Aliber, M. Mosoetsa, S. Kanuri, G., Moroka, T. and Arhoen, K.
Commissioned by the Department of Science + Technology
(NFALMA)

STRATEGIC GUIDELINES FOR SOCIAL IMPACT INVESTMENTS OF THE DEPARTMENT OF SCIENCE & TECHNOLOGY

OCTOBER 2006

TABLE OF CONTENTS

ACRONYMS

DST	Department of Science and Technology
M&E	Monitoring and evaluation
MTEF	Medium Term Expenditure Framework
PFMA	Public Finance Management Act
R&D	Research and development
S&T	Science and technology
STSI	Science and Technology for Social Impact sub-programme of DST

1. INTRODUCTION

In 2001, the Department of Science and Technology (DST) began supporting various community-based projects with the aim of contributing to poverty reduction and job creation. Over time, as experience with these interventions grew and DST's expertise developed, DST's overall strategy in respect of poverty reduction evolved. Presently, DST identifies itself as a key promoter of poverty-reducing applications of science and technology, and typically seeks to operate by means of assisting other implementing agencies, not least government departments, in their poverty reduction efforts.

The purpose of this document is to spell out the Strategic Guidelines according to which DST pursues this function, in other words, what it is that DST is doing by way of poverty reduction, and how it is doing it. The document is equally meant to serve as a reference for DST's partners and other stakeholders so as to make transparent what DST does in respect of poverty reduction.

The Strategic Guidelines articulated in this document apply broadly to DST, but more specifically to the Science and Technology for Social Impact (STSI) sub-programme. STSI is that part of DST whose core purpose is to contribute to the fight against poverty; however, other parts of DST also at times engage in interventions with direct poverty reduction implications, in which case in spirit, if not to the letter, these Strategic Guidelines also apply.

2. OVERVIEW OF THIS DOCUMENT

The sections that follow are as follows:

Section 3 situates the mandate of DST within the context of national priorities, and of STSI within DST.

Section 4 summarises STSI's overall approach in respect of its poverty reduction mandate.

Section 5 describes the Overall Portfolio and Sub-Portfolios and how they are shaped.

Section 6 describes an Investment Programme, which is the basic unit of what STSI does.

Section 7 addresses the overall approach to monitoring, evaluation and learning in the STSI sub-programme.

The Annexures provide additional descriptive and explanatory material.

3. DST'S POVERTY REDUCTION MANDATE

3.1 DST'S OVERALL OBJECTIVES AND THE PLACE OF POVERTY REDUCTION

Broadly speaking, DST is that part of government which is ultimately responsible for "...introducing measures that put science and technology to work to make an impact on growth and development in a sustainable manner...." The components of this responsibility are spelled out in the core objectives of the *National Research and Development Strategy* of 2002, of which DST is the chief custodian, namely:

- "*Innovation.* Achieve mastery of technological change in the economy and society through an agency whose function is to facilitate innovation, finance technology and maintain coherence in the area of innovation.
- *Human capital and transformation.* Increasing investment in South Africa's science base through targeted approach, to increase excellence in mathematics and science among black matriculants and to establish new Centres of Excellence where young people could be encouraged to pursue a career in scientific research.
- *Alignment and delivery.* Creating an effective government science and technology system where the integrative DST will be responsible for the regulatory framework for research and development and line departments will be responsible for setting up objectives and budgets."

DST is obligated to respond to national priorities as stated in the White Paper on Science and Technology (1996) and the National Research and Development Strategy (2002). The White Paper identifies a number of key objectives for a coherent and effective science and technology policy, including promoting competitiveness and employment creation, enhancing quality of life, developing human resources, working towards environmental sustainability, promoting an information society and reducing the cost of infrastructure.

Most of the objectives indicated above have important implications for poverty reduction. However, poverty reduction is also singled out as a specific area for priority attention. The R&D Strategy identifies the need for a Poverty Reduction Mission, the purpose of which is to focus on the demonstration and diffusion of technologies to improve the quality of life and enhance service delivery. As such, since 2001, DST has piloted a variety of technology transfer interventions throughout the country, mainly in areas identified in the R&D Strategy such as beneficiation of agricultural products, aquaculture, small-scale mining and healthcare.

