NATIONAL ADVISORY COUNCIL ON INNOVATION

Call for Proposals

HUMAN CAPITAL AND THE KNOWLEDGE BASE

1. Background

Currently, the contours of our national S&T knowledge base are incomplete and fragmentary. There is thus an urgent need to map our national S&T knowledge base, which forms the raw material for innovation. In particular, it is of critical policy importance that we plot the cartography of the scientific and technological 'landscape' in SA in order to gain concrete and detailed insight into existing science and technology 'hot spots'.

2. Objectives

A key objective of the study would, therefore, be to identify the critical centres of gravity (or concentration points) in SA as it pertains to the core fields of science, engineering, mathematics and technology. Such information needs to be readily accessible to key S&T policy decision-makers. For example, who are the foremost biotechnology experts in SA and how are they clustered? Who are the key specialists in petrochemicals or mining engineering in the country and to which institutions are they affiliated?

3. Methodological Approach & Deliverables

This is largely a mapping exercise and data will be generated mainly through secondary sources such as the R&D indicators database (HSRC), NRF grants database, NRF rating systems, centres of excellence (NRF), SARIMA studies, etc. The existing data are scattered between institutions and resources need to be applied to mobilise and integrate this information so that it is nationally accessible and easily disseminated. Internet solutions should be explored.

We would expect the service provider to:

(i) Investigate the relationship between the different layers/sources of information (as mentioned above), and to identify and explain points of convergence and divergence as and when they arise.

(ii) Provide a detailed conceptual/theoretical justification and framework around the meaning of the "national knowledge base" concept by interrogating the latest literature in science and technology policy studies and knowledge production.

(iii) Provide a quantitative profile of the knowledge base in terms of critical "knowledge entities" such as peer reviewed articles, scientific books and monographs, patents, doctoral dissertations and other related knowledge products. This profile should look at a relatively long period of time (1990 onwards) and focus on breakdowns by, *inter alia*, scientific field, knowledge producer profiles (gender/race/age), and institution.

(iv) Produce a more detailed profile of the key institutions producing knowledge in highly strategic fields (strategic to be defined in terms of the notion of "competitiveness" and innovation imperatives). Such a profile will identify the "centres of critical mass" where there are long-standing and well-established capacities in knowledge production.

(v) Deliver a bibliometric profile of the international "visibility" of South Africa's knowledge base and a comparison with similar economies in terms of world share in knowledge production. The first part, will be based on an extensive analysis of citation profiles of scientific fields (both with regard to ISI and non-ISI publications).

(vi) Generate a network analysis of patterns of scientific collaboration and networking of the top 20 science fields in the country.

(vii) Align this study with the HR model exercise currently being developed by NACI and other NACI studies such as skill shortage advise, Utilisation of research findings etc.;

(viii) Assess the capacity of the knowledge base in attaining the goals as set in national priorities must be addressed. This will also include introducing qualitative leavers such as quality of education system etc.

The aim is to generate a more nuanced understanding of the dimensions of our national knowledge base, especially its configuration in respect of specific priority science, technology and innovation fields. In terms of identifying priorities, the NRDS, AMTS, Biotechnology strategy as well as key national development priorities such as technology for poverty reduction should provide a useful point of departure as well as provide the study with a strategic focus. In short, the service provider will need to collate and synthesise current knowledge of our national knowledge base vis-à-vis identified national priorities.

4. Benefits

The overarching goal is to provide a map of the knowledge base of the core disciplines of science, mathematics, and engineering, which are the underpinnings of technological innovation. In addition to providing a useful resource for decision-makers within the country, systematically charting and documenting our national knowledge-base will also facilitate better access to the international research community and will more effectively provide our scientists, engineers and technologists with opportunities to participate in global networks of knowledge production.

INSTRUCTIONS

All submitted proposals should provide:

- Detailed information on the proposed design of the project.
- A detailed project management plan.
- An indication of the timeframe for the project.
- A detailed project budget.
- An indication of how the different tasks will be executed.
- List of at least three current and/or recent projects directly related to the present call for proposals.
- Résumés (i.e. qualifications and experience) of all consultants who would be involved in the project.

Submissions should reach the NACI Secretariat on or before Friday, 28 October 2005 at the following postal address: The National Advisory Council on Innovation (NACI), PO Box 1758, Pretoria, 0001. All enquiries should be directed to Ms Charlotte Mzolo: Tel (012) 392 9351; Fax (012) 392 9353; Email: Charlotte.Mzolo@dst.gov.za.