

## SIX

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# Life and death in the national system of innovation (NSI): The role of public sector innovation

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## INTRODUCTION

The importance of the public sector in and for innovation has received increasing focus and attention in recent years (OECD, 2015, 2017). This includes the role of governments in shaping innovation systems, creating conditions for innovation and being innovative themselves (Arundel et al., 2019; Mazzucato et al., 2021). However, there have also been massive challenges and criticisms levelled at the role of the state in public sector innovation (PSI). The critiques levelled range from overly bureaucratic operations to centralisation, lack of transparency, corruption, inadequate skills and professionalism and uncondusive institutional arrangements (CPSI, 2021).

In this chapter, the authors explore a series of questions in relation to public sector innovations (PSI) in South Africa. Firstly, the chapter

contents with the stereotypical view that innovation is being stifled by, or has been dying at, the hands of the state. This question requires taking a look at innovation as enabled and/or inhibited by the state, and at the public sector as an innovator itself, i.e., innovating within the service. Secondly and linked to the first question is, is the prevailing national system of innovation (NSI) conception and configuration put in place by the state supportive of public sector innovation? Lastly, if indeed the state has not been innovative or conducive to innovation, what has driven PSI then, and why?

The authors consider prevailing paradigms and the innovation policies and strategies that have been influencing innovation practices and performance. Local case studies are then used to help elucidate lessons from practical experiences. The chapter also looks to international literature to determine whether there are similarities or lessons to be found elsewhere. This pursuit raises epistemological and methodological challenges, which require consideration of what an appropriate analytical framework for PSI might be. It also raises questions about whether and how case studies of public sector innovation failures (and not only 'best practices') could be used to develop useful insights for learning and innovation in the public sector.

Ultimately, the paper seeks to determine what changes or factors for success in innovation policy (Schot and Kanger, 2018) might shift the public sector towards better enabling effective innovation in South Africa.

## METHODOLOGY

The research was approached as part of a qualitative study. The intention was to enable the researchers to draw on their own valuable knowledge and experiences, as they are embedded in public institutions and/or affiliated to academia. Two of the authors are currently public sector officials, and two are former civil servants currently working in academia. The qualitative approach also allowed the researchers to construct and re-construct the scope and findings of the research study to illustrate the various determinants and concepts under analysis without distorting or reducing their meaning (Rahman, 2017).

First, existing theories and perspectives in the literature about public sector innovation were reviewed: this literature includes academic and so-called ‘grey literature’.<sup>1</sup> The literature relating to South Africa’s NSI pursuit is also considered. The concepts derived are then used to construct an analytical framework that can be used heuristically to interrogate the efficacy of public sector innovation. Next, a set of purposively selected PSI case studies are presented and analysed. These were selected to represent a top-down perspective (large-scale government or corporate-driven innovations, which tend to be most frequently referenced in popular discourse about PSI failures), plus bottom-up innovations (community-driven solutions, an area in which there is great emerging potential). Although the case studies selected are not entirely representative or generalisable, they were chosen to give some dimension to the exploratory analysis. Finally, findings are discussed in relation to the research questions.

#### INNOVATION, INNOVATION SYSTEMS AND THE PUBLIC SECTOR

Historically, a national system of innovation is one of three major framings for science, technology and innovation (STI) policy, alongside innovation for growth, and – more recently – transformative change (Schot and Steinmueller, 2018). The innovation for growth framing was articulated and implemented in industrialised countries in the aftermath of the Second World War with significant investments in research and development (R&D) to drive long-term economic recovery and growth. The national systems of innovation framing arose from the 1980s onwards as scholars began to question the linear innovation model underpinning the innovation for growth framing. Although the role of government is cardinal to the national systems of innovation framing – for instance in the quadruple helix model, which focuses on the interaction of government, industry, university and civic innovation activities and outcomes – innovation in the public

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1 Grey literature is a term used for information produced outside of commercial publishing and distribution channels. It can include papers and publications from government, business, industry and academia.

sector per se is not explicitly addressed.

