

INTEGRATION OF INNOVATION IN THE MUNICIPAL ENVIRONMENT:
VVISDP PROJECT 4

**RESEARCH REPORT: INNOVATION BARRIERS, DRIVERS
AND ENABLERS**

Date submitted

14 March 2024

Submitted by

CSIR Smart Places

Submitted to

The Department of Science, Technology and Innovation

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Table of Contents

- 1. Introduction**
- 2. Benefits of innovation in public service**
- 3. Studies into innovation barriers, drivers and enablers**
- 4. Conclusion - Factors that have led to successful public sector innovation**

1. Introduction

South Africa's development agenda post 1994 has sought to achieve outcomes which include provision of household infrastructure and services, creation of liveable, integrated cities, towns and rural areas, local economic development, community empowerment and redistribution¹. In 2011, a diagnostic review of the country pointed out several challenges which include low levels of service delivery, in-migration into urban spaces, slow growing economy, and high unemployment amongst others. These challenges can undermine confidence in the state, contribute to a breakdown of trust, and, in recent years this has often led to service delivery protests².

In the White Paper on Science, Technology and Innovation (STI)³, the main factors constraining the performance of the National System of Innovation (NSI) in South Africa are highlighted and it is suggested that if these are addressed, it will be possible to increase the impact of STI in South Africa:

- Inadequate and non-collaborative means of STI agenda setting for the country.
- Insufficient policy coherence and coordination
- Weak partnerships between NSI actors (particularly the inadequate involvement of business and civil society)
- Inadequate monitoring and evaluation (M&E)
- Inadequate high-level science, engineering, and technology (SET) and technical skills for the economy
- An undersized research system
- A poor environment for innovation
- Significant levels of underfunding³

This report explores the barriers, drivers and enablers that municipalities and other role players face in the quest to implement innovative technologies and initiatives to improve service delivery.

2. Benefits of innovation in public service

In the last 20 years, policy makers had a growing realisation that the public sector should learn how to innovate if it were to respond adequately to a rapidly changing environment and citizen's and business's expectations⁴.

Government is now faced with pressure to find new ways to respond to the service delivery challenges. According to the Organisation for Economic Co-operation and Development (OECD), innovation in government is about finding new ways to impact the lives of citizens, and new approaches of activating them as partners to shape the future together. It involves

overcoming old structures and modes of thinking and embracing new technologies and ideas⁵. Innovation in a municipality can help to offer better service delivery, reduce costs, build relationships with communities, and establish new partnerships and relationships⁶.

The South African Local Government Association (SALGA) acknowledges that the challenges facing municipalities today are enormous and there are no easy answers. What is needed is a new mind-set to enable the municipalities to serve more people with less money, less time and better quality⁶.

According to SALGA, innovation in a municipality can help to:

- offer better service delivery
- reduce costs
- build relationships with communities
- establish new partnerships and relationships

Municipalities that fail to innovate run the following risks:

- losing the support of their constituents
- suffering from falling efficiency and quality
- losing key staff
- experiencing steadily reducing levels of excellence in service delivery⁶

3. Studies on innovation barriers, drivers and enablers

Barriers to innovation refer to factors that constrain or prevent various aspects of innovation such as innovative thinking or ideas, or make the implementation of innovative approaches, processes, or technologies difficult or impossible.

Drivers can be described as those factors that trigger innovation, while enablers aid the process once it has started. Enablers support innovation and contribute to the creation of a conducive environment for innovative thinking and implementing innovative approaches, processes, or technologies. Drivers are closely related to enablers.

The OECD notes that there is a complex interaction between drivers and barriers. The role a particular factor plays in the innovation process can change as a function of context, and what in some circumstances could be a driver of innovation might in others act as a barrier. It is difficult to isolate particular factors as driving or hindering any specific systemic innovation, as drivers and barriers act within a dynamic and closely interconnected context. Drivers and barriers are context specific, and each system should develop its own “recipe” to guarantee adequate responses to the needs and barriers it faces.

In this section, information is presented that was gleaned from various local and international studies into innovation barriers, drivers and enablers. The section is based on a desk-top study, and it will be enhanced with practical examples and experiences once more municipalities participating in the VVISDP become actively involved.

