

Promoting a science, technology and innovation policy for inclusive development in South Africa

Summary

South Africa is at the cutting edge of innovation policy in proposing to develop a coherent, comprehensive cross-government national strategy for innovation for inclusive development (IID). This requires coordination and strategic alignment of policy goals and instruments across government departments with diverse mandates.

We address the following question in this policy brief: 'How are current public policy goals and instruments aligned with the Department of Science and Technology's (DST) goal to promote science, technology and innovation (STI)-enabled inclusive development through a national IID strategy?' Addressing this question is a major challenge considering the complexity of South Africa's development policy framework. We identify possibilities and challenges for improving alignment in policy, based on a systematic analysis of policy intent as articulated in key policy documents promoting innovation and/or socioeconomic development across nine government departments.

The systemic review was conducted by the Human Sciences Research Council (HSRC) on behalf of the DST.

We conclude that the key challenge for implementing a coherent cross-government national IID strategy is the high degree of fragmentation and potential lack of synergy between government departments, rather than a lack of appropriate policy instruments. In other words, the appropriate policy intent, for the most part, exists. We provide a set of recommendations for how the DST can facilitate alignment and coordination across national policy:

- (1) Coordinate across the nine departments to extend, deepen and align the focus of existing policy instruments in order to
 - integrate innovation goals where they are missing, or
 - promote socioeconomic inclusion goals where the emphasis is solely on formal innovation goals.
- (2) Design new policy instruments that will be required to address significant gaps in existing instruments to promote new

priorities such as grassroots innovation.

- (3) Facilitate the formation of effective implementation networks.

Introduction

The DST is strategically re-orientating its STI policy around the objectives of IID. IID is defined as:

... innovation that addresses the triple challenge of inequality, poverty and unemployment and enables all sectors of society, particularly the marginalised poor, informal sector actors and indigenous knowledge holders to participate in creating and actualising innovation opportunities as well as equitably sharing in the benefits of development. (DST 2016: 11)¹

In order for the DST to design an implementable IID strategy, and effectively lead in coordinating and integrating IID, it is critical to identify relevant policy goals and instruments across government. Are the right policies in place? What are the synergies that can be deepened, the duplications that can be coordinated and the gaps that require new instruments? What are the spaces for alignment and coordination?

In this policy brief, we address these questions by drawing on a review which the HSRC conducted on behalf of the DST to assess the readiness of the South African policy environment to enable and support IID.

How we analysed 100s of policy instruments

Since the advent of the democratic dispensation in 1994, the government

1 Department of Science and Technology, South Africa (2016) *Draft innovation for inclusive development (IID) strategic framework*. Pretoria: DST.

has created a complex development policy framework embodied in a plethora of Acts, white papers, strategies, programmes and instruments across multiple departments.

The review was aimed at assessing policy worldviews, objectives, goals and instruments in terms of a framework for promoting IID (Foster & Heeks 2015)² and in terms of alignment with national goals for socioeconomic inclusion. Following Foster and Heeks (2015), we categorised government policies into three broad types: (1) contextual policy, (2) policy promoting socioeconomic inclusion and (3) innovation policy. Contextual policy for inclusive development is set by the Presidency; Treasury; Department of Economic Development (EDD); Department of Trade and Industry (dti); and Department of Agriculture, Forestry and Fisheries (DAFF). Policies that promote socioeconomic inclusion are set by the Department of Rural Development and Land Reform (DRDLR), Department of Small Business Development (DSBD) and Department of Water and Sanitation (DWS), among others. Innovation policy is the responsibility of the DST. We conducted internet searches to identify policy documents promoting innovation and/or socioeconomic inclusion for each of these departments. We identified 83 relevant policy documents targeting informal sector actors³ across the nine departments (see Figure 1).

Mapping the potential IID synergies, duplication and gaps across more than 300 policy instruments is an extremely

- 2 Foster C & Heeks R (2015) *Policies to support inclusive innovation*. Development Informatics Working Paper 61, Centre for Development Informatics, University of Manchester.
- 3 The term 'informal sector actors' is used to indicate low-income groups, which in South Africa are characterised by exclusion and marginalisation along gender, race, class, education levels and spatial grounds.