Most recently, emerging in the 2010s, the ‘transformative change’ framing has called for transformation through applying innovation to contemporary environmental and societal challenges such as climate change, inequality, poverty and pollution, and directing innovation towards systemic solutions such as the United Nations’ Sustainable Development Goals (SDGs) initiative (Ghazinoory et al., 2020; Lundvall, 2022:12). Schot and Steinmueller (2018: 1565) argue that the transformative change framing is complementary to the two earlier framings, but that it should be prioritised because it addresses several key shortcomings in the earlier framings and integrates multiple actors in holistic ways. For example, civil society and citizens are seen as playing crucial innovation roles in the transformative change framing, not just one of providing demand for firm-level innovation. Furthermore, under this framing public policy can be translated into transformative public missions. As such, the frame can be linked to the mission-oriented innovation policy paradigm (Mazzucato, 2018) in terms of government planning and implementation.

Lundvall et al. (2009: 6) define a national system of innovation (NSI) – although they use the alternative, equivalent term ‘national innovation system (NIS)’ – as:

... an open, evolving and complex system that encompasses relationships within and between organisations, institutions and socio-economic structures which determine the rate and direction of innovation and competence-building emanating from processes of science-based and experience-based learning.

This definition includes both the narrow STI and the broad DUI (doing, using and interacting) conceptualisations of innovation systems (Lundvall et al., 2009: 2–7). In the South African context, the NSI is firmly aligned with the narrow definition of innovation systems and focuses largely on science, engineering and technology (SET). This is despite the fact that the Department of Science and Technology (DST) White Paper on Science, Technology and Innovation, the key policy document on South Africa’s NSI, explicitly states that it aims to ‘adopt

a broader conceptualisation of innovation beyond R&D' (DST, 2019: 33). Among its other policy intents, the White Paper on STI also aims to 'strengthen government's role as an enabler for innovation' by several means: it aims 'to address market failures, taking the lead in making high-risk investments' and says that 'to help entrench a culture of innovation in government, the DST will work with the Centre for Public Service Innovation (CPSI) and other relevant national, provincial and local agencies' (DST, 2019: 41–42). Importantly, although the White Paper on STI sets the medium- to long-term policy direction for South Africa's NSI, it is not an implementation plan. 'Rather, the implementation of the White Paper will be directed through successive decadal plans. To ensure policy coherence and maximum responsiveness to the needs of society, these decadal plans will be developed in partnership with the relevant NSI actors' (DST, 2019: 12).

#### ROLES OF THE PUBLIC SECTOR IN THE INNOVATION SYSTEM

##### *Differences between the public and private sectors*

To understand the role of the public sector in innovation, it is useful to step back and discern the key differences between the public sector and the private sector. Because the boundary between the public and private sectors is permeable and changes with time and circumstances (Flynn and Asquer, 2017: 1–2), it is extremely difficult, if not impossible, to distinguish clearly and unambiguously between the two sectors. Nevertheless, four general distinctions can be made between the public and private sectors even though none of them are absolute (Flynn and Asquer, 2017: 4–5):

1. public goods and services vs. private goods and services (for example, public goods and services generally produce positive externalities and are non-excludable);
2. the public sector is mainly financed by taxation rather than direct payments by individual customers;
3. who employs the service providers and who owns the facilities (typically public services are provided by public employees using publicly owned assets); and

4. most importantly, whether the underlying motivation for serving and satisfying customers is the value of public service rather than profit.

Generally speaking, there are two types of innovations (Gault, 2020), both of which the public sector is engaged in: *product innovations* involving new or improved goods and services, and *process innovations* involving new or improved organisational processes. Public sector innovation is the implementation of new ideas, methods or practices to create new or improved public goods, services and processes (CPSI, 2021). For public goods and services, government (national, provincial and municipal) and government departments and agencies are the key providers and citizens are the key beneficiaries. On the other hand, public sector process innovation involves internally facing innovations such as e-administration, e-recruitment and green buildings. Furthermore, a distinction is drawn between such public sector innovation and innovation in which other kinds of non-private organisations are the main actors, science councils, higher education institutions, non-governmental organisations and so forth.

The Copenhagen Manual (Innovation Barometer, 2021: 51) highlights how public-sector innovation differs from private-sector innovation in terms of its predominant logic (political vs. market); purpose (public good vs. competitive advantage); general attitude towards copying (free copying vs. intellectual property rights); predominant collaboration mode (horizontal vs. vertical); and relative risk propensity and appetite (low vs. high).

