

## Science Diplomacy in West and Central Africa: *State, Trends and Patterns*

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### Abstract

Review and reflection have been made on the evolving discipline of science diplomacy from the point of view of state, pattern and trend in West and Central Africa. While the state is embryonic and implemented consciously or unconsciously, the pattern indicates business is done with friends other than former colonial powers. From the three roles of science diplomacy – science in diplomacy, science for diplomacy and diplomacy for science – West and Central African states have been engaged with the latter. The priority areas involved aimed at creating capacity for science, technology and innovation through education and technology transfer. The players involved included governments, private sectors and individual scientists. Challenges were many but most important was the non-respect of commitments made by partners leading to failure to achieve stated objectives and targets. Suggestions for improvement have been made. Most important among these are transparency, clarity and respect of commitments earlier agreed. To benefit from the three roles of science diplomacy, states of the region need to create adequate critical capacity/mass based on a common vision founded on collective aims.

**Key words:** *Science Diplomacy, West Africa, Central Africa*

### Résumé

Une revue et une réflexion ont été effectués sur l'évolution de la discipline de la diplomatie scientifique du point de vue de l'état, du modèle et de la tendance en Afrique de l'Ouest et Centrale. Alors que l'état est embryonnaire et mis en œuvre consciemment ou inconsciemment, le modèle indique que les affaires se font avec des amis autres que les anciennes puissances coloniales. Des trois rôles de la diplomatie scientifique - la science dans la diplomatie, la science pour la diplomatie et la diplomatie pour la science - les États d'Afrique de l'Ouest et Centrale ont été engagés avec cette dernière. Les domaines prioritaires concernés visaient à créer des capacités pour la science, la technologie et l'innovation par le biais de l'éducation et du transfert de technologie. Les acteurs impliqués comprenaient les gouvernements, le secteur privé et les scientifiques individuels. Les défis étaient nombreux, mais le plus important était le non-respect des engagements pris par les partenaires, ce qui a conduit à l'échec de la réalisation des objectifs et des cibles fixés. Des suggestions d'amélioration ont été faites. Les plus importantes d'entre elles sont la transparence, la clarté et le respect des engagements pris antérieurement. Pour tirer parti des trois rôles de la diplomatie scientifique, les États de la région doivent créer une capacité/masse critique adéquate fondée sur une vision commune reposant sur des biens communs collectifs.

**Mots clés:** *Diplomatie Scientifique, Afrique Centrale, Afrique de l'Ouest*

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## 1. Introduction

Science diplomacy is a relatively new subject/discipline. The methods of science are quite different from the methods of diplomacy. An attempt to have the meaning of science diplomacy has led to expert workshops by the Royal Society, UK (2010) and the U.S. National Academy of Sciences (NRC, 2012) to reflect on the issue. Indeed, given the increasing importance/value of science in solving global, regional and national challenges, *the White House Office of Science and Technology asked the U.S. National Academy of Sciences to organize the workshop to inform the US on Science Diplomacy*. These workshops came up with three “frameworks” (Royal society, 2010) for analysis and conceptualization of science diplomacy and detailed analysis (NRC, 2012) which indicated that there is *overlap between international cooperation and science diplomacy but that it is important not to confuse them*. It was suggested that science diplomacy has always existed, but it has been practiced *consciously or unconsciously* (NRC, 2012). Science diplomacy enables the use of science, technology and innovation – ‘soft power’ – instead of military force – ‘hard power’.

*Activities under science diplomacy must be clear and transparent and the boundary between science cooperation and science diplomacy is not easy to establish* (NRC, 2012). These efforts were reinforced by the Madrid Declaration (by experts) which stated the need to integrate science into foreign policy in the interest of national policies and shared global challenges (E.U. Horizon 2020, S4D4C : using science for/in diplomacy for addressing global challenges). Hence, the definition of science diplomacy approximately can be as follows. *Science diplomacy is the art and practice of conducting negotiations between nations to advance science (STI) in the search for solutions to societal problems. Such search for solutions while being scalable and sustainable ‘must build developing country science and technology capacity’* (Dehgan and Colglazier, 2012). *The negotiations may be bilateral or multilateral* (Mbah, 2019). *This definition of science diplomacy is better understood by visiting the roles related*

*to it* (see 4 below). Its meaning for Africa is, however, still to be reflected on (AMASA-15, 2019). *As one of the recommendations of the 15th Annual Conference of African Science Academies, this implies that the role of science diplomacy for Africa in general and West and Central Africa in particular is still to be understood*.

