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Impact evaluation of Support
Programme for Industrial Innovation

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1. POLICY SUMMARY

The purpose of this evaluation is to provide insight into the effectiveness and efficiency of the current model of implementation of the Support Programme of Industrial Innovation (SPII), assess the impact of SPII and to determine how the beneficial impacts can be strengthened.

We believe that SPII should continue given the important and extremely relevant role it plays in the innovation landscape in South Africa. There are a number of policy, design and implementation issues that underpin the current and potential impact of SPII. The report's recommendations are framed in terms of these high level issues, including:

- SPII should clearly define its objectives, with corresponding targets, and its achievement of these should be measured annually. There should be clear recognition that SPII cannot be directly responsible for the short-term fulfilment of job creation, economic growth, or competitiveness targets, but that it can play an indirect role in contributing to the achievement of these outcomes.
- SPII is not an enterprise development fund, and its mandate to support innovation should not be overwhelmed by a mandate to address direct job creation. The shifts in products, productivity, scale and skills requirements that typically result from successful innovation will typically lead to job creation in the long term. This needs to be made explicit in SPII's theory of change, so that the focus and implementation of the programme is not confused and compromised by potentially conflicting goals.
- To avoid creating market distortion, SPII should continue to stimulate innovation in products/processes and in geographical areas where opportunities are the greatest.
- As maximum impact is achieved through commercialisation, the application appraisal process should more rigorously assess an applicant's prospects of successful commercialisation as a key criterion.
- Further, to maximise the impact of SPII, and given the very specific part in the innovation cycle that SPII plays, greater linkages with other innovation actors and programmes in the private and public sectors should be encouraged. SPII should consider explicitly addressing the lack of business skills amongst some of its funded projects, particularly SMEs, through improved linkages to training programmes, incubators and other competent service providers.
- The differing needs and capacities of smaller and larger firms suggests that SPII should adopt less of a one-size-fits-all approach to its application and funding processes, which should differ according to scheme. Consideration should be given to the creation of specialist teams of programme managers within each scheme with specific skills sets for the types of firms they assess and fund.
- Consideration should be given to collectively considering applications at a limited number of defined points in a year, allocating defined but flexible funding amounts to each of the three schemes per funding round, and adopting a more targeted and proactive marketing approach.
- SPII should formalise internal processes that generate lessons from applications, from successful and unsuccessful projects, and from applicants' feedback following each funding round.
- A web-based platform for applications, internal appraisals, and reporting data should be established.
- A set of indicators for success of SPII itself should be determined, linked to the objectives and targets (particularly the commercialisation of approved projects) highlighted in its theory of change, and benchmarked against the scheme's previous performance.
- All this points to the fact that SPII needs to be focused, flexible and opportunity driven and should remain a specialised innovation fund located within a specialised fund management institution.

2. EXECUTIVE SUMMARY

This report presents an impact evaluation of the Support Programme for Industrial Innovation (SPII) for the thirteen year period 2000/01 - 2012/13. The purpose of this evaluation is to provide insight into the effectiveness and efficiency of the current model of implementation of SPII, assess the impact of SPII and to determine how the beneficial impacts can be strengthened.

Although this was initially considered an impact evaluation in the Terms of Reference (ToR), the limited availability of data has constrained this evaluation's ability to robustly identify and attribute impact in all instances, and so focus is also given to the implementation factors that both limit and enhance SPII's impact. A broader recommendation for further evaluations is to conduct evaluability assessments of the projects and programmes to be evaluated prior to the finalisation of the ToRs to provide insight into the type of evaluation that can be conducted.

2.1. FINDINGS

Impact of SPII on South Africa's competitiveness and broader development objectives:

Successful commercialisation is the ultimate indicator of project (and innovation) success. Survey responses show that 25% of PPD projects and 53% of SPII matching scheme projects were commercialised. It was highlighted that bridging the gap between the pre-production prototype stage and commercialisation remains the most significant barrier impeding the success of innovations, and that this was exacerbated for smaller firms.

The survey found that only 9.93% of respondents who received SPII support said that they could have continued without SPII funding, while 57% of rejected applicants reported to not have continued with their project. The survey found that as the size of the firm increases, the ability to continue without SPII support increases; however the majority would have been at a smaller scale or over a longer time period. Further analysis revealed that an accepted SPII application has a higher probability of commercialisation than a project that was rejected. This could be that SPII assists projects to commercialise; or it could be that SPII only selects projects that are likely to succeed regardless of whether they receive SPII funding or not.

The survey results suggest that on average, both accepted and rejected SPII projects create jobs. However, it is not possible to attribute increased permanent job creation for companies that are participants of SPII against companies that are not. Projects funded by the SPII Matching scheme have been the most successful at producing jobs, while projects funded by PII have been the least successful. In total we estimate that SPII funded projects have directly created or retained approximately 3000 permanent jobs. According to the same data ZAR 622 671 640 was received from SPII by the funded projects, which equates to approximately ZAR 207 560 per job. However, it must be noted that SPII, according to its objectives, does not aim to generate employment, but merely to stimulate innovation. It is also important to note that the job figures reported here relate to those created directly within SPII recipient companies, and does not include those created indirectly once the innovation is commercialised.

Regarding skills development, the survey results show that the majority of survey respondents trained between one and five employees for their project. The case studies suggest that this is usually on-the-job training and is product specific in one-product companies.

Impact and relevance of SPII in the South African Innovation Landscape: SPII contributes to specific stages in the innovation cycle (the end of basic research to the development of a pre-commercialisation prototype). The majority of interview respondents believe that SPII fills an

important role by funding these stages, as traditional sources of funding are difficult to obtain at these points in the process in South Africa. The survey revealed that the availability of appropriate forms of financing, the cost of innovation and the length of pay-off period associated with innovation are perceived to be the greatest barriers to innovation in South Africa, all of which SPII attempts to address through its provision of grants in the less developed and risk-adverse venture capital market of South Africa.

There is direct overlap between the Technology Innovation Agency (TIA) and SPII. However, a number of industry stakeholders who have had experience working with TIA noted that SPII is the dominant player in this space, and is the more efficient and effectively run programme. This finding was supported by the findings of the 2013 Ministerial Review of TIA, which found that there was a distinct lack of confidence in TIA from both the public and private sector.

Achievement of and constraints to SPII's objectives: SPII's objectives are not clearly defined and thus the achievement of these is difficult to measure. Between **the dti** and the IDC a business plan is developed each year with targets on how many projects to fund and the monetary value available to commit to projects. When assessed against these targets, SPII has successfully met all of its annual targets and thus would be considered to have been effective. However, this narrow interpretation of assessment criteria presents an incomplete picture of the programme's effectiveness. Currently, there are no targets set with respect to the number of projects successfully commercialised, the number of projects producing a positive return on investment, or the number of (direct and indirect) jobs created.

The constraints listed by case studies and industry stakeholders to be the key constraints to innovation in South Africa were: a lack of available funding and a risk averse private investment environment, a fragmented innovation landscape where the relevant agencies work in siloes, the lack of support of linkages across value chains and between relevant agencies, the lack of business expertise on behalf of innovators, and a limited skill base. These findings were corroborated by data on investment in South Africa, the 2012 Ministerial Review and the OECD Science, Technology and Industry Outlook (2012).

Institutional efficiency as it relates to the impact of SPII: The average time between submission of a SPII application to rejection or approval is approximately 166 days. However, on the whole, case study respondents reported SPII's application process to be efficient, but this depended on the consultant and account manager assigned to the project.

Two factors are considered when evaluating an application - economic merit and the level of innovation. These are currently broad and open-ended and open to interpretation when evaluating applications.

Smaller companies reported SPII's contracting and reporting processes to be more costly and onerous than larger companies. Respondents also noted that SPII's follow-up reporting is limited to financials and employment figures and is unable to establish progress for projects that have not been commercialised yet, or provide reasoning for the lack of commercialisation.

Constraints SPII administrators face in achieving the programme's objectives were consistently reported to be a lack of funding for the scheme. It was also stated by SPII stakeholders that SPII's account managers and post-investment team is small and is often overburdened.

Sustainability: Many industry stakeholders confirmed the importance of SPII funding being grant-based as any form of repayable funding would stifle innovation. Given that SPII is grant-based, the programme itself is not financially sustainable, nor was it designed to be.

At the project level, respondents noted that projects, particularly those of smaller firms, would likely have a greater chance of success if business development support was provided in conjunction with the SPII funding or if projects were incubated during and post-SPII funding.

2.2. RECOMMENDATIONS

We believe that SPII should continue given the important and extremely relevant role it plays in the innovation landscape in South Africa, its direct impact on innovation and its potential indirect impact on long-term job creation and increased competitiveness. The report's recommendations are framed in terms of the high level policy, design and implementation issues that underpin the current and potential impact of SPII, including:

- SPII should clearly define its objectives, with corresponding targets, and its achievement of these should be measured annually. There should be clear recognition that SPII cannot be directly responsible for the short-term fulfilment of job creation, economic growth, or competitiveness targets, but that it can play an indirect role in contributing to the achievement of these outcomes.
- SPII is not an enterprise development fund, and its mandate to support innovation should not be overwhelmed by a mandate to address direct job creation. The shifts in products, productivity, scale and skills requirements that typically result from successful innovation will typically lead to job creation in the long term. This needs to be made explicit in SPII's theory of change, so that the focus and implementation of the programme is not confused and compromised by potentially conflicting goals.
- To avoid creating market distortion, SPII should continue to stimulate innovation in products/processes and in geographical areas where opportunities are the greatest.
- As maximum impact is achieved through commercialisation, the application appraisal process should more rigorously assess an applicant's prospects of successful commercialisation as a key criterion.
- Further, to maximise the impact of SPII, and given the very specific part in the innovation cycle that SPII plays, greater linkages with other innovation actors and programmes in the private and public sectors should be encouraged. SPII should consider explicitly addressing the lack of business skills amongst some of its funded projects, particularly SMEs, through improved linkages to training programmes, incubators and other competent service providers.
- The differing needs and capacities of smaller and larger firms suggests that SPII should adopt less of a one-size-fits-all approach to its application and funding processes, which should differ according to scheme. Consideration should be given to the creation of specialist teams of programme managers within each scheme with specific skills sets for the types of firms they assess and fund.
- Consideration should be given to collectively considering applications at a limited number of defined points in a year, allocating defined but flexible funding amounts to each of the three schemes per funding round, and adopting a more targeted and proactive marketing approach.
- SPII should formalise internal processes that generate lessons from applications, from successful and unsuccessful projects, and from applicants' feedback following each funding round.
- A web-based platform for applications, internal appraisals, and reporting data should be established.
- A set of indicators for success of SPII itself should be determined, linked to the objectives and targets (particularly the commercialisation of approved projects) highlighted in its theory of change, and benchmarked against the scheme's previous performance.
- All this points to the fact that SPII needs to be focused, flexible and opportunity driven and should remain a specialised innovation fund located within a specialised fund management institution.

