Can open government support innovation for inclusive development? A South African case study

Working paper

The final, open access version of this article is available here:

Plantinga, P. & Adams, R. (2021). Can open government support innovation for inclusive development? A South African case study. International Journal of Technological Learning, Innovation and Development, 13(2), 142-167.

<https://dx.doi.org/10.1504/IJTLID.2021.10039526>

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Abstract

The opening of government in a number of countries has implications for innovation processes and the potential for inclusive development outcomes. After unpacking key thinking around openness and its attendant values, we explore the adoption of open government practices in innovation by considering four instruments: the opening of innovation and technology policy processes, co-creation and collaborative solution development by civil servants, government entities acting as innovation brokers, and public sector procurement of innovation. Through a case study of South Africa, we highlight how innovation actors prioritise particular values of openness over others, oftentimes at the expense of legality and impartiality. This oversight leads to project failures, legitimacy crises and exploitation of openness by more powerful entities. In response, we suggest that public sector innovation programs and platforms can more explicitly recognise and balance different values through appropriate institutional forms and legislation, and thereby enable sustainable application of open government practices.

Keywords: innovation, open government, Popper, inclusive development, procurement, co-creation, South Africa

Introduction

Open government is viewed as both an enabler of innovation and a governance innovation in itself. At its core, open government draws on ideals associated with state transparency, access to government information, networked and co-operative governance, as well as responsive

government. In addition to enabling public sector accountability and promoting citizen engagement with policy and decision-making, narratives of open government increasingly highlight opportunities for public servants to collaborate with a broader base of innovators to solve ‘wicked’ social problems (Hartley et al. 2013). In this article we reflect on open government practice and policy in South Africa as it relates to innovation for inclusive development (IID). We follow the broad conceptualisation of IID in South Africa’s science, technology and innovation (STI) policy framework, as outlined in the draft IID Strategy by the Department of Science and Innovation (DSI) (previously the Department of Science and Technology (DST)): ‘innovation that enables all sectors of society, to enjoy equality and equity in access to the knowledge infrastructure, participate in creating and actualizing innovation opportunities and enable individuals to share in the benefits of innovation to advance development goals’ (DSI 2016).

We first review the broad trajectory of open government and its relationship to historical accounts of the open society and the values inherent in it, particularly in the writing of Karl Popper, and to notions of innovation globally. We then use a lens of administrative values – such as flexibility and effectiveness – and examples of co-creation, innovation brokering and innovation procurement in South Africa to highlight how the ‘opening’ of government can lead to diverse and sometimes contradictory innovation practices and development outcomes. Finally, we consider how IID policy actors and programme managers can draw on open government, whilst recognising oftentimes competing values at play and embracing new meanings of openness, to achieve inclusive development outcomes.

Openness and open government as collaborative innovation

The resurgence of open government in the mid 2000s had strong connections to the Internet and free and open-source software (FOSS) communities, sharing many of the same liberal democratic ideals of access, openness, participation and collaboration (Singh & Gurusamy 2014; Tkacz 2012; Adams 2018; Neylon 2017). Tkacz suggests that during this period, neo-liberal agendas of ‘philosophy and economics are isomorphic with the ones that played out in computer cultures’ (2012: 390), effectively meaning that the open movement represented a dovetailing of the interests of politics, economics and technology. Indeed, one of the first key thinkers on openness was Karl Popper, who was also one of the early proponents of neoliberalism together with Milton Friedman and Friedrich Hayek amongst others.

For Karl Popper, the notion of openness proffered the promise of a different kind of society, one that was less absolute and more democratic than the other forms of society arising out of earlier systems of governance. In two volumes Popper critiques what he describes as a closed society which he discerns as being marked out by Western canonical philosophy, and most notably, by Plato. Such societies are closed insofar as they subscribe to the notion that unchallengeable truths (mainly about the functioning and governance of society) exist, and society should work towards

their revelation or assimilation, as in Plato's perfect forms. Yet, in these two volumes Popper's articulation of what an open society is or aims towards is critically limited, aligned loosely to notions of liberty, justice and democracy. Indeed, as Tkacz notes, Popper's concept of the open is 'reactionary; it gains meaning largely through a consideration of what it is *not*' (2012: 400). Tkacz goes on to point out that 'of the negative or *is not* qualities of the open, we can extract the following from Popper's critique of closed societies: open societies do not condone historical or economic determinism; do not support programs of radical social engineering based on truth claims; and do not hold any truth to be absolute' (2012: 400). However, neither Popper nor Tkacz quite explain the role of truth (or prescribed societal values) in an open society. It is only later that Popper developed a more fervent position on this. While continuing to reject the authority of absolute truths and values, Popper insists that society must continue its *search for* such prescriptions, and posits disinterested and critical thought as a key value of the new open society, together with 'individualism, equalitarianism, faith in reason and love of freedom' (1962: 175).