#### THE ROLE OF THE PUBLIC SECTOR AS AN INNOVATION ENABLER

Governments have long played roles in fostering private sector innovation through (Boghani and Jonash, 1993):

1. procurement;
2. reducing the technical, commercial and financial risks of innovation;
3. facilitating innovation by collaborating on advanced research and development (R&D) and product development; and

4. using standards and regulations to stimulate innovation.

In South Africa, the public sector's involvement in these four roles has been largely uncoordinated, and the use of procurement to foster innovation has been under-utilised. There are however occasional cases where this has not been the case: a contemporary example of the South African government successfully enabling innovation is the launch of the Africa Medical Supplies Platform (AMSP). This is a digital marketplace to enable the supply of Covid-19-related critical medical equipment to African Union (AU) member states (Presidency, 2020).

#### THE ROLE OF THE PUBLIC SECTOR AS AN INNOVATOR

Beyond the traditional role of fostering innovation in the economy, the public sector also innovates within. According to Mulgan (2014: 5), '... public sector innovation involves creating, developing and implementing practical ideas that achieve a public benefit'. As such, public sector innovation is distinct from, but complementary to, creativity and entrepreneurship.

Chen et al. (2020) propose a typology for classifying innovation within the public sector. This typology is comprised of two: 'innovation focus' and 'innovation locus'. The first, innovation focus, includes three public value creation processes: strategy, capacity and operations. The second, innovation locus, encompasses both internal and external orientation. Together, these result in six types of public sector innovation:

1. **Mission innovation:** introduction of a new worldview, mission or purpose for the organisation as a whole (strategy value creation process + internal orientation).
2. **Policy innovation:** introduction of new benefits and obligations for the organisation as a whole to solve societal problems (strategy value creation process + external orientation).
3. **Management innovation:** introduction of a new management practice, process, structure or technique to improve the organisation's ability to further organisational goals (capacity value

- creation process + internal orientation).
4. **Partner innovation:** establishment of new partnerships to improve the organisation's ability to further organisational goals (capacity value creation process + external orientation).
  5. **Service innovation:** introduction and delivery of new services to achieve organisational goals (operations value creation process + internal orientation).
  6. **Citizen innovation:** establishment of new platforms to facilitate citizen collaboration to achieve organisational goals (operations value creation process + external orientation).

#### THE CASE FOR AND AGAINST THE PUBLIC SECTOR AS AN INNOVATION ACTOR

There are views that run counter to the idea that the state *can* play an active role both as an innovator and as an innovation enabler. These broadly revolve around three issues:

1. **Appropriateness critique:** Liberal views about the appropriate role of governments, with the automatic assumption that it should be minimal at best, and innovation left to markets (Muraille, 2019);
2. **Capability critique:** Debilitating culture, structure and capacities – the view that the debilitating culture, structure and capacities of most public bureaucracies result in inevitable inefficiency. This hampers their capacity to succeed in either innovation role (Cinar et al., 2019); and
3. **Performance critique:** What is anecdotally assumed to be generally negative experiences and poor track records of public bodies being anything other than just funders, or else obstacles to innovation (King, 2022).

Despite these critiques and cynicisms, there have been cogent arguments made that states *should* play key roles in the innovation ecosystem – ‘as shareholder, policymaker, regulator and operator’ (Mazzucato et al., 2021: 9). This has been argued in terms of governments’ specific legitimacies and innovation capabilities considered to be ‘based on underlying values, [and] which can be



better recognised and supported to achieve sustainable innovation outcomes and more inclusive service delivery’ (Plantinga, 2021). It has been further argued that there are certain clearly defined, mission-critical societal objectives ‘whose realisation requires a strong, not weak, state that is able to co-create markets, and work with a variety of stakeholders in realising missions’ (Mazzucato et al., 2021: 7). This therefore locates the state centrally in national innovation systems, and ‘requires strengthening the institutional capabilities of the state across different spheres of government, especially at the coalface of public service delivery at the local level’ (Mazzucato et al., 2021: 19).

#### BARRIERS AND RISKS TO PUBLIC SERVICE INNOVATION

Since public sector innovation does not exist in a vacuum, but in an environment of structured organisation, certain organisational factors may impede or trigger it. To further complicate matters, a specific factor can be either a barrier or a driver depending on the broader context (Bekkers et al., 2013). A recent study puts barriers to public sector innovation into four categories (Cinar et al., 2019) (see Table 6.1).