3. SUMMARY REPORT

3.1. INTRODUCTION

The Department of Performance Monitoring and Evaluation (DPME), as part of its mandate under the National Evaluation Policy Framework (NEPF) and in partnership with the Department of Trade and Industry (**the dti**), commissioned Genesis Analytics to conduct an impact evaluation of the Support Programme for Industrial Innovation (SPII) for a thirteen year period from 2000/01 - 2012/13. SPII is a **dti** initiative that is administered by the Industrial Development Corporation (IDC). SPII supports the development of viable, innovative products and/or processes and the commercialisation thereof.

3.1.1. Objectives of the impact evaluation

The purpose of this evaluation is to provide insight into the effectiveness and efficiency of the current model of implementation, assess the impact of SPII and to determine how the beneficial impacts can be strengthened. In carrying out the evaluation the Genesis team was guided by a number of overarching questions, namely:

- What is the impact of SPII on South Africa's innovation landscape?
- What impact does SPII have on economic development through technology transfer and technology development?
- Do industry partners realise a significant return on investment (ROI) from SPII; after how long?
- Does South Africa realize a return on investment from SPII against the cost of delivering the programme in terms of:
 - Economic growth and empowerment;
 - Skills development and job creation (rate);
 - Taxable Revenue; and
 - Competitiveness.
- What happens to the Intellectual Property from complete SPII projects?
- Is SPII still relevant when considering other instruments in the innovation landscape?
- What factors in the South African context enable or constrain the beneficial impact of SPII, including the long term sustainability of those impacts?
- How can the beneficial impacts of SPII be strengthened?
- Is the current model of delivering SPII cost effective in comparison to alternative models?
- What effect do institutional mechanisms (structure, management, administration, and processes) have on the efficiency and effectiveness of delivering programme outcomes?
- How does SPII performance compare to similar programmes nationally and internationally?

Although this is considered an impact evaluation in the Terms of Reference (ToR), a number of these evaluation questions are also focused on the implementation of the programme. Furthermore, the limited availability of data has constrained this evaluation's ability to robustly identify and attribute impact in all instances, and so focus is also given to the implementation of

SPII, using qualitative and quantitative research to understand the implementation factors that both limit and enhance SPII's impact.

A critical point that the evaluation process highlighted to the evaluation team is the importance of conducting an evaluability assessment prior to finalising and issuing a ToR to ensure that the context and data available can reasonably answer particular types of evaluation questions. Had this been done in this case prior to the ToR being issued – it would have more likely been appropriate to focus this evaluation on implementation, rather than on impact.

3.1.2. Evaluation criteria

The Development Assistance Community (DAC)¹ evaluation criteria were selected as the guiding framework for the evaluation in order to gather the information required to answer all the evaluation questions. This approach provided an in depth assessment of the programme's relevance, effectiveness, efficiency, impact, and sustainability, as well as additionality.

3.2. OVERVIEW OF SPII

In discussing the SPII programme it is important to start by exploring the definition and process of innovation. According to the World Bank, innovations can be described as *“technologies or practices that are new to a given society. They are not necessarily new in absolute terms. These technologies or practices are being diffused in that economy or society. This point is important: what is not disseminated and used is not an innovation. Dissemination is very significant and requires particular attention in low- and medium-income countries.”*²

In 1989, **the dti** introduced the Innovation Support for Electronics (ISE) programme to fund up to 50% of specified costs incurred by electronics firms in the development of new products. The objective of the ISE programme was to promote technology development so as to assist import replacement and increased exportation of electronics. **The dti** appointed the IDC to administer the programme on its behalf.

In April 1993, the ISE was extended and restructured to cover all sectors of the economy as a means to catalysing a wider range of innovation. The restructured programme was thus named the Support Programme for Industrial Innovation (SPII). Specifically, SPII was designed to promote the development of commercially viable, innovative products and/or processes and facilitate the commercialisation of such technologies, through the provision of financial assistance.

Since its inception in 1993, SPII has undergone a number of changes to streamline its processes and to increase its accessibility to South African entities and general citizenry. These changes included the introduction of the Partnership Scheme in 1999 to fund large projects by corporate entities; and the introduction of the Black Economic Empowerment (BEE) Scheme to increase accessibility for BEE companies in 2004. The BEE Scheme was revised in 2005 to broaden its mandate to include support for small, very small and micro-enterprises, and as a result was renamed the Product Process Development (PPD) Scheme. Currently, SPII offers three schemes: The PPD Scheme, the SPII Matching Scheme, and the SPII Partnership Scheme (PII). These schemes differ according to the size of the applicant firms, percentage of qualifying costs covered and maximum funding amount, as shown in the table below.

¹ The OECD's DAC (Development Assistance Community) criteria provide a useful framework for evaluating developmental assistance. More information is available at <http://www.oecd.org/dac/evaluationofdevelopmentprogrammes/dacriteriaforevaluatingdevelopmentassistance.htm>.

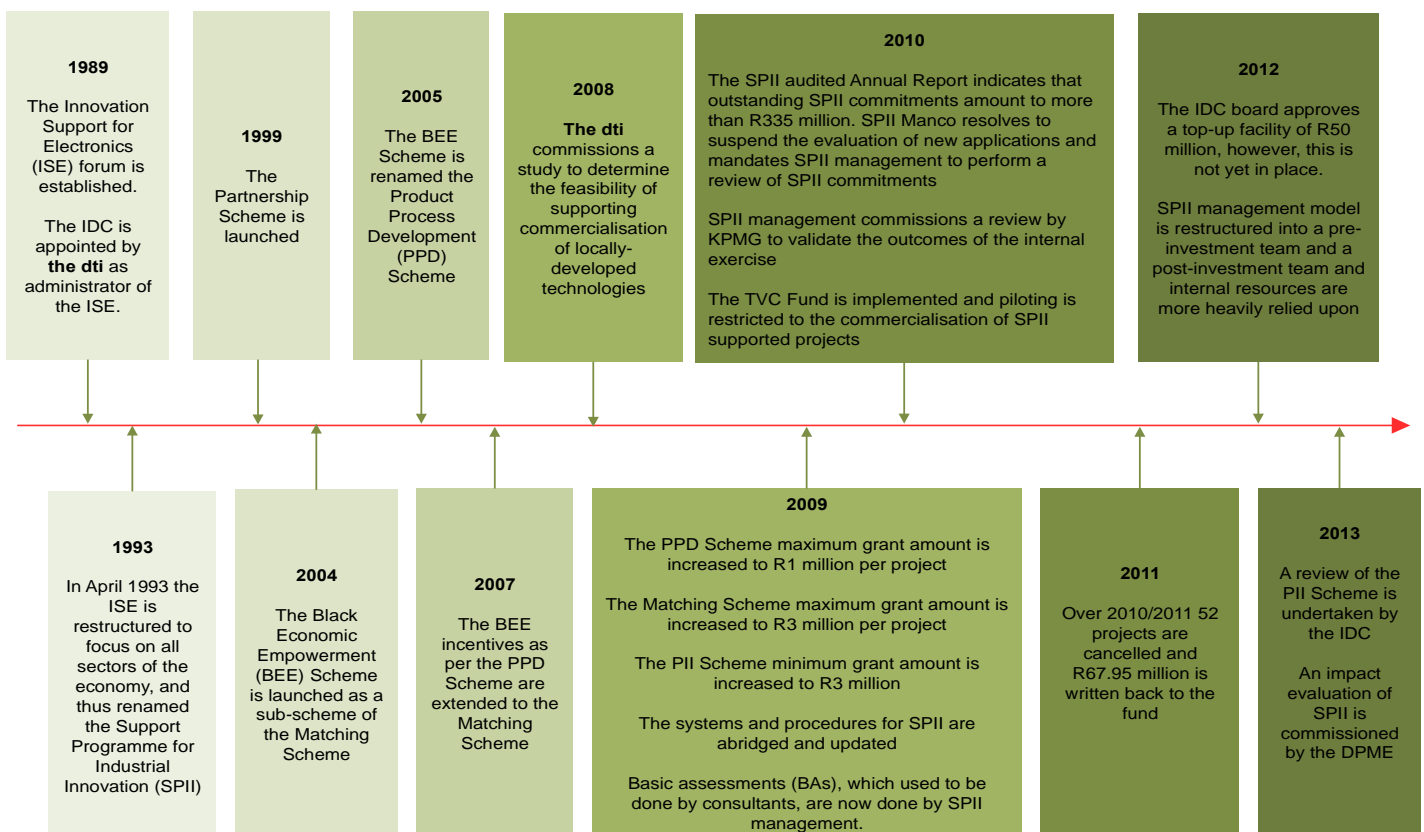
² Innovation Policy: A Guide for Developing Countries – World Bank (2010)

Table 1: Characteristics of SPII schemes

Name of scheme	Funding mechanism	Size of applicant firm	Value of grant	Grant limit
PPD	Non-repayable grant	Small, medium and micro-sized enterprises	Between 50% to 85%	Up to R2 million
Matching	Non-repayable grant	Small and medium enterprises	Between 50% and 75%	Up to R5 million
PPD	Conditionally repayable grant	Large companies	50%	Minimum of R10 million

Financial assistance is only available for projects that have already concluded basic research; and financial assistance ends after the pre-production prototype of the product or process is complete. In 2011 SPII underwent a review process in order to better align it with IDC rules and criteria. A timeline of the major changes to SPII since its inception are presented in the figure below.

Figure 1: Timeline of SPII's evolution



The majority of SPII projects are in Gauteng, the Western Cape and KwaZulu-Natal, and SPII mainly appeals to the electronics and ICT industries.

3.3. METHODOLOGY

A combination of quantitative and qualitative methodologies was used in conducting the evaluation. In addition to a document review of relevant innovation incentives and policy literature,

Table 2 presents the tools used to collect data for the evaluation.

Table 2: Data collection tools

Instrument	Response
Key informant interviews	33 interviewees (of 43 contacted)
Survey of SPII applicants (approved and rejected)	230 respondents (of 666 contacted)
Case studies of SPII funded projects	20 detailed case studies (8 in Gauteng, 8 in Western Cape and 4 in KwaZulu Natal)
Completed project reporting data review	218 (of the 401 completed projects only 218 had sales data)

3.3.1. Limitations

The evaluation faced a number of constraints, including limited reporting data, a lower response rate to the survey than expected, and the refusal or unavailability of some stakeholders to participate in the evaluation. These constraints have limited the ability of the team to identify and attribute impact certain instances and have resulted in the evaluation having a greater focus on the implementation factors that either enhance or dilute SPII’s impact. Despite this, the quality of the evaluation has not been negatively affected.