3.1 Academy of Science of South Africa (ASSAf) - Policy Research Study to Determine the Adoption and Integration of STI into Government Policies and Planning Frameworks

The constraints highlighted by the White Paper on STI regarding the performance of the national System of Innovation (NSI) in South Africa are aligned to the findings from the ASSAf policy study⁷. The study found that policy coherence is a challenge in pluralistic systems such as the one in South Africa as such systems usually lack champions to promote the well-being of STI in government.

The study identified incoherence and policy failures related to interdependence and inter-relations between different policies (i.e. policies affect or are affected by other policies to achieve objectives), lack of inter-departmental collaboration and IT silos within departments. There is complexity in STI policy with policy mix (diversity of innovation institutions from different domains) and multi-level governance (with levels of policies designed and administered).

Constraints identified by departments in incorporating STI in policies include budget/cost, technical skills and lack of capacity/resources, low implementation in spheres of government, and lack of inter-departmental collaboration, budget and costing, technical skills and lack of capacity/resources. The sentiment was that STI can be accommodated but there is a need for clarification to departments on what is expected from incorporation of STI.⁷

3.2 Water Research Commission (WRC) – Understanding the Policy and Regulatory Barriers for Water and Sanitation RDI Implementation in South Africa

The study focusses specifically on water, sanitation, and hygiene (WASH) policies. However, many of the barriers and enablers identified are universal and may be applicable to innovation in general. It highlights that National Acts tend to encourage bureaucracy, which is centred around conformity and reduces risks, whereas innovation is the opposite of conformity.⁸

Policy barriers and enablers

The report acknowledges that South Africa has considerable sophistication in innovation policy, however, these do not always translate to an effective innovation system. It highlights various ways in which policy can be a barrier / enabler⁸:

- *National policy and regulation* are sometimes dated or were developed for specific/already existing innovations.
- *Plethora of policy and legislation* can also be suffocating or overregulating local government, making it difficult to execute their mandate and stifle them from infusing innovation into municipal activities. The amount and detail of legislation that municipalities must comply with have little room for innovation, experimentation, local responsiveness, and discretion.
- *Policy fragmentation* geographically and vertically, with local government regulations sometimes blocking technologies encouraged by national.
- *Lack of knowledge* on how policy can enable deployment.
- *The one-size fits all approach of local government legislation* means that all the rules and structures apply, regardless of the available resources with a municipality.
- *Gaps in government procurement policy and processes* for enabling of deployment, localisation and socialisation of WASH innovations and disruptive innovations.
- *Policy ignores piloting of innovations* (prototyping) especially on deployment, localisation, and socialisation of innovations.
- *Inability of policy to drive demand for innovations*, specifically disruptive WASH innovations.

Non-policy barriers and enablers

These are WASH innovation deployment, localisation and socialisation challenges that cannot be directly addressed by government policies alone.

- *External factors* (such as pandemics or natural disasters) which can lead to reactive responses which often lead to adoption of less innovation (mostly off-the-shelf and established solutions). However, it can also result in rapid development, deployment, localisation, and socialisation of innovations if the value chain and enabling environment allows this.

- *Market related factors*
 - Knowledge and access to market are not always available to innovators. This is related to weak sharing of information and knowledge and weak best practice experiences which may cause innovators to operate in isolation.
 - Different skills sets are required for each stage of the WASH innovation value chain.
 - The market may not be ready and may be unwilling or may be risk averse to adopting new innovations.
 - The manufacturing industry may not be equipped to produce, at scale, disruptive innovation, or traditional innovation⁸.
- *Behavioural factors* which relate to accountability, stakeholder management, bureaucracy, and resistance to change.
- *Human resources* and technical performance and capability which may enable or hinder innovation.
- *Institutional factors* such as political leadership which can interfere or lead development and innovation.
- *Financial context* of an organisation such as procurement and financial processes which can be laborious and impact the speed of deployment, and payment of innovators⁹.
- Poor coordination and synergy between institutions.
- Limited funding for innovation, especially for scale up and deployment stage.
- Risk aversion which can affect testing and piloting new innovations.
- Following traditional management approaches which consist of large-scale infrastructure with long life spans. The approaches to infrastructure tend to be biased towards adoption of incremental upgrades than innovative and ground-breaking innovations.