3.2 OBJECTIVES OF STSI

The STSI sub-programme is the part of DST whose core purpose is to promote the development and use of technologies that have the potential to contribute to poverty reduction. Given the multi-dimensionality of poverty, which is overtly recognised in South Africa's anti-poverty strategy, S&T can be brought to bear on poverty in many ways, including contributing to the creation of income-earning opportunities, improving the quality of or access to services, improving the efficiency, healthiness and safety of human settlements, identifying affordable healthcare solutions, etc.

The reason for a dedicated unit like STSI – i.e. why it is necessary – is twofold: first, the amount of attention in the R&D community to poverty reduction is insufficient; and second, there is a need for better co-ordination among the diverse role-players who collectively can promote the application of science and technology to poverty reduction.

Accordingly, STSI's Strategic Objectives parallel those of DST as a whole, but with some significant qualifications. In short, the Strategic Objectives of STSI can be stated as follows:

- To promote innovation, adaptation and transfer, specifically of technologies which have the potential to contribute to the fight against poverty.
- To promote human capital development, both in the sense of encouraging more members of the R&D community to focus their efforts on poverty reduction, and in the sense of promoting 'technological literacy' among low-income individuals who stand to benefit from uptake of certain technologies.
- To ensure alignment and delivery, whereby STSI works with line government departments, as well as with other role-players, to encourage the development and use of poverty reducing technologies.

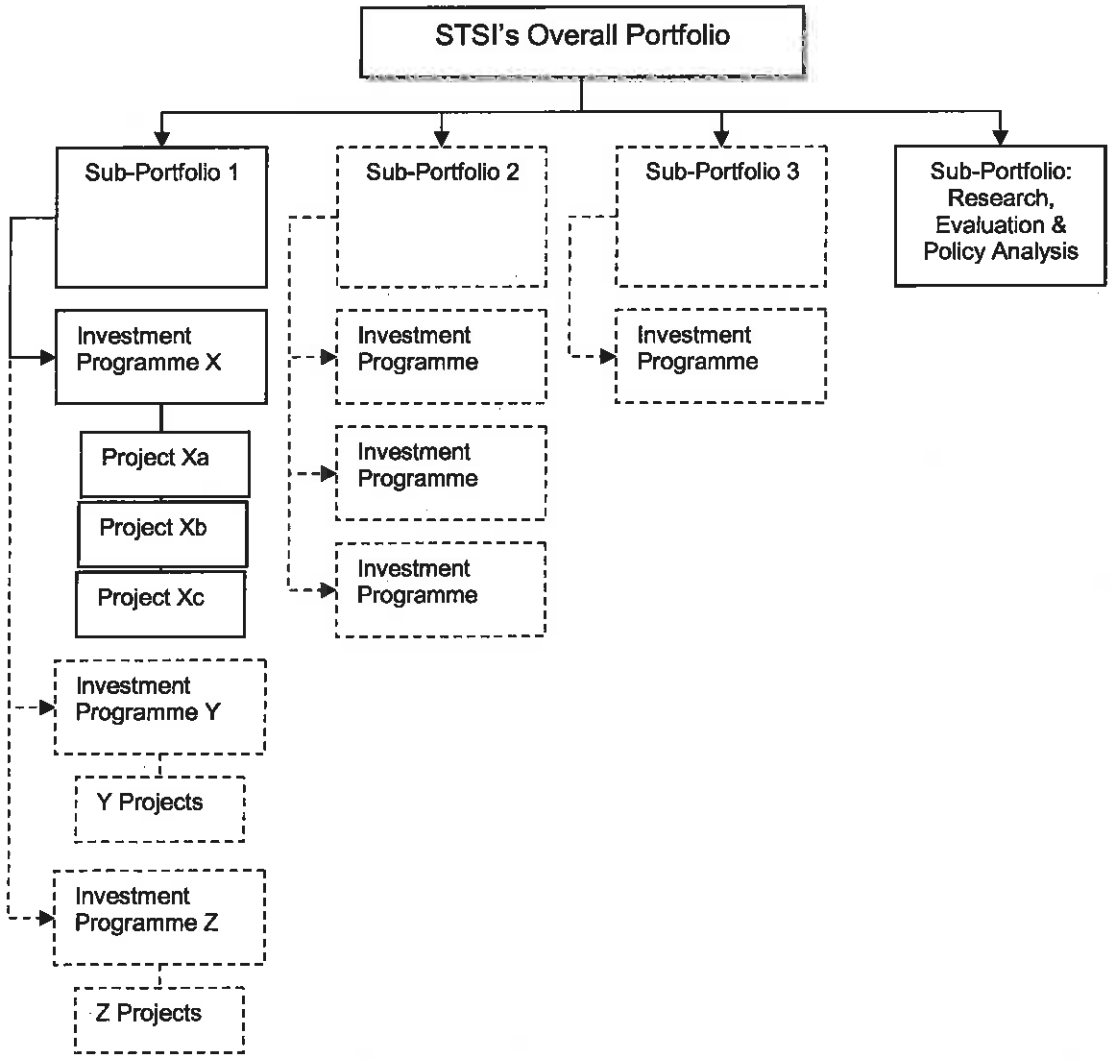
What must be stressed is that STSI's role is mainly to impact on poverty reduction *indirectly*, in the sense that STSI seeks to promote the development and/or use of poverty reducing technologies, but the large-scale dissemination of these technologies is not primarily STSI's, or DST's, responsibility.