3.4. FINDINGS

The findings from the evaluation process are discussed in detail below. The findings presented draw on both the qualitative and quantitative research process.

3.4.1. Impact of SPII on South Africa’s competitiveness and broader development objectives

The impact of SPII on South Africa’s competitiveness and broader development objectives measures the extent to which SPII has directly or indirectly effected social, economic and other development indicators, be they intended or unintended.

3.4.1.1. Achievement of projects funded by SPII

Successful commercialisation is the ultimate indicator of project success. However, it must be noted that many projects take longer than three years to reach commercialisation post SPII support; thus, the reporting data likely underestimates the number of commercialised projects. Analysis of the reporting data was therefore supplemented by survey data. When splitting this measure of success by scheme, we find that the SPII matching scheme funded projects have been relatively more successful at achieving commercialisation than the PPD scheme. Figure 2 and Figure 3 illustrate this finding; while Figure 4 presents the time it took survey respondents to achieve commercialisation:

Figure 2: Survey results on commercialisation (absolute)

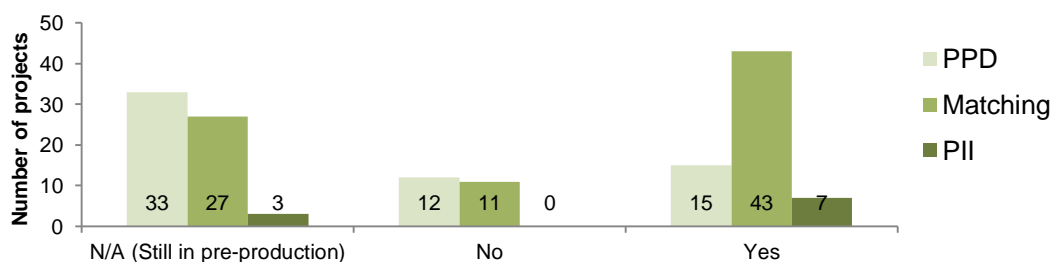


Figure 3: Survey results on commercialisation (relative)³

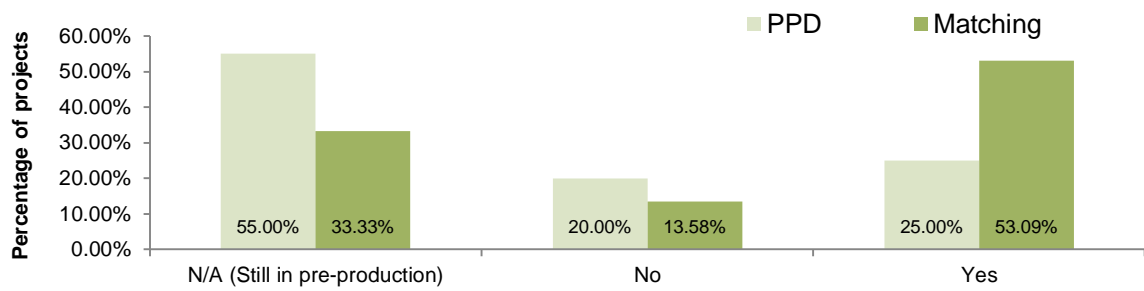
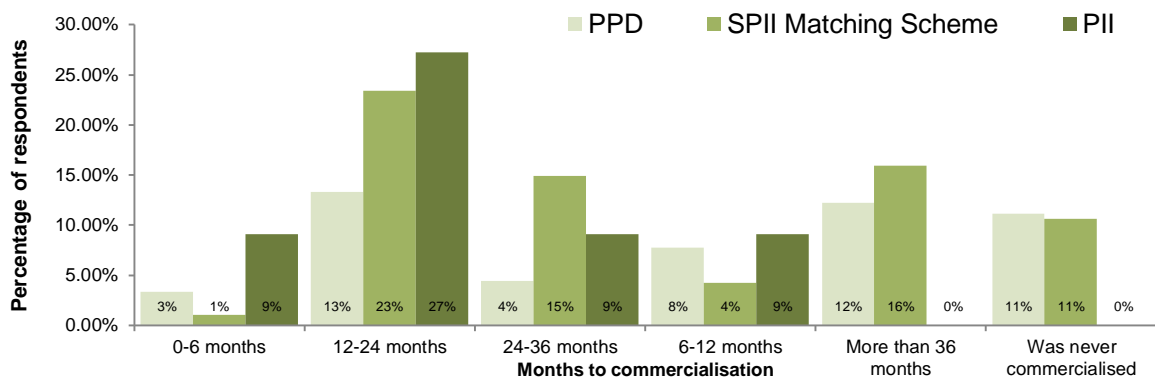


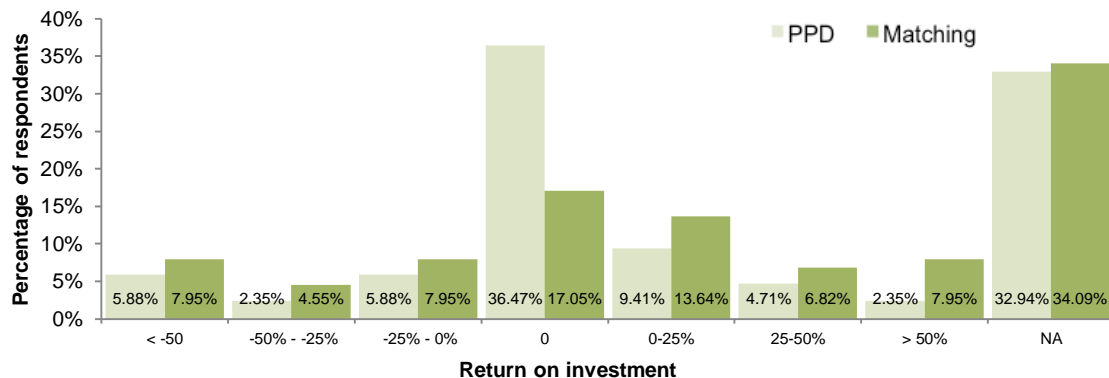
Figure 4: How long it took survey respondents to achieve commercialisation⁴



It was highlighted by industry stakeholders and case study respondents that bridging the gap between the pre-production prototype stage and commercialisation was the most significant barrier impeding the success of innovations, and that this was exacerbated for smaller firms.

Another indicator of achievement is the return of investment (ROI) produced by the innovation. The survey results report that 41.7% of SPII funded projects, for which a response was given to the question related to ROI (182), have not yet commercialised, and thus, have not produced a ROI. Furthermore, it appears that the matching scheme has been more effective at realising a return. The survey results are illustrated below in Figure 5:

Figure 5: Return on investment⁵



³ The PII scheme has been omitted, as only 10 survey participants responded to the question.

⁴ The percentage of respondents who are still in the pre-production phase are not included in the graphic

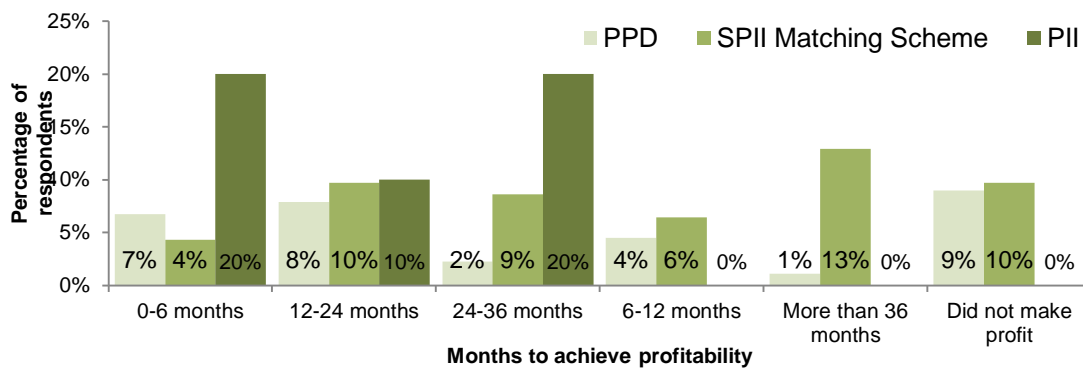
⁵ PII was omitted due to the small sample size

The reporting data captured on completed SPII projects should collect information for three years post funding support. However, in practice the data contains many missing values, despite the fact that it is obligatory for grantees to report. Even of those projects with three years of data, many have not yet begun to experience profitability and reported a negative return on investment, as it often takes longer than three years to realise a positive ROI. The ROI calculated using the reporting data should thus not be used as an indicator of SPII's achievement, as it is not representative or calculated over a long enough period of time.

Finally, the ROI of the entire programme is considered. This is calculated using the data on all grants dispersed and all reported sales. The ROI of SPII is 456%.

The time it takes a project to begin making a positive ROI is extremely varied by project and there are no strong significant findings on what the average length of time is. Figure 6 presents how long survey respondents reported it took them to make a profit:

Figure 6: Length of time to achieve profitability

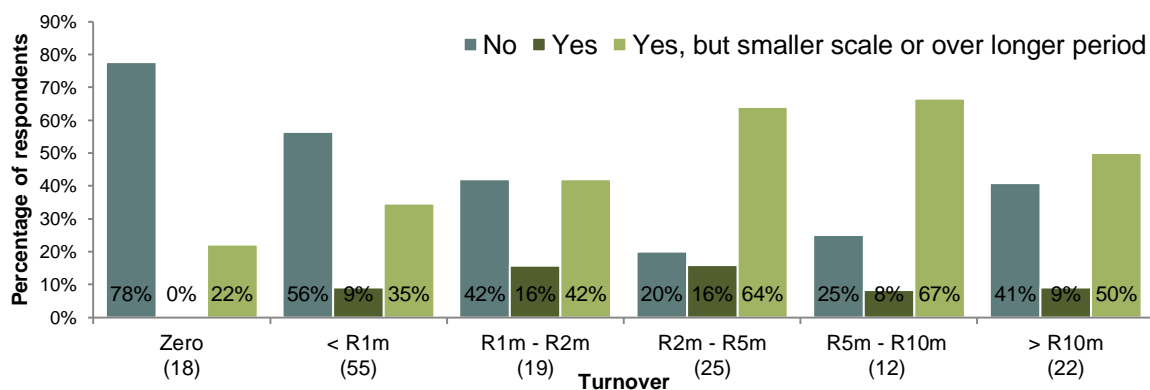


3.4.1.2. Innovation and competitiveness

The majority of respondents from the case studies felt that SPII filled a very important gap in the innovation cycle. Furthermore, the survey found that only 9.93% (15) of respondents who received SPII support said that they could have continued without SPII funding, while 57% of rejected applicants reported to not have continued with their project.