Tkacz's critique of Popper could have been extended further. Writing in 1960, 15 years after Popper published his two volumes on the open society, Willmoore Kendall wrote an article on 'The "Open Society" and Its Fallacies'. Kendall's assessment of the open society draws upon an idea expressed by the 19th century thinker John Stuart Mill who, in close similarity to Popper, wrote that freedom of speech should be the ultimate value of an open society. As with Popper, Mill took issue with the acceptance of absolute truths or singularly dominant values, decreeing instead that all ideas, doctrines and statements should be the subject of continuous public debate and scrutiny. Yet Kendall points out that 'when we elevate freedom of thought and speech to the position of society's highest good, it ceases to be merely freedom of thought and speech, and becomes – with respect to a great many important matters – the society's ultimate standard of order' (1960: 974). Kendall's point is an important one about prioritising particular values of openness over others, a tension that we explore as emerging in the systems and outcomes of open government and IID below. However, what Kendall also points to here is that Mill, and subsequently Popper, in their total commitment to the open society in fact creates a new absolute truth: a truth of openness, or as Tkacz puts it 'a precise truth of the open' (2012: 402). This is broadly reflected in the way in which network technologies have supported a new, largely uncontested legitimacy for openness as a governance and development principle in both developed and developing countries (Reilly & Smith, 2014).

The more recent coupling of open government to the Internet and FOSS has shifted attention towards more collaborative forms of public sector engagement and innovation enabled by modern information and communication technologies (ICTs) (Yu & Robinson 2012). Whilst current work on open policies and platforms has increased the visibility of information and data, and yielded many innovation benefits, it is also contributing to the commodification of information. The result is an abstraction of the labour, incentives and underlying politics of information sharing, often obscuring or 'open washing' corporate and government accountability practices, all suggestive of

the neoliberalist worldview in which the idea of the open society arguably first arose (Yu 2012; Adams 2018; Singh & Gurumurthy 2014; European Journal of Cultural Studies et al. 2020). The current prominence of innovation in the open government and development discourse encourages collaboration and reinforces values of efficiency and effectiveness, in a move away from Kendall's emphasis on freedom of speech. As noted earlier, this comes from a view that current, 'wicked' problems can only be solved by cross-silo or cross-sector interaction (Hartley et al. 2013) and as a way to ensure buy-in for the adoption of solutions over the long term.

Similar thinking emerged amongst innovation scholars and practitioners as highlighted by changes in one of the field's big ideas: the business-university-government (BUG) or 'triple helix' model of knowledge production (Leydesdorff 2012). Starting out as an empirical tool for describing national or regional innovation dynamics, the triple helix has become a neo-institutional model for stimulating industrial innovation based on coordinated BUG interaction, largely through hybrid organisations such as technology transfer offices, innovation agencies and science parks (Leydesdorff 2012; Laranja et al. 2008). Government's role in the triple helix has been reinforced by research on the 'entrepreneurial' and 'developmental' state (Mazzucato 2013; Block 2008). The nature of this role ranges between traditional, direct forms of innovation stimulation, such as R&D tax incentives and grant funding of university research; and more indirect facilitation of institutional learning and knowledge exchange, such as through cluster projects and online matching platforms.

The need to explain additional dynamics in innovation activities, and a desire to include more marginalised actors led to extensions of the helix metaphor. In developing countries, the notion of a quadruple helix has been especially attractive in defining a more inclusive model of innovation focused on the role of users or 'communities' as co-producers of solutions to social challenges. Thus, communities became the C in BUG-C (Cunningham et al., 2012; Arnkil et al. 2010). To enable this supposedly more inclusive innovation model, government actors sought to become more open about how they prioritised development challenges and in seeking deeper interaction with non-governmental actors to address social issues. The role of public entities in these networked forms of innovation stimulation has tended towards the facilitation of connections and social capital, enabling individual and organisational knowledge exchange (Lorenzen 2007). Thus, governments' role in innovation activity becomes the creation and maintenance of, an often broadly defined, openness of information and interactions.

