

Summary

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STI in West Africa: Key challenges and context-specific responses

Lecture and workshop with Ernesto Fernandez Polcuch (UNESCO) at the Austrian Institute for International Affairs – oiip, 29 November 2017

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Lecture and workshop with Ernesto Fernandez Polcuch (UNESCO) at the Austrian Institute for International Affairs – oiip, 29 November 2017

The speaker



Ernesto Fernandez Polcuch is the Chief of Section for Science Policy and Partnerships in the Natural Sciences Sector of UNESCO. He manages global UNESCO programmes in STI Policy, Science Communication, Gender and STEM, Science Diplomacy, and Science-Policy-Society linkages. Before joining UNESCO, he worked with RICYT, the Ibero-American Network on Science and Technology Indicators, setting up the S&T indicators system in Latin America. He also has worked as a researcher, professor, government advisor and consultant in Argentina and the region.

Zusammenfassung

Westafrika erfährt zurzeit starke Umbrüche. Vor dem Hintergrund zahlreicher Krisen entstand in der Region ein Konsens darüber, Wirtschaftssysteme diverser und nachhaltiger zu gestalten. Dabei nehmen Forschung, Technologie und Innovation (FTI) eine äußerst relevante Rolle ein. Innovation wird in Westafrika jedoch von grundlegenden infrastrukturellen Mängeln beeinträchtigt. In dem Vortrag werden daher die Bestrebungen beschrieben, strukturelle Unterfinanzierung mit neuen nationalen Förderungsmechanismen für FTI zu überwinden, um somit auch stärker auf lokale und regionale Prioritäten Rücksicht nehmen zu können. Des Weiteren soll Forschung zugänglicher und stärker an bestehende Ausbildungssysteme gekoppelt werden. Hier besteht großes Potential für Kooperation zwischen Österreich und Westafrika in der Lehre und Ausbildung von jungen Arbeitskräften. Eine weitere Herausforderung ist die bessere Koordinierung zwischen Forschung und Innovation. In diesem Zusammenhang könnten in der Region etablierte Formen von Prozessinnovation und KMUs die Rolle eines wichtigen Bindegliedes einnehmen und so einen großen Beitrag in Sachen Arbeitsplatzschaffung, Diversifizierung der Wirtschaft und Nachhaltigkeit liefern.

Abstract

Recent crises and their economic impacts have illustrated that West African countries need to diversify their economies and introduce measures for more sustainable growth. In his lecture, Ernesto Fernandez Polcuch articulates the relevance of Science, Technology and Innovation (STI) in achieving these goals. However, at the same time he lays out several challenges that are currently restraining innovation. To tackle the overall lack of financial resources, national STI funds need to be established that prioritize research according to local and regional interests. In terms of linking education to STI, higher education needs to become more accessible to a broader public. As the speaker points out, the areas of technological vocational training bear particular potential for cooperation between Austria and West Africa. Finally, making STI more accessible also entails to coordinate research better with the economy. In this regard, process innovation and small-scale companies could generate youth employment, and as such be a central contribution to the overall goal of sustainability and economic diversification.

1. Introduction

Throughout his lecture Ernesto Fernandez Polcuch's displays that world regions like West Africa require attentiveness to regional characteristics in the formulation of science, technology and innovation (STI) policy. Such attentiveness is crucial for understanding the dynamics of this complex region, and accordingly, to choose the right tools to encourage innovation. In this regard the speaker outlines three key challenges for West Africa: 1) funding and implementation, 2) transition from education to STI, and 3) coordination between research and economy. He argues that West African STI systems need to become



more accessible to a broader population. Furthermore, they need to become more responsive to the challenges and opportunities particular to the context of West Africa. As the speaker formulates it, innovation has to come “closer to society”.

The Economic Community of West African States (ECOWAS) is the main intergovernmental organisation in West Africa. As one of six recognized African Regional Economic Communities (RECs), it comprises 15 West African member states. ECOWAS states rely heavily on revenue from raw commodity exports, mainly in crude oil and natural gas, in mining, as well as in agricultural products (see UNESCO Science Report 2015). While the region has experienced some economic growth over the last decade, Ernesto Fernandez Polcuch explains that recent crises¹ have shown that this growth is unsustainable. In this context ECOWAS has formulated its own Science and Technology Policy in 2011 (ECOPOST). This policy lays out the basic framework for STI activities in their crucial role for diversifying economies, establishing sustainable infrastructure and strengthening governance (see UNESCO Science Report 2015).