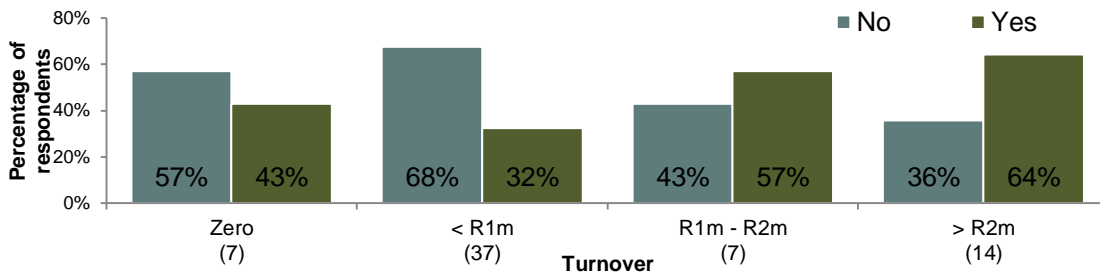
Figure 7 and Figure 8 below illustrate these findings and how there appears to be a relationship between turnover size of a firm and the ability to continue without SPII funding:

Figure 7: Would you have been able to attempt your project without SPII funding?⁶



⁶ Number of respondents reported in brackets

Figure 8: Did unsuccessful applicants continue despite lack of SPII support?



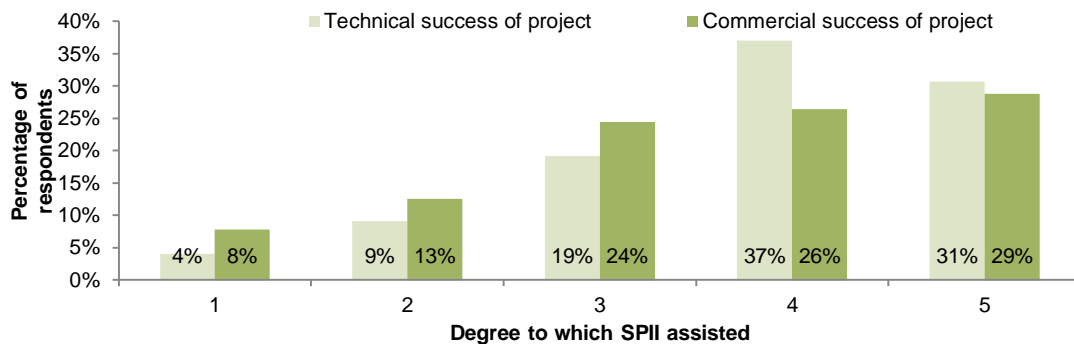
These results cannot be interpreted as SPII creating innovators, but rather that SPII helps facilitate and enable innovation, as it provides those with innovative ideas with access to finance, the absence of which represents a binding constraint on further investment in the idea.

Further analysis, using a probit model, indicates the following:

- Holding all else constant and on average, an accepted SPII application has a higher probability of success than a project that was rejected. This can be the result of two directions of causation. It could be that SPII funding assists projects to commercialise or it could be that SPII only selects projects that are likely to succeed regardless of whether they receive SPII’s funding or not. However, it is also possible that it is a combination of these, that SPII both selects good projects and assists them in getting to market.
- Holding all else constant and on average, the size of a company in terms of turnover is significantly positively correlated with the probability of commercialisation.

The reporting data collected by the IDC includes a five-question survey, asking to what degree SPII contributed to the ‘significant advancement in technological expertise, job creation and retention, technical success of the project and the commercial success of the project’. The respondents are asked to rate the degree of contribution from 1 to 5. Respondents generally feel that SPII contributes to both the technical and commercial success of their projects. Figure 9 below illustrates this finding:

Figure 9: Reporting data survey results of SPII contribution to success

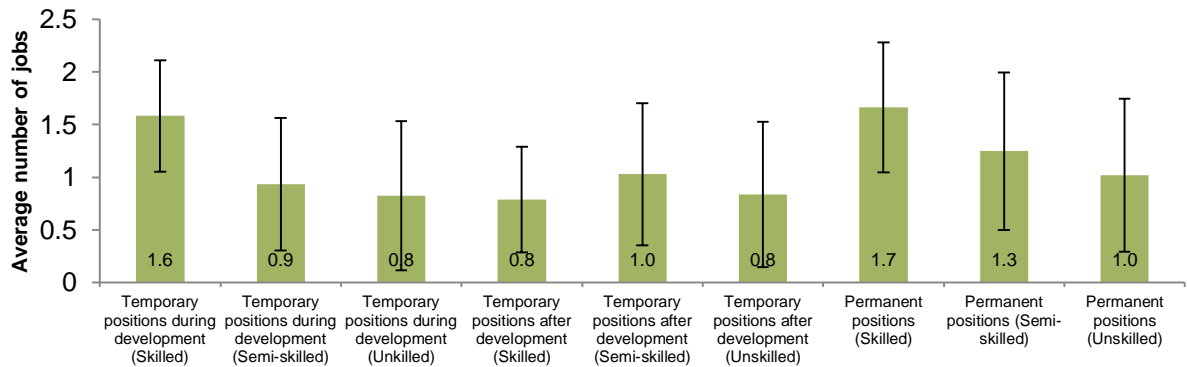


3.4.1.3. Job creation and skills development

Innovation has an ambiguous direct effect on employment; it can generate jobs by creating new markets or it can lead to temporary restructuring towards methods that can replace labour inputs. However, in the medium to long term, innovation can lead to economic development and improvements to competitiveness which will in turn lead to job creation. The survey results report

that on average, both the SPII funded and non-SPII funded innovation projects created jobs. The results are displayed below in Figure 10:

Figure 10: Survey results on average job creation per project



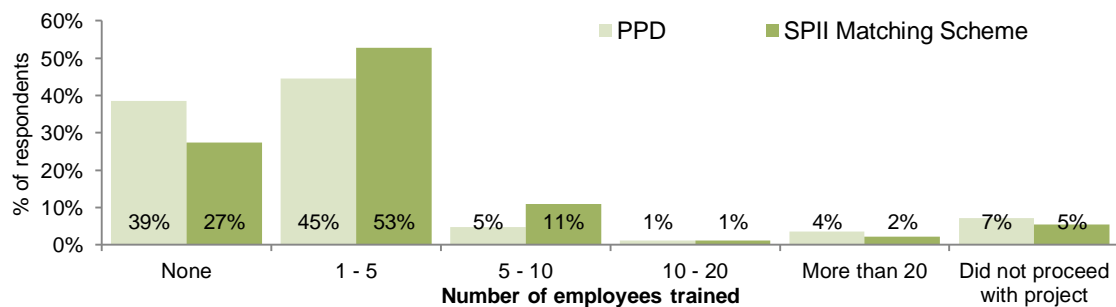
While it is not possible to attribute increased permanent job creation for companies that are participants of SPII against companies that are not, the findings illustrate that many jobs have been created by companies on SPII.

Using the reporting data from the IDC, the average number of permanent jobs created per sector and scheme is calculated. In total we estimate that SPII funded projects have directly created or retained approximately 3000 permanent jobs. According to the same data ZAR 622 671 640 was received from SPII by the funded projects, which equates to approximately ZAR 207 560 per job. However, it must be noted that **SPII, according to its objectives, does not aim to generate employment**, but merely to stimulate innovation. It is also important to note that the job figures reported and analysed here relate to those created directly within SPII recipient companies, and **does not include those created indirectly once the innovation is commercialised**.

Projects funded by the SPII matching scheme have been the most successful at producing jobs, while projects funded by PII have been the least successful. The electronics sector dwarfs the other sectors in terms of job creation. However, it must be noted that the SPII scheme and the electronics sector make up approximately 60% of the funded projects.

Regarding skills development, the survey results from SPII-supported projects show that the majority of respondents trained between one and five employees for their project, while approximately 30% did not train any. The case studies suggest that in one-product companies, the entire staff is re-trained; however, this training is not necessarily technical and is product specific, such as training sales people in the knowledge of the new product.

Figure 11: Number of employees trained⁷



⁷ PII omitted due to small sample

3.4.2. Impact and relevance of SPII in the South African innovation landscape

Impact and relevance of SPII in the South African context assesses the programme's relevance in the broader South African innovation landscape and the extent to which the programme is suited to the needs of the beneficiaries and its ability to achieve impact.

3.4.2.1. The applicability of SPII's objectives in the South African context

SPII's mission is to "promote and assist technology development in the South African industry through the provision of financial assistance for projects that develop innovative products and/or processes"⁸. SPII administrators noted that SPII is housed within **the dti**, and so also aims to promote economic growth, employment and equity.

SPII has also been linked with Outcome 4 of the President's Delivery Agreement, which is centred on job creation and decent employment. Industry stakeholders' opinions varied around the extent to which SPII furthers these objectives. Generally respondents felt that SPII makes an *indirect* contribution to these objectives - innovation in itself typically creates relatively few direct jobs. However, when products or processes are successfully commercialised, a significant number of indirect jobs may be created. It was frequently noted that there should be better monitoring of these indirect impacts. Regardless, it is extremely important to note **SPII was not designed to achieve these broader objectives**. The Delivery Agreement and labour focus are relatively recent developments in SPII's long history.

Industry stakeholders reported that South Africa is producing a substantial amount of research. However, very little of this is converted into commercialised products or processes. A number of stakeholders noted that SPII enabled the translation of some research into working products/processes.

3.4.2.2. The relevance of SPII in the innovation process and in relation to other programmes and funding mechanisms

SPII contributes to specific stages in the innovation cycle - specifically, SPII's mandate covers the stages from the end of basic research to the development of a pre-commercialisation prototype. Industry stakeholders were of the opinion that SPII does fill an important role by funding these stages, as traditional funding from commercial banks is difficult to obtain at these points in the process in South Africa. Although it was felt that SPII fills an important gap, over 50% of industry stakeholders noted that the further jump to commercialisation can be significant and requires funding support, which SPII does not provide for.