The interest in openness and collaboration from both open government and IID communities is closely linked to the popularity of multi-level and network governance as a 'joined-up' way of delivering social services, as well as to the widespread adoption of various 'technologies of governance' associated with New Public Management (NPM) in the international development field (Kerr 2008; Mladovsky 2020). The values implicit in these forms of governance are often contested leading to unanticipated outcomes (Davies 2009). In particular, from an *innovation*

governance perspective, the values of different actors vary widely; from their views of the different professions involved, to the identities constructed around similar technologies, and acceptable forms of government management of innovation activities (Askforsa & Fornstedt 2018). For example, the values associated with government's role may prioritise democratic representation, transparency, state sovereignty, public authority, legality and impartiality; or they may emphasise flexibility, efficiency and effectiveness (Grotenbreg & Altamirano 2017). Rather more critically, the normative idea that multiple – and ideally, *all* social actors – should participate in bringing about openness, borders on what Michel Foucault names as neoliberalism's central tendency: governmentality. For Foucault, governmentality is a practice of governing which may or may not be performed by the State (1982; 2004). It involves the broad schema of ways in which individual and institutional behaviour is controlled by society to be consistent with the rationality of the governing order. According to Benjamin Noys, what marks neoliberalism out as a new governmentality is its 'point of application' (2012: 8). Foucault writes of neoliberalism as a plurality of the State, for neoliberalism entails a method of governing which no longer requires the traditional State as such (hence neoliberalist calls for the retreat of the State) (2008). Neoliberal governmentality spreads out through every strata of the social machine, such that the dispersion of the practice of governing has only become more profound and totalized, and where multiple actors are called on to perform the central truth of, in this case, openness.

A case study of IID and open government values in South Africa

In this section we build on an earlier case study of South Africa's open government which examined the diverse pathways by which innovation actors leverage *information and communication* technology (ICT)-based platforms to access development resources; i.e. open access research, open data and open ICT infrastructure (Plantinga & Adams 2020). In this, the second part of the case study, we focus attention on four emerging technologies of *governance* by which innovation actors seek more inclusive development outcomes: open policymaking, open innovation brokering, co-design of solutions and agile procurement.

As with the previous case study, we draw on methods used in critical historical accounts or genealogies of IID (Smith 2013) and open government (Gray 2014) to trace the multiple histories and lines of thinking which have led to – or are challenging - the current, contingent unity or stability around 'what works'. For this paper we are mainly interested in the emergence and (un)sustainability of emerging open governance approaches in relation to IID, and therefore draw on critiques of the dominant values which underpin these forms of public sector, innovation and development management; including the idea that openness represents the single truth of modern society.

We do this by reviewing policy documents, project descriptions, government speeches, news articles, seminar reports and online discussions from South Africa's increasingly connected open

government and IID policy space. We also comment on the implications of value contests for the sustainability of government's approach to IID policy and programme implementation, and whether open instruments are likely to support inclusive development in South Africa.

Openness in innovation and technology policy

There are three distinctive features of South Africa's recently approved White Paper on Science, Technology and Innovation (STI White Paper). First, is the DSI proposing a 'whole of government' approach to innovation (2019: 33) which calls for more coordination in supporting innovation across all policy domains and line departments. Second, is the explicit policy intent to 'bolster innovation for inclusive development' including supporting grassroots and other neglected innovators and ensuring participation of civil society in policy governance and technology transfer as a 'potential link between the formal and informal parts of the [national system of innovation]'

 (2019: 24). Third, the STI White Paper aligns strongly with a global trend towards a more open and diverse knowledge system which draws on transdisciplinarity, open science and open innovation (2019: 52).

As part of the open science and open innovation policy intent, the STI White Paper makes a specific reference to South Africa's participation in the Open Government Partnership (OGP) and its commitment to developing an open data policy (2019: 53). The mention of OGP, which has formally been coordinated through the Department of Public Service and Administration (DPSA), is peripheral, probably due to a lack of political support and wider cabinet buy-in to OGP action (Razzano 2016). However, the reference to OGP *does* reflect a broader convergence on both openness and innovation by a number of government entities, including the previous Department of Telecommunications and Postal Services' (DTPS), now Department of Communications and Digital Services (DCDT). As with the STI White Paper, recent ICT and e-government policies by DTPS/ DCDT include explicit references to open governance, open government and associated instruments, such as open data (DCDT 2016; DCDT 2017).

