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South African Science Diplomacy: Fostering Global Partnerships and Advancing the African Agenda

Naledi Pandor

SOUTH Africa's democratization in 1994 heralded significant changes for South African science and technology, as for all aspects of South African society. Prior to 1994, public investment in South African science was largely an instrument for advancing the objectives of the apartheid government, e.g. military. In a landmark white paper published in 1996, South Africa's first democratic government emphatically stressed the role of science and technology as essential instruments not only for economic growth and competitiveness, but also for social development and poverty alleviation. A newly created national Department of Arts, Culture, Science and Technology, which was succeeded in 2002 by a full-fledged Department of Science and Technology (DST), was entrusted with this mandate. Developing and implementing a strategy for international scientific and technological cooperation was one of the first priorities of the department. This was important, not only to overcome the impact of the relative international isolation of South African science during the apartheid years and to develop, for the first time, relations with African partners, but also to leverage international partnerships and investments in support of national programs and capacity building.

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With South Africa being responsible for no more than 0.5 percent of global research output at the time, international cooperation was, and remains, essential for South African science to prosper. International cooperation provides local researchers with additional resources for national projects, and by ensuring South Africa stays in touch with cutting-edge global developments, it is a powerful vehicle for developing, attracting, and retaining human capital. Today, international cooperation is a core component of major South African policy documents such as the Ten Year Innovation Plan and the National Research and Development Strategy. The growing importance of the science content of critical foreign policy issues has necessitated that the South African government pursue a concerted science diplomacy strategy.

This article will provide an overview of this agenda, highlighting its priorities and sketching some of the flagship initiatives.

The Department of Science and Technology, for which I am responsible, is entrusted with the overall coordination of national research and innovation initiatives in South Africa. This includes responsibility for oversight and facilitation of South Africa's international scientific and technological cooperation.

The International Cooperation and Resources program of the DST is tasked with facilitating and nurturing bilateral scientific cooperation with countries in Africa, Europe, the Americas, and Asia. The same program nurtures multilateral scientific cooperation with the African Union, the United Nations system, donor agencies and foundations, global research infrastructure projects, and multinational companies, as well as focused strategic partnerships, such as with the European Union. At present the department has three international offices, located at South Africa's diplomatic missions in Tokyo, Moscow, and Brussels, dedicated to promoting cooperation with Japan, the Russian Federation, and the European Union. The DST has also seconded an official to the secretariat of the Southern African Development Community in Gaborone, Botswana, and has in the past seconded an official to the African Union Commission in Addis Ababa, Ethiopia.

The DST of course does not have exclusive responsibility for matters related to science diplomacy, and works closely on matters of mutual interest with its sister departments, such as the Department of Trade and Industry, the Department of Environmental Affairs, and the Department of International Relations and Cooperation and its network of diplomatic missions abroad. Many of South Africa's national science councils or other public-funded research and technology organizations also have dedicated teams working on international cooperation. These include the National Research Foundation, which is responsible for the implementation of international science and technology cooperation agreements. As with other aspects of government action, the coordination of various engagements, and the activities of these actors, is enabled through various interdepartmental forums and clusters. The science diplomacy agenda, thus, comprises multiple initiatives, but all target strategic national priorities.

South Africa's priorities for science diplomacy can perhaps best be summed up by stating that international scientific cooperation is pursued both as an objective in its own right and as an instrument to attain strategic national and foreign policy objectives. International cooperation and investments are sought to support the implementation of national research and innovation programs that are informed by the developmental challenges of a society in transition. This has been a significant shift of emphasis in the post-1994 democratic reconstruction of South Africa. The focus has moved from military technology exchanges closely related to sanctions busting to a science and technology exchange for economic and national development. Science diplomacy in the democratic era has promoted international cooperation and innovation in science and technology as central to enhancing economic development and competitiveness. Innovation through a knowledge-based economy is a means to address the evils of inequality, unemployment, and poverty. In bilateral partnerships, scientific cooperation is an important component in strengthening political and economic relations with strategic international partners. In multilateral frameworks, South Africa seeks to leverage scientific cooperation and the building of trust and relationships among its partners to foster consensus on contentious issues. Within the context of these various objectives, some strategic objectives can be identified.