In the South African context, there are opportunities and challenges associated with the implementation of the White Paper on STI since its adoption in 1996 (NACI, 2020). These illustrate policy innovation and interaction-specific ‘barriers’ as types of impediments to public sector innovation, respectively.

Barriers can either constitute specific constraints (Bekkers et al., 2013) or could be viewed as the absence of key success factors (EU, 2013: 15–16), thus referred to as the ‘lack of...’ Drivers on the other hand can help to create enabling conditions for innovation, e.g., resource availability. These two concepts are discussed together, in most of the literature, as inadequate or absent drivers weakening enabling conditions (EU, 2013: 15–16). In addition, a barrier such as lack of funding at one stage of the innovation journey may be an enabler rather than a constraint as it could force frugal innovation (Hindocha et al., 2021: 3), whilst at another stage could lead to failure.

An important factor closely associated with barriers and drivers

**Table 6.1: Barriers to public sector innovation**

Organisational barriers	Interaction-specific barriers	Innovation-characteristics barriers	Contextual barriers
<p>Barriers linked to the internal context in which innovation takes place.</p> <ul style="list-style-type: none"> <li>• Ineffective administration of innovation-process activities</li> <li>• Resistance or lack of support from specific actors</li> <li>• Lack of available resources</li> <li>• Inappropriate organisational structure and culture</li> <li>• Lack of skills, knowledge and expertise</li> </ul>	<p>Barriers linked to interactions and collaborations can arise out of linkages with other actors such as:</p> <ul style="list-style-type: none"> <li>• Public service organisations</li> <li>• Citizens and NGOs</li> <li>• Businesses as suppliers or contractors</li> <li>• Politicians and political entities</li> <li>• Businesses as users or co-creators</li> <li>• International organisations</li> <li>• Other</li> </ul>	<p>Barriers linked to the characteristics of innovations, as perceived by adopters.</p> <ul style="list-style-type: none"> <li>• Incompatibility</li> <li>• Complexity</li> <li>• Switching costs</li> <li>• Lack of interoperability</li> <li>• Platform/software problems</li> <li>• Inflexibility</li> <li>• Other</li> </ul>	<p>Barriers linked to context can arise from:</p> <ul style="list-style-type: none"> <li>• Laws, regulations and policies</li> <li>• Lack of standardisation</li> <li>• Geography</li> <li>• Other</li> </ul>

*Source: Cinar et al. (2019)*

which warrants separate discussion is ‘risk’, including uncertainty and shocks (Flemig et al., 2016: 429). Innovation is after all strongly associated with risk-taking with high odds for failure. In a public sector context where many wicked<sup>2</sup> problems exist, failure can further come

<sup>2</sup> A wicked problem is a social or cultural problem that’s very difficult or even impossible to solve because of its complexity.

from too many shocks at a time when the innovation has not matured. Failure can also result from barriers to innovation as identified in the third transformative innovation policy framing of Schot et al. (2019: 25). Yet, very little empirical work has been conducted on the nexus between risk-taking and innovation performance (García-Granero et al., 2015; Flemig et al., 2016: 425). Whilst the NSI is structured as an enabler for higher-risk investment (DST, 2019: 41), the White Paper is silent on navigating the risks associated with innovations. Brown and Osborne (2013: 195) distinguish between risks as ‘known knowns’ and uncertainty as ‘unknown knowns’. Shocks can be viewed as unknown unknowns. Brown and Osborne (2013) proceed to categorise risk as *consequential* (risks to the individual citizen, e.g., when a digitised service excludes a legitimate recipient); *organisational* (e.g., job losses); and *behavioural* (negative consequences at community or environmental levels). Unintended consequences can indeed be the death of innovation and, as emphasised by Flemig et al. (2015), technocratic risk management narrowly linked to financial management within the public sector is inadequate to support public and social innovation.

Most of the barriers, drivers and risks discussed in the literature are external to the innovation journey itself. Separating these from the innovator or innovation team can lead to a superficial judgement of the efficacy of the innovation or to ineffective innovation policy (Flanagan and Uyarra, 2016).