Figure 1: Word cloud of the key focus areas across the policy documents⁴

complex task. Our research contributes a new methodology for policy review by creating searchable databases that the DST can use as a resource on an ongoing basis. Our analysis was conducted using NVivo software to map main trends.

This policy brief focuses on high-level trends and implications, while the full supporting data and more extensive analysis are available in the report.⁵

How are current policies aligned with the DST's goal to promote IID?

Our analysis of policy objectives and goals across all departments found that the emphasis falls more strongly

- 4 The most frequently used words (set in the largest font size in the word cloud) are development, economic and innovative. The frequency with which policy texts use related words – water, inclusion, technology, services, social, sustainable, applicable – suggests that economic development and inclusion are prioritised as policy objectives more strongly than innovation. The font size for words such as science, knowledge, participation, research activities is much smaller, reflecting that these terms are used less often in policy texts.
- 5 Petersen I, Kruss G, Rust J, Juan A & Tele A (2016) *Is South Africa ready for 'innovation for inclusive development'? A review across national policy*. Report to the DST prepared by the Education and Skills Development Programme, Human Sciences Research Council, Pretoria.

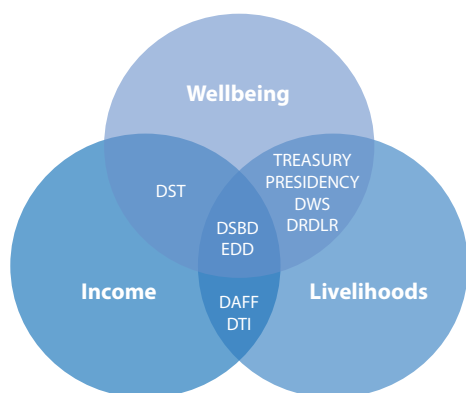


Figure 2: Venn diagram showing the main intersecting objectives of improved wellbeing, income and livelihoods by department

on promoting socioeconomic inclusion than innovation.

Figure 2 illustrates that the largest number of the other departments' policies is aimed at improving livelihoods and wellbeing, while the DST's current policy instruments are more strongly focused on improving income and wellbeing. The main implication for future intervention is that the DST has to find ways to integrate STI into strategies, programmes and instruments promoting stronger socioeconomic inclusion and to address the lack of IID instruments oriented to improving livelihoods.

The main social groups targeted for inclusion are the youth, rural communities, disadvantaged persons, farmers, black persons and small enterprises – in that order. These reflect socio-political challenges in the South African context – inequalities related to race, gender and spatial location, and high levels of youth unemployment. It is thus not sufficient to define target groups solely in terms of their economic roles as informal actors, or as 'the poor' or 'the marginalised.'

What does our review of policy indicate?

Recommendations for the DST

We suggest three ways for the DST to intervene and lead an IID strategy across government:

- (1) *Coordinate across the nine departments to extend, deepen and align the focus of existing policy instruments to*
 - *integrate innovation goals where they are missing, or*
 - *promote socioeconomic inclusion goals where the emphasis is solely on formal innovation goals.*
- (2) *Design new policy instruments that will be required to address significant gaps in existing policy instruments.*
- (3) *Facilitate the formation of effective implementation networks.*

We provide specific examples of each strategy below.

- (1) Align and extend existing policy instruments

Figure 3 maps spaces for extending existing policy instruments to include innovation and aligning them with an IID strategy (each strategy is identified

on the line between the DST and the lead department). For example, the DAFF has agricultural extension models for technology transfer to small-scale and emerging farmers that the DST could extend to other settings or sectors, but the DAFF's extension strategies do not integrate STI as a mechanism for development nor do they sufficiently encourage agency and participation on the part of informal sector actors – a space for DST intervention. The DST can extend and align their instruments with those of the DSB to promote technological upgrading, transfer and diffusion for informal sector actors to complement the DSB's support for developing business management skills and improving standards. Or the DST and the DRDLR can align to implement Comprehensive Rural Development programmes for skills training, employment creation and support to smallholder and land reform farmers by integrating STI dimensions. These examples hint at a potential policy network for promoting STI in the small enterprise sector to address the lack of policy promoting STI and livelihoods in urban and rural settings. A final example is where the DST can extend new models for socioeconomic inclusion and innovation by drawing on the DWS's