4. AN OVERVIEW OF STSI'S APPROACH

The main elements of STSI's approach follow from the above, namely, to provide leadership and build partnerships with other government departments in research, development and technology; and to identify and support key strategic areas of research, innovation and technology transfer that have potential to benefit the poor, and/or assist government in its efforts to combat poverty.

To translate this broad approach into action, STSI has adopted an organisational framework according to which its interventions have a logical place. The following figure summarises the organisational framework according to which the STSI sub-programme operates:

Figure 1: Organisational framework of STSI



The four main types of elements comprise the framework, namely the Overall Portfolio, Sub-Portfolios, Investment Programmes and Projects. These are described briefly here, and then in more detail in subsequent sections:

- **Overall Portfolio** – STSI's Overall Portfolio is merely the collection of its Sub-Portfolios, which are described below. The value of conceptualising these as part of a single, all-encompassing portfolio will be explained in the following section.

- **Sub-Portfolios** – STSI organises its investments in support of its social impact objectives into defined Sub-Portfolios, which are the high-level intervention areas for the sub-programme's interventions. At any given time, STSI concentrates on a limited number of Sub-Portfolios which it typically expects to maintain over the medium term. Currently, STSI maintains three Sub-Portfolios, namely 'Sustainable Livelihoods' and 'Sustainable Human Settlements,' and 'Research, Evaluation & Policy Analysis.' This third Sub-Portfolio, however, is slightly different, in that is a standing Sub-Portfolio that allows for a variety of typically shorter-term, supportive interventions for which the need may arise.

- **Investment Programmes** – STSI seeks to achieve the outcomes of each of its Sub-Portfolios by establishing a set of "Investment Programmes". These, the main unit of activity of STSI, are designated "Investment Programme" rather than just an "investment" or a "project" specifically because it is assumed that most (though not all) of STSI's engagements will be complex and span more than one year. For example, a single Investment Programme might involve funding a combination of laboratory research, field-based adaptive research, pilot projects, and, parallel to these, possibly other types of sectoral investments.

- **Projects** – Each Investment Programme is underpinned by one or more projects. The set of projects is intended to achieve the objectives of the Investment Programme, and must therefore be coherent even though the actual project activities may range from being inter-dependent to fairly independent. (The detailed specification and selection of projects is not discussed in this document. However the logic would be similar to that used in defining and assessing Investment Programmes. STSI would provide specific formats for the development of Project Plans by implementing agencies.)

