheme (P-AIS);
- Black Business Supplier Development Programme (BBSDP);
- Business Process Services (BPS);
- Capital Projects Feasibility Programme (CPFP);
- Critical Infrastructure Programme (CIP);
- Co-operative Incentive Scheme (CIS);
- Clothing and Textile Competitiveness Improvement Programme (CTCIP) ;
- Employment Creation Fund (ECF) ;
- Export Marketing and Investment Assistance (EMIA);
- Film and Television Production Incentives:
- Foreign Film and Television Production and Post-Production Incentive;
- SA Film & TV Production and Co-production;
- The South African Emerging Black Filmmakers Incentive;
- Incubation Support Programme (ISP);
- Innovation and Technology Funding instruments;
- Isivande Women's Fund ;
- Manufacturing Competitiveness Enhancement Programme (MCEP);
- Manufacturing Investment Programme (MIP);
- Production Incentive (PI) ;
- Sector-Specific Assistance Scheme (SSAS) ;

- Shared Economic Infrastructure Facility (SEIF) ;
- Support Programme for Industrial Innovation (SPII) ;
- Technology and Human Resources for Industry Programme (THRIP);
- Tourism Support Programme (TSP)

The aim of the Department of Science and Technology is to realise the full potential of Science and Technology (S&T) in social and economic development of human resources (HR), research and innovation. The department funds basic research at universities and public entities, including science councils, so that they can train scientists, engineers and technologists and produce publications and patents.

There are a number of strategies developed to implement the Innovation Policy, these include but not limited to, Bio-Economy strategy, National Space strategy, etc.

The DST has established Institutions to Support innovators as described below:

Name of Public Entity	Legislative Mandate	Nature of operations
The Technology Innovation Agency (TIA)	Technology Innovation Agency Act no.26 of 2008	Provides funding is mandated to stimulate and intensify technological innovation to improve economic growth and the quality of life of all South Africans.
National Advisory Council on Innovation (Naci)	National Advisory Council on Innovation Act 55 of, 1997	Advise the Minister of Science and Technology, and the Cabinet, on the role and contribution of innovation (including S&T) in promoting and achieving national objectives.
The South African National Space Agency (Sansa)	South African National Space Agency Act no.36 of 2008	Promote the peaceful use of space, foster international cooperation in space-related activities and create an environment conducive to industrial development in space technology through research, human capital development, outreach programmes and infrastructure development.

National Intellectual Property Management Office	Intellectual Property Rights from Publicly Financed Research and Development Act 51 of 2008	It aims to ensure that recipients of funding from a government funding agency assess, record and report on the benefit to society of Intellectual Property emanating from publicly financed R & D.
National Research Foundation (NRF)	National Research Foundation act no.23 of 1998	manages South Africa's national research facilities. It promotes and supports basic and applied research. The NRF oversees the following national research facilities: South African Astronomical Observatory Hartebeesthoek Radio Astronomy Observatory South African Institute for Aquatic Biodiversity South African Environmental Observation Network National Zoological Gardens iThemba Laboratory for Accelerator-Based Sciences (iThemba Labs).

Council for Scientific and Industrial Research (CSIR)	Founded by Scientific Research Council Act, Act 33 of 1945, and was constituted as a science council by the Scientific Research Council Act (Act 46 of 1988, as amended by Act 71 of 1990).	
Human Sciences Research Council (HSRC)	Human Sciences Research Council Act no. 23 of 1968 which was amended by 17 of 2008.	Conducts large-scale, policy-relevant, social-scientific projects for public-sector users, non-governmental organisations (NGOs) and international development agencies.
ACADEMY OF SCIENCE OF SOUTH AFRICA (ASSAf)	ACADEMY OF SCIENCE OF SOUTH AFRICA Act no. 67 of 2001 which was amended by Science and Technology Laws Amendment Act no.16 of 2011	promote common ground in scientific thinking across all disciplines, including the physical, mathematical and life sciences, as well as the human, social and economic sciences; encourage and promote innovative and independent scientific thinking; promote the optimum development of the intellectual capacity of all people;

		provide effective advice and facilitate appropriate action in relation to the collective needs, opportunities and challenges of all South Africans; link South Africa with scientific communities at the highest levels internationally.