Flanagan and Uyarra (2016: 177) rightfully decry the idealistic, tool-boxing, coordination-reliant and atemporal nature of innovation policies. They point out that these policies take little account of the complexity of the actual innovation journey from the perspective of the innovator(s). Specifically, agency and the need to sustain momentum are overlooked. Innovation is the product of human creativity and action, not of an industrial or policy process. Forsman (2021), when reflecting on the innovation failure of small, medium and micro enterprises (SMMEs), noted that the ‘common factor for innovation failure is the occurrence of several incidents during the innovation process that slowly contribute to complete failure’. Dhliwayo (2017), identifies agency, facilitation and participation as key elements,

although he frames these as forms of public sector entrepreneurship.

The ability (or inability) of individuals and teams to navigate the social networks underpinning systems and processes (Pedraza-Fariña, 2017), foster collaboration, explore inter-dependencies, navigate risks and leverage opportunities become key factors in success or failure (Courvisanos, 2007). As such, ‘agency’, as a relational, deeply human construct, could provide an additional framing for understanding the success and failure of innovations.

#### A WORKING ANALYTICAL FRAMEWORK

Based on the above discussion, the two cases below are used to explore how the determinants of success or failure of innovation in the public sector – barriers and drivers, risk and agency – impacted on the outcomes of an initiative. These determinants are present at individual, team, organisational and systems levels and many cut across. For example, the barriers related to innovation characteristics and those related to context, mentioned above, present at both organisational and systems levels.

#### INNOVATION CASE STUDIES

Two case studies with rich longitudinal insights related to the framework above are discussed below. The first was initiated as a top-down, leadership-enabled innovation, and the second as a bottom-up, social needs-driven innovation.

##### *Case 1. Top-down State Innovation Projects: The Maponya Mall Urban Thusong Centre*

The Minister of Public Service and Administration, Mr M.R. Baloyi, launched the Maponya Mall Urban Thusong Service Centre (MMUTSC) in February 2011 as ‘part of integrating public services and bringing them closer to the people’ and ‘as a *pilot model* of an integrated service delivery point for a range of government services which include, amongst others, applications for identity documents, social grants and employment opportunities’ (emphasis added) (DPSA,

**Table 6.2: Examples of Analytical Determinants**

FACTOR	EXAMPLES OF WHAT THESE FACTORS CAN IMPACT AT DIFFERENT LEVELS:		
	Individual/team	Organisational	System(s)
<b>Barriers and drivers</b>	Lack of skills and capacity Funding Personal traits	Lack of incentives Bureaucracy, management, leadership Sharing of knowledge	Lack of flexibility in laws and policy Structural constraints Political factors Social and technological factors Theoretical and policy failure
<b>Risk, uncertainty and shocks</b>	Consequences of failure (negative performance appraisal) Unintended consequences such as the exclusion of certain individuals	Culture of risk avoidance (negative consequence management practices) Job losses	Negative consequences such as dependency or unemployment Wicked problems
<b>Agency</b>	Ability and support to navigate the structure of social relations underlying processes	Ability and support to navigate inter-institutional dynamics	Ability and support to navigate policy and legislative dynamics

*Source: Compiled by the authors*

2011: 11). The model was inspired by Citizen Assistance Service Centres in Bahia State in Brazil, which won the 2004 UN Public Service Award and was subsequently visited by the Minister for the Public Service and Administration and officials from the Department

and Centre for Public Service Innovation in October 2004.

Although it became one of the most successful Thusong Service Centres (TSCs) (DPSA and GCIS, 2019), it remains a pilot model that has not been successfully scaled. According to the 2010/11 Annual Report of the DPSA, within two months of opening its doors, the Maponya Mall Urban Thusong Centre had provided 10,693 citizens with services from the Departments of Home Affairs and Labour, Gauteng Department of Roads, Transport Gauteng Enterprise Propeller, Gauteng Provincial Government, Professional Job Centre and the NYDA.

From the inception of the Thusong model, it was clearly articulated that the key factor for the success of the TSC would be intergovernmental collaboration, enabled by Memoranda of Agreement. In addition to offering citizens access to multiple government services, the TSC extends the additional convenience of being open on Saturdays.

Despite the clear benefits to citizens, the TSC initiative and the intended scaling were hampered by two challenges, according to subsequent annual reporting by the DPSA. These were operational challenges, such as procurement and cost recovery, from participating departments and broader challenges related to funding and ownership of the Thusong Service Centre programme. Some departments simply did not contribute to the operational costs and in 2021 the outstanding lease contribution of one of the entities amounted to R2,107 million (DPSA, 2021).