5. OVERALL PORTFOLIO AND SUB-PORTFOLIOS

5.1 COMPOSITION OF THE OVERALL PORTFOLIO

The Overall Portfolio of STSI comprises the sum total of Investment Programmes which STSI is supporting, which in turn are grouped within Sub-Portfolios. The Overall Portfolio seeks to achieve a balance among Sub-Portfolios and Investment Programmes according to the following main considerations:

(i) Diverse but limited Sub-Portfolios – STSI seeks to have an impact on poverty in different ways, meaning that at any given time it maintains more than one Sub-Portfolio and a reasonable level of distinctiveness in terms of approach or focus, but also not so many different Sub-Portfolios that it is unable to focus and therefore have a discernible impact.

(ii) Investing in different parts of the innovation chain – STSI supports the development and application of technology in pursuit of poverty reduction, and as such seeks to invest in various types or stages of research activity, ranging from applied to adaptive research. This also implies that STSI supports investments of a shorter and longer term nature, as well as investments that differ in terms of the certainty of their payoff.

(iii) By project type – STSI seeks to explore the full repertoire of ways (in the sense that 'project' is defined in Annexure A) in which to use science and technology for social impact.

5.2 ANNUAL PORTFOLIO REVIEW

STSI will subject its Overall Portfolio to an annual review. The purpose of this annual review is:

- To reflect on how well STSI is striking the sort of balances indicated above.
- To take stock of the past year's accomplishments and lessons.
- To make decisions as to areas of investment that STSI wishes to prioritise in the next year, for example in which it wishes to develop proposals.
- To assist with the annual MTEF process.

The annual portfolio review is an internal STSI process. It will make use of various types of documentation, including quarterly progress reports and external assessments of Investment Programmes, as described below.

5.3 THE SUB-PORTFOLIOS

Each Sub-Portfolio is defined in terms of a Sub-Portfolio Statement, which is a concise articulation of what STSI hopes to achieve over time through that Sub-Portfolio. As social impact is something that can typically only be determined over the medium to long term, the purpose of the Statement is not only to serve as a lens through which to focus

investments, but also as a goal to review against over time and determine whether the constituent investments are progressively leading towards intended outcomes and impacts.

Towards determining the set of Sub-Portfolios, STSI develops Memoranda of Understanding with other Departments as a means to define agreed areas for research and cooperation. Other inputs that influence the selection of Sub-Portfolios include, for example, DST's and STSI's mandates, national priorities, stakeholder engagements, expert consultations, assessments and evaluations (of own programmes as well as national and international good practices), and supporting research.

5.4 THE "RESEARCH, EVALUATION & POLICY ANALYSIS" SUB-PORTFOLIO

In order for STSI to perform its role as efficaciously as possible, there are a number of activities it undertakes that do not relate to specific Investment Programmes. Specifically, DST has committed itself to providing research leadership and support research work in other government departments. The primary purpose of this extraordinary Sub-Portfolio on Research, Evaluation and Policy Analysis is therefore to, in partnership with and support of other government departments, identify bottlenecks in the implementation of government programmes, undertake evaluation studies, and generate alternative models for service delivery. The major thrust of the research initiatives is likely to be poverty alleviation and the improvement of quality of life, as well as policy analysis which informs strategies for government programme implementation.

The activities in this sub-programme can be undertaken in various ways, ranging from commissioning specific studies, to routine support activities that should be undertaken by staff which could include:

- Keeping track of technology developments in other countries that could have application in South Africa, as well as of developments in parts of South Africa that could have application elsewhere in South Africa.
- Keeping tracking of research related to poverty and technology across relevant South African institutions.
- Participating in inter-departmental fora, whether cluster-oriented or sector-specific, in order to identify areas of poverty reduction where technology development or diffusion could play a role.
- Keeping abreast of the research literature on poverty and poverty reduction in South Africa.