**2. The objective of this write-up is, therefore, to initiate a reflection on the state, trends and patterns of science diplomacy in West and Central Africa and to encourage regional readiness to benefit from it.**

## 3. Methods

The methods used for the write-up include exploitation of literature and experience of personal participation in bilateral and multilateral agreements/conventions and protocols. Reports of partnership projects and consultancies obtained from ministries or websites of participating partners were sought and used as well as journal publications. Typical keywords used for literature search included science, diplomacy, cooperation.

## 4. Types/Categories of Science Diplomacy

The Royal Society (RS, 2010) came out with *three analytical frameworks* while the US National Academy of Sciences (National Research Council, 2012) came out with *three roles* related to science diplomacy. These are briefly presented as follows:

**4(a)- Science advice to inform foreign policy: science in diplomacy.** The place /role of science in negotiations between states: this has been evident in building relationships between US, Japan, China, USSR, etc. (NRC. 2012). Nations of West and Central Africa with still a developing Science, Technology and Innovation(STI) capacity, have only natural resources to use during negotiations at bilateral or multilateral levels.

**4(b)-Science cooperation to improve international relations between countries: science for diplomacy.** Scientific advantage is used to drive relationship/

foreign policy among nations. Again, states of the region do not have a strong STI base to use as negotiation tool at fora. Yet, it is known that the use of STI knowledge to enhance diplomatic objectives has been recognized and it has achieved successes during the last decade, but has not been equally successful in addressing societal objectives/goals (Kontar et al, 2018).

**4(c)-Facilitation/enabling international science cooperation: diplomacy for science.** *Negotiations between nations for use of scientific expertise/enterprise.* This is the case of most nations of the region. A good example is the multilateral science cooperation that led to the Nigerian Space Programme (Isoun&Isoun, 2014). Other examples include:

- African Graduate Fellowship Programme for American Universities (AFGRAD), and
- Multilateral negotiations: Subsidiary Body for Scientific, Technical and Technological Advice (SBTTA) (CBD/UNEP, 2003), Ad Hoc Tech: Expert Groups.

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### 5. Win-Win or Win-Lose Negotiations

Regardless of the category in 4 above, the outcome of any negotiation must be a win-win result. Otherwise, one party is at a disadvantage while the other gains. Hence, to guarantee a win-win outcome, the negotiators must be adequately qualified and advised prior to negotiations.

### 6. Preparation for Negotiations

At this point, science advice is necessary and obligatory if national interest must not be disadvantaged/mortgaged. Considering the nature of negotiations, the negotiation team is constituted accordingly. Usually, it must be multidisciplinary whether or not the negotiations are bilateral or multilateral.

### 7. Science Diplomacy at National Level

This implies that « tact » is used to approach the policy makers/sectors to have them take science on board for development. Scientists/researchers are « selling » science. An important element of « tact » here is trust building between the science sector and the policy/user sector.

### 8. Science Diplomacy at International Level

Science diplomacy, an important tool by which states can more effectively promote and secure their foreign policy agendas, should be understood to enable evaluation of the potential of a given state for global issues in a systematic way (Olga Krasnyak, 2018). Each state has a *national style* in science diplomacy (Olga Krasnyak, 2018). The *construction* of a national style in science diplomacy involves understanding of the role of science at national levels and identification of the nation's diplomatic style (Olga Krasnyak, 2018). *Each of the nations of the region probably has a national style which may correlate with the colonial legacy.*

At the national level, this is evident from the « cooperation agreements between newly independent countries and their colonial powers. At the international level, this is evident from « block » voting (on decisions, conventions, treaties and protocols). However, some countries (e. g. Nigeria) have practiced science diplomacy (i.e. diplomacy for science) with superpowers (like China and Russia, etc.). The case of the Nigerian Space Programme mentioned in 4(c) above is given more details here. The Programme is in *communication satellite business*.