3.3 WRC – Supporting the enabling environment for public sector uptake of emerging water and sanitation innovation (technology and process solutions)

The WRC report on supporting the enabling environment for public sector uptake of emerging water and sanitation innovation (technology and process solutions) raises the following challenges with the development and uptake of innovation⁹:

- Constraints regarding financing and technical validation.
- Insufficient/inefficient knowledge sharing of practices for innovators and other stakeholders.
- Access to funding for SMMEs and start-ups and includes limitations in accessing loans and challenges navigating funding options. These may limit their ability to compete with large companies and may prevent their ability to bring and test new technologies.
- The reliance of municipalities on grants than own funding for new projects, which limits innovations and technological investigations, procurement, and uptake.
- Value proposition vs value for money – there will be value when the municipality identifies the innovation than when the innovation is externally identified.

It identifies policies and barriers The challenges with procurement, which are categorised according to financial aspects, legal aspects, commercial aspects, behavioural aspects, institutional aspects, technical aspects, political interference, and the procurement framework.

According to financial aspects, legal aspects, behavioural aspects, institutional aspects, technical aspects, and other challenges with the procurement framework. The report argues that legislation is largely enabling and allows for innovation uptake, however, there are limitations with implementation of the current procurement framework which hinders the uptake of innovative technology solutions.

- **Financial aspects:**
 - Include limited funding sources for the end user, inability of the innovator to access funding to complete the development of the innovation and lack of tried and tested implementation and financial models that allow for cost effective and revenue generation opportunities for the end user.
- **Legal aspects**
 - Policy drivers regulating water use and waste-water treatment at municipal level, national and international.

- Corruption in public procurement which goes against the objects of the Municipal Finance Management Act (MFMA) and its regulations to secure sound and sustainable financial management¹⁰.
 - National Treasury Regulation 16A.6.4 ¹¹ allows an organ of state to deviate in circumstances when it is impractical to invite competitive bids. Paragraph 5.10.5.1 of the Supply Chain Management (SCM) Guide for the Accounting Officers ¹² indicates that a single-source selection should be examined in the context of the overall interests of the client and the project.
 - Paragraph 5.10.5.2 of the SCM Guide for the Accounting Officers ¹², states that a single-source selection may be appropriate if it presents a clear advantage over competition for tasks that represent a natural continuation of previous work carried out by the firm, where rapid selection is essential, for by very small assignments, or when only one firm is qualified or has experience of exceptional worth for the assignment. In practice such deviations and single-source justifications are almost never used, even when an innovative solution to an intractable problem is available.
- **Commercial aspects**
 - Challenges faced by innovators include establishing sustainable businesses that can provide the public sector with sustainable solutions – i.e. business aspects that enable deployment of innovations to the identified market.
 - Lack of innovation in municipalities is related to technologies that are adopted by municipalities that are not for profit and technologies that do not match the resource base in the municipality. This puts a spotlight on the technical specifications input for tendering and procurement, the municipality's ability to sustain and manage infrastructure.
- **Behavioural aspects**
 - Resistance to change whose common causes includes lack of understanding or knowledge about new technologies, concerns about job security, change to established processes and procurement, resistance to new ideas, approaches, lack of incentives for adopting new technologies.
 - Lack of transparency and accountability in public procurement processes which may discourage private entities from participating in public procurement and innovation (e.g. the SCM process does not provide feedback to assist suppliers to improve their services or goods).

- Fraud and corruption related to financial mismanagement and ethical conduct are significant barriers. It may create an environment where certain companies are awarded contracts over more qualified one. This compromises the quality of products and may discourage participation of competent companies.
- **Institutional aspects**
 - Lack of technical capacity to evaluate and implement innovative technologies and solutions due to absence of sufficient knowledge and expertise. There is possibly the challenge of capability and willingness to execute tasks, resolve problems and to champion innovations.
- **Technical aspects**
 - Inability to operate, maintain and procure equipment related to the poor infrastructure maintenance record in the country. Institutions are reactive in addressing the challenges, leaving little room to consider innovative solutions. The above inability is linked to lack of skilled & experienced personnel at all levels within the organisation and not only technical staff, lack of accountability and interest/motivation at each level within the organisation, bureaucratic interference linked to the procurement of new equipment and materials within the organisation's SCM protocols and lack of budget to procure new equipment and materials.
 - Inadequate scope and budget for existing contracts. The nature of engineering projects is such that they go through unforeseen circumstances, scope change, which may require additional funding and extension of the contract. Responsiveness to these can be hindered by the MFMA requirements for authorising additional funding¹⁰.
- **Political interference**
 - Undue political influence has been recorded widely in South Africa. It is compounded by factors that include a combination of factors, including blurred lines of responsibility, involvement of party politics in the appointment of municipal officials.
- **Other challenges with the procurement framework**
 - Non-application of functionality criteria which leads to service providers being appointed based on the lowest quotation but are unable to provide the service.