It seems that policy processes and associated policies have taken into account some of the critique of technological determinism in previous science, innovation and information society strategies; such as recognising that STI policy is 'subordinate', or at least depends on, wider poverty reduction strategies, and that implementation will depend on intermediaries which are closer to communities (Moodley 2005). One of the more visible responses has been to adopt relatively open forms of innovation and technology policymaking that incorporate inputs from a more diverse set of actors, such as in the recently constituted Presidential Commission on the Fourth Industrial Revolution (4IR) which, whilst technology-oriented, draws on a mix of industry veterans, academics and youth leaders from different parts of the country (South African Government, 2019).

As outlined in the previous case study, this open policy discourse has been reflected in a number of open ICT-based practices that are shaping our approach to IID (Plantinga & Adams, 2020). In the following sections we similarly explore how emerging open governance practices, and the underlying values of protagonists, are influencing the sustainability of relationships and processes related to IID.

Government as open innovation broker

In line with a ‘system’ view of innovation processes, public policy actors have identified the lack of knowledge exchange as a key challenge for local and national actors, and focus a large amount of attention on (re)building linkages between various innovation actors in both public and private sectors and, to some extent, coordinating joint action (Laranja et al 2008). As a result, during the late 2000s there was a surge in government programmes, including in Southern Africa, aimed at connecting ‘solution seekers’, ‘solution providers’, investors and policy managers through innovation forums and platforms (Mohalajeng & Kroon 2016).

Whilst this brokering role may be regarded as relatively neutral and ‘demand-led’, most government and quasi-public innovation intermediaries seek to balance at least two, potentially contradictory, objectives simultaneously: facilitating collective problem solving to address social challenges and stimulating local economic activity by connecting small enterprises with investors and corporate partners. The well-known Small Business Innovation Research (SBIR) programme and its derivatives aim to achieve similar goals in a number of countries (OECD 2010). For example, the impact of the United Kingdom’s National Health Service (NHS) SBIR-like health programme is measured in terms of job creation, technology exports, private investment as well as benefits to patients and cost savings for the NHS (NHS 2018).

In South Africa there are a number of formally established brokers in all spheres of government. Some have been deeply embedded in civil service operations as a research or innovation unit, such as in the City of Tshwane (CoT) (CoT 2012). Others run as relatively independent entities associated with certain sector departments and outcomes; whether economic, as with the SA SME Fund (2020) or public service modernisation, as with the Centre for Public Service Innovation (CPSI) (2018). Broker objectives may be relatively implicit or explicit is seeking to solve a ‘service delivery challenge’ whilst also requiring that the technology be developed locally (TIA 2018) and ‘creating opportunities for solution providers and entrepreneurs from the region’ (OpenIX 2018). As an example, between its launch in 2013 and early 2019 the OpenIX platform hosted over 80 innovation challenges, with approximately 70% of them oriented to addressing social or service delivery issues. However, The Innovation Hub is looking to shift this balance to more private sector or commercial challenges, indicating a common tension between commercial viability and social impact (de Vries 2019).

Beyond the work of formal government innovation intermediaries are various, less formal brokers facilitating access to decision-makers and promoting local innovations. Many of these individuals and organisations are (or work closely with) local politicians who have a genuine interest in addressing social issues by accelerating the adoption of new ideas that can benefit their communities. Inevitably this brokering activity blurs the public-private boundary, also highlighted in the previous section, which can lead government officials and politicians into awkward and volatile situations where they are perceived to be favouring specific products or innovators. This has been highlighted a number of times, such as at the peak of the 2018 Western Cape drought, when the white Premier of the province publicly recognised a water saving innovation by a white inventor. This action generated a significant backlash on social media where the invention was viewed as a copy of a similar product developed by a black university student, Nkosinathi Nkomo (Ntsabo 2018). The backlash has triggered a broader, sustained conversation (on and off social media) about intellectual property and how young, black innovators are treated by government officials and a largely white-managed private sector.

It is not only the technology brokering space that becomes contested. In designing new social policies or programmes, MPs and public servants draw on ideas from a variety of sources, in many cases looking at the experiences of other countries. On major policy issues, an expert panel may be established to synthesise local and international evidence and make recommendations. In other cases, independent or government-based research intermediaries may support the policy process by facilitating access to research information, as demonstrated by the work of the Department of Planning, Monitoring and Evaluation (DPME) in creating evidence maps for internal clients (DPME 2014). Evidence hubs and platforms are expanding globally and locally, such as the South African SDG Hub (2020) which promotes the use of research evidence *as well as* technology-oriented innovations for addressing specific goals.

