



ETSIP

KNOWLEDGE CREATION AND INNOVATION

[N\$29.6 million]

Background

1. Knowledge, technology, skills, and the interaction thereof have become more critical determinants of economic growth than traditional factors of production - land, capital, and labour. Over the past three decades production has become increasingly more knowledge-intensive as investments in intangibles such as research and development (R&D), software, product design, process engineering, quality control, testing, training, marketing and management have come to play a greater role in the production of goods and services. Gradually the knowledge intensity of production has extended beyond the high technology sectors to reshape a broad spectrum of traditional industries.
2. As production becomes more knowledge intensive, firms compete not only on pricing, but also on their ability to innovate. The dismantling of traditional barriers to trade and investment has also facilitated the diffusion of innovation-based competition around the globe. These changes have put pressure on local firms in developing countries to engage in a process of continuous innovation for which they are ill prepared. In the case of Namibia, firms lack the skilled labour required to enable them to apply knowledge and technology to improve methods of production, experiment with new products and engage in higher value-added productivity. Labour market surveys and global competitiveness ratings confirm this constraint. The lack of skilled labour tends to make Namibia attract Foreign Development Investments (FDIs) that are at the lower end of the global production chain, and which have no incentive to train their staff and/or to invest in R&D. Other than the lack of skilled labour, Namibian firms, in particular SME's, lack high-level knowledge workers who could lead firm-level R&D. This in turn has challenged governments to develop policies to stimulate and support a process of innovation.
3. Cognisant of these limitations, Vision 2030 highlights knowledge and technology as critical drivers of economic growth and social development. Namibia plans to build on its strengths, and to turn its potential comparative advantage into competitive advantage. Current potential advantage includes an enabling macro environment, rich natural resource base, fairly developed infrastructure, and the recognition of the role of knowledge, innovation and technology as key drivers of development.
4. This sub-programme focuses on the development of an effective national science, knowledge creation and innovation system that can strengthen the national science and technology system as well as foster the strategic linkages between the creation of knowledge and its use in production.

Achievements

5. Efforts to strengthen/create the policy, legal, institutional and financing frameworks that are required to facilitate science, knowledge creation and innovation are in progress. The National Policy on Research, Science and Technology as well as the Policy on Biosafety and Biotechnology was adopted by Cabinet in 1999. The Research, Science and Technology Act that enabled the creation of the National Commission on Research, Science and Technology (NCRST) that will house the National Research, Science and Technology Fund (NRSTF) was enacted in 2004. Substantial work has been completed on the conceptualisation of the Centre for Innovation, Entrepreneurship and Technology (CIET).
6. Namibia also has an emerging knowledge base on which a knowledge and innovation system can be built. This includes the research and consultancy wings of tertiary education and training institutions, research departments of government ministries, independent research and consultancy firms and individual researchers. The primary focus of these knowledge creation nodes is basic research, in a narrow scope of disciplines, while very limited applied research takes place.
7. The Government of Namibia has recently developed the National Research, Science and Technology Policy aimed at developing and managing Namibia's scientific human and institutional base. The successful implementation of the policy will lead to (a) an increase in scientific human and institutional capacity; (b) enhanced efficiency in resource utilisation and value addition; and (c) enhanced coordination and management of knowledge creation, in particular its effectiveness. The successful implementation of the policy is a pre-requisite for the effective development and implementation of the National Innovation System.

Challenges

8. One of the key challenges lies in the capacity of these emerging knowledge and innovation nodes to produce knowledge that is relevant to Namibia's growth potential. A significant explanation for this low capacity is the failure of tertiary education and training institutions to produce graduates that can effectively contribute to knowledge creation and management. Even more so, is the inadequate contribution of the academics of these institutions to knowledge creation and application. Added to weaknesses on the supply side, is a weak demand for knowledge by the productive sector. Most production centres are branch plants of centres located outside of the borders of Namibia. The research and development work of these branch plants is carried out at the centres located outside of Namibia thus there is limited demand for Namibian knowledge and innovation. Furthermore given the low level of education and training, Namibian Firms in particular SME's are not able to present their production failures as knowledge and technology needs. Without effective knowledge and technology brokerage, these producers do not have intermediaries that could link them to the relevant supply of knowledge. Within the formal sector, there is a stark dearth of firm level R&D programmes that could actually apply knowledge to improve productivity. The challenges therefore are: (a) the lack of a system for identifying sectors whose productivity is constrained by the lack of relevant knowledge and technology; (b) the lack of a national system for the coordination and development of science and research capacity, and (c) the lack of a system for linking knowledge demand to effective supply of knowledge.