Chief among these objectives is South Africa's commitment to support the African development as well as the African regional integration agenda. The DST promotes and invests in efforts to build Africa's science and technology capacities and seeks to harness the role science plays to cement intra-African political and economic integration and cooperation. A key goal is to use South Africa's privileged relations with partners such as the European Union to reinforce African programs. South Africa is often in the unique position of both receiving support, as a beneficiary of development aid (for science and technology programs) from developed partners, and being a donor in its own right, by providing aid to strengthen other African countries' science capacities. This dichotomy also applies to South Africa's broader development partnerships.

South Africa's science diplomacy agenda closely follows the developments and intricacies of its foreign policy. For example, the fostering of South-South relations is an increasingly important strategic priority for South Africa in politics and trade, but also in science. The DST has contributed for several years to the India Brazil South Africa science and technology partnership, and the department is also representing South Africa in the nascent science and technology forums of the BRICS (Brazil, Russian Federation, India, China, and South Africa) group, to which South Africa was admitted in 2011. In building these new alliances, the DST can build on the foundation and learn from the experience of several success stories in South Africa's science diplomacy. Four of these will be briefly reviewed here: South Africa's support to science and technology programs of the African Union; South Africa's championing of the science for sustainable development agenda;

South Africa's leadership in the Group on Earth Observations; and South Africa's strategic science and technology partnership with the European Union.

As South Africa's Minister of Science and Technology, I am currently serving as Vice Chair of the African Ministerial Council on Science and Technology (AMCOST) of the African Union, the body tasked with political oversight of the implementation of Africa's Science and Technology Consolidated Plan of Action. In 2003, South Africa hosted the first meeting of AMCOST and one of my predecessors served as its first chair. Besides providing political leadership, South Africa continues to invest substantially to support the implementation of flagship science and technology initiatives of the New Partnership for Africa's Development aligned with the Consolidated Plan of Action. This includes funding for the African Laser Centre at the Centre for Scientific and Industrial Research in Pretoria and the African Institute of Mathematical Sciences in Cape Town. Through the DST's strategic partnership with Finland, resources were leveraged to support the Southern African Biosciences Network. Presently, South Africa is prioritizing the progress of the African Network for Drugs and Diagnostics Innovation, which I am co-chairing together with the Minister of Health of Kenya. South Africa has made substantial contributions to current vibrant progress in African science and technology. It is an objective to which we remain committed.

When South Africa hosted the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002, the DST in partnership with the International Council for Science hosted a major program of science and technology related side events. An even more salient contribution was perhaps the role of South African negotiators in ensuring that the Summit's Johannesburg Plan of Action clearly recognized the essential role of science and technology as an instrument for sustainable development. This highlighted the need for developed countries to support the strengthening of developing countries' knowledge generation and innovation capacities. In the aftermath of the Summit, South Africa has consistently championed the global science for sustainable development agenda, for example in forums of the Organisation for Economic Co-operation and Development, (in which South Africa enjoys observer status in the science and technology bodies, but plays a very active role.) It is also a theme I have raised in the meetings of the Carnegie Group, which brings together the science ministers and advisors of the so-called G8+5 countries. It is perhaps significant that South Africa became the first country outside the G8 to host a Carnegie meeting, when I had the privilege to welcome my colleagues to Cape Town in November 2011.

These diplomatic interventions have all played a part in ensuring science for sustainable development enjoyed priority focus in global forums. The agenda was further boosted by concrete South African support for the implementation of some of the major science and technology initiatives born at the WSSD, such as the Group on Earth Observations (GEO), tasked with launching the Global Earth Observation System of Systems. Not only has South Africa co-chaired the GEO since 2003, but

the DST has made important contributions to its trust fund, notably for African capacity-building initiatives, and has seconded experts to the GEO Secretariat in Geneva. The G20 and other global forums have, in recent years, recognized the strategic importance of GEO, entrusting it with the development of a Global Agricultural Monitoring Initiative. GEO is today a science-driven but government-led instrument for sustainable development, sustained by broad global support. South Africa and the DST played no small part in ensuring its success.