- Delays in appointment which affects the validity period of bids and service providers have to fix pieces to remain valid and to be considered.
- Complex and lengthy procurement processes which may discourage private sector participation.
- Bureaucratic system, processes or procedures which may discourage companies from bidding for government tenders. These include complex procedures for bidding, lengthy and time-consuming processes for obtaining licences.
- Cancellation of tenders, sometimes after responses were received, without clear reasons for the cancellation.
- MFMA 3-year period – there is unwillingness to extend contracts beyond 3 years due to frustrating SCM processes. This leads to some projects restarting from scratch, leading to unauthorised, irregular or fruitless and wasteful expenditure.
- The bid evaluation follows a combination of 80-20 or 90-10 rule for price and soft issues respectively. While there are no official prequalification criteria in the South African procurement process, the 10% made up of soft issues such as bidder's BBBE compliance have in some case been a cause of unethical behaviour which affects the award of contracts (e.g. the bid adjudication committees often decide on the lowest price. The lowest price does not always translate to good delivery).

One of the findings is that Water Service Authorities have their own interpretation of the current procurement framework, which hinders the capacity and willingness of public sector institutions to procure emerging innovations. It identifies some issues associated with emerging water sector innovations, which include:

- Interpretation of legislative and regulatory environment, including Public Private Partnerships.
- Challenges with establishing longer term Service Level Agreements (SLAs) of three years' duration or longer.
- Possible requirements to re-tender (go back to market) on solutions that need to be upscaled after they have been tested or piloted by public institutions.
- Lack of clarity in terms of how municipal donation processes apply in the context of certain public sector business services arrangements.⁹

3.4 OECD - Organization for Economic Co-operation and Development (OECD) - Enhancing Innovation Capacity in City Government

The purpose of this OECD report¹³ is to improve the understanding of the different methods and forms in which local public sector innovation is taking shape within city

administrations. It is informed by a survey of 89 cities worldwide from around the world and of all sizes with populations of under 50,000 to over 9 million.

Amongst others, the report shows that establishing a culture of innovation whereby municipal staff are encouraged to experiment, take risks and learn from failure is key enabler and driver to innovation; and so are external partnerships that can supplement or help develop internal capacity, for example, to assist in piloting and evaluating a new programme. Finally, committed and supportive leadership can signal the priority level for the city's innovation efforts throughout the administration and encourage engagement at all levels.¹³

The report highlights a number of factors that limit cities' innovation capacity. These factors are summarised next.

- **Organisational and cultural barriers**

Cities face several structural and institutional obstacles to enhance their innovation capacity. Some of them are inherent to the public sector and others come from the external environment¹³.

Organisational and cultural barriers

Inherent barriers to innovation in the local public sector include:

- political leaders who do not publicly promote innovation
- lack of workplace incentives for employees to think creatively and take risks
- fiscal austerity and limited budgets for experimental programmes and policies
- fragmented approaches to complex challenges due to overly specialised workplace silos
- red tape, inertia and a risk-averse culture in the public sector
- inability to synthesise and process data holistically across administrative departments
- limited institutional resources for citizens' engagement throughout the policy cycle
- a culture that prioritises the expertise of professionals to the exclusion of other sources of insight, including research and residents themselves
- challenges with procuring innovative solutions.
- fear of experimentation in the local public sector due to political and social scrutiny, and failure.
- lack of mechanisms and structures for facilitating learning and good practice exchange across the local public administration.

External barriers to innovation in the local public sector include:

- Lack of trust in the public sector and its leadership and apprehension to use public money to experiment.
- Underfunding of core capacities within local government, including innovation capacities like data analysis, citizen engagement and project management.