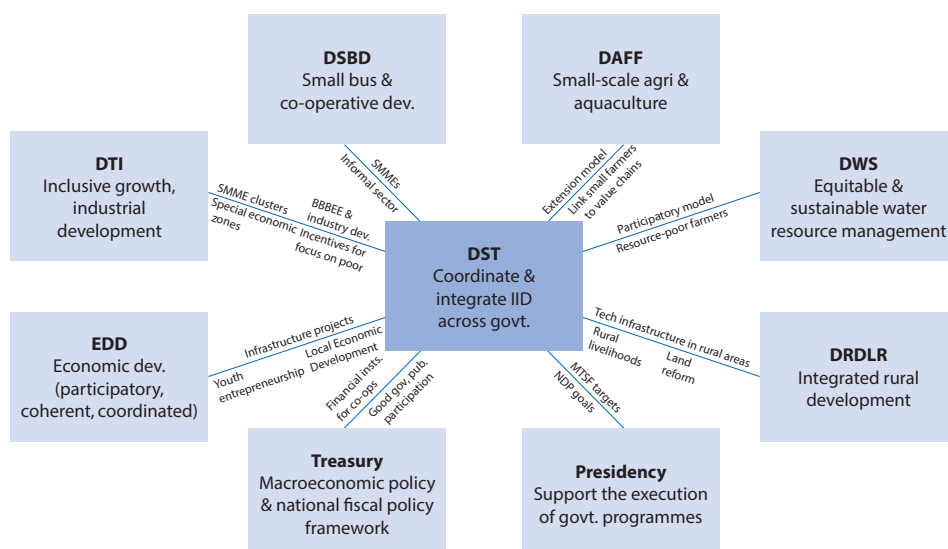


Figure 3: Spaces to deepen and extend policy alignment towards IID

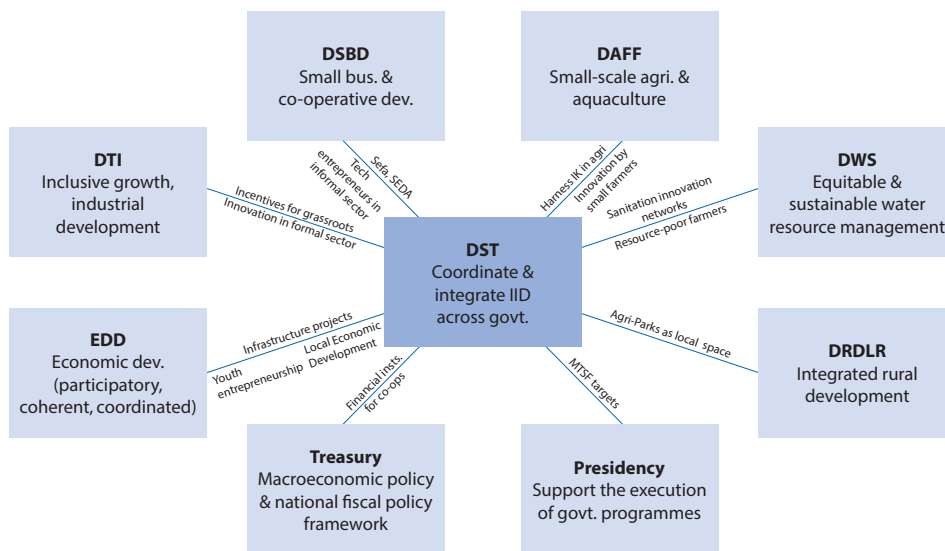


Figure 4: Gaps in policy to promote grassroots innovation

models to inform strategies for inclusion and participation in other types of public goods provision.

(2) New policy instruments to fill the gaps

Figure 4 shows gaps in existing instruments which will require that the DST designs new instruments. For example, missing policy mechanisms to promote grassroots innovation (each gap is identified on the line between the DST and the lead government department).