4.5. Monitoring and evaluation

The departments each have their own monitoring and evaluation units. These units monitor the performance of the departments in terms of achieving the goals as set out. The tools used are standard tools across government that has been compiled by the ministry of Planning, monitoring and evaluation. The tool is the Management Performance Assessment Tool (MPAT). The MPAT measures departments against 29 management standards, awarding level one (red), level two (orange), level three (yellow), or level four (green) scores.

The department's report to the clusters and clusters and individual ministries report to the cabinet committees.

4.6. Demographic profile of respondents

This section presents the demographic profile of the respondents The face-to-face interviewees, were given an opportunity to provide information on their position, responsibilities and years at the said department.

The Ms Nonkululeko Shinga was interviewed from the dti, she is Chief Director of Innovation and Technology policy unit from May 2012. Ms Shinga is a member of the National Advisory Council on Innovation and Management committee member of THRIP. She was Director of R&D Planning at the Department of Science and technology for a period of 8 years. Ms Shinga was involved in the development of the TYIP.

Mr. Mmboneni Muofhe is the Deputy Director-General (DDG) for Technology Innovation at the Department of Science and Technology in South Africa. He was previously DDG for International Cooperation and Resources and has held several positions at the Department including being Chief Director: International Resources, Director: Strategic Partnerships and Director: Global Projects. During this period he oversaw South Africa's growing participation in EU Research Funding programmes,

lead the mobilization of Official Development Assistance funds to support South Africa science system and the Department's partnership with Multinational Companies. Mr Muofhe's earlier working and post-graduate years were mainly in agricultural biotechnology.

He was a United Nations Education and Scientific and Cultural Organisation (UNESCO) Biotechnology Fellow at the Agricultural Research Council in 1997 before joining the Foundation for Research Development (now National Research Foundation) as Coordinator and then Manager for Technology and Human Resource for Industry Programme (THRIP) for five years.

4.6.1. Policy content

Both interviewees agree that the setting, prioritising and articulation of the objectives are very clear and according to the processes set out by government. They agree that the policy objectives are aligned to the overall goals and objectives of government. They agree that the policies are coherent and coordinated in terms of intentions, context and outcomes.

They agree that political commitment has been shown with policies that were developed in a widely consultative manner with all stakeholders, mainly organised through the clusters. Ministers are responsible and accountable to coordinate the clusters. The Presidency has established structures to monitor the performance.

They agree that there is coherence both internally and externally albeit to a limited extent. At the level of policy making the understanding is clear, directors-general have also signed Memorandum of Agreements (MOA) to identify areas of cooperation. Challenges with these MOAs have been identified as having a very narrow focus on project to project and therefore reduced to project management.

4.6.2. Governance

On issues of governance the interviewees confirm the existence of the governance structures aimed at achieving coherence; however they do identify shortfalls in the system. At a very high level the structures e.g. clusters are working. There are quarterly meetings between the technical teams identified at the clusters and bi-annual meetings between ministers and directors-general. There is not always agreement on implementation at these meetings, this results in the individual departments ending up going back and doing their own thing in silos.

The reporting mechanisms are not set up to focus on reporting back on coherence and coordination rather on performance.

4.6.3. Implementation

The interviewees reported that there are tools for implementation although they expressed concern that implementation is a challenge due to insufficient capacity, not having the sufficient technical expertise. Duplication of efforts between the departments and within the departments has been identified, the duplication happens because there is no coordinated reporting on coordination, each department reports only on what it is doing. One of the interviewees mentioned that “Silo mentality is still rife and the departments become territorial and this creates fighting to secure projects”.

Lack of funding for the efforts has also been identified as a challenge. In some cases budgets get cut and funds redirected to issues of higher priority.

4.7. Conclusion

The research shared valuable insight into the concept of coherence in the South African context. The country's policies, processes, management of the systems have been studied.

What has been highlighted is that coherence and coordination in efforts to achieve set targets is top priority but sometimes take a backseat to issues that become higher priority.

5. ANALYSIS OF THE RESEARCH FINDINGS

This chapter discusses the results, based on the three key focus areas namely strategic management of innovation; critical success factors of innovation; and barriers of innovation. The discussion is based on the areas covered by the document analysis as well as interviews conducted during the research process.