¹ For instance the 2014 Ebola outbreak in Guinea, Liberia and Sierra Leone; or the various political crises such as the 2012 Tuareg and Jihadist rebellion in Mali (UNESCO Science Report 2015)

2. The challenge of funding and implementation

One of Fernandez Polcuch's main concerns is that West African STI systems display an overall lack of funding. In most countries the GERD (Gross Expenditure on Research and Development)/GDP ratio remains clearly below the defined ECOWAS target of 1% of the GDP. Further, international donors contribute a relatively big share of R&D. The speaker thus emphasizes the importance of establishing national and regional STI funding mechanisms that prioritize research according to the interests of West African countries. ECOWAS has formulated concrete plans (ECOPOST 2011) to establish such national STI funds. The objective is to facilitate more and better research in particular areas that are essential to regional economies². According to Ernesto Fernandez Polcuch, the funding procedures that do exist mainly focus on established institutions, such as universities. In order to improve interlinkages between the economy and the research sector, it is important to establish more direct funding mechanisms for individual research projects and innovative companies. Some opportunities are existing for researchers to apply for international project funding in frameworks like Horizon 2020. While Ernesto Fernandez Polcuch points out certain positive effects of the internationalization of science, for instance on the quality of research and personnel development, he explains that these international collaborations render West African STI dependent on foreign funding. Collaboration should be approached differently, for example by creating incentives for internationally organized research to be carried out "on site" in West Africa³. Alongside the already mentioned adaptations in funding, this idea automatically implies that regional research centres need to be better equipped in order to carry out such high-quality research. According to the speaker, another important aspect to research infrastructure is interregional cooperation amongst Western African researchers. Such cooperation could be encouraged by new funding mechanisms and by the "Centres of Excellence" programs (see next section).

While these infrastructural issues pose big challenges for regional STI, the speaker explains that policy-making often fails to consider how programs can deal with such conditions. Fernandez Polcuch has experienced conceptual agreement from several West African stakeholders to increase efforts in STI development. However, to enable implementation it is necessary to consider questions of funding, personnel and monitoring already when policy is being formulated.

² In particular, there is a lack in research on mining and agriculture.

³ The biggest research partners are in the UK, France, Germany and the U.S.

3. The challenge of linking education and STI

As Ernesto Fernandez Polcuch explains, one of the major building blocks of West African STI policy is the establishment of centres of excellence. The World Bank, ECOWAS and WAEMU have launched projects to establish such centres at local universities. The main objectives for these centres are training of personnel on the one hand and enhancing mobility and exchange for West African researchers on the other. The speaker regards these efforts as an important first step in terms of research funding and in building networks amongst researchers located in the region. Nevertheless, he insists that these centres alone still do not create the necessary infrastructural sustainability for STI systems.

Ernesto Fernandez Polcuch thus emphasizes the need to interrelate STI policy with youth education. West African education policies have focused on generalizing primary education, which has led to a rise in enrolment to 92%. More work needs to be done in this area, but the speaker encourages policy makers to focus more on the transition from youth education to professional (scientific) environments, as this is the step that appears as particularly difficult to a lot of young West Africans. This entails making higher education and STI environments (like the centres of excellence) more accessible for a broader population. Linking education systems and STI is part of Fernandez Polcuch's broader point to bring innovation "closer to society". In this regard, the speaker points to the high potential for international cooperation, in particular with Austrian expertise and experience in the areas of youth education and technological vocational training.

4. The challenge of coordination between research and economy - Innovation "closer to society"

Apart from adjustments in education, the speaker emphasizes that the notion of innovation "closer to society" also entails better coordination between science and the economy. This requires re-organizing STI systems in order to play a crucial role in youth job creation. The speaker mentions an on-going UNESCO project in West Africa that aims to establish local innovation hubs. Such projects build on a "grass-roots-like" innovation model that encourages small companies to develop products that are shaped by local demand. The speaker projects that innovation of such kind will integrate a larger number of people in the job market and could, in this way, play a crucial role in the diversification of the economy. As

he argues, STI policy in West Africa should take the issue of youth employment as one of its primary concerns.

In this context, Fernandez Polcuch argues that the standard OECD approach to innovation and R&D cannot be implemented in West Africa without further adaptation. He points to a range of infrastructural deficiencies in the whole business enterprise system. There exists a big informal sector. Regional economies are shaped by a few big monopoly-like enterprises. Further, such companies often do not really engage in technological innovation, but rather work with imported and already finished goods. Therefore, institutions concerned with STI policy should not take a “one-size-for-all” approach, but instead be responsive to local and regional characteristics. This requires openness towards different forms and models of innovation, and a departure from unrealistic visions of a “West African Silicon Valley”.