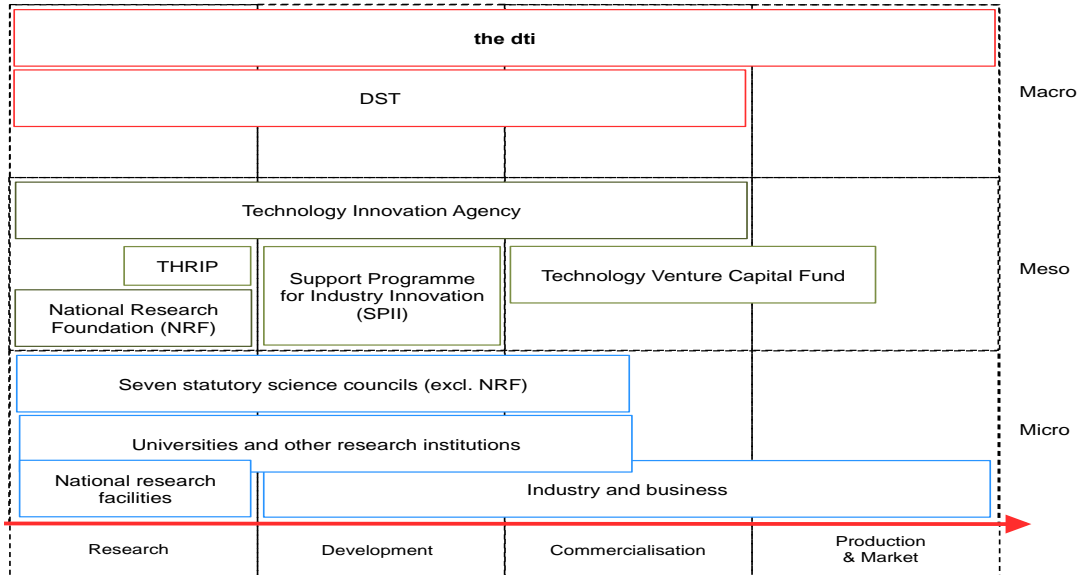
There are a number of different players in the innovation landscape in South Africa. However, a number of industry stakeholders who have had experience working with TIA noted that SPII is the dominant player in this space and is the more efficient and effectively run programme. This finding is further confirmed by the 2013 Ministerial Review of TIA, which found that there was a distinct lack of confidence in TIA from both the public and private sector.

Figure 12 below plots the location of these players in the innovation landscape. As this illustrates, there is direct overlap between TIA and SPII as both programmes provide funding for the purpose of prototype development. However, a number of industry stakeholders who have had experience working with TIA noted that SPII is the dominant player in this space and is the more efficient and

⁸ http://www.spil.co.za/SPII_intro.html

effectively run programme⁹. This finding is further confirmed by the 2013 Ministerial Review of TIA¹⁰, which found that there was a distinct lack of confidence in TIA from both the public and private sector.

Figure 12: South African innovation landscape 2013



Source: Genesis Analytics, 2013

3.4.2.3. The appropriateness of SPII funding

Qualifying expenditures that SPII covers were generally considered to be appropriate. However, it was noted that SPII does not cover overhead costs of employees and that in some case studies; the beneficiaries noted that although SPII covers various labour related costs, the ceiling on professional fees, which is determined by position and qualification, is prohibitive.

Whilst this exceeds the mandate of SPII, as mentioned above, a number of beneficiaries noted the need to cover tooling-up, market research and marketing costs. Industry stakeholders and the case studies confirmed this by noting that the allocated R50 000 for market research from SPII was insufficient to develop a business plan able to convince venture capitalists to invest. Moreover, PPD applicants found marketing, tooling-up, quality assurance and market analysis relatively larger than the matching fund applicants did.

There were mixed reactions as to the appropriateness of the values of SPII's grants. Many beneficiaries noted that while they could not expect SPII to fund the full value, funding the shortfall was problematic. This was particularly true of the smaller companies that found it difficult to obtain funding from the more traditional sources such as commercial banks. However, it was generally agreed that having 100% grants opens the programme to risk and that having to put down a small contribution signals the innovators' confidence in their product.

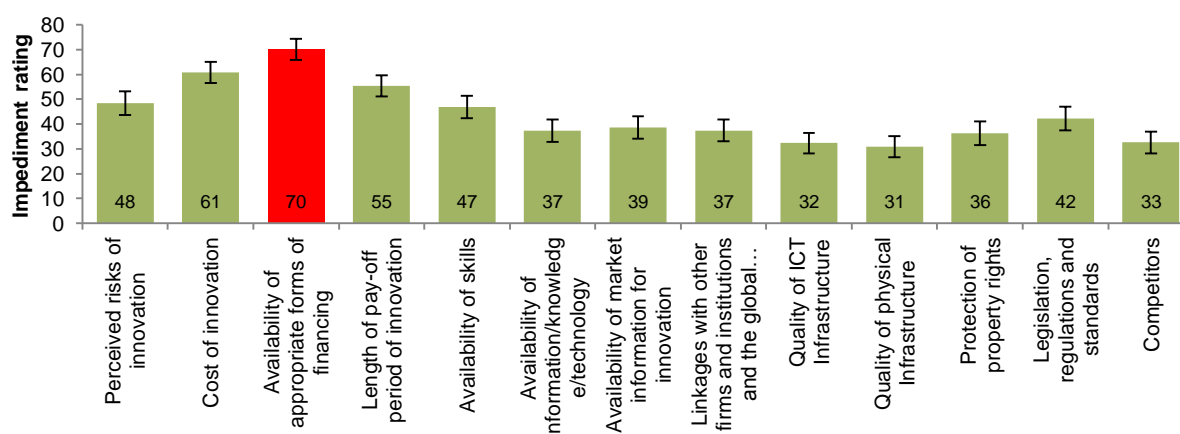
3.4.2.4. The impact SPII has in reducing the barriers to innovation in South Africa

⁹ This may be as a result of TIA's lack of maturity in this space and its recent changes.

¹⁰ THE REVIEW OF THE TECHNOLOGY INNOVATION AGENCY - Prepared for the Minister of Science and Technology, April 2013

The results of the survey of SPII applicants reveal that the availability of appropriate forms of financing is perceived to be the greatest barrier to innovation in South Africa. This is supported by the findings from the South African Innovation Survey conducted in 2008, where the three most-cited factors that hamper innovation were: the lack of funds within the respondent's enterprise or group, lack of finance from sources outside of the respondent's enterprise, and the high costs of innovation.¹¹ This issue is compounded by the finding that the cost of innovation and the length of pay-off period associated with the innovation are the second and third greatest perceived impediments, respectively. Figure 13 below illustrates the perceptions of survey respondents as to what the greatest impediments to innovation are. This question was answered using to a sliding scale between 0 and 100, with 100 meaning insurmountable and 0 meaning not a consideration.

Figure 13: Perceived impediments to innovation in South Africa



The key informant interviews and case studies further confirm that South Africa's venture capital market is less developed and more risk-adverse. SPII does not directly overcome this constraint as it only assists with the early stages of the innovation cycle, rather than the typical venture capital stages of getting the product/process commercialized and to the market.

Another major barrier that was identified through the case studies and key informant interviews is the lack of the necessary business skills needed to manage the innovation process and then to commercialise it. This lack of business skills is particularly apparent in the smaller and start-up companies. Currently, SPII is not mandated to offer business support to overcome this impediment.

3.4.3. Achievement of and constraints to SPII's objectives

This criterion measures the extent to which the programme is meeting its objectives, and identifies the constraints to attaining these.

3.4.3.1. Achievement of SPII's objectives

SPII's objectives are not clearly defined and thus the achievement of these is difficult to measure. The current objectives are to:

- Achieve a meaningful increase and improvement of the competitiveness and commercialisation of SPII supported technologies;
- Achieve a meaningful increase in the number of innovative products and processes developed in South Africa; and,

¹¹ HSRC (2008). The South African Innovation Survey pg 47

- Achieve increased and balanced participation (of women, previously disadvantaged individuals, BBBEE and youth in technology development)

Between **the dti** and the IDC a business plan is developed each year with targets on how many projects to fund and the value to be committed to projects. When SPII's performance is assessed against these targets and against its expenditure as a percentage of the Medium Term Expenditure Framework (MTEF) spent annually, SPII has met all its targets and thus would be considered to have been effective. In fact, by this measure SPII has been exceeding its targets. The table below summarises the current commitments and available MTEF budget:

Table 3: Summary of SPII commitments, MTEF expenditure and fees¹²

	PPD	Matching	PII
Committed	R 62 574 713	R 111 048 718	R 6 140 338
MTEF (Surplus/deficit)	(R 27 703 806)	R 14 059 079	R 4 398 475
Management fee	R 13 270 000		

Two moratoriums on funding commitments have been drafted recently in attempts to curb the overall deficit. As mentioned above, targets are set through establishing the number of projects to be funded and the value. Currently, there are no targets set with respect to the number of projects successfully commercialised, the number of projects producing a positive return on investment, the number of (direct and indirect) jobs created, or other economically orientated measures of impact.

3.4.3.2. Constraints to SPII achieving its objectives

Case study beneficiaries and industry stakeholders were asked what they consider to be the key constraints to innovation in South Africa. The constraints consistently listed were: a lack of funding, a fragmented innovation landscape, the lack of linkage support, the lack of business expertise on behalf innovators, and a limited skill base; each of which are described below. The lack of appropriate funding was supported by the survey findings presented in Figure 13.

Lack of funding

The South African banks and other private investors are considered to be relatively risk averse. This risk aversion restricts enterprises from entering into the innovation landscape, as they cannot obtain the necessary funding. Beyond the survey data supporting this, South Africa's relatively low percentage of GDP invested in R&D validates this finding; South Africa invests 1% of its GDP in R&D, while the average for emerging markets is 1.3%.¹³

Fragmented innovation landscape

The South African innovation landscape is reportedly highly fragmented, where the various agencies, including the DST, **the dti**, Seda, TIA, innovation hubs and SPII work in silos and their linkages with private players are limited. It was noted in the key informant interviews and the case studies that there is much confusion over the positions that TIA and SPII fill, and that there is duplication across the two funds. Should effective collaboration take place between the relevant agencies, projects could successfully transfer from one stage in the innovation cycle to the next; however, this transition is not currently facilitated because of the fragmented nature of the industry. This finding is supported by The Ministerial review (2012), which found that the national system of innovation (NSI) in South Africa is extremely fragmented; in particular, there is a lack of coordination between the different government departments that form part of the NSI.

¹² SPII Dashboard, as of 5 February 2014

¹³ 2014 GLOBAL R&D FUNDING FORECAST, Battelle

Interviews with SPII administrators suggest that a greater collaborative effort is underway, particularly in terms of greater collaboration with TIA. If this collaboration strategy is implemented effectively over time, these perceptions may change.

Lack of linkage support

Industry stakeholders noted that South Africa operates in a “closed innovation” space whereby innovators protectively keep their ideas to themselves rather than openly sharing and learning from other innovators. This environment, in conjunction with the lack of linkage support in the innovation landscape, limits innovation in the country. The case studies consistently noted linkages support as being necessary to ensuring successful commercialisation. The type of support needed varied by company.

