

# The political economy of the Senegalese science granting councils

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## **‘Light touch’ national case study report: Senegal**

### **For the Research Project: ‘Case studies of the political economy of science granting councils’**

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## Introduction

Senegal's science system is well developed with well-established universities and a long standing set of science funding mechanisms. Senegal is situated towards the top for rates of R&D investment in sub-Saharan Africa with a rate of 0.54% of gross domestic product (GDP) for R&D intensity (UNESCO, 2016). At the same time however, R&D financing is almost 50% provided by foreign sources i.e. donors and there is tension regarding the focus on research as opposed to teaching or innovation.

This light touch study will outline the key characteristics of the Senegal science system based on a desk review conducted in May 2017 together with 14 face-to-face interviews conducted with officials at the central administration of the Ministry of Higher Education and Research together with management staff and academics at the Université Cheikh Anta Diop de Dakar (UCAD). This report focuses predominately on the situation post 2013, following a thorough overview of the Senegalese scientific research and funding activities published in that year (Gaillard and van Lill, 2013).

This report has the following sections: Section 1 introduces the Senegal STI and research funding field in the context of wider political and economic influences. Section 2 provides an overview of the historical and current situation of STI activities in Senegal. Section 3 narrows down into the research funding landscape under the SGC. Section 4 provides insights that were raised during the desk review.

### 1. Setting the context

Senegal is a stable country in West Africa both politically and economically. It has had three peaceful transitions of power and has a growth rate of over 6% at present. That said, it still has significant levels of poverty.

The country has a well-established education system being one of only three African countries that devotes more than 1% of GDP to education (UNESCO, 2016). However, the higher education sector is predominately teaching focused and researcher density is low (Diallo, 2013). Despite this, it is one of the few Francophone countries that has a dedicated science funding systems.

#### 1.1 Political overview

Senegal has a stable political system with established systems of government and administration. It has had three peaceful transitions of power and four Presidents since independence in 1960.<sup>1</sup> Research, innovation, science and technology activities have been under the Ministry of Higher Education and Research or its equivalent since 1983; that said research grants have been given at an institutional level since 1973 (Mouton et al, 2015). A significant push towards promoting research, innovation, science and technology has taken place in Senegal since 2013 when a series of Presidential Decisions changed the way research and higher education was organised and funded (MESR, 2013).<sup>2</sup>

The Ministry for Higher Education and Research (MESR) is tasked with formulating and coordinating policy and priority setting. Specifically, the Directorate General of Research is tasked with day-to-day responsibility for these activities within the Ministry. This is further sub-divided into:

1. Directorate of Strategy and Planning Research
2. Directorate of innovation, valuation, intellectual property and technology transfer
3. Finance Directorate of Scientific Research and Technological Development

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<sup>1</sup> <http://www.worldbank.org/en/country/senegal/overview> (accessed 07/06/17)

<sup>2</sup> <http://online.fliphtml5.com/rvsvd/obtv/#p=12> (accessed 07/06/17)

#### 4. Promotion of Science Culture Directorate.

We would argue that it is the Finance Directorate which is currently the equivalent to the SGC in Senegal as it has the following functions:

- “develop the national budget for scientific research and technological development;
- monitor and control the use of funds;
- develop and monitor the implementation of all management procedures;
- prepare and organize the sessions of the National Research Council, Technology, Innovation;
- to implement all measures to promote greater involvement of the national scientific community.”<sup>3</sup>

The Finance Directorate is responsible for the various funding platforms available for scientists and researchers in Senegal.

### 1.2 Economic overview

Senegal is the second fastest growing economy in West Africa with a stable economic growth rate above 6% for the past few years (6.6% in 2016 and 6.5% in 2015). Agriculture and fisheries are the mainstay of the economy although services provide more than half of Senegal’s total GDP.<sup>4</sup> The ‘Emergent Senegal Plan’, a new development plan introduced in 2014, focuses on moving Senegal to ‘emerging market’ status through a series of flagship projects. This includes building a second university in Dakar focused (amongst other things) on science and technology as well as various large scale infrastructure projects such as a dry port and the development of a Special Economic Zone.