Institutional management and oversight in the DPSA further shaped the priorities related to the centre, and emphasis gradually shifted away from experimentation towards the development of a broader framework. Whereas the pilot project was launched by the DPSA's Governance Branch as an Integrated Public Administration Reform project, it was moved to the Policy, Research and Analysis Branch in 2015/16, with the restructuring of the DPSA. The focus was now internally on the operational management of the centre and no longer on the piloting of an innovation in public sector reform. The policy objective also shifted to developing an appropriate model for the governance and co-ordination of service centres with the DPSA's only role being to guide the provision of ICT and broadband connectivity.

There is uncertainty as to what will happen when the current lease commitment comes to an end in June 2024. A number of observations, based on the DPSA's reporting, relating to the failure to mainstream this innovation are discussed below.

Initial barriers were easily managed through the provision of funding from the DPSA (ring-fenced by National Treasury) and operational management capabilities. The availability of funding further enabled the DPSA to mitigate risks such as non-payment by participating entities. However, the inability to navigate inter-institutional dynamics and to finalise a multilaterally agreed management framework for a broader Thusong Centre Programme has meant that the initiative, after 11 years, has not succeeded in progressing beyond that of a pilot. Whereas high levels of agency were present at the start of the pilot (such as obtaining funding from Treasury and getting the buy-in of several departments and entities), this agency eroded over time as the vision for the programme was blurred by operational challenges and non-adoption by service delivery departments.

The provision of enabling funding was thus not sufficient to overcome the interaction-specific barriers described by Cinar et al. (2019). In addition, regular leadership changes at political and executive management levels further created contextual barriers, whilst eroding agency and ownership of the pilot. The transition at organisational level from an experimentation mindset (to demonstrate efficacy and scaling potential) to an operation management and maintenance approach (by making the pilot an extension of the activities of the department), effectively stopped any future commitment to scaling.

### *Case 2. Community-level Innovations: The MeMeZA Community Alarm System*

South African urban areas face challenges that are associated with fast-growing populations. These are a result of the influx of people from rural areas in search of opportunities. This unplanned migration into cities 'without adequate spatial planning, urban design or financial allocation to accommodate the transfer and relocation of people' (Singh, 2019: 6) leads to a sharp growth in informal settlements. Policing under these circumstances becomes a big challenge. The MeMeZA Community

Alarm System sought to solve this challenge.

In 2012, the South African Police Services in the Honeydew Cluster, located in and around Johannesburg, Gauteng, approached the Centre for Public Service Innovation (CPSI) to request assistance. They were seeking help with a solution that would improve police response to incidences of crime in Diepsloot, a settlement within the cluster – particularly those committed within Diepsloot’s informal settlements. The police were only responding more than 24 hours after crimes had been committed. This was mainly because when the crimes were committed victims’ cell phones were stolen, which made it difficult for them to alert the police. Furthermore, when crimes were reported, the police found it difficult to locate the exact sites where the crimes were committed due to the lack of proper street addresses in informal settlements.

Efforts to deal with this challenge saw the CPSI collaborate with The Innovation Hub (TIH) who, through its open innovation platform (OpenIX), were able to identify a number of potential solutions in conceptual or pre-commercial stages of development (CPSI, undated: 8).

The start-up company that was the closest match was MeMeZa Shout, which was headed by Ms Thuli Mthethwa, who developed the solution as a survivor of crime herself. The system consists of an electronic device that is installed in households. If triggered, the alarm sends a text message to the police sector vehicle, the police station and members of the Community Policing Forum (CPF). It also makes a loud noise, which attracts the attention of neighbours. The alarm can also be triggered silently. The innovation lies not in the device itself but in the use of appropriate technology to activate community networks, encourage proactive policing, improve response times and strengthen community participation in creating safer neighbourhoods (Isafiade et al., 2020).

This solution was piloted in Diepsloot through a collaborative effort between the CPSI, TIH and the SAB Foundation. It involved the deployment of alarms in selected households. The statistics from the pilot programme were promising: serious crimes were reduced by 60 per cent with a 9 per cent decrease in the murder rate and a 26



per cent reduction in sexual offences (OECD: 2014), suggesting the potential to improve police response times and reduce crime (Suleiman et al., 2020: 260). The solution was further replicated in 23 Gauteng schools to protect the institutions' ICT infrastructure. Here again, the solution was impactful as it reduced theft of ICT equipment by 50 per cent (CPSI, undated: 31).