Respondents commonly noted the following linkages, which revolve around SPII taking on a facilitation role, as being necessary for the successful commercialisation of their project: links to other SPII projects for mentorship opportunities, introductions to international investors and/or clients through exhibitions, introductions to other government departments for procurement opportunities, links to suppliers through a trusted supplier database, and introductions to other government funding agencies or programmes. SPII does indicate that there are aspirational goals to support linkages; and have a few working partnerships in place, however, these are currently limited.

Limited skills base

The skills base in innovation is limited in two regards, the lack of experienced business people in innovation and the lack of technical skills. Innovators in South Africa are typically inexperienced business people who have creative ideas that are conducive to research and development. However, this does not always translate into the successful commercialisation of these ideas. The lack of business expertise amongst SPII recipients is so prevalent that 71% of industry stakeholders noted the need for business development support for innovators. This was further confirmed in the case studies where the smaller, start-up companies consistently commented on the need for business development support and/or mentorship.

This is not only a South African phenomenon and according to the latest OECD Science, Technology and Industry Outlook (2012), many countries are beginning to distinguish between *financial measures*, which includes direct funding and indirect funding, and *non-financial measures*, such as providing a range of services, such as provision of support services, skill development and consultancy services. There is a growing trend towards providing non-financial measures as many SMEs find this more appropriate than the former.

Additionally, complex, technical innovations require technically skilled individuals, generally with tertiary degrees. Many case studies noted that finding such employees or local subcontractors is difficult and often requires subcontracting international expertise. Both the 2007 OECD *Review of Innovation Policy* in South Africa and the 2012 *Ministerial review* noted that one of South Africa’s weaknesses in the innovation landscape was a lack of skilled human capital, particularly in the areas of mathematics, science and technology, and engineering.

3.4.4. Institutional efficiency as it relates to the impact of SPII

The efficiency of the programme is important in so much that institutional efficiency and delivery has a direct effect on the impact of the programme. Efficiency was measured by assessing the outputs of SPII in relation to the various inputs.

3.4.4.1. Application and contracting processes

On the whole, the case studies reported that the application process was efficient; however, this depended on the consultant that SPII assigned to the project to assist in the application process and the account manager assigned to the project¹⁴. Where consultants were adequately skilled and suited to the project, they were seen as being extremely efficient and helpful in the application process.

Most case studies suggested that the application process could be further improved by migrating it to an online platform, suggesting that over time this could extend to include the disbursement process. Furthermore, the survey results report that the smaller an enterprise is in terms of turnover, a greater number of additional costs, such as legal fees and external consultants, are incurred to complete the application process, which the case studies found to be a result of the smaller firms not having the in-house expertise or experience.

A number of the case studies noted concerns around the fact that the applicants themselves do not present their case to the investment panel, as this is rather done by the consultant/account manager responsible for each project. This can be beneficial for applicants with limited presentation skills. However, as the applicant has the greatest understanding of their proposal and project, there was consensus that he/she should at least be present to answer any questions of clarity for the investment panel.

Another policy-linked matter is that of the restrictions around intellectual property (IP), whereby it cannot be sold for a period of three years post-SPII funding. The European Commission's research found that it is best practice to vest initial ownership of results and inventions funded by public funds to the public research organisation where the research was conducted¹⁵. However, this was said to discourage private sector partners, given that the purpose of innovation is to realise a comparative advantage, which is frequently embodied in the IP.

It was stated by SPII stakeholders that SPII's account managers and post-investment team is small and is often overburdened. Furthermore, this team has to manage the existing projects, disbursements and reporting requirements as well.

SPII stakeholders noted that two factors are considered when evaluating an application, being economic merit and the level of innovation. These criteria are not clearly defined and are open to interpretation. Each application is evaluated against these criteria on a case-by-case basis. Other questions are asked, but are not taken into consideration when evaluating whether the project should receive funding or not.

The records of applications from October 2000 to November 2012, supplied by the IDC, show that the average time between submission of an application to the date of rejection or approval is approximately 166 days – nearly six months, while the internal target is six weeks.¹⁶

3.4.4.2. Reporting and disbursements

The gaps in reporting data received from the IDC for this evaluation illustrates SPII's challenges with reporting compliance. Despite these reporting requirements being obligatory, no punitive measures or incentives are in place to ensure compliance to them.

¹⁴ In some cases these roles are separated whereas in some cases the account manager assumes the role of the consultant.

¹⁵ European Commission (2004) Management of intellectual property in publicly-funded research organisations: Towards European Guidelines

¹⁶ SPII Business Plan, 2013

The case studies illustrated that SPII's reporting requirements are appropriate for larger companies; however, for smaller companies they can be arduous and resource consuming.

It has been noted that SPII's follow-up reporting in the three years after project completion is limited to financials and employment figures. Therefore, the data is unable to establish progress for projects that were not yet commercialised in those three years, or provide reasoning for the lack of commercialisation.

3.4.4.3. Communication

The case studies revealed mixed responses on the communication processes of SPII; this was highly dependent on timing and the nature of the process.

Regarding the marketing of SPII, it was revealed that SPII does not market itself as it is already oversubscribed. 82.8% of survey respondents claimed to have come to know about SPII through word of mouth, referral from another programme or independent research.

When case study respondents and industry stakeholders were asked about how they feel about the marketing of SPII, it was noted that openly marketing SPII could open the programme up to undesirable applicants. It was suggested by a case study respondent that SPII should only market itself through existing innovation networks, such as innovation hubs and technology transfer offices.

3.4.4.4. Management and structure of the programme

The SPII team reported concerns around the arduous legal and financial processes a project must go through before being approved as this is decreasing SPII's appetite for risk. The importance of experienced, suitable account managers was also highlighted as essential to the successful running of the programme. The case studies reported mixed experiences with these account managers, which were heavily dependent on the suitability of the account managers' background and skills to the innovation of the case study.

The management of the SPII programme was generally noted by industry stakeholders to be better than the other innovation programmes in South Africa, with the administration of the programme and the programme's reliability noted as differentiating factors.

In terms of structure, SPII administrators suggested that SPII should have greater collaboration with Seda and TIA. As these programmes are more focused on the commercialisation process, projects should be introduced to other institutions that focus on the next phase of the innovation cycle to improve their chance of successful commercialisation. The head of Development Finance at the IDC explained that SPII has a tentative relationship with TIA at the lower levels of implementation; however, more direction is needed from departmental level to ensure true collaboration and synchronisation.

Administrators of SPII were also asked what constraints they face in achieving the programme's objectives. This was consistently reported to be a lack of funding. This is evidenced by the fact that two moratoriums on funding commitments have recently been implemented.

3.4.5. Sustainability

The sustainability of SPII measured the extent to which the benefits accrued from SPII were likely to continue once SPII funding ended.

3.4.5.1. The sustainability of SPII's budget

SPII administrators felt that because SPII (the PPD and Matching schemes specifically) has always been a grant-based scheme, it was unlikely that other more sustainable funding mechanisms would be considered. Many industry stakeholders confirmed the importance of SPII funding being grant-based as any form of funding that requires repayment can stifle innovation, particularly in the inherently risky stages of the innovation process that SPII targets. Given that SPII is grant-based, the programme itself is not financially sustainable, nor was it designed to be.

The two moratoriums on funding commitments illustrate the significant demand for SPII grants and the budgetary constraints that SPII faces. SPII administrators referred to the IDC "top up facility" whereby the IDC allocated a R50 million grant to SPII.

SPII administrators raised concern around PII's viability, value for money and sustainability. The size of these projects and the corresponding grants are so immense in comparison to the other schemes that one large project could essentially use the vast majority of SPII's budget. PII uses repayable grants, but the low number of PII-funded projects means that this does not contribute significantly to the sustainability of the SPII programme as a whole.

3.4.5.2. The success of the projects which SPII has funded

A SPII administrator noted that the PII programme has had extremely limited success, and that there is currently a process underway to determine why these projects have not been successful. The Matching scheme was considered to be the most successful of the schemes as these projects reportedly have the highest commercialisation rate. Although the administrator noted that the PPD scheme was not as successful as the Matching scheme, these projects were considered to need funding the most.

Respondents noted that projects would likely have a greater chance of success if business development support was provided in conjunction with the SPII funding or if projects were incubated during and post-SPII funding.

3.5. ANALYSIS

3.5.1. Impact

3.5.1.1. What is the impact of SPII on the innovation activity in South Africa?

SPII is considered to be one of the stronger innovation incentive programmes in South Africa and plays an important role in overcoming what is considered to be the greatest constraint to innovation in the country – access to finance. This is particularly true given the limited and risk-averse nature of the venture capital and angel financiers in South Africa, as well as the areas in the innovation cycle that SPII targets, namely basic research to pre-commercialisation prototype.

The survey data that shows the majority of successful SPII applicants would not have been able to continue their project without SPII funding, or that it would have taken longer, further indicates the important role SPII has played in increasing innovation activity in South Africa.

However, the demand for SPII funding far exceeds the amount it is allocated to commit to projects each year, thus limiting the number of projects that can be approved. This suggests that the potential exists for the programme to have a far greater impact on innovation activity, although this

will also depend on the effectiveness of SPII's marketing, applicant selection processes and linkage support.

3.5.1.2. What impact does SPII have on economic development through technology transfer and technology development?

An innovation project can only contribute to economic development if it is commercialised. SPII provides funding during a fundamental stage in the innovation process, but because this funding ends at the pre-commercialisation prototype phase, economic development cannot be *directly* attributed to SPII. One of the major themes that emerged during this evaluation was the challenge innovating firms face in bridging the gap from prototype development to commercialisation. While SPII, under its current mandate, cannot address this challenge directly, by collaborating closer with other agencies that support commercialisation, through funding and other mechanisms of support, such as mentoring, business development service provision and/or incubation, this gap could be reduced and technology transfer and development could be enhanced – thus enhancing the economic impact of the incentive. SPII does provide hand-holding support to applicants during the basic assessment stage of the application process, but this remains limited to the proposal development process, rather than throughout the funding period. SPII is also looking at establishing closer links with the TIA technology stations, with a particular focus on incubation, but this remains aspirational at this stage and is limited to a limited set of state-funded agencies. The role for private incubators and other service providers of a range of support mechanisms could be further explored.

Nevertheless, the data collected by the IDC reports that ZAR 3 459 014 309 in sales¹⁷ has resulted from SPII funded innovations since 2000¹⁸ and that SPII has disbursed ZAR 622 671 640 over the same period. The sales figure is likely also an underestimate, as many projects have not submitted sales data and even the ones that have, have done so for a maximum of approximately four years. Furthermore, an accepted SPII application has a higher probability of success than a project that was rejected, which can be the result of either SPII funding assisting projects to commercialise or SPII only selecting projects that are likely to succeed or a combination of these.