That said, poverty affects nearly 50% of the population (46.7%) which could potentially intensify with the focus on capital intensive exports limiting the creation of new jobs. There are geographically sharp inequality divides: ‘almost two out of every three residents [are] considered poor in rural areas, especially in the south, versus one in four in Dakar.’<sup>5</sup>

### An overview of the current state of STI in Senegal by indicator

The 2015 UNESCO Science Report is the latest document that provides published data on Senegal’s current state of STI by internationally recognised indicators. Data provided in the report shows the following:

- Senegal’s investment in R&D, or GERD, as a percentage of GDP was 54% in 2010; 41% of GERD was from foreign sources compared to 48% from government and 4% from the private for-profit sector.
- The majority of Senegal’s GERD went to government institutions (52%) or higher education (31.4%).
- Senegal has a highest density of researchers per million inhabitants at 361 full time equivalents compared to Nigeria and Ghana both at 39.
- Female researcher numbers remain low but relatively in West Africa, Senegal does well with 24.8% of researchers being female (2010 figures).

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<sup>3</sup> [http://www.mesr.gouv.sn/?page\\_id=1274](http://www.mesr.gouv.sn/?page_id=1274) (accessed 05/06/17)

<sup>4</sup> <http://www.worldbank.org/en/country/senegal/overview> (accessed 07/06/17)

<sup>5</sup> <http://www.worldbank.org/en/country/senegal/overview> (accessed 07/06/17)

- Senegal has the third highest publication rate (338 journal publications in 2014) in West Africa after Nigeria (1, 961) and Ghana (579). The majority of scientific papers published by Senegalese based researchers between 2008 and 2014 were in the field of biological or medical sciences (1,037 papers) as opposed to agriculture (118 papers).

## 2. Senegal's science, technology and innovation system

Senegal has a number of well-established universities and research institutes in the country. The MESR website lists seven universities, two higher institutes of vocation training, one polytechnic and an English language school as falling under its mandate. However, in addition to this, the President in his 2013 Decision mandated the creation of a Virtual University (<http://www.uvs.sn/>) and 50 Digital Open Spaces, at least one in each governmental department of the country. The Virtual University works through the 50 Digital Open Spaces or ENOs. In 2013 in the Presidential Decisions on Higher Education and Research, the government announced that they would reform university administration boards and at least 50% of board members would come from outside of academia or the "socio professional world of work" to quote the translation of the Decision (MESR, 2013:2).

The research institutes fall under the remit of sector Ministries. The most well-known of these is ISRA, the Senegalese Agricultural Research Institute.

In total Senegal had 16 functional research centres and test centres in 2015 up from 9 in 2014. The aim of the government is to have 33 functional centres by 2018. (MESR, 2016)

The Ministry is supported by a National Council of Higher Education, Research, Innovation, Science and Technology established in 2015 which will act as a consultative mechanism to the Minister of Higher Education and Research and will monitor these two sectors (UNESCO, 2016).

Senegal's MERS is also supported by a number of other allied agencies that promote research activities in the country. These include:

- National Academy for Science and Technology of Senegal (<https://www.ansts.sn/>)
- National Agency for Applied Scientific Research (<http://www.anrsa.sn/>)
- Senegalese Agency for Industrial Property and Technological Innovation (<http://www.aspit.sn>)

Senegal's government ministries work towards the achievement of the governments developmental priorities as currently set out by the National Strategy for Economic and Social Development (SNDES) 2013-2017.