- **Nigeria Sat-1:** launched in 2003 (within the DMC consortium) from Russia, mission control by Nigerian engineers, is a political, technological and commercial success,
- **Nigeria Sat-2:** launched in 2011 from Russia, mission control by Nigerian engineers at Abuja (Nigeria),

- **Nigeria Sat-X**: full flight satellite by Nigerian engineers, launched in 2011, Russia,
- **Cooperation** for all of this was with Surrey Satellite Technology Ltd (SSTL), UK.
- **SSTL** trained the Nigerian scientists and engineers.
- **NigCom Sat-1R**: Nigerian communication satellite, launched in 2011, China.
- Data on functioning from satellite monitoring centres located in Nigeria (Abuja), China (Kashi)
- **Note**: Nigeria is the first black African Nation in space through science diplomacy (i.e. diplomacy for science). Can the science diplomacy involved be shared with the nations of the region?

### 9. Role of the Scientific Community

The global scientific community has tried and is trying to have science as a global good for the global community (ISC, 2018,2019). The international science council made up of 140 national and regional scientific associations including science academies(4 in West and Central Africa) consider science as a global good that should be available and accessible to the entire human society. Together, they produce statements on priority and global issues for the attention of governments and international organizations worldwide.

The Network of African Science Academies(NASAC) and the Inter-Academy Partnership (science, health, policy)(IAP, 2019) , subsets of the ISC membership, in their programmes and partnerships target STI in priority areas. Here, the international partnership projects seek capacity building for its membership and

scientists-policy maker workshops aimed at fitting science into policy.

In addressing the UN sustainable development goals, STI is required. The STI solutions can assist in solving problems diplomacy cannot handle (i.e. science leapfrogs diplomacy)(Colglazier, 2016). Contributions from science could include identification of challenges, advice on effective actions, monitoring and search for innovative solutions (Colglazier, 2016).

In 2007 and 2008, NASAC and the science academies of the G8 addressed a common statement to the G8 countries on capacity building for STI in African countries. Similar statements were also addressed (2007) to African Heads of Government and Ministers in charge of science and technology. Their immediate response was as follows:

- a) Royal Society –DFID Africa Capacity Building Initiative (RS-DFID ACBI): for scientists who want to develop a collaborative research consortium between scientists in sub-Saharan Africa and a research institution in the UK (RS, 2020). Main objectives include:
  - o To facilitate sustainable multidisciplinary research partnerships in sub-Saharan Africa and the United Kingdom,
  - o To strengthen research and training capacity in higher education Institutions of sub-Saharan Africa by way of transfer of skills between organizations of the research consortia,
  - o To support Young Scientists through Doctoral scholarships coupled with co-supervision of graduate students between UK based and Africa based members of the consortia, and
  - o To « evaluate the contributions of the Africa Initiative to support Universities and Institutions in Africa to develop sustainable research and research training capacity »,

- It is funded by UK aid and UK government.
- b) German Academy of Sciences Leopoldina-German Ministry of Education and Research-Network of African Science Academies capacity building project: National and International workshops hosted by NASAC academies: major output was usually policy recommendations. The Commonwealth Science Academies in the same vein addressed common statements on priority problems of member states to Commonwealth Heads of Government and Ministers for their global attention for solutions.
- c) National Science Academies of the region can engage with diplomats of their countries and key foreign diplomats on issues which they can assist in solving. For example, the Cameroon Academy of Sciences (CAS) interacted with the Ambassador of the United States of America when it hosted the second Annual Conference of the African Science Academy Initiative (ASADI – 2) and he spoke elaborately on evidence-based science advice (CAS, 2007). CAS subsequently interacted with the Konrad Ardenauer Foundation for hosting its forum on climate change. Both cases appear to belong to science diplomacy (i.e., Diplomacy for science).

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### 10. Actors in Science Diplomacy

A look at the actors in science diplomacy can assist in proper framing/defining it. The following are actors (NRC, 2012):

- Government,
- Private sector,
- Funding: a « collective will within which governments, metascience organizations (academies, associations, etc.), do science diplomacy (NRC, 2012).

While scientists do science, businesses do business. The « science component in government diplomacy is valuable’, but science must still be real science, it must be true to the scientific method (e. g. Not using selected evidence to reach a desired conclusion » (NRC, 2012)).

- Science diplomacy must be clear and transparent relative to activities under science diplomacy.
- However, the boundary between science cooperation and science diplomacy is difficult to establish.

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**Definition of science diplomacy:** Three (03) roles related to science Diplomacy :

- a) Scientific advice to inform policy (relations): Science in Diplomacy.
- b) Facilitating/enabling international science cooperation: diplomacy for science
- c) Using science cooperation to improve international relations between countries: science for diplomacy

Relations among scientists in government, NGOs, and private sector contribute to building bridges and handling common problems. The principles of implementation are very important. These include:

- Transparency,
- Clear common interest,
- Sustained cooperative relationships with individuals/institutions, and
- Inclusion of young participants/scientists.