A challenge with defining SPII's impact on economic development is that the data on SPII-funded projects post funding is limited. SPII requires that projects report on financials and employment figures for only three years after project completion and SPII has experienced difficulties in retrieving this standard reporting data from clients. This does not allow for the monitoring and evaluation of projects that have not commercialised. This means that there is a lack of the necessary measurement and evaluation systems for rigorous evaluation and identification of determinants of success.

3.5.1.3. Do industry partners (recipients) realise a significant return on investment (ROI) from SPII in terms of profitability, skills development, and sustainability of the enterprise? After how long is the ROI realised?

The survey data shows that 57% of projects have not yet been commercialised, and thus have not produced a ROI. Furthermore, according to the reporting data 20.42% of the matching fund and 14.11% of the PPD supported enterprises are experiencing a negative ROI because of the time it takes to begin generating profit, with some survey respondents reporting that it took them longer than three years to generate a return.

¹⁷ The sales figure cannot be solely attributed to the SPII funding, but to the innovation projects themselves

¹⁸ This value cannot be solely attributed to SPII's input, as projects may have had other driving inputs.

It appears that the matching scheme has been more effective at realising a return than the PPD scheme. The ROI of the entire programme was calculated, using the data on all grants dispersed and all reported sales, to be 456%. Because innovation and SPII funding can result in the financial or strategic repositioning of a business, it often does realise a return on investment in terms of enhanced competitiveness and sustainability. However, these ROI figures are highly unreliable due to the nature of the data on sales figures only being collected for three years post-funding and with many projects not even complying with this reporting requirement. We believe that SPII cannot be accurately evaluated on this indicator for that reason.

In terms of skills development, 45% of PPD- and 53% of matching scheme-funded survey respondents have trained 1-5 employees. The majority of this is on-the-job training, rather than formalized, accredited training. Thus, the training is highly specific to the company in question.

3.5.1.4. Does South Africa realize a significant return on investment from SPII against the cost of delivering the programme?

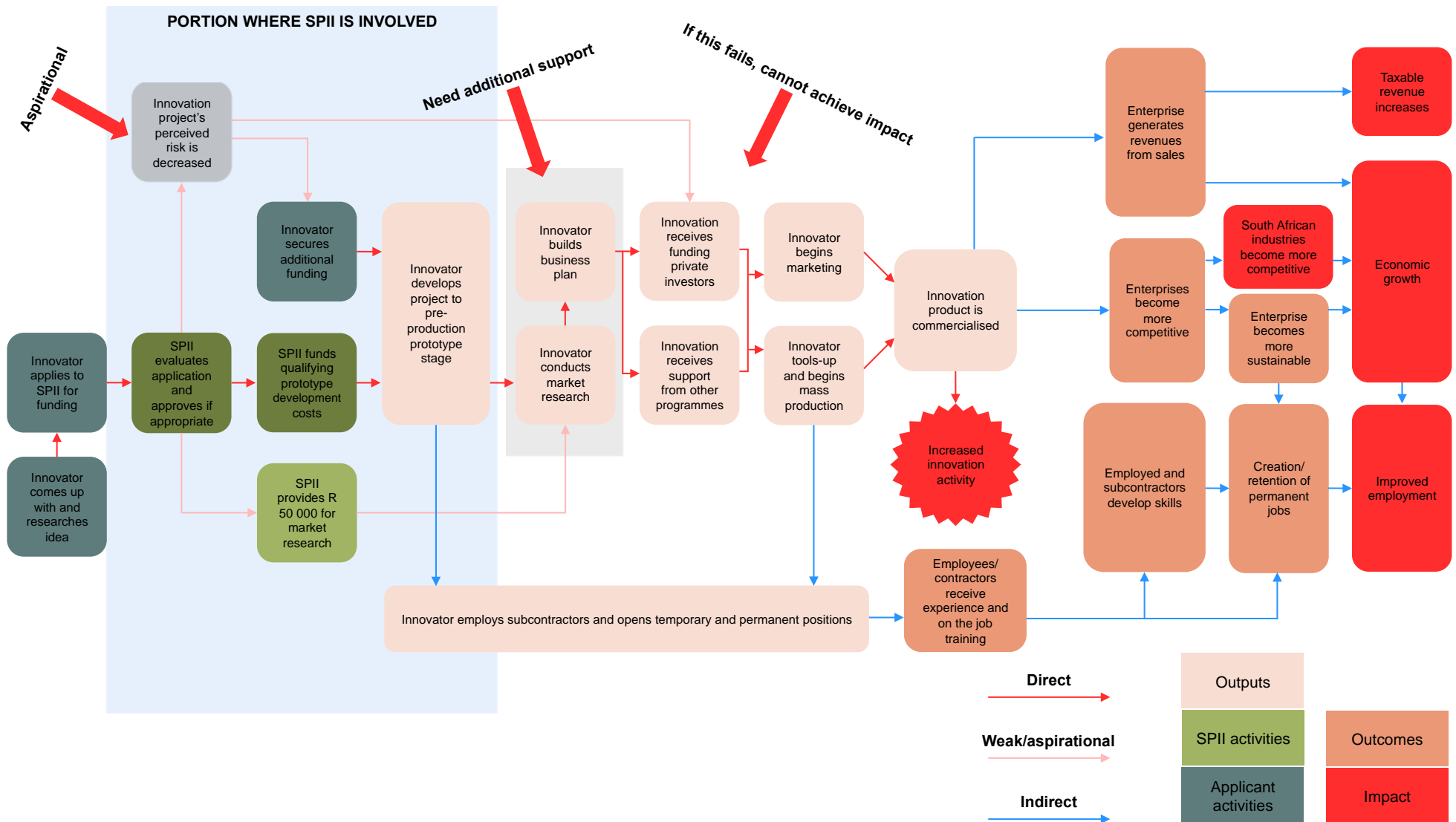
In total we estimate that SPII funded projects have directly created or retained approximately 3000 permanent jobs. According to the same data ZAR 622 671 640 was received from SPII by the funded projects, which equates to approximately ZAR 207 560 per job. However, one of the major findings of this evaluation is that SPII does not contribute to the above four areas directly. Only after they are successfully commercialised do SPII investments actually contribute to enterprise and economic growth, permanent job creation, tax revenues and competitiveness. This is true by definition – there is no “economic value” until commercialisation happens.

SPII, according to its objectives, does not aim to generate employment or economic growth, but merely to stimulate innovation and enhance commercialisation. SPII should therefore do what it can to facilitate and enable the development of innovation projects that will ultimately result in commercialised products/processes.

The theory of change in Figure 14 demonstrates SPII’s direct and indirect impacts. It shows the limited direct contribution of SPII to broader economic development indicators, and emphasises the importance of improving SPII-funded projects’ chances of commercialisation and success through linkages with other funding and support mechanisms, as well through market research and business plan development. This further illustrates that economic development will only occur once the project is commercialised.

Nevertheless, following the logic that, as reported in the survey, SPII funded projects would not have taken place or would have taken place over a longer period or on a smaller scale if they had not received SPII funding, and that these same projects reported creating or retaining jobs, it follows that the SPII funding indirectly impacted on job creation or retention.

Figure 14: SPII theory of change



3.5.1.5. What happens to the Intellectual Property from completed SPII projects?

Given the limited available SPII data, these impact questions are difficult to answer for the programme as a whole. The findings above shows that 42% of survey respondents' projects that were supported by SPII have commercialised, while 44% are still in pre-production and 14% did not commercialise. The Matching scheme appears to be more successful than the PPD scheme in terms of commercialisation. Whether that IP from commercialised projects has remained in the country or not cannot be determined from the data available.

However, in terms of process, a number of case study respondents cited a number of challenges with SPII's rules related to IP. While there are mechanisms within SPII for clients to motivate the selling of their IP, there are instances of firms resigning from the programme because of the IP rules. This is particularly the case for international investors who require security for their investment and who are inherently sceptical of the extent to which the government has control over the IP. However, there are also cases where SPII's IP restrictions have benefitted the company in question. While responses to this issue are mixed, this raises broader questions around South Africa's industrial growth and the effect IP regulation has on foreign investment in the country, which is outside the scope of this evaluation. However, research by the European Commission regarding the management of IP from publicly-funded research found that best practice is to vest initial ownership of results and inventions funded by public funds to the public research organisation where the research was conducted¹⁹. This has been recognised by several studies and by an increasing number of countries, which have passed specific regulations to that effect.

3.5.1.6. Is SPII still relevant when considering other instruments in the innovation landscape?

The majority of respondents to this evaluation believe that SPII is still highly relevant when considering other instruments in the innovation landscape. SPII is one of the only programmes funding projects in the pre-commercialisation prototype stage of innovation, and while TIA overlaps with SPII in this stage, industry stakeholders and one case study that had experience with both interventions reported that SPII was run more efficiently. However, it should be noted that TIA has been going through a period of redefining its role and the differences in the programmes' mandates and structures make it difficult to compare the two programmes. Nonetheless, the synergies between SPII and TIA have been recognised and the two programmes have a memorandum of understanding and are attempting to collaborate much more closely, in terms of both the role of TIA's technology stations and where, between the two funds, duplication can be minimised and synergies enhanced. There are a number of different types of entities in South Africa that address R&D and innovation - the purpose of having multiple entities playing in a similar space is the ability to seek synergies and harmonization to benefit from the complementarities – currently, it is not necessarily a bad thing if there are duplications that exist in the market given that there is an unmet demand.

A significant finding of this evaluation was the high level of compartmentalisation of innovation industry stakeholders and agencies in South Africa. Improving linkages and transitions between programmes could have a significant impact on innovation activity and success in the country as synergies and complementarities can be exploited in this way – in effort to benefit the innovators.

An important development in the South African innovation landscape has been the creation of the IDC's Technology Venture Capital fund, which was originally conceived as a sister programme to

¹⁹ European Commission (2004) Management of intellectual property in publicly-funded research organisations: Towards European Guidelines

SPII. The majority of TVC-funded projects have been SPII recipients as well. However, a number of stakeholders believe the trajectory for a project from SPII to TVC could be more streamlined while still retaining the independence of each programme.

3.5.1.7. What factors in the South African context enable or constrain the beneficial impact of SPII, including the long term sustainability of those impacts?