In the network diagram (Figure 4), we propose a type of policy network that the DST can initiate and coordinate around grassroots innovation. We identify specific spaces where the DST can intervene. For example, the DAFF's strategies do not include a focus on the indigenous and local knowledge of farmers in the informal sector – a gap the DST can address by extending and aligning its own Indigenous Knowledge Systems strategy. The DRDLR has a strategy to build Agri-Parks to stimulate agro-processing at the local level, but does not include goals and mechanisms to stimulate grassroots innovation – a potential space for DST intervention. The

DST can link and introduce innovation policy targeting the informal sector into the DSBD's National Informal Business Upliftment Strategy (NIBUS) programme to uplift informal businesses, and it can partner with the DWS, the EDD and the DSBD to support the creation of livelihood opportunities in relation to the provision of water and sanitation services. Participation by municipalities, traditional authorities, community organisations and local leadership may have a greater impact and lead to the realisation of inclusive development goals.

The DST also has gaps in its own array of instruments, which are oriented more strongly to formal institutions. For example, there is a need to create mechanisms to review, incentivise and support formal science, engineering, technology and innovation institutions (SETIs) in order to extend their knowledge to engage with the needs and knowledge of informal and marginalised actors.

The report provides a detailed list of the spaces for intervention we identified in terms of promoting the goals of IID. The DST should use this to identify mechanisms and actors to

link and connect national programmes and interventions at local levels of implementation across government departments.

(3) Build implementation networks to realise good policy intent

Diffusing and implementing an IID strategy requires the political will to reprioritise and change existing policy, and foster innovation and socioeconomic inclusion. The danger is that policy actors may formally appear to support the DST's IID goals while carrying on with 'business as usual' on the ground or in practice. Hence, our analysis of formal policy documents can only indicate the government's strategic intent. It does not take into account the political will to enact these policy instruments, nor the capabilities and resources to implement policy instruments effectively and efficiently.

The major challenge for the DST is to identify mechanisms to orchestrate effective development networks for implementation across government. We need to understand how to strengthen the implementation networks required to enact existing policy instruments for wider socioeconomic benefit.

POLICY BRIEF AUTHORS

- Glenda Kruss**, Deputy Executive Director: Centre for Science, Technology and Innovation Indicators, HSRC
- Il-haam Petersen**, Post-Doctoral Research Fellow, Education and Skills Development (ESD) Programme, HSRC
- Jennifer Rust**, Master's Intern, ESD Programme, HSRC
- Azinga Tele**, Master's Intern, ESD Programme, HSRC

Enquiries to:
Glenda Kruss: gkruss@hsrc.ac.za
Il-haam Petersen: ipetersen@hsrc.ac.za

Table 1: Policy alignment, misalignment, coordination and gaps

IID GOALS						
Type of policy	Policy actor	Orient formal innovation systems towards inclusion of needs and knowledge of informal actors	Reduce structural barriers in government to support informal sector development	Promote grassroots innovation	Improve absorptive capacity of informal actors	Drive effectiveness and use of innovations among informal actors
Innovation policy	DST: Enable science, technology and innovation in support of inclusive national development.	Gap: The DST has to create an integrated strategic focus to coordinate and create new instruments to promote innovation, participation and livelihoods in the informal sector.	Gap: The DST has to identify mechanisms and actors to link and connect programmes and interventions at local implementation levels across government departments.			Gap: The DST has to create mechanisms to review, incentivise and support formal SETIs in order to extend their knowledge to engage with the needs and knowledge of informal and marginalised actors.
		Potential partners for coordination and alignment: dti, DSBD, EDD, Presidency, DRDLR, DWS and DAFF.	Potential partners for coordination and alignment: Treasury, Presidency, dti, DSBD, EDD, IDC, DRDLR, DAFF, DWS and DBSA.	Potential partners for coordination and alignment: DAFF, dti, SEDA and DSBD, EDD, Presidency, DWS and DRDLR.	Potential partners for coordination and alignment: DSBD, SEDA, SEFA, EDD, Presidency, dti, IDC, DAFF, DWS and DHET.	Potential partners for coordination and alignment: DSBD, SEDA, SEFA, DAFF, DWS and DRDLR.
Socioeconomic inclusion policy	DSBD: Small, medium and micro-sized enterprise (SMME) development, including micro-, very small, small and medium enterprises and co-operatives in the formal and informal sectors.	Extend and align: The DST has to align with and integrate the DSBD's new policy instruments to promote technological upgrading, transfer and diffusion to complement support for developing business management skills and improving standards.	Extend and align: The DST's focus on local economic development should be aligned with the DBSD's instruments to build the capacity of local business associations and municipalities to support informal enterprises.	Extend and align innovation instruments: The DST has to align with SEDA and SEFA as potential partners for grassroots innovation with technology entrepreneurs in informal sector.	Extend and align: The DST has to align with DSBD, SEDA and SEFA to extend the model of community-private sector partnerships to support rural enterprise development and co-operatives through technological upgrading.	Extend and align: The DST and DSBD have to align and coordinate SEDA and SEFA instruments to create technology platforms and promote technology transfer.
		Gap: The DST has to link with and introduce innovation policy targeting the informal sector for the DBSD's NIBUS programme to uplift informal businesses.	Gap: Key DSBD instruments should focus on formalisation of requirements that may preclude participation by co-operatives in the informal economy.		Extend and align: The DST has to align with and implement more effectively the SEDA and DHET collaborative model of entrepreneurship skills training for micro-enterprises.	Align for innovation: The DST's Technology Stations Platform has to be coordinated and aligned with the DSBD's initiatives to improve support to micro-enterprises and co-operatives.
			Gap: Targeted strategies to address distinct needs of different types of informal actors.			Extend the model for socioeconomic inclusion: The DSBD has to strengthen implementation and the DST has to explore potential models for informal enterprise support and the potential of co-operatives as a mechanism to grow livelihoods.