However, as with technology innovations, the research and policy innovations coming from expert panels and evidence hubs are developed and disseminated in a political context (Hawkins & Parkhurst 2015). As an example, findings and recommendations related to land reform from the ‘high level panel’ assessing various areas of legislation have been debated widely during the lead up to South Africa’s national and provincial government elections, as these findings were seen to conflict with the role and values of traditional authorities in certain regions (Niselow 2018). So, developing mechanisms for the ‘good governance’ of evidence and technology brokering in political contexts, such as ensuring transparency and allowing for contestation by citizens (Hawkins & Parkhurst 2015), will be significant for IID going forward.

Co-creation and collaborative solution development

Whilst much of the above brokering and enabling takes place at arms-length, usually as far as funding certain technologies or research council programmes, certain civil servants in South Africa

have taken limited steps towards (re)engaging more directly in certain innovation activities. Most of this has taken place within lower-income communities where a state role seems to be more clearly justified and accepted. In these cases, government actors work more closely with end-users, emerging entrepreneurs, non-profits and corporates in the design and build of innovations.

There is increasing recognition amongst scholars that governments have had a significant positive impact on innovation outcomes through a variety of enabling pathways (Mazzucato 2013). However, there is also the lower-profile but more widespread innovation activity of civil servants who are making daily adjustments and improvements in the delivery of services to citizens, whether at a front-desk or through the design of a tender. This action has been recognised and supported by entities such as the MindLab in Denmark (Hermosilla 2016) and CPSI in South Africa (2018).

These centres and labs have called on public servants (and public-funded researchers) to be more open to participation and ideas from outside their organisation. In particular, involving end-users in the design of new technologies or workflows is seen to bring in new ideas relevant to the local context and to facilitate a common understanding of challenges *and* shared responsibility for outcomes (Bason 2010). South African researchers and government partners have adapted models used in Scandinavia, UK and the USA to test a more user-centered design and co-creation approach. Many early projects were run through local Living Labs which coordinated joint work on innovations with/ for local government and surrounding communities. The opportunity for learning and collaboration was expanded across an association of Living Labs through the Living Labs in South Africa (LLiSA) network. To a large extent, though, government's role has involved providing infrastructure or funding for Living Labs as an 'enabler' of the collaborative work that is being done in them, as a political sponsor within the region, and as a facilitator of knowledge sharing between Labs through the LLiSA network, via the CSIR as network orchestrator (Coetzee et al. 2012).

More broadly, public and private actors are encouraged to explore novel ways of cooperation to address social problems, requiring 'a fundamental shift in mindset on the part of public agencies' (WWF 2018: 12). New forms of collaboration and performance or outcomes-based contracting between government and non-government actors have emerged, typically supported by creative approaches to procurement, reviewed in more detail below. Underpinning many of these models is a desire for closer interaction between civil servants and non-governmental actors to better understand problems, co-design solutions and, often, share the risks and rewards of project implementation (WWF 2018). The ultimate goal is to get better value for money, through a more agile project management approach, and by aligning the incentives of partners.

An emphasis on consultation, openness and value for money is reflected in the broader set of Batho Pele Principles by which government officials are meant to operate when designing and providing

services (DPSA, 2014). The many sites of consultation, from ward-level service provider forums to national multi-stakeholder committees, are also places of co-creation and innovation.

From the authors' own experiences working in this sector, the more difficult reality of co-design projects is that the project partners are typically not prepared for the journey that is required to build mutual understanding and achieve acceptable outcomes. Many projects seek to include emerging local entrepreneurs or inventors, however the co-design process requires that they spend a large amount of time in multiple rounds of pre-commercial interactions. In addition, for government supply chain officials involved in a project, the more open-ended, iterative nature of a co-design process places significant technical and operational strain on their normal procedures. This results in ambiguity about key issues such as evaluation of capabilities, initial funding allocations, ownership of intellectual property, definition of outcomes and how a final solution may be procured for scale-up. Often, co-design challenges exhaust the tolerance of officials, the interest of end-users and the resources of emerging entrepreneurs.

