

- 56% of Chinese loans are provided as concessional loans to infrastructure projects, and for industrial development, with economic and social benefits.
- 8% of interest-free loans were apportioned to the construction of public facilities.
- Grants: 36% of Chinese aid for welfare projects went to human resources development, agricultural development, technical cooperation etc.



SOUTH AFRICA

- Development agencies: South African Development Partnership Agency (SADPA), Development Bank of Southern Africa (DBSA), Industrial Development Cooperation (IDC), Export Credit Insurance Cooperation of South Africa (an agency of the Department of Trade and Industry).
- Since 2001, South Africa has provided R20 billion (US\$1.1 billion) in export credits and investment insurance cover.
- Southern Africa mining and infrastructure development dominate the development assistance portfolio.

What is to be done? Suggestions on developing a results-based work plan

With South Africa taking the lead on the NDB Africa Regional Centre, the following are suggestions on how the bank should develop a results-based work plan, geared towards linking peace and security development challenges in Africa with sustainable development:

- Main stakeholders in working out the operationalisation of connecting peace and security challenges in Africa with sustainable development should be:
 1. The NDB Africa Regional Centre - (lead resources and mandate-driving stakeholder);
 2. The Department of International Relations and Cooperation (DIRCO) and / or South Africa's Council on International Relations (SACIR) – (mandate-driving stakeholders);
 3. The AU's Peace and Security Department – (mandate-driving stakeholder);
 4. The BRICS' development agencies – (lead implementing stakeholders);
 5. Two leading NGOs on peace and security developments in Africa from each of the African regional economic communities – (implementing stakeholders);
 6. Two NGOs from each of the BRICS countries - (implementing stakeholders);
 7. Two research institutions from each of the African regional economic communities – (knowledge production, recording, publishing and dissemination stakeholders); and
 8. Two research institutions from each of the BRICS countries (knowledge production, recording, publishing and dissemination stakeholders).
- The objective is to draw an implementable, outcomes-based and measurable annual results-based matrix work plan, identifying peace and security challenges in Africa that

- BRICS' development agencies and NGOs can collaborate on.
- The basis for this results-based plan should be the AU's *Post-Conflict Reconstruction and Development (PCRD) policy (2006)*. The PCRD policy is defined as 'a comprehensive set of measures that seeks to address the needs of countries emerging from conflict, including the needs of affected populations; prevent escalation of disputes; avoid relapse into violence; address the root causes of conflict; and consolidate sustainable peace'. The AU PCRD policy can be used as a barometer to measure the outcomes of these challenges, following its six development indicative elements, namely (i) security; (ii) humanitarian / emergency assistance; (iii) political governance and transition; (iv) socio-economic reconstruction and development; (v) human rights, justice and reconciliation; and (vi) women and gender.
- The main stakeholders, with the NDB Africa Regional Centre leading, should constitute bi-annual symposia / conferences in South Africa of the stakeholders listed above, tasked with the mandate of drawing the results-based work plan, and the second symposia / conference set to review and measure the development outcomes.
- This process should be repeated annually, with a clear emphasis on measuring, recording, publishing and disseminating data on the outcomes of the work plan.

Changing our thinking

The area of linking peace and security with development in developing countries is well-charted and has generated its own intricate and dynamic politics since the Cold War. It is the too-familiar realm of donors, development agencies, the private sector's corporate social responsibility, and philanthropy. It is an area often regarded as trailing behind and serving the national interests of donor countries. BRICS and the NDB enter into this orbit with an increasing number of new actors, particularly from developing countries, all operating in an increasingly complex and interdependent world system.

The main challenges facing this area are two-fold. The first is that many donor activities are linked to the national and foreign policy interests of donor countries. The second challenge is that the donor activities, often left to be undertaken by international NGOs and other non-state actors, are often uncoordinated, with outputs difficult to identify and measure. In addition these activities are often viewed as ends in themselves, with little review and monitoring to link them to the broader ideals and goals of donor countries.