In addition there are a number of private research organisations that operate out of Senegal as either Senegalese non-profits or as international organisations, these include the following indicative and non-exhaustive list:

- L'Institut Pasteur de Dakar (<http://www.pasteur.sn>)
- Institute of Research for Development (<https://en.ird.fr/>)
- Council for the Development of Social Science Research in Africa (<http://www.codesria.org/>)
- African Institutes of Mathematical Sciences (<http://www.aims-senegal.org/>)

Diallo (2013) noted that Senegal required the development of advanced technology platforms not just traditional research centres. Significant efforts have been made in recent years to develop a series of innovation hubs and incubator spaces. Examples of efforts to develop these include:

- CTIC Dakar (<http://www.cticdakar.com/fr/>) founded in 2011
- Ker-thioassane/ Defkoakniep (<http://www.defkoakniep.org/>) founded in 2014
- Yessali AgriHub (<http://yeesalagrihub.net/>) founded in 2016

Finally, as noted by UNESCO (2016) the construction of Senegal's first planetarium and mini-astronomical observatory "could also be a sign of a growing science culture" (UNESCO, 2016: 494).

### 3. Research funding activities of science granting councils of Senegal

Senegal has set out to meet the African Union target of 1% of GDP to be spent on R&D but expenditure on R&D is currently around 0.54%. However, 1% of GDP each year would require an input of approximately 135 million USD each year. In 2015 the government funded 11 research projects (compared to 20 in 2014) (MESR, 2016).

The Finance Directorate of Scientific Research and Technological Development provides the following funding streams:

#### 3.1 FIRST/ FNRI

FIRST or the Impulse Fund for Scientific and Technical Research was set up in 1973 to distribute funding at an institutional level. Since 2007 it has been distributing different categories of research grants and scholarships. Based on available figures from the MESR website, funding for research within FIRST has totalled 1,162,667,192 FCFA or approximately 2 million USD since 2007.<sup>6</sup> The 2015/2016 cohort of successful recipients received between them a total of 118 million FCFA (approximately 200, 000 USD).<sup>7</sup> A total of seven projects (out of 103 applications received)<sup>8</sup> were funded with this money in the areas of health, energy and agriculture. Three projects from University of Ziguinchor Assane Seck won together with two projects from ISRA together with two individual grants to staff at UCAD and ISRA.

Technically FIRST has become rebranded and reorganised into the National Fund for Research and Innovation or FNRI since 2015 (UNESCO, 2016); however, the MESR website notes that the FNRI is currently in a period of 'gastation' or development.<sup>9</sup> It notes that the new Fund will not only focus on research grants as FIRST has but also the funding of research laboratories at universities and on the promotion of innovation and as such will require additional funding (to be received from both the public and private sectors).

#### 3.2 Funds for female researchers (PAPES)

A project set up in 2013 (UNESCO, 2016) within the MESR provides support for female teachers and researchers. The funding call for 2016/2017 provides, amongst other things, an opportunity for

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<sup>6</sup> <http://www.mesr.gouv.sn/?p=2716> (accessed 07/06/17)

<sup>7</sup> <http://www.mesr.gouv.sn/?p=14347> (accessed 07/06/17)

<sup>8</sup> <http://www.mesr.gouv.sn/?p=2716> (accessed 07/06/17)

<sup>9</sup> <http://www.mesr.gouv.sn/?p=2716> (accessed 07/06/17)

female teachers and researchers to apply to a dedicated fund for support with the cost of further education (in Senegal or abroad), publishing costs and costs to attend conferences to present papers.<sup>10</sup>

### 3.3 Other funding schemes

A 2013 report by CAAST-NET on the Senegalese STI system highlighted three other funding streams that were available:

- The Fund for Scientific and Technical Publications
- The Presidential Award for Science and Technology Research
- The Presidential Award for Innovation

Unfortunately no further details of these could be found during the desk review other than to a passing comment in the UNESCO Science Report 2015 which mentioned that the Publications fund had been set up in the 1980s and a recognition of its existence by Diallo (2013).

There is however reference made on various websites to a Grand Prize for Science awarded in Senegal.

### 3.4 FNRAA

This fund (<http://www.fnraa.sn/>) is not actually a Fund under the MESR as it is housed within the Ministry in charge of the economy being a sectoral fund for agriculture and food research. It was set up in 1999 and funds “research and the commercialization of results for users” (UNESCO, 2016).