The factors that influence the impact of SPII include:

- Support gaps in the innovation landscape, particularly the gap to commercialisation
- The lack of business skills, particularly in small companies
- The lack of vocational training or education amongst the majority of the population
- An undeveloped risk capital market and a lack of funding for innovation in South Africa
- The lack of clearly defined objectives and targets for SPII, which indicates a certain degree of policy confusion in relation to innovation, investment, growth and employment targets.
- SPII's mandate and limited budget limits its ability to directly impact on macro- economic development indicators.
- The information feedback loops within SPII have improved in recent years, and draw on client feedback and management interactions, but these are not formalised. This is combined with limited reporting data from SPII recipients for three or less years following project completion.

3.5.2. Cost effectiveness

3.5.2.1. Is the current model of delivering SPII cost effective in comparison to alternative models?

SPII is managing approximately R340 million for over 200 projects, and the IDC's management fees make up 3.8% of the total amount committed. SPII also receives a large number of applications, all of which are reviewed, including ineligible and rejected concepts. Upwards of 133 applications are reviewed each year, of which an average of 66 (49%) are funded. Given this, and based on national and international benchmarks, SPII is relatively cost effective in comparison to other programmes in the innovation space. However, alternative funding mechanisms, such as loans or matching grants, or processes such as competitive funding rounds, have not been explored by SPII or assessed in relation to their cost effectiveness.

3.5.3. Processes

3.5.3.1. What effect do institutional mechanisms have on the efficiency and effectiveness of delivering programme outcomes?

The majority of case studies noted that SPII's administrative processes are efficient relative to other programmes. In 2010 the programme underwent a number of changes, from its leadership to its processes in a move to align it more with the IDC's strategy and processes. Anecdotal responses from case study respondents indicate that the impacts of these changes have been mixed. For example, many respondents feel that the programme became more compliance driven, which can be onerous, particularly in terms of meeting reporting requirements and application processes.

Respondents noted that the change from *ex post* to *ex ante* disbursement of funds has been positive, and that the SPII team has developed good skills internally. However, the internal account

managers are sometimes inappropriately assigned to certain projects, and do not have the skill set or expertise required for projects in particular industries or sectors.

Respondents were mixed in their assessments of the use of consultants, with some speaking very highly of the consultants and finding them very helpful, while others have had bad experiences with consultants who have, in some cases, made mistakes in the applicants' applications. Many respondents also struggle with the way in which they themselves do not attend the presentation of their proposals to the Investment Committee, which does not allow for opportunities to directly promote, clarify and defend any issues raised by the Investment Committee.

Overall, case studies reported that SPII's processes and requirements are seen as easier for larger companies, and more arduous for smaller companies with limited resources, skills and capacity.

3.5.3.2. How does SPII performance compare to similar programmes nationally and internationally?

Rather than directly comparing the performance of different programmes in terms of ROI or job creation, we feel it is more beneficial to compare the mandates and processes of different schemes, as these determine how a programme promotes and encourages innovation growth.

Table 4 below compares SPII's practices to international best practices identified across a range of academic articles, evaluations and country case studies. The table highlights nine best practices for innovation programmes and compares SPII's performance against these practices. This illustrates some of SPII's weaknesses and areas for potential improvement.

Table 4: SPII's performance against international best practice

	Best practice	SPII's practice	Performance
1a	A clear vision and mission, with upfront objectives	SPII has a clear vision and mission; however, SPII does not have clear specific objectives and inadequately defined quantitative and qualitative targets.	Poor
1b	Every term used in the vision should have an unambiguous and comprehensive definition	SPII does not have a definition of what a successful innovation is, nor of the link between innovation and its successful commercialisation	Poor
2	Open to all industries and evaluate each individual project	SPII does not restrict funding to sectors	Good
3	Simple management structure	SPII management structure is simple; however, the account managers are over burdened	Good, but require more account managers
4	Simple administrative requirement processes	SPII's administrative requirements are simple but can be onerous for enterprises that lack business skill or in-house business capabilities.	Could be improved, smaller enterprises need support
5	Strong linkages with other programmes	SPII, like the innovation landscape in South Africa, lacks strong linkages with other programmes and industry initiatives, but does have some linkages with technology transfer units and is looking to build these further.	Poor
6	A budget appropriate appraisal process.	The current appraisal process does not allow for budgeting or prioritisation of projects, as funding is not allocated on a competitive basis	Should be reviewed

	Best practice	SPII's practice	Performance
7	Selection of projects with impact potential.	SPII currently does not select projects based on their potential social or economic impact (or potential to commercialise), only on their 'economic merit' and level of innovation	Could be improved
8	Appropriate funding instruments to address market failures	SPII provides non-repayable grants, which address a gap where risk is perceived to be too high for the private sector	Good
9	Comprehensive monitoring and evaluation	SPII requires that projects report on financials and employment figures for three years after project completion. This does not allow for the monitoring and evaluation of projects that have not commercialised. Furthermore, SPII has difficulties in retrieving the standard reporting data from clients. In addition, SPII lacks the necessary measurement and evaluation systems for rigorous evaluation.	Poor

3.6. RECOMMENDATIONS

We believe that SPII should continue given the important and extremely relevant role it plays in the innovation landscape in South Africa, its direct impact on innovation and its potential indirect impact on long-term job creation and increased competitiveness. The report's recommendations are framed in terms of the high level policy, design and implementation issues that underpin the current and potential impact of SPII, including:

1. SPII should clearly define its objectives, with corresponding targets, such as the number of firms supported, lead times to approval and disbursement and number of projects that reach the market, and its achievement of these should be measured annually. There should be clear recognition that SPII cannot be directly responsible for the short-term fulfilment of job creation, economic growth, or competitiveness targets. However, SPII plays an indirect role in contributing to the achievement of these outcomes (the logic of which can be explained by means of a clear and detailed 'theory of change'), and so a link does exist between SPII and the broader **dti** mandate.
2. SPII is not an enterprise development fund, and its mandate to support and enhance innovation in business/industry should not be overwhelmed by a mandate to address direct job creation. Innovation can generate jobs by creating new markets or it can lead to temporary restructuring towards methods that replace labour inputs. However, the shifts in products, productivity, scale and skills requirements that typically result from successful innovation will only typically lead to job creation in the long term – and to the ultimate goal of innovation-led economic growth and improved competitiveness. This logic needs to be made explicit in SPII's theory of change, so that the focus and implementation of the programme is not confused and compromised by potentially conflicting goals.
3. As with any grant-based programme that addresses market failure, in this instance sufficient funding for risk-based venture capital, there is a concern that SPII could create a market distortion. Thus, going forward, SPII needs to continue to stimulate innovation in products/services and in geographical areas where opportunities are the greatest.
4. Given that maximum impact is achieved through commercialisation, the application appraisal process should more rigorously assess an applicant's prospects of successful commercialisation as a key criterion. A key component of this is market research, rather than firm level characteristics. SPII does allow for a small amount of market research to be

done during the application phase, and where there is capacity, this should be enhanced. Existing institutions, such as SEDA and other incubators should also be leveraged.

5. Further to the above point around commercial potential, to maximise the impact of SPII, and given the very specific part in the innovation cycle that SPII plays, greater linkages with other innovation actors and programmes should be encouraged. This ensure that smaller businesses exiting the programme are afforded access to alternative sources of funding, mentorship and incubation resources that are needed to reduce the barriers to commercialisation. SPII should also look to establish linkages with private partners such as commercial banks and venture capital operations that exist beyond government's mandated agencies (Seda, TIA, TVC etc.). Ideally, SPII should aim to serve as an effective pre-incubator of early stage innovation for review and adoption as much by commercial banks and investors as by other DFIs and state agencies.
6. To further ensure that successful projects proceed to the commercialisation stage, SPII should consider explicitly addressing the lack of business skills amongst some of its funded projects, particularly SMEs, through improved linkages. This could include assisting with linking beneficiaries to training programmes, incubators and other competent service providers who could offer technical assistance towards the end of the funding period to review the project's successes and challenges, to hone the necessary marketing requirements, and, overall, to map a concrete path to the commercialisation of the project.
7. The differing needs of smaller and larger firms suggests that SPII should adopt less of a one-size-fits-all approach to its application and funding processes, which should differ according to scheme (and hence size of the firm being funded).
 - a. Consideration should be given to the creation of specialist teams of programme managers within each scheme with specific skills sets for the types of firms they assess and fund.
 - b. Linkages with business development support organisations, particularly for smaller less-capacitated firms should be encouraged in order to improve their ability to meet application and reporting requirements.
8. Given SPII's limited resources, the on-going (rolling) consideration of applications does not allow for a strategic approach to building a project portfolio. Serious consideration should therefore be given to the following:
 - a. Applications for funding should be collectively considered at a limited number of defined points in a year. This will allow the Investment Committee to consider batches of applications on a comparative and competitive basis.
 - b. Defined funding amounts (whether indicative or set as ceilings) should be allocated to each of the three schemes per funding round. This requires strategic decision-making as to how the portfolio of SPII should be constituted across programmes (in terms of project scale, levels of risk, ROI etc). This process will ensure that funding is competitively allocated and not on a "first-come-first-served" basis. It will also ensure that SPII develops a diverse portfolio of investments which effectively tests a wide range of innovative ideas and approaches. Funding amounts should be flexible, so that uncommitted funds for one scheme can be absorbed by other schemes where greater opportunities exist.

- c. With this process, there will need to be a more targeted and proactive marketing approach to inform potential applicants about SPII
9. SPII should formalise internal processes that generate lessons from applications, from successful and unsuccessful projects, and from applicants' feedback following each funding round. This could be done through more regular Exco reports or defined time slots in each management committee meeting dedicated to discussing and documenting lessons and feedback, the minutes of which can be distributed to the whole team. This will allow on-going design and process adjustments to continue to be made which reflect the needs of the market and incorporate the cumulative learning and experience in the programme's implementation. This should include details on key success criteria for commercialisation which then serves to inform the application and selection process.
10. A web-based platform for applications and internal appraisals should be established. This would allow for a more systematic appraisal of applications. It would also allow for the efficiency of the SPII processes to be monitored, enabling bottlenecks and other sources of inefficiency to be quickly identified and addressed. This platform could also be expanded to improve the ease of collecting reporting data on completed projects.
11. In order to improve the efficiency of the programme, a number of processes should be re-considered. These include assigning consultants or account managers with limited knowledge of a specific sector to projects in those sectors, as well as the current practice of preventing applicants from presenting their applications to the investment committee directly, or at least attending the presentation in person.
12. In order for SPII to determine its success, a set of indicators for SPII itself should be determined, linked to the objectives and targets (particularly the commercialisation of approved projects) highlighted in its theory of change, and benchmarked against the scheme's previous performance.
13. All this points to the fact that SPII needs to be focused, flexible and opportunity driven, and should remain a specialised innovation fund. It should be located within a specialised fund management institution that has access to the correct networks to serve its role as a player in the landscape.