The consequence of this, particularly when linking peace and security with development, is that the root causes of conflict are inadequately attended to. This then carries the potential of a relapse into conflict, and wasteful expenditure. The solution for the BRICS countries is to find ways to co-ordinate their activities within their collective goal of development, thus finding and funding the links between peace, security and sustainable development. ■

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THINK PIECE

A reflection on a data-curation journey

Lucia Lötter and Christa van Zyl reflect on experiences of data preservation and sharing (data curation) practices developed at the HSRC. The lessons learned from this journey may usefully contribute to more general reflection on the management of change in data practice.

The HSRC undertakes large-scale research projects that involve nationally representative, cross-sectional repeat surveys that deal with attitudinal, behavioural and health-related matters. Findings from these surveys are of obvious interest to researchers and the organisations that fund such surveys, but are also highly relevant to policy makers, students, journalists and other users of social science data.

Since the early 2000s, when the organisation published results obtained from ground-breaking new surveys, such as the first South African National HIV Prevalence, Behavioural Risks and Mass Media Household Survey, the HSRC came under considerable pressure to make the data underpinning its research findings available to a wider audience of potential users. Actuarial scientists wanted to review and use the data to base forecasts on, and academics from other institutions wanted to use the data to conduct their own analyses and make comparisons to feed into new publications.

Reluctance in sharing data

Initially, there was a reluctance to share survey data without careful consideration of various issues. For instance, why – or under which conditions – should others have access to HSRC research data from which they are able to freely analyse, criticise, and gain publication credentials, while they were not involved in the hard work to obtain funding for the survey; of developing and translating questionnaires; obtaining permissions; managing complicated fieldwork; capturing, cleaning, and analysing the data; preparing the report; and engaging with policy makers and the media?

In 2003, an international panel responsible for the HSRC's institutional review recommended that the HSRC should consider making research data available for future use as one of its 'public purpose' roles. This implied that the HSRC would have to make resources available for the management, preservation and effective sharing of its research data. In its cautious response to this recommendation, the HSRC highlighted the following concerns:

- There was no national policy around data sharing; hence the question arose of why only one of several data-generating organisations in the country was required to share its research data with others.
 - There was insufficient funding, infrastructure and resources to make data publicly available and to serve the needs of potential users.
 - There was a need to maintain confidentiality or anonymity of research participants, especially where participants were assured of confidentiality during the processes in place to get informed consent from them.
 - There were complexities around intellectual property rights, data ownership and cost recovery, especially at a research entity that depends on contract or grant funding.
- Other issues identified during subsequent consultative workshops included resistance to change, perceived threats to competitive advantage, reluctance to change established work habits, and concerns about the additional burden of detailed recording of metadata.

Finding the value in research data

Many researchers were not aware of the value of research data, the potential re-use of data, and how technology obsolescence might impact negatively on future accessibility of research data. Some were apprehensive about the limited infrastructure and resources that were available, the extra work required and new skills that would have to be developed for data management. They were also worried about possible criticism from external parties, for instance, if secondary users were to report on problems with the quality of some data sets.

Despite these concerns a survey among HSRC research staff showed that 94% regarded statistics/quantitative data as 'very important' to their work. At the same time there were changes in the external research environment. New initiatives to promote secondary access to data became more prevalent; there were increasing numbers of requests for data from external stakeholders; and there were also changes in the legislative environment.



Bring back our girls and women to careers in physics

Early adopters

By 2006, a core team of data management 'champions' was ready to embark on a learning process. The team had a strong background in research, research data management and systems development within the HSRC. Its members were keen to investigate ways in which data could be better managed, preserved and made available for future use.

With limited resources the team organised workshops with senior researchers and research managers to raise awareness and to do a needs analysis. This was augmented by international benchmarking and learning.

As a first step to prepare for better data management the HSRC's existing project information system was extended to allow for the capturing of metadata of data sets. The team then started to work on data from the first (2003) South African Social Attitudes Survey (SASAS).

They developed an approach to clean, describe and package the data set so that it could be made available on a platform that would be accessible to internal and external users alike. Further workshops and awareness-raising road shows followed.

Challenges that presented themselves included the need to develop 'rules for access'. The aim was to formulate the rules in such a manner that external users would be able to easily access data but that access should nevertheless be managed and the confidentiality of individual participants, or even participants drawn from identifiable geographical areas, be adequately protected. A dissemination interface linked to project information on the web was developed to prepare for the dissemination of pilot data by the end of 2007.