IID GOALS							
Type of policy	Policy actor	Orient formal innovation systems towards inclusion of needs and knowledge of informal actors	Reduce structural barriers in government to support informal sector development	Promote grassroots innovation	Improve absorptive capacity of informal actors	Drive effectiveness and use of innovations among informal actors	
Socioeconomic inclusion policy	DRDLR: Land reform and revival of the rural economy.	Extend and align: The DST has to coordinate with the DRDLR's formal structures and programmes.	Extend and align: The DST has to align with the DRDLR's strategy for the revitalisation of technology infrastructure and public facilities in rural areas.	Align for innovation: The DRDLR's Rural Infrastructure Development unit is an important potential partner for grassroots innovation in rural areas.	Extend and align: The DST and DRDLR have to align and implement comprehensive rural development programmes for skills training, employment creation, and support to smallholder and land reform farmers.	Extend and align: DST to align DRDLR Agri-Parks initiatives with its own strategies for innovation hubs and regional innovation systems	
		Extend and align: The DST has to integrate innovation goals in the DRDLR's strategies and instruments targeting informal actors in order to promote livelihoods.	Misalignment: The DST has to improve and support the alignment and coordination between DAFF and DRDLR programmes and interventions around livelihoods.	Gap: The DST has to investigate the potential role of Agri-Parks as local space for grassroots innovation programmes.		Extend model for socioeconomic inclusion: The DRDLR has to strengthen implementation and the DST has to explore the potential of models for participation in land use and rights.	
				Gap: The DST has to integrate innovation goals into the DRDLR's strategies to promote rural enterprises and industrial development in rural areas.			
	DWS: Improve access to and equitable use of water and sanitation services.	Extend new models for socioeconomic inclusion and innovation: Work with the DST to draw on the DWS's models to inform strategies for inclusion and participation in other types of public goods provision.			Extend innovation model: The DWS and DST have to facilitate the participation of informal actors in sanitation innovation and technology networks.	Extend model for socioeconomic inclusion and align with innovation: Improve and extend the implementation of capacity-building programmes and models to facilitate innovation by users, and use innovation to improve access to resources.	Extend model for socioeconomic inclusion: The DWS has to strengthen implementation mechanisms for new models promoting the participation of informal actors as vehicles for diffusion.
		Extend strategy: The DWS and DST have to extend their research and innovation strategy to integrate IID.	Gap: The DWS and DST have to adapt the water and sanitation policy model to align with the DWS's policy on resource-poor farmers to facilitate participation in formal structures and innovation processes.	Gap: The DWS, EDD, DSBD and DST have to support the creation of livelihood opportunities in relation to the provision of water and sanitation.	Potential alignment: Strengthen co-ordination between the DWS, DST, DAFF and DRDLR around the implementation of water usage strategies for resource-poor farmers.		