Despite these successes, the solution has yet to be sustainably scaled and formally integrated into policing. Several high-level meetings were held at which Diepsloot and Honeydew Cluster police and community members presented on how the solution had proved helpful. This points to clear barriers within state bureaucracy that prevent solutions from being scaled. The first is a lack of flexibility in procurement legislation that would allow government departments to test and scale community-based innovations. Flexibility in the legislation is further needed for the government departments to then procure innovations that prove successful without having to go through a tender process which puts start-up companies at a significant disadvantage (UNDP, 2018). A second constraint is risk aversion in management decisions, planning and budgeting. The potential of new and alternative solutions is not weighed against the consequences of continuing the status quo.

It can further be argued that the state is still not receptive to social innovations that come from communities. This is despite the fact that there is a legislative instrument for this in the form of the National Treasury Practice Note No 11 of 2008/2009 which facilitates the submission of unsolicited proposals (National Treasury: 2008/9); the burden of evidence required however assumes the solution is at commercialisation stage. Many potential social innovations may require significant further development and thus further experimentation before they can be offered as a bid. The result is that those solutions that do get piloted, like MeMeZa, are because of the individual agency of the officials guiding the process. Several individuals within the state (notably from TIH, CPSI, SAPS Honeydew Cluster and the Civilian Secretariat for the Police) helped MeMeZa to navigate constraints, overcome policy and institutional stumbling blocks, and access funding to ensure that at least the solution was tested and piloted in a government environment to satisfy the requirements for unsolicited

proposal (CPSI, undated: 17).

However, individuals within the government departments that are potential beneficiaries are less likely to assist in the scaling of such solutions. This is mainly because scaling requires buy-in from top leadership, dedicated ‘champions’ and budgeting and incorporation into operational and annual plans. There is thus a need for policy mechanisms that will allow leadership to adopt, fund and scale innovations in a more agile manner (UNDP, 2018). Currently many officials, despite understanding the potential service delivery benefits, are not willing to provide dedicated support. This is because they perceive themselves as facing consequential risk in terms of both the procurement process itself and the potential for a new solution to fail, which would result in them confronting ‘consequence management’.

#### MAKING THE CASE FOR A HUMAN-CENTRED SYSTEM FOR PUBLIC SECTOR INNOVATION

Considering the barriers, drivers, risk-related behaviour and agency discussed above, as well as the lessons arising from the case studies examined, it is not possible to make a simple case for the public sector as either a destroyer or an enabler of innovation in South Africa. From the number of entries for awards initiatives, such as the national Public Sector Innovation Awards and the Gauteng Accelerator Programme (GAP) Innovation Competition, it is clear that there is not a dearth of innovation associated directly with the public sector. A more nuanced narrative is needed; a view that recognises that officials innovate at institutional level despite barriers, and that social and entrepreneurial innovators only succeed with great effort, patience and support from within the state bureaucracy. In contrast, the role of the state as an enabler of innovation beyond the mandated institutions of the NSI is severely constrained.

As observed by Cavalcante and Camões (2017) from their analysis of Brazilian public sector innovations, successful ‘bottom-up’ innovations mostly relate to institutional and process reforms whilst, as Kotter (1996) observed in his seminal work, ‘top-down’ innovations are led and are more disruptive in nature. This suggests that the type

of innovation is a function of the respective levels of agency that innovators have. As is illustrated by the two case studies, the failure or success of an innovation is dependent on sustained human agency. One way of countering the negative consequences of loss of agency, not only for innovation but also for the realisation of most policy intentions, is to institutionalise mechanisms and processes that are human-centred.