### 11. Challenges in Science Diplomacy

The challenges encountered in best practices progress in global advancement of science and science diplomacy are similar and include:

- ***Lack of human and infrastructural capacity in partner developing countries of West and Central Africa*** (lack of STI strategies, lack of human resources, lack of research infrastructure, differences in goals among partners (e.g. research information as global good in the developed country while in the developing country, it is local development need). However, both developed and developing partners can work for win-win options. It has been observed that developing country partners often provide insufficient resources to science (e.g. MINRESI, 2014) and Project (MINDIF, Far North Region, Cameroon). Often, the developing countries usually do not guarantee sustainability since inadequate or no provision is put for continuity (they fail to own/appropriate the initiative as a continuous activity).
  - ***Weak public-private partnership***: the private sector is important in STI engagement. That means that science diplomacy should not be limited to government to government. This aspect is weak in the West and Central Africa subregions.
  - ***Inflexibility of government programmes***. The flexibility of government programme/policies should be « based on truth and mutual confidence » between the scientific and political communities. This implies that decision making and readiness to adapt based on evidence should apply.
  - ***Lack of incentives***: Scientists appear not to be engaged in diplomatic conversations. There is no evidence of « science attachés » at diplomatic representations where necessary.
  - ***Lack of common voice within the scientific community***: This refers to the failure of scientists to effectively engage policy makers and the public in understanding the role of science and its potential value in development and diplomacy (NRC, 2012). Very important is the absence of (i) a unified voice in favour of science, and (ii) experience within the political institutions to use science and to communicate with the scientific community.
  - ***Broken Promises***: The failure of governments to implement commitments made in bilateral, multilateral, etc, meetings/projects, thereby leading to the undermining of the credibility of the process of science diplomacy, e.g. Project Mindif and University of Dschang – University of Florida (USAID) land grant project in Cameroon where government failed to respect terms of partner contribution and unilateral decision on institutional restructuring, respectively. The USAID simply withdrew from the projects.
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- ## 12. Improving the Process of Science Diplomacy
- Given the preceding, the improved use of science diplomacy includes attention to the following suggestions (NRC, 2012):
- ***Better partnership between governments, private sector and NGOs in developing countries*** (e.g. West and Central African countries) and developed countries (e.g. countries in North America, Europe, etc.)
  - ***Involvement of young people*** (e.g. National Young Academies, Global Young Academy) in efforts of science diplomacy.
  - ***Inclusion of scientific capacity in foreign service science attaches*** at diplomatic representations and science advisers in Ministries of Foreign Affairs as may be deemed necessary.
  - ***Encouragement of competition***: This is necessary to handle global challenges in food security, energy needs, climate change, infectious diseases, etc.

- ***Emphasis on educational and professional development.*** A strong emphasis on STI in higher education and professional development will satisfy economic development needs and major goals of science diplomacy. « Unfortunately, in some developing countries (many in West and Central Africa), higher education is separate from research (e.g. Cameroon). Higher education is « buffer zone between high school and labour force entry » instead of providing facilities to develop relevant skills for modern workplace, innovation and job creation » (NRC, 2012). There is need to develop new communication tools to enable science programs and scientists to communicate with non – English speaking countries given that English is the language of science.
- ***Effective involvement of politicians and the public.*** Scientists need to develop appropriate communication skills/experiences to interact with national/international politicians and the public by publishing science diplomacy related articles in foreign affairs journals to indicate « importance of science in international affairs » and improve science culture by interaction of senior/credible scientists (national/international) with the states of the region.
- ***Emphasize interface of science and policy.*** The creation of centres of excellence focusing on science- policy interface (e.g. program of policy analysis of former Institute of Human Sciences, Cameroon). Any « discourse on science diplomacy should not only be based on emotions but mainly on research to see whether it is efficient ».
- ***Giving importance to transparency and clarity.*** The process of science diplomacy needs to be clear, transparent and direct « the need to be selective in choosing clear terms to explain what is being done and why. It is important for parties to define and communicate clearly the

national interest to other parties. This is necessary to build mutual trust and avoid future misunderstandings.