- Shortages in knowledge and skills in the wider workforce market. Information asymmetries between private sector suppliers of new technology and municipalities.
- Public resistance to change, in particular to the ways and types of public services that are delivered.
- Lack of technological solutions for problems at hand.
- National and regional government restrictions and mandates.¹³

Other factors that tend to constrain cities' innovation capacity are:

- *Fragmentation and policy silos*: Municipal public administrations are primarily designed with the goal of delivering public services (e.g. water, housing, electricity, transport). Given the complexity of orchestrating these complex urban systems, municipal bureaucracies tend to delegate tasks through specialised silos of agencies managing a given policy sector. This technical specialisation can result in a lack of communication between employees in distinct policy fields and a reluctance to innovate because of the unforeseen repercussions.
- *Politics*: Mayors and other political leaders might be reluctant to take risks that could negatively reflect on their public image, instead preferring to stick with the status quo.
- *Rules and procedures*: Rules and procedures in the local public sector and their interpretation may restrict innovation capacity. A poor understanding of regulations by local public officials may also weaken innovation capacity. Failing to comply with the rules, policies and frameworks may be risky, and can outweigh the rewards from trying to innovate.
- *Resource gaps*: Inadequate financial mechanisms, support and the resulting shortages of the relevant skills and competences may weaken cities' innovation capacity. The public sector does not have at its disposal the same economic incentives to innovate that exist in the private sector, for instance, patents and workplace bonuses, and the direct translation to profits.
- *Administrative/bureaucratic barriers*: Some of the organisational norms that can deter innovation in public sector include red tape, human resource management practices that do not incentivise innovation, risk aversion, a silo approach to policy development, hierarchical structures, and an inadequately trained and motivated workforce. This lack of positive incentives can be compounded by negative repercussions and barriers, in the form of rigid legal and bureaucratic.
- **Limited data management capacity**

This refers to the lack of compatible data across policy areas and the limited capacity to use data to improve municipal policy making and implementation. Collecting, cleaning, integrating, and analysing big data for innovation and policy making could be particularly demanding even for large, relatively rich cities. That is probably why some cities partner with external specialised organisations in data management.

- **Limited access to new technological developments**

As part of efforts to innovate, cities are increasingly looking to emerging technologies and the Internet of Things (IoT) for ways to streamline and dramatically improve services to citizens. Yet these efforts are not without challenges, e.g. information asymmetries between private sector actors and public officials that may make strong partnerships challenging, civil liberties concerns given the potential for surveillance, and cyber security risks.

- **Limited participation and support from citizens**

Some of the obstacles that may prevent citizen engagement for innovation in the local public service are:

- *Institutional barriers:* Municipalities that lack robust institutional channels for collaborative engagement with constituents throughout the policy-making cycle will inevitably fail to establish meaningful constituent engagement. Moreover, even if there are institutional venues and channels for co-production of public policies, without adequate communication infrastructure in place, municipalities risk engaging with only a limited number of their constituents.
- *Cultural barriers:* Related to the perceptions between civil servants, politicians, and residents. Those in public office may find it challenging to find constructive and fruitful ways to collaborate with residents for several reasons, including residents' responses which may be unpredictable and the perception that residents are purely recipients of public service rather than partners in development
- *Lack of incentives:* Municipalities may be reluctant to invest financial and human resources in collaborative projects without clear indications of the returns they will receive for their investment in the form of outputs and outcomes.
- *Constituent barriers:* A variety of social factors might inhibit constituents themselves from engaging with their municipal government to innovate.

4. Conclusion - factors that have led to successful public sector innovation

In essence, innovation is a new idea or an improvement of an existing idea. It does not exist in vacuum but serves to bring change to socio-economic conditions. The change can be achieved in several ways, including improving effectiveness, efficiencies, and cost reduction in delivering a service/process of delivery.

The OECD has identified three main drivers of public sector innovation¹³:

- Political ambition (election mandates, pressure by politicians, leadership changes)
- Public demand (citizens demand better and more public services at lower costs)
- Tightening resources (budget reductions or inadequate funding sources).