Creating pathways for experimentation in a risk-controlled environment, institutionalising agile and design-thinking methodologies and ring-fencing bridging funding are some of the policy interventions to explore. These measures should create safe spaces for experimentation through mechanisms such as living labs or regulatory ‘sandboxes’ (Attrey et al., 2020). Sandboxes ‘promote flexibility and innovation in the digital age’ (OECD, 2023) for both officials and innovators. Schot and Kanger (2018) identify the notion of ‘shielding’ – the creation of national policy which allows for shielding from regulations which prevent further developments. The Transformative Innovation Policy Consortium (TIPC) framing of this concept of shielding offers another potential mechanism to explore to afford innovators protection, especially social and civic tech innovators<sup>3</sup> from outside government. This protection and support would allow innovators the space to demonstrate the efficacy of their solutions. Importantly, governance mechanisms should recognise not only the product/service aspect of what defines innovation but also enable the process aspect.

## CONCLUSIONS AND RECOMMENDATIONS

This paper’s title attempts to confront the common but blunt narrative that South Africa’s public sector should not or cannot innovate, and that it hampers innovation in the country. Rather than just defend against that stereotypical narrative, the authors offer a more nuanced and constructive story about what has been happening in the South African system, and what could be learned from it. The authors

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<sup>3</sup> The term ‘civic tech’ refers to the use of technology to enhance civic participation.

take the opportunity to also think through an appropriate analytical framework for guiding policy considerations that relate to public sector innovation.

In concluding and seeking lessons for moving forward, it is useful to consider the final research question, which was whether the prevailing NSI conception and configuration in South Africa is supportive of public sector innovation. This study concludes that more deliberate and practical consideration of public sector innovation within the broader NSI is required, beyond what the current White Paper alludes to. Currently, the role of the public sector in the NSI is poorly framed and focused on at both national and sub-national levels. These shortfalls result in poor performance by actors within the innovation system despite the aspiration to ‘strengthen government’s role as an enabler for innovation’ (DST, 2019). Imagining a government that can enable experimentation and dynamic innovation would require attention to the limiting conditions (barriers and risks) encountered within the state.

In addition, public sector innovation requires policy that is human-centred and developmental in nature. This is important for the challenges around both the innovations themselves and around how innovators are enabled to address such challenges: i.e., how the innovators can be assisted to use their ingenuity and agency to address obstacles to innovation. Here, the authors propose the formation of a public sector innovation living lab that will foster collaborative arrangements for both state and non-state actors. The proposed lab must focus on macro-societal challenges, leveraging cross-sectorial networks that include public-sector leaders, academics and innovators. It can provide space for experimentation and for policy to be developed.

The proposed living lab can be located within a cross-cutting national entity or agency – for example, to ensure that resources and political support are available – but ownership should be shared and horizontal integration ensured in order to provide access to various service sectors, and so enable agile experimentation. It is through this safe space for experimentation that, for example, new innovations from the community can be assessed for impact rather than individual bureaucrats within the state being left to make decisions about which

innovations should thrive and which should die. A safe space such as this would ensure that new innovations can be tested and, if need be, supported for scaling. The anticipated outcome of this experiment would be the emergence of policies that would enable innovators from within both communities and the state to address challenges to innovation in the public sector. These policies include the procurement ones which are cited as one of the barriers to public sector innovation.

The conditions in innovation ecosystems also need to be considered. The cases presented demonstrate the need to allow for process flexibility to accommodate the nature of an innovation (e.g., top-down, bottom-up), and not force everything into a single, system-determined mould (the ‘cookie cutter’ approach). The environment should allow space for failure, active de-risking and alternative risk-management practices at various levels – policy, planning, resourcing, performance management and auditing.

Demand-side mechanisms also need strengthening to foster greater efficiency in the South African innovation system. The ever-so-often disconnect between what is produced through the NSI, decision-makers and public officials at the coalface of service delivery is resulting in many failures or unscaled innovations. In times of austerity and resource constraints, it is even more imperative to find ways of using public systems and programmes to stimulate and support both public and private demand for innovation, including among SMMEs (OECD, 2011). This would help to boost innovation without relying on new programme spending, and focus innovation towards meeting social demands in critical areas such as health, energy, food security and the environment (Adesida et al., 2021).

Finally, although the paper’s title speaks to the goal of successful, sustained innovation because (or in spite of) the public sector’s effective role within an NSI, it is also useful to recognise the complex and dynamic nature of socio-technical needs and conditions. For this reason, we need mechanisms to manage dynamic innovation ‘life and death’ cycles, including how to prevent failure, capacity chasms, a lack of bridge funding, and – in the TIPC framing – protect new niches whilst retiring innovations that have played their course.

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