Support for African programs, championing the science for development cause, and advancing the progress of GEO are all also core components of one of South Africa's most important international science and technology partnerships, its cooperation with the European Union. Beyond the very successful participation of South African researchers in the European Union's Framework Programmes for Research and Technological Development (outside Europe, South Africa ranks only behind the United States, the Russian Federation, China, and India in terms of the number of Framework Programme participations), a multi-faceted strategic alliance has been carefully constructed over the years since the conclusion of the South Africa-EU Science and Technology Cooperation Agreement in 1996.

This cooperation includes South Africa's leadership in the Science, Information Society and Space Partnership of the Joint Africa-EU Strategy; South Africa's implementation of a unique innovation for poverty alleviation budget support program funded by the European Union; and South Africa's role as co-chair with the European Commission of the Group on Earth Observations. South Africa's relations with the European Union highlight how science diplomacy strengthens international partnerships beyond traditional cooperation in scientific research. I have been privileged to attend three South Africa-EU Summits, where the Presidents of South Africa, the European Union, and the European Commission have consistently lauded the role played by science and technology in South Africa-EU relations.

In conclusion, I would like to highlight one of the current flagship areas for South African science diplomacy, namely radio astronomy in Africa. The choice may seem surprising at first. It is, however, a logical one. Africa has an optimal environment for astronomy observation, such as large territories with minimum radio frequency interference, which is essential for radio astronomy. Large science investment is often based on the objective to maximize comparative geographic advantages the country and continent enjoy. The ideal observation conditions and comparatively cheap infrastructure and construction costs make Africa an ideal location for large-scale global astronomy infrastructures. It makes sense to exploit the clear comparative advantages that we enjoy.

To leverage these advantages, South Africa, in partnership with several other African countries, is bidding to host the Square Kilometer Array (SKA) global radio telescope. The bid, supported by South Africa's construction of the exciting MeerKAT telescope, a precursor for the SKA, and several human capital

development programs, has contributed immensely to raising interest in science, technology, and engineering across Africa. Astronomy is an ideal vehicle for public understanding and science education programs because of the excitement it generates. Irrespective of the outcome of the SKA site selection, radio astronomy is responsible for providing Africa with a substantial new cohort of scientists, engineers, technicians, and other knowledge workers. Furthermore, partnerships with multinational companies related to information and communications technology engineering required for radio astronomy are thriving with African expertise becoming a sought after source of innovation for these companies.

The African Union Heads of State and Government have strongly endorsed the African SKA bid and issued their support for the related radio astronomy initiatives. At the 2012 African Union Summit in Addis Ababa, held January 29-30, 2012, which brought together leaders from more than fifty African countries, SKA and radio astronomy were featured on the agenda. This is no small achievement for the science diplomacy efforts of South Africa and its partners, to have a discipline, traditionally viewed as an elite basic research domain dominated by developed countries, now being recognized at the highest level as a flagship initiative not only for African scientific capacity building, but also for broader regional integration and economic development.

This article has painted a rosy picture of South African science diplomacy efforts. There is indeed much to be proud of. A more detailed analysis, at another time, could also interrogate the obstacles, dead ends, and frustrations in this development, but that will need to wait. As sketched above, the South African science diplomacy agenda comprises and has achieved success in three areas: (a) diplomatic efforts to promote international scientific cooperation; (b) international scientific cooperation to address political and economic developmental goals related to foreign policy; and (c) the science content of topical international relations issues and the diplomatic effort required to deal with them. The growing dynamic interfaces between these three different components, as demonstrated by South Africa's relations with the European Union, will only grow in importance.

Herein is perhaps the biggest challenge for South Africa's future science diplomacy engagements; having an agenda that is sufficiently focused in order to ensure an optimal investment of resources, but sufficiently flexible in order to respond to the rapidly changing dynamics of international relations in the twenty-first century which, if not driven by science, most certainly will require a science based response. **SD**