Priorities

Component 1: Strengthening the policy and legal environment to support knowledge creation and innovation

Component 2: Strengthening capacity for the effective coordination of the NKIS

Component 3: Strengthening effective demand for knowledge and innovation

Component Descriptions

Component 1. Strengthening the policy and legal environment to support knowledge and innovation [N\$2.5 million]

9. *Challenges:* Related policies that could complement each other in supporting a national knowledge and innovation system either are not all in place or even if they exist are not complementary. Therefore there is need that the industrial policy, labour policy and research policies at the institutional level are in place and complementary. Furthermore, the legal framework that should enact these policies is not comprehensive enough.
10. *Objectives:* The objective of this component is to develop a set of policies and legal instruments that provide a coherent incentive structure for knowledge creation and its up-take by users. It is designed to create an environment conducive to the overall coordination and management of the National Knowledge and Innovation System (NKIS).
11. *Component description:* This component is intended to (a) review existing policies to check their consistency with the national strategic goal of transforming into a KBE through heightened application of knowledge in production; (b) revise policies; and (c) draft policies that are not yet in place.
12. A large number of policies affect the processes of knowledge creation and innovation. Reviewing existing policies of relevance to the NKIS and analysing policies and practices with regard to the NKIS in selected other countries will provide the basis for drafting a framework policy. A dialogue among Ministries and other stakeholders through the National Commission on Research, Science and Technology (NCRST) would ensure that the policy framework accords comparable status to all types of knowledge and knowledge systems and that it is consistent with the national strategy of moving towards a knowledge-based economy. A national consultative workshop would then enable the framers to broaden the range of stakeholder inputs prior to finalising the draft for submission to the Minister of Education and to Cabinet. The major cost for this component will be costs to review the NKIS framework, including existing policies and developing new policies to fill the gaps identified. As a cost-cutting measure, the policies identified in the review process will be prioritised and aligned and developed according to this prioritisation.
13. In addition to setting the policy framework for the NKIS, this component will review the research policy that is currently under development as well as existing policies in other domains of relevance to the NKIS to ensure their coherence with the framework policy. The review process will also serve to identify areas where policies will need to be developed and legal frameworks put in place or updated to give these policies effective status. Technical assistance will be sought where this is needed.

14. *Implementation:* The NCRST will implement the component under the guidance of the MoE.
15. *Outputs and indicators:* The outputs will be: (a) Framework Policy drafted; (b) two policies reviewed to ensure coherence, and (c) two new policies drafted to fill gaps identified. Indicators will include: (i) report on review of existing policies relevant to the Framework Policy; (ii) meeting held between stakeholders; (iii) report on national consultative workshop; (iv) draft policy documents; (v) policies submitted to Cabinet; and (vi) report on review of existing policies relevant to the Framework Policy.

Component 2. Strengthening capacity for the effective coordination of the NKIS [N\$17.8million]

16. *Challenges:* The knowledge creation and innovation system has a very weak capacity for coordination and support. This lack of coordination and support leads to other issues. First is that ongoing efforts and locally produced knowledge are not well recorded or organised. Second, the potential applicability of this knowledge is lost because it is not known nor is it easily accessible. Third, there is no clear system of identifying knowledge of strategic development importance and once identified, there is no system for communicating these needs to potential knowledge creators.
17. Furthermore, there is inadequate funding for knowledge creation and application across the board: at the level of the government, tertiary institutions and private firms; as well as very limited competitive financing for individual researchers. The net effect is that production of knowledge is constrained.
18. *Objectives:* The purpose of this component is to establish the key institutions needed to effectively coordinate the NKIS. The NCRST, a key institution that houses the National Research, Science and Technology Fund (NRSTF), will be created in the first phase. The NCRST has been designated by the Research, Science and Technology Act, 2004 as the organisation responsible for the coordination, monitoring and supervision of research, science and technology and the provision of policy guidance to the research, science and technology innovation systems in Namibia. The NRSTF under the NCRST will be used as a financing mechanism for research and development, and for the creation of appropriate institutional and organisational arrangements for the proper functioning of the NCRST.
19. *Component description:* This component includes all activities needed to establish the NCRST, including the development of criteria for the selection of commissioners, the preparation of a human resources manual and the financial procedures and policies for its secretariat and the identification and rental of physical facilities for its secretariat. A series of training workshops in the design and evaluation of innovation policies will foster a common language and understanding of the NKIS across the government, other stakeholders and within the NCRST and its subsidiary bodies. The appropriate methodology for monitoring the quality and relevance of knowledge outputs as well as information management system for diverse knowledge and innovation sub-sectors will be developed.