- ***Given that nations of the region may*** have different science diplomacy styles (due to different colonial legacies (British, French, Spanish, Portuguese and vestiges of German), *can these nations forge a science diplomacy that is based on their « collective commons » to enable them benefit from the three roles of science diplomacy? It is inescapable that capacity in science and technology is a required cornerstone. This could be achieved through « collective investment » around their « global commons ».*

### 13. Response to Science Diplomacy

The response to efforts of the newly independent countries of West and Central Africa can be seen in the success or failure of science diplomacy *conscious or unconscious efforts* made from 1960 to date. Such efforts were and are in the area of diplomacy for science. They were and continue to be in capacity building (human and infrastructural). Examples include:

- a) ***African Graduate Fellowship Programme for American Universities (AFGRAD) (1963-1997).*** Characteristically, it was very competitive. The candidates were selected within each country by a committee composed of government officials and American representatives. Management components/ commitments included :
  - US state department,
  - Africa America Institute,
  - US Graduate Schools, and
  - African governments.

The fields of graduate education at master/doctoral levels were determined by each developing country. In general, graduate education was in science, engineering, business administration, and economics. Many countries of West and

Central Africa participated in the programme with strong participation by Nigeria, Ghana, Cameroon and Côte d'Ivoire. A good number went to scientific research and/or the University upon graduation with an MS or PhD.

**b) National Cereals Improvement and Extension Programme (USAID – Cameroon (Institut de Recherche Agronomique, IRA):**

The main objective was capacity building (training of researchers and building infrastructure). Researchers were trained in complementary disciplines in American Universities at MS/PhD levels while infrastructure was built in Yaounde (headquarters) and Ekona (Biotechnology Laboratory). Funding was by the World Bank, USAID, and Government. Commitments by partners were respected.

**c) Small Livestock and Poultry Development Project:** The capacity building involved :

- Researcher training at MS/PhD levels in US Universities,
- Technician training in US institutions,
- Farmer training (including women) in US, particularly with US farmers,
- Introduction of basic genetic resources (inputs of poultry breeds, goat breeds, pig breeds, rabbits and cattle breeds, etc.), and,
- Infrastructure building at Mankon (headquarters), nutrition and biochemistry laboratory) and at Bambui (dairy technology laboratory).

The partners were:

- USAID/Heifer Project International (HPI),
- Government of Cameroon (Ministry of Livestock, Fisheries and Animal Industries, Ministry of Scientific and Technical Research (Institute of Animal and Veterinary Research whose Director, Dr. Emmanuel D. Tebong,

initiated the project through contacts with Heifer Project International)

Commitments by partners were respected.

**d) The Pasture, Water and Livestock Development Project** (Project Mindif) in the Sudano-Sahelian Zone (Cameroon). This example is different from the preceding in outcome. Partners included:

- USAID,
- Government of Cameroon (Ministry of Livestock, Fisheries and Animal Industries, Ministry of Scientific and Technical Research (Institute of Animal and Veterinary Research).

The objective was to develop pasture and water management for livestock (and humans) in the sudano-sahelian zone. Components included:

- Training of range management/improvement scientists/experts in American Universities,
- Training of livestock farmers for pasture and water management, pasture improvement.

Outcome: project stopped without meeting full objectives because partners (developing country) failed to meet commitments.

#### 14. Conclusion

Science diplomacy, a developing discipline, which is guided by the global role/value of science, technology and innovation in addressing national/regional/global problems, may have been practiced knowingly or unknowingly in the countries of the West and Central Africa subregions. Efforts made indicate that the states of the region went out of the limits of colonial legacy and worked with new partners as well. They were engaged in diplomacy for science, one of the roles of science diplomacy. To enable the region benefit from the three roles of science diplomacy, states of the region may need to create critical capacity/mass guided by a common vision which is founded on their collective commons.



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## 15. References

CAS. 2007. Prioritizing Food Security Policies for Health and Development in Africa : Science academy- policy maker interaction for evidence-based decision making, pp.86

CBD/UNEP. 2003. Handbook of the Convention on Biological Diversity (2<sup>nd</sup> Edition) : Decision V/20 : Operations of Convention.III. Operations of Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA).