5.1. EXTENT OF COHERENCE

Governance concerns the systems and practices used to make priorities and set agendas, implement policies and derive knowledge about their impacts and effectiveness. It therefore concerns the ways in which the policy cycle is managed. In Ramirez et al (2004), the policy cycle is defined in three broad stages of:

- Agenda setting, policy formulation and prioritization
- Implementation
- Evaluation and learning

In terms of policy statements clearly identifying policy goals that are aligned to government objectives, the government has clearly defined the agenda and shown commitment in a number policy documents, strategies and statements. These include the Constitution of the country and regulations and laws to ensure achievement of coherence and coordination e.g. Integrated Government Relations act. South Africa has taken the step very few governments have taken, according to Galeazzi et al (2013), of publishing laws and statutes aimed at achieving policy coherence.

The Industrial and Innovation policies take their overall goals from the government stated goals of poverty eradication and job creation. The

policies outline the strategies to adopt in order to achieve these objectives. The approach taken by both policies is one of sectoral approach, targeting specific sectors to implement programmes. The sectors chosen are aligned in both policies.

The policy coherence identified between the two policies is **Horizontal coherence** as defined by Ramirez et al (2005) as ensuring that individual, or sectoral policies, build on each other and/or minimise inconsistencies in the case of conflicting policy goals.

The concept of coherent policy to drive and achieve goals set out is clearly stated and actions to be taken to ensure this, such as coordination across a range of government departments are outlined. The Presidency in as its responsibility has set up structures to ensure coherence albeit this seems to be at a very high level. The policy documents, show alignment and coherence as they receive their goals from the stated policy directions of the government of the day, of poverty reduction and economic growth resulting in job creation. To this end theres is coherence, this does not seem to filter down to the implementation.

The governance capabilities of national policy making systems will have an important impact on the degree of policy coherence of the system. Coherence is understood as the degree of consistency and lack of conflict in the policy system; it describes the state of a system. (Ramirez et al, 2005)

Ramirez et al (2005), Metcalfe 1994 in Peters, 1998, in Persson, 2004 and OECD (2009) consider coordination that is, the explicit activities of players to align aims, harmonise policy instruments and actions, as one of the most important elements for bringing about coherence.. In the South African context the coordination efforts that are needed to ensure that all affected interests are involved at appropriate stages of policy

development and to ensure that collaborative working relations within and among all sectors of the administration are not all there. The focus is more on inter and intra government coordination through consultations in the clusters, stakeholders external to government have limited involvement in the policy development stages.

In this study the governance structures have been found to have been set up to forster an intergrated approach in a similar manner as described in literature. The challenges found are that of accountability or ownership of ensuring coherent policies as the clusters have coordinating departments but they are not measured on coherence but achievement of the goals.

In Ramirez et al (2005) and Peters (1998) in Persson,(2004)the assumption is that the higher a government seats on the coordination scale, depicted in **Figure 5** and **Table 3** the more horizontal the policy will be. Moving up this scale seems more likely in the case of both innovation policy and Industrial policy, because they 'pollute' everybody's agenda and involves numerous ministries. South Africa seems to seat fairly high on the scale from the results of the review of the documentation, for example a government strategy exists and the clusters are used as the vehicle to search for agreement among ministries. This however does not necessarily filter through to implementation levels.

At implementation, the country seats around level 3 as in the plans it is stipulated what other department's responsibilities and actions are towards said policies but no real measures are in place to control and ensure those are met. The said departments go back and set their own departmental plans, which do not necessarily align to the cluster's outcome. At ministerial level performance agreements signed with the Presidency and monitored by Department of Performance monitoring and evaluation are in line with the cluster outcome to be achieved but the managers responsible for implementation of departmental programmes

are measured on individual performance. This creates focus on own goals, territorialism and duplication of efforts and programmes.
There are no incentives for the managers to ensure coordination.

5.2. Political Commitments

This is the stage where objectives and goals are set, prioritised and articulated explicitly to show political leadership and commitment. The policy statements should be explicit about coherence or explicitly show coherence with each other. Galeazzi,Knoll, Kratke,Lein, Rosengren and Sherriff (2013) say that “the most usual form of this type of mechanism is an official policy statement or strategy paper. In the case of South Africa has made policy statements and strategy papers, for example the Medium term Strategy Framework (MTSF) and Plan of Action (POA).

It is stated in the MTSF (POA, 2014) that to realise the strategic agenda of government and the enhanced integrity of state by:

- Ensuring coherence in planning, co-ordination, policy development and implementation
- Performance monitoring and evaluation to promote a culture of accountability across the spheres of government
- Communicating progress against the priorities of government
- Mobilising the nation towards a common vision

The Strategic Objective is “to enhance policy development, co-ordination and integrated strategic planning across all spheres of government.