6. INVESTMENT PROGRAMMES

6.1 DEFINING THE INVESTMENT PROGRAMME STRATEGY

Each Investment Programme is defined in terms of an Investment Programme Strategy document for how STSI envisages that the Programme would ultimately contribute to achieving the aims articulated in the respective Sub-Portfolio, and how it would be composed and managed towards those ends. An Investment Programme is comprised of nine main "attributes," as follows:

- Sector / sub-sector
- Strategic objective
- Investment logic
- Expected outputs and outcomes, and measurable indicators
- Projects
- STSI's role, that of partners, and identification of the broader programme/framework
- Institutional relationships and arrangements
- Timeframe, phases and milestones
- STSI's and partners' resources.

These attributes are described in greater detail in *Annexure A*.

The purpose of defining an Investment Programme in terms of these common attributes is twofold:

(i) to provide a checklist that can be used to ensure that proposals for new Investment Programmes do not omit important considerations; and

(ii) to impose a common language so as to facilitate STSI-wide planning and prioritising among what is necessarily a heterogeneous set of actual and potential Investments.

6.2 IDENTIFYING AND SELECTING INTERVENTION PROGRAMMES

A typical Investment Programme is complex and costly. A decision to proceed with an Investment Programme must therefore be based on a clear and rigorous procedure that enhances the likelihood that Investment Programmes in general produce real benefits. However, this should not be misconstrued: the nature of investing in research and development supposes a certain amount of risk; STSI accepts that some Investment Programmes will not yield tangible results (apart from valuable lessons), but commits itself to taking on this risk in a well informed and judicious manner.

6.2.1 Overview of the Two-Stage Process

The process of identifying and selecting Investment Programmes is broken down into two stages:

(i) **Motivation**: The first stage entails the completion of a Motivation based on a preliminary scoping exercise to sketch the idea behind the proposed Investment Programme. A Motivation has to address all nine of the attributes set out above, though more generally and tentatively for a number of the attributes (i.e. expected outcomes, projects, and resources). The two criteria guiding the assessment of a Motivation are, first, whether the proposed Investment Programme fits strategically within an established or anticipated Sub-Portfolio; and second, the merit of the proposed Investment Programme, i.e. whether there is a reasonable likelihood that the proposed Investment Programme will result in new knowledge or technology with wide-scale applications in poverty reduction. The assessment of Motivations are conducted internally by STSI.

(ii) **Investment Programme Proposal**: A Motivation that is supported past the first screening can be further developed into an Investment Programme Proposal. In most circumstances this requires the combined efforts of all of the partners who will be involved in the actual Programme, and possibly some preliminary studies. STSI may make funds available to implementation agents or others to defray the costs of their contribution to the development of a Proposal. The maximum amount of money that STSI will pay an external agent to draft (or contribute to the development of) a Proposal is R30 000, while if more than one external agent is involved, the maximum that STSI will pay collectively for a single proposal is R50 000. The Programme Manager of STSI may exercise discretion in approving larger amounts for assistance with Proposal development. An Investment Programme Proposal that is formally approved thereafter becomes an actual Investment Programme.

Regardless of the extent of external input, a Motivation, an Investment Programme Proposal, and an approved Investment Programme, all belong to STSI.

6.2.2 Ad Hoc Expert Panels for the Evaluation of Investment Programme Proposals

For each Investment Programme Proposal, STSI will convene an 'Ad Hoc Expert Panel'. In some instances, the same Panel could be requested to evaluate more than one Proposal. STSI shall exercise discretion in determining, for example, whether a single Panel could evaluate all Investment Programme Proposals falling within the same Sub-Portfolio. Depending on the burden on members of a Panel, and depending on the institutions to which the members are associated, the Programme Manager of STSI may exercise discretion in authorising honoraria of not more than R5 000 per member.

The composition of an Ad Hoc Expert Panel will be specialists who are selected for their scientific understanding, their understanding of poverty dynamics, their understanding of the economic sector to which the proposed Investment Programme relates, and, depending on the nature of the Proposal being evaluated, their understanding of the relevant government delivery milieu. A Panel shall include not fewer than two and not more than five members. One Panel member must be designated as the convenor of the Panel.