On the other end of the spectrum, well-resourced firms have become notorious for exploiting their close relationship with government in South Africa's 'contract state' (Brunette et al. 2019). Through their access to decision-makers, larger engineering and consulting firms are able to consult closely with government entities on their needs, and then position themselves as exclusive providers of 'innovative' solutions to service delivery challenges. This has led to high profile failures, such as between McKinsey and Eskom, South Africa's state-owned power company in which the 100 percent at-risk advisory contract was found to be illegal (Bogdanich & Forsythe 2018). Unfortunately, these failures can close down the limited tolerance public (especially treasury and supply chain) officials have for exploring more sustainable and inclusive forms of public-private interaction around IID.

Opening the procurement of innovation

Whilst collaborative, iterative and participatory project models have significant potential for developing more appropriate innovations for developing contexts, it is clear that these approaches need to be cognisant of institutions, politics and competing value systems (Lee 2015). For example, given the above examples, we need to acknowledge the validity of public sector procurement values of predictability, transparency and competition, instead of exclusively focusing on creativity and innovation (and expecting supply chain management (SCM) officials to 'shift their mindset' (Jackson 2018)).

Therefore, a central feature of the IID good governance discussion should be on ensuring government procurement (and financing) of innovations from emerging entrepreneurs and established corporates is procedurally and legally sustainable.

A key challenge to the sustainability of innovator-government relationships is the desperate financial situation of most local inventors and small enterprises. Although the net of grant funding and mentoring support for technology startup companies has been widened significantly, mainly through private and public enterprise development programmes and innovation competitions, the bigger issue is that this support is not translating into new business or procurement opportunities (SeedAcademy 2018).

Whilst procurement by the private sector and lack of early-stage venture funding in South Africa are major issues for emerging innovators (SeedAcademy 2018; Jones & Mlambo 2013), the focus of this section is on whether the opening of *public sector* procurement can support IID. The STI White Paper explains how government will ‘(u)se public procurement as a vehicle to further innovation’ focusing on locally developed technologies, but also ‘the sustainability of new and transformed broad-based black economic empowerment firms in or outside the existing supply chains of SOEs’ (DSI 2019: 34). Progress with the implementation of this policy intent is summarised in the Department of Trade and Industry (DTI) 2018/2019 Industrial Policy Action Plan (IPAP) for which the DST and DTI are leading the development of a strategy on the ‘diffusion of locally developed technologies’ focusing on a limited number of government users initially (DTI 2018: 101).

Current procurement legislation and associated court judgments have limited the scope for procuring on functionality (Brunette et al. 2019) and thereby reduced the potential for creative alternatives for meeting government needs. Nonetheless, a small percentage of public entities have included a requirement for innovation in contracts (Kruss et al. 2018); and National Treasury, DSI, DTI, state-owned companies (SOCs) and various innovation-related agencies *are* exploring international models for the procurement of innovation (e.g. OECD 2017; Moñux & Uyarra 2016; Edler et al. 2014; UNCITRAL 2011). These models could support pre-contracting ‘dialogue’ between stakeholders on specific outcomes (Bolton 2016) or broader, longer term signaling through mechanisms such as ‘Forward Contract Procurement’ (FCP) (BIS 2011).

There is potential for existing procurement legislation and regulations to support a more explicit innovation requirement, alongside other ‘horizontal’ purposes, such as increasing the participation of majority black-owned businesses in public sector supply chains (Bolton 2016). However, for SCM personnel, the addition of innovation criteria within the current, fragmented regulatory environment is likely to place further strain on overloaded processes. Yet, there may be an opportunity through *broader* procurement reforms and the relatively new Office of the Chief Procurement Officer (OCPO) to develop more responsive legislation, strengthen oversight and enhance SCM support to enable more IID-oriented purchasing; alongside related objectives like local procurement (DTI 2018: 65). As part of this process, it would be important to understand how officials are adapting existing procurement instruments to acquire innovations.

Most notorious among these instruments is single or sole source contracting, which usually involves a deviation from competitive bidding processes because government entities have an emergency need, changing suppliers is not cost-effective, *or because the product is unique and no reasonable substitute exists* (e.g. CoT 2016). The procurement of innovations on single source is also often triggered by unsolicited bids. However, the criteria and process for justifying these deviations is, theoretically, onerous and should involve a public comment or formal Request for Qualification step (National Treasury 2008). In addition, although the Treasury practice note instructs institutions to protect information contained in unsolicited bids, entrepreneurs and lawyers often raise concerns about intellectual property being used by government without reimbursing the originator or leaking details to other firms (Cachalia 2015).