The focus of implementation of the NIPF and IP emphasizes the need for coordination between and within government departments and spheres.

The NIPF represents its location within certain “ongoing and complementary policy and programmatic initiatives within government”.

It appears from the analysis that each policy places substantial emphasis on governance, particularly coordination

Maile, (2008) argues that De Coning and Cloete (2006) “say policy coherence focuses on the relationship and continuity between policies. Coherence is broad in scope and includes the following:

- Inter-governmental relations.
- The relationship between a political system and a policy-making system.
- The resonance between organisations’ values and the policy making processes.
- Appropriate links between organisational structures.
- Processes and methods of policy-making.
- Consistency of decision-making with policy guidelines.
- Political leadership and commitment.
- Strategic-policy framework’s consistency with government’s goals and priorities.
- Horizontal consistency among policies.
- Reconciliation between policy priorities and budgeting imperatives.
- The provision of room for adjustment.

In the South African context issues such as “reconciliation between policy priorities and budgeting imperatives” still pose a challenge as the budgeting

process does not allow consolidation of budgets at, say cluster level to be able to redirect funds the programmes as a cluster.

The Presidency has re-constitutes Ministerial clusters, as part of the process of improving coordination within government and enhancing the delivery of services.

5.3. Effective Policy Coordination (Governance)

The DST and the dti are members of the Economic sectors, employment and Infrastructure development cluster. The structures created to drive coherence, such as clusters are not suitable empowered to achieve coherence or coordination.

There are implementation structures and programmes that have been set up to support the policies. Some re-assignment of these institutions and incentive programmes has happened over the years. Though some duplication and disjuncture still exist some strides in the right direction hav been taken. There seems to a lot more streamlining of the incentives and institutions.

There are still gaps that exist between the research from public research institutions and industry. The “Innovation Chasm” still exist, in that innovation do not easily move from “idea” to being funded for piloting and commercialisation. The institutions such as TIA are not delivering due to lack of capacity. Funding, even at the dti is difficult to access due to this lack of capacity and skills in the government institutions. This affects the delivery of services and this is because no real coordination exist between these institutions, even within the departments.

5.4. Monitoring and evaluation

Effective monitoring and evaluating procedures and mechanisms must be in place so that policies can be effectively implemented and assessed as

to how they are performing. This information is important to policy makers and can help them to refine or re-prioritise their policy instruments and objectives as needed to maintain their coherence over time. Furthermore, the adoption of a comprehensive set of indicators for assessment of policy coherence would be in place (OECD, 2009).

In OECD (2009) the “monitoring, analysis and reporting involves collecting and analysing evidence about the impacts of policies and reporting to parliament and the public. This is essential for evidence-based policymaking, learning and accountability. This stage consists of the systems that a country has in place to monitor the impacts of policies, to analyse the evidence collected through monitoring, and to report on the impacts of policies”. In South Africa the monitoring does not really look at the impacts of the policies, rather the achievement the goals as per the POA or strategic programmes.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter summarises the findings of the study and the conclusions that can be reached based on the literature, document review and interviews results.

6.2. Major Findings on Coherence

The results presented in this paper show that we still have a long way to go before we achieve an acceptable level of policy coherence. It should also be acknowledged that the method used in this paper may be a minimum criterion for policy coherence and the actual situation could be worse. A more detailed analysis is needed on the tools used to achieve coherence. The methodology used did not take an indepth analysis of the actual mechanisms used.

The results do however highlight that there is coherence in the policies at various levels, specifically at the highest ministerial levels and that challenges with regard to the co-ordination and alignment of the governance and implementation exist within the system. The government has strategies and structures in place that sets out goals for coordination and has been used to establish the monitoring and evaluation systems.

However the government lacks measures to ensure that the departments meet their goals of coordination and the lack of visible management support in driving coordination impacts negatively on coherence. The coordination efforts at implementation level lack senior executive support and senior executives who will champion coordination between departments.

The reviews done on the systems note that there is lack of buy-in from the implementation levels, managers are focusing on achievement of departmental and individual goal and coordination is not priority.

The monitoring , evaluation and reporting that happens is not necessarily on coherence or coordination but rather on achievement of goals.
The document review and the interviews results revealed that the departments had strategies that were aligned with the government's goals and objective. However, because each department is measured individually for the programmes under their ambit it is difficult coordinate the implementation efforts.