In February 2008, the HSRC co-hosted an international conference dealing with data curation - evidence of a small but growing community of data management practice in the country. This event developed into the annual African Conference for Digital Scholarship & Curation hosted by members of a community of practice called the Network of Data and Information Curation Communities. The HSRC continues to participate in NeDICC activities.

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Accelerated implementation

Toward the end of 2008, a new HSRC Act was promulgated. One of the clauses required the HSRC to '... develop and make publicly available new data sets to underpin research, policy development and public discussion of the key issues of development, and to develop new and improved methodologies for use in their development'.

With this new sense of urgency, more status was given to the team who had initiated work in the field of data curation. One of the objectives was to develop a long-term data curation, preservation and dissemination strategy for the HSRC.

Based on their earlier work and experience gained through international benchmarking the data curation team could also develop policies and standard operating procedures (SOPs) for data curation. As had been their approach from the beginning, a consultative approach was followed to develop and periodically review these policies.

Engagement with the Research Ethics Committee (REC) of the HSRC ensured that plans for data preservation and sharing would, at least in principle, be built into research protocols from the outset. From 2011 onwards, all HSRC research protocols that were submitted for ethics review were required to be accompanied by a data preservation and sharing plan that would be reviewed by an expert in data curation. This required researchers to think more carefully about the kind of information they would provide to potential research participants about the envisaged use of research data and the kind of consent that would be required.

Managerial support was made even more evident in 2010, with the introduction of a new indicator of institutional performance that would be formally reported on annually - the number of research-generated data sets that had been preserved and, where appropriate, made available for future secondary re-use.

Establish practice

In the course of approximately 10 years, the HSRC has experienced much change and growth in the area of data curation. By 2015, institutional practices are in place to support a data management culture included good governance, curation systems and processes, and a dedicated team to provide support for data curation.

Remaining challenges and opportunities

A remaining concern is how best to ensure appropriate recognition of the contribution of investigators and research teams who planned research, developed instruments, and collected and made available original data for further research analysis. If co-authorship of publications is not an option there is a need to insist on proper citation of data sets to demonstrate the impact of good research surveys. Continued funding for data collection and data management - undoubtedly the most cost- and time-consuming activities associated with original research - is dependent on an ongoing demonstration of its value.

The HSRC's data service has matured to such an extent that formal certification is the logical next step. Research data should be considered as valuable research infrastructure, and the long-term preservation of research data should be prioritised as a national commitment.

Note: This article is an abridged version of the original article and do not include references to various publications dealing with the management of science. The headings used in this article are to a large extent derived from John Kotter's 1996 publication, *Leading Change*. The full article is available on <http://jre.sagepub.com/content/10/3.toc> ■

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Statistics show that around the world the number of women in physics drops sharply when approaching postgraduate level. What are the barriers that hinder their success in physics, and what can be done about that, ask *Portia Tshigoli, Rodney Managa and Palesa Sekhejane*

Science is part of almost every aspect of people's lives and scientific knowledge is central to resolving the economic, social and environmental problems that make development paths sustainable. Sustainable development requires that science and innovation be practiced at local, regional and global level with the equal involvement of women and men, yet women are still under-represented in physics and related career paths.

A 2015 global survey conducted by Rachel Ivie and Susan White, indicated that women were less likely to access resources and opportunities than men. Using data from the Global Survey of Physicists (GSP), a multi-national collaborative effort arising from a series of international conferences, they found that there were no countries in which women had more resources and opportunities than men. For instance, in countries such as China, Spain and Italy, women physicists had fewer resources and fewer opportunities than men.

Marriage and family

The study also found that in most countries, women were more likely than men to say that their careers as physicists have affected their decisions about marriage and family, and that having children, had slowed their rates of promotion at work.

The authors believe that this trend could be ascribed to the disadvantaging norms that apply to women, for example they found that in most countries, women were more likely than men to say that their careers as physicists have affected their decisions about marriage and family, and that having children, had slowed their rates of promotion at work.

The trend in South Africa follows the same pattern. As shown in Figure 1, there is a general incline in the enrolment of women at the undergraduate level, however, this figure declines at postgraduate level, with severe decline at the PhD level.

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