IID GOALS						
Type of policy	Policy actor	Orient formal innovation systems towards inclusion of needs and knowledge of informal actors	Reduce structural barriers in government to support informal sector development	Promote grassroots innovation	Improve absorptive capacity of informal actors	Drive effectiveness and use of innovations among informal actors
Socioeconomic inclusion policy	DAFF: Promote small-scale agriculture and aquaculture.	Extend and align: The DST has to draw on and extend existing DAFF models for linking informal agricultural actors into formal value chains into other sectors.	Extend: The DAFF has to adapt and implement instruments for regulation and standard setting to embed the inclusion of small-scale and informal actors.		Extend and align: The DAFF has to build capacity of extension and advisory services to more effectively promote diffusion.	Extend and align: The DAFF has to adapt the extension policy to integrate innovation in agriculture and aquaculture extension and advisory services in order to more effectively promote diffusion by building the capacity of extension officers and advisers.
		Gap: The DST has to integrate goals of innovation and participation into the DAFF's strategies and instruments targeting informal actors to promote bi-directional knowledge flows and agency.	Misalignment: The alignment and coordination between DAFF and DRDLR programmes and interventions should be established more strongly.	Gap: The DAFF articulates the goal of small-scale farmers identifying innovation, but there is no instrument to promote grassroots innovation or harness indigenous knowledge.		Extend and align: The DAFF and DST have to investigate the potential STI role and implementation of Agriculture Development Centres.
						Extend model for innovation: The DST has to draw on the extension model of technology transfer to promote the diffusion of technology and innovation to informal actors.
	dti: Develop SMME clusters and economic zones.	Extend and align with the DST and DSBD: Expand clusters beyond a small set of formal sectors and focus more on the participation of micro-enterprises and technology entrepreneurs in the informal sector.	Extend and align: The dti has to deepen capacity development across government to promote economic zones.		Extend and align with the innovation policy: The DST has to work with the dti and IDC to support and extend SME development instruments in sectors aligned with the Industrial Policy Action Plan.	
		Potential alignment with the DST: Extend special economic zones and regional innovation systems to include informal enterprises.	Gap: The dti has to ensure that policies to strengthen framework conditions for industrial development and black economic empowerment do not disadvantage informal actors.	Gap: The dti and DST have to explore the potential for adapting innovation support instruments to include targeted and earmarked incentives for grassroots innovation.		
	Gap: The dti has to create incentives for business to develop pro-poor innovative solutions.					

IID GOALS						
Type of policy	Policy actor	Orient formal innovation systems towards inclusion of needs and knowledge of informal actors	Reduce structural barriers in government to support informal sector development	Promote grassroots innovation	Improve absorptive capacity of informal actors	Drive effectiveness and use of innovations among informal actors
Socioeconomic inclusion policy	EDD: Promote economic development through participatory economic policy and planning.	Extend and align: The DST has to work with the EDD to ensure inclusion and creation of livelihood opportunities in strategic infrastructure projects.	Extend and align: The DST's focus on local economic development should be aligned with the IDC's instruments to build the capacity of local municipalities to support informal enterprises and job creation.	Extend and align for innovation: The DST has to align and integrate grassroots innovation into the EDD and Presidency's instruments to promote youth entrepreneurship, co-operatives and employment in marginalised urban and rural locations.	Gap: The DST has to work with the IDC to extend entrepreneurship funding instruments that can accommodate and support informal actors.	
	Treasury: Coordinate macroeconomic policy and promote the national fiscal policy framework.		Extend and align: The DST has to work with the Treasury, DSBd and DAFF to coordinate the implementation of targeted financial institutions to support co-operatives and to improve access to credit.			
			Coordinate and align: The DST has to align with the Treasury's initiatives to promote good governance and the processes of public participation.			
			Gap: The DST should review the DBSA's instruments to determine the inclusiveness of their research and the potential to extend these to informal actors.			
	Presidency: Support the execution of government programmes.	Gap: The DST has to work with the Presidency to orient its Medium-Term Strategic Framework (MTSF) actions and commitments to include pro-poor innovation and socioeconomic inclusion.	Coordinate and align: The DST has to align with the Presidency's promotion of National Development Plan goals, and monitoring of progress on outcomes and MTSF targets.	Extend and align for innovation: The DST has to align and integrate grassroots innovation into the Presidency and EDD's instruments to promote youth entrepreneurship, co-operatives and employment in marginalised urban and rural locations.		