20. The National Research, Science and Technology Fund is to be established within the NCRST which sets the policy for and oversees its activities. It is designed to improve the allocation of resources to support knowledge and innovation and increase the relevance of research to users. Among its principal activities will be the provision of research grants, loans, and similar financial aid in research, science and technology. Priorities for the NRSTF will be set by the NCRST at three-year intervals. One of the first steps in the establishment of the fund is to undertake a study of best practices in National Research Financing and to design appropriate procedures, financing strategies, as well as monitoring and evaluation tools. Creation of the oversight committee as stated in the Research, Science and Technology Act, 2004 and selection and recruitment of support staff for the fund would also take place prior to initiating the Fund's research support activities.
21. *Implementation:* The Directorate of Research, Science and Technology will implement the component.
22. *Outputs and indicators:* The NCRST is established by 2007. (Indicators: regulations in place, HR Manual in place, financial procedures in place, commissioners recruited, secretariat appointed, physical facilities identified, report on best practices studies, report on procedures, organisational design, financial strategies monitoring and manager and support staff appointed.)

Component 3. Strengthening effective demand for knowledge and innovation [N\$9.2million]

23. *Challenges:* There is a need to link real demand to the relevant supply. Currently there is no mechanism through which producers, in particular SME's, can be assisted to articulate their production failure as knowledge and technology needs. There should also be some support system to follow up on the use and on the yield to productivity. Once this is done they are empowered to buy that knowledge and technology through some funding mechanism. Last but not least, a mechanism is needed through which small and medium-sized enterprises, which are the hubs of production, can push economic growth and also meet the social equity goal.
24. *Objective:* The objective of this component is (a) the establishment of CIET; (b) the systematisation of identification of knowledge gaps; (c) provision of support to knowledge users; and (d) linking knowledge suppliers with knowledge users
25. *Component description:* As a means to strengthen effective demand for knowledge, this component would further develop the conceptualisation of CIET. CIET will stimulate, facilitate and promote innovation and entrepreneurship and provide organisational, technical, scientific, market advice and training to support the development of local enterprises, in particular the small and medium-sized enterprises in Namibia. CIET would also support the process of identifying higher value added production opportunities in Namibia and function as a knowledge broker, linking knowledge suppliers to different types of users in pursuit of this objective.
26. Some of the activities to be carried out under this component would include the following: With the aid of international technical assistance, the elaboration and articulation of the CIET concept, its function and role and development of its institutional and organisational structure will be undertaken. Technical assistance will also be sought

to design an industrial and innovation survey, along the lines currently being developed within NEPAD, to train the researchers who will carry it out and analyse the data. These data will provide inputs for the development of relevant training to help small and medium-sized enterprises to identify their needs for knowledge and the activities that will support their ability to innovate. A prioritisation of other activities to deal with upgrading to higher value-added production in critical sectors such as fishing, husbandry, mining and tourism will also be undertaken. Local and international networks will be developed as a means to strengthen capacity within CIET for carrying out its activities. The outcome of CIET activities will inform policy development.

27. *Implementation:* The NCRST will implement the component under the guidance of the MoE.
28. *Outputs and indicators:* The output of this component is that CIET is established by 2011. Indicators are: CIET concept articulated, functions and role of CIET articulated, institutional and organisational structure developed, resource requirements identified, legislation developed, HR Manuals developed, financial policies and manuals developed, Board members elected, CEO and technical staff appointed, premises, physical facilities and equipment acquired and industrial and innovation survey conducted.

Links with the Tertiary Education and Training Sub-programme

29. In strengthening the productive capacity of the NKIS, a steady supply of high-level researchers coming from the tertiary education sector and skilled technicians from the Polytechnic of Namibia and artisans from vocational training centres will be required. Within ETSIP, opportunities to interface this sub-programme with tertiary education and vocational education and training has reduced the risks of a supply failure, though there is likely to be a lag in the number of researchers produced by the system in the short term. It is possible to close this gap by using foreign technical assistance. Although ETSIP concentrates on the integration of ICT as a tool to enhance learning and teaching, a need exists to better integrate this with higher level skills production from Tertiary Education and the enhance management and development of the technology by the private sector.



REPUBLIC OF NAMIBIA

ETSIP is spearheaded by the Ministry of Education

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