The brief of an Ad Hoc Expert Panel is to deliberate on the merits of an Investment Programme Proposal, and to deliver comments to STSI, drawing particular attention to observed weaknesses in or concerns about a Proposal. A

Panel may or may not choose to issue a common statement on a Proposal, and a Panel may or may not choose to convene physically. A Panel may: request more information from STSI related to a Proposal before it issues its comments; request the appropriate official from STSI, or others, to come in person to meet with some or all Panel members; recommend that a Proposal be further developed. A Panel is not required to issue a collective judgement as to the merits of the proposal, but rather to advise STSI. STSI must make its own decision as to whether or not to support a Proposal, taking due regard to the considered opinions of the Panel.

6.2.3 Evaluation criteria for Investment Programme Proposals

An Investment Programme Proposal is evaluated according to three sets of criteria, spanning a range of technical and institutional issues, namely: (i) partner commitment; (ii) merit in respect of poverty reduction aims; and (iii) Investment Programme integrity. Each of these is spelled out in more detail below. Notwithstanding these sets of criteria, an Investment Programme Proposal should be structured according to the nine attributes (i.e. as section headings) indicated in 6.1 above and described in more detail in *Annexure A*.

(i) Partner commitment

An Investment Programme Proposal must demonstrate commitment from those stakeholder partners who are necessary to the implementation of the Investment Programme. Procedures for obtaining and demonstrating this commitment should generally follow the prescripts of the *Framework for the Implementation of Joint Programmes*.

(ii) Merit in respect of poverty reduction aims

Establishing the merit of a Proposal in respect of the Investment Programme's poverty reduction potential, can be established relative to the following high-level criteria:

- Whether the proposed Investment Programme aims to address an important need (preferably one that has been quantified)
- Whether the proposed Investment Programme can reasonably be expected to address that need
- Whether the proposed Investment Programme is aligned with – or forms part of – a cogent sector development/investment strategy
- Whether the proposed Investment Programme would generate knowledge that is important for the pursuit of poverty reduction, irrespective of its immediate applicability to that pursuit
- Whether, on balance, the proposed Investment Programme represents value for money.

(iii) Investment Programme integrity

Beyond these high-level criteria, there are a handful of more specific considerations based on DST's experience as to what is important for ventures into poverty reduction:

- Whether the Projects that make up the proposed Investment Programme are coherent and feasible
- Whether the proposed institutional arrangements are clear and sound

- Whether there is adequate provision to ensure that the proposed Investment Programme yields useful lessons, even if it is not in itself successful in reducing poverty
- Whether there is a coherent and plausible mechanism by which a successful pilot could be scaled up
- If the Investment Programme consists of conducting a pilot, whether the extent of resources devoted to the pilot are reasonable in light of what would likely be available to post-pilot investments (I.e. is there a built-in bias to make the pilot succeed?)
- Whether there is an honest and dispassionate reckoning of the chances of success versus failure
- Whether the proposed Investment Programme has taken adequate care to consider a suitable business model or organisational form, or if appropriate, to test alternative models/forms
- Whether the proposed Investment Programme assumes an unrealistic degree of community homogeneity and/or cohesion
- If the technology in question seeks to develop livelihoods opportunities, whether it builds on target clients' existing resources, knowledge and activities
- If the technology in question seeks to develop livelihoods opportunities, whether it pays adequate attention to marketing arrangements
- Whether the proposed technology is appropriate to the individuals/communities for whom it is meant, bearing in mind likely maintenance costs, availability of specialist support, and labour versus capital intensity
- If the technology in question seeks to improve access to services, whether people's expectations are to be tracked and managed appropriately, for example if the technology is unfamiliar
- If the technology in question is to be installed in a public place, whether there are adequate precautions against vandalism and theft that are also generalisable to non-pilot situations.

6.3 MANAGEMENT OF INVESTMENT PROGRAMMES AND PROJECTS

Each Investment Programme is overseen by an STSI staff member.

Projects under each Investment Programme may be identified in various ways, including:

- Solicitations (tenders) or targeted procurement for specific services
- Thematic Calls for Proposals and Expressions of Interest
- Discretionary funding for proactive submissions

Processes in this regard will comply with relevant DST and National Treasury policies and regulations.