Other drivers include social and cultural changes, which are normally linked to different visions of socio-economic development. In addition to these drivers, increasingly, the impacts of global megatrends will be felt in cities, and they will have to be innovative to address them.

Uptake of innovation requires intentionality marked by encouraging leadership, institutional capacity and competences, dedicated resources, and a supportive environment that includes a receptive organisational culture. According to the experience of the Australian public sector, innovation needs to be fostered, recognised and rewarded throughout the organisation to be sustained and embraced. Some pre-conditions for public sector innovation that appear consistently in the literature and government reports are outlined below¹³.

- **Leadership and organisational culture.** Politicians and managers can send strong messages about the importance of innovation and the relevance of creating a culture that values, rewards and recognises innovation. It is also important that people at all levels of the organisational structure see the role they play in being an innovative administration. It is essential to establish a culture that learns from experience, particularly from mistakes, to reinforce an innovation culture. This is supported by research which highlights building capacity and looking for internal and external champions as part of the actions that cities can take to enhance their innovation capability¹⁴.
- **Adaptive and reactive structures.** It is important for cities can read, understand, respond, and adapt to constant changes in their environment. Part of this effort requires strategic allocation of resources, developing the capacity to collect, analyse, and use qualitative and quantitative data and information as evidence for decision making.
- **Active and engaged networks.** To obtain more effective results from innovation initiatives, it is often necessary to look beyond the portfolio of an organisation to see if joint initiatives with others can lead to better results. Networks to diffuse innovation are essential ingredients for success as links to other organisations may provide access to the skills,

support and means to put an idea into practice and, at the same time, may connect actors at different levels of government.

- **Organisational capability and innovative capacity.** Organisations need to build capability to support innovation. Since substantive innovation is unlikely to happen by chance, it has to be planned for and resourced. This involves considering the direct costs (i.e. training, information systems and equipment) and opportunity costs (i.e. time), empowering staff to take risks and think outside the box, ensuring the necessary financial sources and skill sets to support and drive innovation, and having strategies for risk management and regulations that support a culture of innovation. For example, a clear innovation strategy is the basis for successful innovation; it must be adaptive, clear and with a compelling narrative. Since innovation is about change, having a change management strategy may prove useful in ensuring the smooth implementation of projects that affect or change public servants' routines. It is important to present the innovation to public servants as an opportunity, rather than a challenge.
- **Conducive governance arrangements.** Factors that may stimulate innovation in the public sector are citizens' participation in the political process and government accountability; political stability; regulatory quality; rule of law and control of corruption; and an open policy formulation process. For innovation to occur, it is important there is consensus that the current models or ways of service delivery are underperforming.
- **Incentives and rewards system.** Innovation is encouraged when there are recognition and rewards. These are also powerful mechanisms to maintain a culture of innovation through peer recognition, disseminating knowledge of new initiatives and fostering adaptation.

The World Bank Innovation Policy Guide for Developing Countries ¹⁵ corroborates some of the pre-conditions raised by the OECD and highlights the following elements that are necessary for innovation¹⁵:

- **Skills:** The forces at work in a knowledge-based economy clearly show the need for a certain set of generic skills across industries, economies, and regions. The ability to innovate will increasingly require individuals to be able to understand the nature of problems and to have the aptitude and creativity to address them. Employees are now expected to move quickly between areas of expertise and to get new skills to keep pace with rapidly changing knowledge.

- **Leadership:** The firm backing of top leadership, such as the head of state or prime minister, is essential to the success of an innovation policy. It gives credibility to a national vision and helps the adoption of key measures for removing bureaucratic hurdles. It is also important to have efficient mechanisms that facilitate cross-departmental cooperation.
- **Policy reforms:** These need to be introduced gradually and be linked to long term strategies. Reforms should be accompanied by the need to build critical masses of innovative and entrepreneurial initiatives by promoting industrial clusters, actively attracting foreign direct investment (FDI), and possibly even creating new cities.
- **Evaluation:** Many policies are related; innovation systems are complex and evolve continuously. As a result, it is often hard to measure outcomes. However, effective evaluation of programs and evidence is crucial to proving whether government policy successfully tackles market failures and provides a positive net stimulus to innovation. This should combine a range of evaluation methods, including national and international, quantitative, qualitative, and micro and macrolevel.

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