Colglazier E. W. 2012. Science and Diplomacy. Science: 335(6070). Pp. 775. <https://science.sciencemag.org/content/335/6070/775/tab-pdf>

Colglazier E.W. 2016. Diplomacy for Science and Science for Sustainable Development. Science & diplomacy 5(1). <http://sciencediplomacy.org/perspective/2016/>

Colglazier E.W. and Lyons E.E. 2014. The United States Looks to the global Science, Technology and Innovation. Science & Diplomacy 3(3). <http://sciencediplomacy.org/perspective/2014/>

Dehgan A. and Colglazier E. W. 2012. Development Science and Science Diplomacy. Science & Diplomacy : 1(4): 1 – 2. <http://www.sciencediplomacy.org/perspective/2012/development-science-and-diplomacy>

EU Horizon 2020. The Madrid Declaration on Science Diplomacy. 2019. 1.9 Public.S4D4C : Using Science for/in Diplomacy for addressing Global challenges.

IAP. 2019. Improving Scientific Input to Global Policymaking *with a focus on the UN Sustainable Development Goals*. Report. [Wwww.interacademies.org/50429/SDGs-Report](http://www.interacademies.org/50429/SDGs-Report)

ISC. 2018. Annual Report 2018. [www.council.science](http://www.council.science); DOI: 10/24948/2019.10

ISC. 2019. Advancing Science as a Global Public Good. Action Plan 2019 – 2021. [www.council.science](http://www.council.science); DOI: 10.24948/2019.09

Isoun T.T. and Isoun M.J. 2013. Why Run Before Learning to Walk? Reflections on High Technology as a Strategic tool for Development in Nigeria. Book Builders. Editions Africa. pp-620

Kontar Y. Y. et al. 2018. Science Diplomacy: The Next Ten Years. NASA/ADS. <https://ui.adsabs.harvard.edu/abs/2018AGUFMPA13A..01k/abstract>

Krasnyak O. 2019. National Styles in Science Diplomacy: The US Center on Public Diplomacy. <https://www.uscpublicdiplomacy.org>

Mbah D. A. 2019. Science Diplomacy. Atelier de Formation sur le Conseil Scientifique en Afrique: Opportunité ou Illusion? 26 – 27 Aout, Yaounde

NASAC. 2007. Joint statement by the Network of African Science Academies (NASAC) to the G8 on Sustainability, Energy Efficiency and Climate Change. Germany, June 2007. [Nasac\\_g8\\_statement\\_07\\_-\\_low\\_res.pdf](#) (accessed 8/6/2020)

NASAC. 2007. Joint Statement to African Science Ministers and Heads of State and Governments by the Network of African Science Academies (NASAC), Building Science, Technology and Innovative Capacities in Africa. January (accessed 8/6/2020)

NASAC. 2008. Joint Statement by the Network of African Science Academies (NASAC), the Inter-American Network of Academies of Sciences (IANAS) and the Science Council of Asia (SCA) to the G8 on the Role of Science, Technology and Innovation in Promoting Global Development. Japan, 7-9 July 2008. Nasac08.pdf. (accessed 8/6/020)

NASAC. 2019, AMASA-15 Report on: Science, technology and innovation for food security and poverty alleviation in Africa :The Role of Academies. [www.nasacomline.org](http://www.nasacomline.org)

NRC. 2012. US and International Perspectives on Global Science Policy and Science Diplomacy : Report of a Workshop, Washington DC : the National Academies Press. <https://doi.org/10.171226/13300>

Past pograms- The Africa- America Institute. The African Graduate Fellowship Program (AFGRAD), 1963 – 1997. [www.aionnline.org/alumni.past-programs](http://www.aionnline.org/alumni.past-programs)

RS-DFID ACBI. 2020. <https://royalsociety.org/grants-schemes-awards/grants/africa-capacity/>

RS. 2010. New Frontiers in Science Diplomacy: Navigating the Changing Balance of Power. pp.33

## 16. Appendix

### The Relation Between Science Advice and Science Diplomacy

Science advice is *general* – needed for development (social, economic, Cultural). Hence, it is essential for the formulation of all policies – including foreign policy (an area usually reserved for diplomacy). Consequently, it intervenes in national, bilateral and multilateral arrangements.

In foreign policy, science advice is necessary to guide /orient the policy without mortgaging the long term interests of the state. Indeed, it is needed to determine the ‘diplomatic style’ of the nation – where should emphasis be? What is exchanged for what? Science advice is evidence-based while science diplomacy is evidence-based and tact-based. Hence, *science diplomacy should be evidence-based (presenting evidence, all the evidence) and tact-based. The importance of science in diplomacy has been emphasized by Colglazier (2012), Science Adviser to the US Secretary of State.*