Building on this idea, the speaker mentions a survey conducted by UNESCO (UIS 2016) that distinguishes product innovation, process innovation, organizational innovation, and marketing innovation. This survey shows a much higher self-perception of innovation rates in certain areas amongst West African countries than existing projections based on R&D spending would predict. For example, the survey indicates that Nigeria is very productive in process innovation. As the speaker explains, process innovation might be a very important factor for an economy that lacks essential infrastructure, for instance in energy supply. Therefore, Ernesto Fernandez Polcuch argues that West African states would be well advised to reflect on the importance of such types of innovation in their STI policies. This policy approach would not only encourage more grassroots innovation, but also support regional STI systems to create more sustainable growth in the long run.

5. UNESCO’s programs in West African STI

UNESCO’s main objective is to enhance peace through education, science and culture. In the context of developing countries, the organization focuses on building human capacities that will support infrastructural development. Ernesto Fernandez Polcuch explains that this approach is opposed to other existing development practices that promote individual development projects without really supporting the sustainability in infrastructure and governance of the concerned states. In contrast, UNESCO aims to encourage countries to

develop sustainable STI systems on their own. In support of such developments, UNESCO introduces different indicator frameworks to inform evidence-based STI policies. Apart from its cooperation with governments, UNESCO also collaborates directly with civil society and universities.

The speaker presents two projects as examples for UNESCO's efforts in West Africa:

STEM and Gender Advancement (SAGA)

Having defined gender equality as one of UNESCO's two global priorities, the organization is concerned with the share of women researchers in West Africa, which is one of the worlds



lowest (below 30%). The international SAGA project aims to develop a methodology for evidence-based policy making and monitoring to achieve gender equality in STI. As the speaker explains, the idea is to conduct a gap analysis that, first, identifies the main objectives

of STI gender policy (such as the increase of visibility, participation and respect of women in STEM), and, second, develops a toolkit that in consequence analyses countries' policies measured against the defined objectives. In 2018, Saga will adopt a focus on West Africa, and in particular on The Gambia and Liberia.

GO-SPIN

Throughout the lecture, Ernesto Fernandez Polcuch reflects on the importance of political stability for STI. As he shows, there is a strong correlation between political stability/governance effectiveness and scientific output. UNESCO has developed its own indicator framework called GO-SPIN (Global Observatory on Science, Technology and Innovation Policy Instrument), as a tool to integrate the role of these political factors into STI

policies. GO-SPIN is building an open-access platform that collects information on existing policy, on implementation, on legal and institutional frameworks, and on gender, to provide policy makers with characterisations of the political and institutional contexts in which STI takes place. The speaker explains that GO-SPIN is designed as a strongly collaborative project between UNESCO and stakeholders of the respective countries. Participating states can request country-specific reports that will provide them with an in-depth analysis of their STI system. At the same time, UNESCO encourages these countries to introduce further institutional adjustments for STI development, including measures in funding and gender equality. The broader idea is to spark sustained awareness and dialogue on STI through the collaborative work on the reports.

Reflecting on the UNESCO's approach to establish indicator frameworks, the speaker explains that projects like GO-SPIN and SAGA aim to trigger institutional reform through the display of quantitative data. As such, these projects could play a key role in getting West African countries to invest more in their STI systems.

6. Conclusion

Ernesto Fernandez Polcuch elaborates three key challenges for STI policy that are characteristic for West Africa.

First, there is a general lack of STI infrastructure, and of the resources necessary to create and maintain such infrastructure. While there exists conceptual agreement amongst West African governments over the relevance of strengthening STI infrastructure, policies lack consideration over the availability of resources and over concrete implementation measures. The creation of national funding mechanisms is a top priority in this regard.

Second, West African governments' efforts to further generalize and increase the quality of education and vocational training are going into the right direction. However, future policies need to link education to the existing STI strategies. Much more attention needs to be paid to the transition from primary education to these professional knowledge environments.

Third, STI bears a lot of potential for West African countries to fight youth unemployment. In order to unlock this potential, it is necessary to encourage grassroots-like innovation and establish better coordination between research and local demand for innovation.

As the speaker emphasizes, especially the point of education and vocational training could be a good space for collaboration between West Africa and Europe, and in particular with

Austria. The already existing international collaborations in research should be expanded to include those areas where West African personnel is trained to participate in STI systems. This would disrupt the imbalance in research capacities between cooperation partners, as well as it would play a crucial role in making West African economies more sustainable for the future.