A related instrument is the discretionary sponsorships and grant funding which are used to support specific projects, usually charities and events. The allocation of this funding is typically governed by a municipal or provincial policy with clearly defined funding thresholds, possibly requiring council approval, but this approach is vulnerable to political change and legal challenges. For example, grant payments to a public WiFi initiative in the City of Tshwane were later found to be irregular by the Auditor General and the contract was phased out (CoT 2018).

As a way to avoid paying for an un-proven but potentially innovative product or service directly (and therefore having to run a tender), government entities have pursued public-private partnerships (PPPs). These are also a way to share the risk and rewards in testing technologies or methods with private partners. PPPs have been particularly attractive in trying out new cleantech innovations (Haynes 2016). Ironically, however, the opening of government procurement to PPPs has been affected by the reduced transparency inherent to a closer dialogue with private enterprises about government service delivery challenges, especially when intellectual property is involved, and because of the closed nature of business model negotiations. PPPs also raise concerns about whether it is the company's or the community's benefits which are being 'maximised' (WWF 2018: 60), even when part or all of the funding is being provided by external donors.

A similar, indirect way of investing into innovations is to open government resources to private entrepreneurs or NGOs at no or low cost. As an example, providing access to under-utilised public land or property at low cost can stimulate innovative or entrepreneurial activity in an area. However, an innovation intended to include marginalised groups may be resisted, as highlighted by a debate around new proposals for low-cost housing in Cape Town where there is push-back from local residents who are opposed to these ideas (Kretzmann 2019).

Less tangible government resources may also be opened up to stimulate innovation, such as public data and even political endorsements. These actions are often regarded as 'free' and therefore beyond formal procurement regulations. However, as noted above, preferential support of any kind can trigger political and legitimacy crises which escalate quickly in an environment where race

and connections are seen to, and often do, matter. Following relatively soon on the Nkosinathi Nkomo case, the same Premier facilitated access to tablet computers for her son to test an application for teaching mathematics in schools. For many commentators this was a good example of him leveraging ‘social capital’ to advance his own career (@nombonisogasa 2018). Data is an equally important resource, and there is a need to clarify rules and obligations around accessing and commercialising public data (Open Data South Africa 2018). Finally, in many developing countries, non-state actors partner with governments to secure donor funds from international agencies. As noted above, these arrangements do raise questions when the public does not have visibility into donor rules and who is benefitting (Stuckler et al. 2011).

To address some of the issues associated with sole source, PPP and less formal support for innovation, a number of other procurement approaches have been explored which are connected to more structured and transparent processes. One option has been to run a standard tender process but use the initial functionality assessment to introduce minimum equity or innovation-oriented criteria. These criteria may include sub-contracting local suppliers, employing local community members or by inserting niche skills or services into the requirement, such as biomimicry, that would also (hopefully) force a larger firm to partner with innovative smaller firms (WWF 2018). The City of Johannesburg’s Jozi@Work programme was a large-scale attempt to outsource aspects of municipal service delivery to local entrepreneurs and included an innovation incentive (CEO Magazine 2015). However, in many contexts outsourcing is seen to impact job security for government staff which can affect the commitment to this kind of programme..

A ‘two-stage’ bidding process is more widely recognised as a mechanism for supporting innovation-oriented procurement (National Treasury 2005), and can be transparent whilst allowing for some flexibility around specifications. Stage one of the process, such as through a Request for Information (RFI), may involve relatively open interaction between entrepreneurs and government on needs and possible solutions. This stage can also be used to *pre-qualify* participants for stage two based on ‘technical and commercial clarifications’ (National Treasury 2005), allowing for a more functionality or outcomes-oriented approach to selecting preferred bidders. A two-stage process can also be applied to PPP-like arrangements. For example, the Gauteng Department of e-Government issued an ‘Invitation for Partnerships’ in the national tender bulletin to identify ICT organisations that may cooperate with the department on collaborative projects (GPW 2016: 217).

However, successful two-stage bidding depends on skilled SCM practitioners and technically proficient end-users, which has led to public entities outsourcing parts of the specification and evaluation process, with associated risks to confidentiality and impartiality. These risks can be mitigated to some extent by involving internal or external, independent actors (from government, academia and/ or civil society) in a technical committee which oversees the specification, evaluation and selection of innovations, such as the Rand Water ‘Innovation and Piloting Committee’ (Rand Water 2018). The technical support or brokering role may even be facilitated

by a specialist government intermediary, such as the OpenIX platform introduced earlier. In the ICT sector, the State Information Technology Agency (SITA) is mandated to support procurement of a number of defined services for certain government entities, including certifying and registering a database of potential suppliers. As with the Gauteng Department of e-Government's Design and Validation (DAV) centre, there is potential for these technology gatekeepers to provide meaningful support on the technical (and, possibly with Treasury, *the process*) aspects of innovation evaluation and adoption.