The interviewees attributed the shortcomings of the coordination efforts on the lack of top management involvement in championing and driving the process. They also highlighted that implementation practitioners within the departments and among the departments still felt very territorial about their programmes.

6.3. Recommendations

Effective monitoring and evaluating procedures and mechanisms must be in place so that policies can be effectively implemented and assessed as to how they are performing. This should also monitor whether coordination is happening. This information, policy makers can use to help them to refine or re-prioritise policy instruments and objectives as needed to maintain their coherence over time.

The performance agreements signed from the highest ministerial level to the lowest level of service delivery should include active participation and ensuring of coherence and coordination efforts.

The structures that have been created to drive coherence should be reviewed and streamlined for this. Clearer mandates should be given to these structures. The oversight role should be much more clearly defined and strengthened in cabinet and the presidency. Accountability for coherence and coordination should be assigned at the right levels.

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APPENDIX A

COHERENCE IN INNOVATION AND INDUSTRIAL POLICY IN SOUTH AFRICA

INTERVIEW PROTOCOL AND QUESTIONS TO SENIOR POLICY OFFICIALS IN THE DEPARTMENT OF TRADE AND INDUSTRY AND DEPARTMENT OF SCIENCE AND TECHNOLOGY IN SOUTH AFRICA

The purpose of these questions is to investigate the existence of coherence between the Innovation and Industrial policies in South Africa.

Policy coherence has been defined as “the systematic promotion of measures across government departments and agencies, to have consistent approaches towards the achievement of agreed objectives. From a development standpoint, policy coherence also implies that developed countries, in pursuing domestic policy objectives in areas such as trade, agriculture, the environment or migration, should, at a minimum, avoid consequences which could adversely affect the development prospects of poor countries (Santos-Paulino, 2010).

The Innovation and Industrial policies are among the policies that have been identified as needing to be coherent in order to achieve the government’s long-term goals and objectives of competitiveness, development and economic growth.

Little is known about how South Africa goes about the process of achieving coherence. In order to achieve a level of coherence, the process should

start at design of policies right through the implementation stage. Policy scholars generally agree that greater coherence of policies is desirable, but the concept is under-theorized and has received little empirical examination. This research examines the coherence of the Industrial policy and Innovation policy domains and considers institutional factors that affect variation among them.

The interview can be face-to-face or a telephonic interview can be held. Audio recording may be requested in the case of a face-to-face interview in order to assist with more efficient collection of data and ensure accuracy of the responses for transcription purposes. The interview is directed to Senior Officials e.g. Deputy Director General or Chief Director The interview has been structured into two separate parts.

Profile Information

This section provides general profile of the respondents from the dti and DST.

1. Date:
Please enter a date:

2. Respondent Name:

This information is used only when clarifying or following up on results.

3. Title / Designation:

4. Department Name:

Extent of policy coherence

The aim of this section is to investigate and understand processes that the South African government follows in order to achieve coherence. The respondents' views will be used to understand the process that they follow in order to achieve coherence in design and implementation of Innovation and Industrial policy.

1. Please take me through how government (parliament) ensures policy coherence among policies in different domains and with overall objectives and goals? What processes and structures have been set up?
2. One of the key indicators of coherence is a coordinated system of implementation mechanisms for policy. How is coordination (within the department and with other departments) achieved in the implementation of the Industrial/Innovation policy? How are these coordination mechanisms able to formulate national positions on policy options and to resolve conflicts of interests?
3. What procedures are in place to monitor the effectiveness of institutional structures? To what extent do these monitoring mechanisms ensure transparency and create incentives for policy coherence? Do you think there is sufficient capacity and adequate resource to monitor policy coherence?

Factors promoting coherence and coordinated implementation

4. In your opinion, what are the factors that promote coherence in policy and coordination within your department and with other departments? How would you improve coherence or coordination between Innovation and Industrial policy?
5. How does the department gather and feedback evidence on the impact of sectoral policies on the different sectors and policy coherence among policies?

Factors hindering coherence and coordinated policy implementation

6. In your opinion, what are the main challenges that hinder/inhibit coherence and coordination within your department and with other departments? What are the measures that you have put in place to overcome these challenges?

Impact of coherence/incoherence on government goals

7. How has the department been performing?
8. How does the interrelationship of policy components affect the achievement of government goals?