## 4. Insights from the desk study and interviews

A review of the MESR website and relevant documents found during the desk review and the in-depth interviews have highlighted the following insights and issues that are notable with regards the current state of the SGC in Senegal and the wider science funding environment. These are not an exhaustive list or put in any order of importance but is a list of areas highlighted by the research as potential challenges or areas of opportunity to strengthen science and research activity in the country.

### 4.1 Focus on teaching over research at universities

Despite a strong tradition of research in the country, and some long standing research institutions such as IRD, universities in Senegal focus heavily on teaching over research. This is also complicated by the lack of funding available by government for scientific research. As a university professor noted:

‘concerning funding, indeed, the big problem, at the university, is that it is the state that allocates funds to research activities; but there is not a budget line specifically for research at the University. However, and this is to the credit of the state, there is some money which is mobilised and is allocated, in the chapter of research, so that each two years, lecturers receive an academic visit allowance. They receive a flight ticket and some honorarium. We manage this at the university here. It is about 1 billion cfaf, but this individual allowance;

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<sup>10</sup> <http://www.mesr.gouv.sn/?p=9661> (accessed 07/06/17)

there is also some research allowance of 300 000 cfaf added to the salary each year. This is what the state counts as research funding! In fact there is no funding.

Another academic noted:

‘What I personally deplore, I said at the Union that the research aspect is not taken into account in our claims toward the state; we do not claim for research; there are researchers who are in the institutes, and there are lecturer-researchers. But for the latter... there is not budget line according to which we can say ‘look we are doing research and we need this this and this; it’s rather teaching’

This lack of funding and recognition of research contributes to isolating researchers at research centres and at universities.

#### 4.2 Influence of external actors

There remains strong links to the French research community. The co-publication figures provided in UNESCO (2016) alludes to this fact with 1009 co-authored publications between Senegalese and French researchers between 2008 and 2014; well ahead of the USA (403), UK (186) and Belgium (139). At the same time, the level of external funding of research is still high (nearly 50%) which led one university professor interviewed to note:

‘I have always said, and I personally blame myself for this; we, we are always waiting that an expert, say an expert of the World Bank, comes and tell us to do such and such . Why not do it ourselves? We can propose models; I think we can sit down and ask ourselves what best we can do to solve our problems’

#### 4.3 Inter-ministry rivalry

The MESR is well-established and the Directorate of Research together with its Finance Directorate of Scientific Research and Technological Development appear to have a strong, established portfolio of research funds. In addition, the government contributes over 50% of funding to the R&D sector. In this way, the MESR appears to be relatively autonomous. However, the desk research highlighted a tension with sector ministries, notably as a result of the agricultural fund, FNRAA, being housed in another ministry. This was echoed by one Ministry of Higher Education and Research interviewee who noted:

‘As you know it, all the research institutions are not under the responsibility of the Ministry of Higher Education and Research. For example, there is ISRA, which depends on the Ministry of agriculture, ITA, on the ministry of industry, etc. there is another Fund called FNRAA which also fund research projects; you see ...and that makes it that at the Ministry of Higher Education and Research we do not have control on them, although they are national funds which provides some funding for research’

This has implications for the SGC in Senegal – the Finance Directorate of Scientific Research and Technological Development – in terms of their ability to effectively manage science funding in the country. The recently established National Council of Higher Education, Research, Innovation, Science and Technology is potentially an organ that will bring a level of coordination across Ministries.

#### 4.4 Private sector participation

While the private sector is not a significant player in funding R&D, the government is aware of the need to engage them more effectively and changes are taking place to address this. This includes ensuring more professionals involved in university administration boards as well as a public rhetoric

to enhance linkages between research and business through a focus on the downstream end of the R&D pipeline as well as through recognition of the importance of private funding for R&D.

#### 4.5 University access

The Emergent Senegal Plan places a large emphasis on tertiary education and building up further education institutions in the country as a means of increasing access to education for a larger number of people and from a wider range of socio-economic and marginalised groups. The Plan allocates funding to the following tertiary education institutes and allied activities:

1. Second University of Dakar to focus amongst other things on science and technology
2. A city of knowledge creating a higher education, research and business
3. Network of higher vocation and training institutes
4. University residences for over 40,000 students

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