Sound research management principles will be applied to how Investment Programmes and Projects are managed. A clear articulation of project planning, implementation, reporting, financial management, evaluation, etc. requirements will be provided and monitored by STSI.

6.4 TIMEFRAMES

The two-stage process which would be applied to both Investment Programmes (and by implication Projects) can result in long lead times for STSI's planning and allocations. STSI will develop management protocols which will aim to coordinate the planning and allocation cycles with DST's funding cycle such that project proposals can be approved for funding in the August month preceding implementation.

6.5 ELIGIBILITY

Any member of the South African public and her institutions is eligible to participate in the development and execution of STSI's Investment Programmes.

7. MONITORING, EVALUATION & LEARNING

Monitoring and evaluation are the essential performance management oversight activities for the maintenance of the quality of STSI Investment Programmes. The monitoring and evaluation process should measure and assess STSI performance at both Sub-Portfolio and Investment Programme levels. At Sub-Portfolio level, monitoring and evaluation should measure and assess the level of attainment of the Sub-Portfolio's objectives relative to the corresponding Sub-Portfolio Statement. At Investment Programme level, monitoring and evaluation will measure and assess the level of attainment of the objectives of Investment Programmes and constituent Projects.

It must be recognised that STSI's purpose in having an M&E component goes beyond the usual reasons associated with line department M&E systems. In STSI's context, M&E serves the additional important purpose of providing an objective view on the value of the knowledge being produced through its Investment Programmes.

7.1 MONITORING

Monitoring at STSI aims to provide management and stakeholders with early indication of progress, or lack thereof, in the attainment of expected investment results. This should include what is required by the PFMA, notably to check the expenditure of an Investment Programme against plans, and track milestones.

STSI staff will be responsible for routine monitoring of the unit's Investment Programmes and their component Projects. A reporting framework for monitoring purposes will be applied for this purpose and follow a schedule of quarterly reporting.

7.2 EVALUATION

Evaluation at STSI should be a systematic and objective exercise that assesses progress towards the achievement of the unit's outcomes. Given the diversity of Investment Programmes that STSI does and will support, and the complexity of most of these Investments, STSI will need to ensure a tailored evaluation exercise for each Investment Programme.

As compared to monitoring, Investment Programme evaluations will be undertaken by external agents so as to ensure adequate objectivity as well as expertise. These evaluations should be complemented by self-assessments done by implementing agents. For Investment Programmes lasting more than one year and for which the average annual cost exceeds R10 million, STSI should also commission interim evaluations on an annual basis, or timed according to especially strategic milestones of that Investment Programme.

7.3 LEARNING

Monitoring and evaluation add value only if they lead to the isolation of lessons learned and an improvement in the delivery of current or future programmes and projects. Thus, an important outcome of STSI's monitoring and evaluation will be the capture of lessons learned at both project and programme levels, which will be a major objective of annual reports and project and investment programme evaluation reports.

Inherent to the concept of learning is the need to learn from both the successes and failures of new R&D projects. It is important that the process of performance evaluation at the STSI accept up-front the possible failing of a certain number of projects as normal to the work of the unit. A certain amount of project failure is unavoidable in the testing of new technology in environments that may not always support successful uptake of such new technology, nor the successful implementation of development projects, risk management mechanisms notwithstanding. However, for the purpose of performance management and monitoring, it is important to establish the level of project failure that would be deemed acceptable. This percentage could be established in line with international standards - perhaps in comparison to countries with similar R&D and technology transfer challenges.

Thus, each STSI evaluation project would give as much attention to the successful projects as to the failed ones, capturing detailed project statistics, and more importantly, the factors that contributed to the success or failure. STSI's programme implementation cycle should make room for the recognition of learning and the incorporation of this learning into the design of subsequent programme and project development work, or the re-design of on-going programmes and projects. The application of learning has significance at both strategic and operational levels, and should be allowed to refine STSI work at both levels. They should inform refinement of STSI policies, investment programme and project objectives, as well as implementation processes at programme and project levels.