In South Africa, innovation procurement is shaped by a mix of objectives and values which can lead to challenges with implementation and the sustainability of relationships. Reconciling contradictory interests – whether primary (e.g. acquiring materials or services), secondary (e.g. innovation or job creation), process (e.g. minimising transaction costs) or competition (e.g. transparency) - reflects a broader challenge in government procurement policy (Telgen et al. 2007). Nonetheless, through an OCPO and associated reforms mentioned earlier, and by embedding procurement regulation in society ‘through a *prudent approach* to transparency and public participation’ (Brunette et al. 2019, emphasis added), we may be able to support the relatively close interactions of innovation-oriented dialogue whilst ensuring there is sufficient oversight to manage diverse interests.

Discussion and conclusion

The current global and South African narrative suggests that open government is an important enabler of IID. This starts with facilitating more inclusive STI policy development, by making the process subordinate to the development needs of marginalised people and drawing on insights from a diversity of sectors. At a lower level, public servants are seeking to co-design more relevant services through deeper engagement with creative local enterprises and end-users, or by brokering innovation partnerships for economic and social impact. As a key enabler of these interactions, the allocation of financial resources depends on appropriate procurement mechanisms.

However, through this snapshot of open government and IID we have demonstrated how competing values and visions lead people to act in different ways (see also Gray 2014: 4). In our review of policy and practice we see that open government's relationship to IID tends to be framed primarily around solving complex social problems and facilitating the uptake of innovations through deeper engagement between various stakeholders (to overcome the ‘knowledge-action gap’ highlighted in the STI White Paper (2019)). This thinking is anchored in values of effectiveness and flexibility which are achieved through more direct interactions between innovators, government officials and end users. In reality, we see a tension between these values and various other values associated with unique perspectives of different of the individuals and professions involved, such as legal compliance and impartiality (Grotenberg 2017; Askforsa & Fornstedt 2018). This tension manifests as project failures, cancelled contracts and social media

crises. Moreover, given the political, economic and historical context of South Africa, we need to ask whether open government can assist marginalised actors build social capital or political influence to access resources and connections for getting innovations developed and implemented. In this case, we may prioritise values of democratic representation and diversity over flexibility and effectiveness.

Going forward, a key challenge for STI White Paper implementation will be to understand how subnational governments, civic activists, ward committees and local councils may interface to what has traditionally been a technocratic, nationally-driven innovation resource allocation and implementation. As the DSI and partners direct attention and funds to grassroots innovation involving micro-entrepreneurs, such as through community innovation competitions and local government procurement, the role of local actors and associated values becomes more significant. In these subnational networks, the relatively external and neutral identities of innovation processes and technologies will be re-created along a variety of contested political and economic lines. By recognising the potential for conflicting incentives and values, we may design more appropriate governance mechanisms for open government and innovation programmes (Gray 2014: 4; Hawkins & Parkhurst 2016; Grotenberg 2017). These programmes (and platforms) can explicitly identify and look to mediate and even coordinate (Hoppe, 2018) or ‘synthesise contradictory expressions of values’ (Castells 2004: 92) by various actors.

At the same time, less formal networks of largely youth-led collaboration are developing at the fringes of open government and open innovation programmes, with network orchestrators seeking to shape policy discussions (e.g. #gkVacWork Tech Debates (Geekulcha 2019)) and develop alternative mechanisms of resource allocation (e.g. The People’s Fund (2019)). These networks have the potential to introduce new energy and ideas into the national innovation ecosystem and are already oriented to involving more marginalised individuals and communities. Emergent technology and entrepreneur-driven networks are cultivating new meanings and values of openness, and enabling alternative forms of interaction with the state and private sector; which will lead to tensions with existing public procurement methods, intellectual property rules and private contractual arrangements. Nonetheless, through these interactions and negotiation of values we may discover forms of development based on networked publicness between organised networks and the state, rather than defaulting to an individualised and commodified openness which tends to be exploited by powerful actors (Singh & Gurumurthy 2014). However, as with the FOSS movement, maintaining a ‘recursive’ (Kelty 2008: 141) or sustainable networked public requires continuous work to enrol technical, legal and pedagogical resources, but also to mediate values, within communities and in their interaction with an opening government.

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