



**MINISTRY OF SCIENCE, TECHNOLOGY
AND INNOVATION**



United Nations
Educational, Scientific and
Cultural Organization



UNESCO GO→SPIN Methodological and Data Collection Training Workshop

Republic of Uganda *Jamhuri ya Uganda*

12–16 April 2021

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ANALYTICAL PROGRAMME



**Research on Knowledge,
Innovation, Technology and
Science Organization**

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INTRODUCTION

UNESCO's Global Observatory of Science, Technology and Innovation Policy Instruments (GO→SPIN) is a programme designed to expose —through the rigorous application of an assessment lens— usable insights about science, engineering, technology and innovation (SETI) policies and their context. This programme is helping UNESCO Member States to create local capacity for analysing SETI evidence-based policies in order to detect gaps and introduce reforms and upgrades to their national innovation systems and its governance. It promotes building capacity to monitor and evaluate the policy performance, through a structural analysis (covering the explicit policy, the SETI national ecosystem, the legal framework and operational policy instruments), because such analysis points to implicit policies and gaps, and situates the performance of each individual national policy. In this way, the scope of standard SETI assessment can be widened, to consider country-specific contexts, as well as emerging knowledge of technological advances that contribute to sustainable development. While complementing efforts to promote evidence based SETI policymaking as well as efforts to evaluate policy performance, GO→SPIN offers a good baseline for the promotion of national scientific and technological foresight studies.

SETI policy priorities must be intricately linked to national objectives and visions, which are embedded within broader development strategies and trajectories. A SETI policy framework with a transformational focus aimed at sustainable development can support shared objectives such as the SDGs and other national and global priorities, as well as other UN commitments and Recommendations. For instance, GO→SPIN is contributing for monitoring the implementation of the recent UNESCO's *Recommendation on Science and Scientific Researchers*¹.

SETI policies are implemented through various operational instruments with different features and focus which are often combined in “policy mixes” requiring coordination, consistency, and coherence across government. Differences in the levels of maturity of countries' National Innovation Systems (and sub-systems within the NIS) require different SETI policies and instruments.

Nevertheless, the lack of, or weaknesses in data, information, indicators, and capabilities to formulate, analyse and monitor SETI policies and instruments continue to be a major challenge in many countries. Consequently, the objective of GO→SPIN programme is to fill these gaps.

This training workshop is an attempt to help SETI stakeholders in the Republic of Uganda to implement methodologies and tools for assessing evidence based SETI policies from a much broad contexts than the traditional input-output indicators' approach. It will also allow the participants to collect and standardize information for the creation of full inventories of: (a) SETI operational policy instruments and other incentives and mechanisms which are in place to promote research and innovation activities, (b) SETI laws, decrees, and international agreements, etc. and (c) institutions which perform research and innovation activities as well as those which provide scientific and technological services.

The collected information will be used to complete the national SETI profile at UNESCO's GO→SPIN on-line platform (URL: <https://gospin.unesco.org/>) or eventually to prepare a much more detailed country profile study (URL: <https://en.unesco.org/go-spin/country-profiles>).

The training workshop is organized in five lectures. UNESCO Regional Office for Eastern Africa in Nairobi will provide a Microsoft Team Link where the trainees will have access to the on-line lectures that will also include Q&A sessions and some practical exercises. The presentations, detailed bibliography, and complementary material can be downloaded from the following URL:

<https://www.researchkits.org/training/uganda>

¹ https://en.unesco.org/themes/ethics-science-and-technology/recommendation_science

LECTURE 1: April 12, 2021 – 14:00 to 16:30 hrs

Description: We present a description of each individual dimension of the UNESCO GO→SPIN Programme which includes: (a) GO→SPIN Training Workshops, (b) GO→SPIN surveys, (c) GO→SPIN Methodological Approach and Guidelines, (d) GO→SPIN on-line platform, (e) UNESCO GO→SPIN Country Profile Series, and (f) UNESCO GO→SPIN Foresight Studies Series. We make a brief introduction to the concept of science, engineering, technology, and innovation (SETI) policy instruments characterized by three main groups (SETI governing bodies and characteristics of the research and innovation ecosystem, SETI legal framework and SETI incentive mechanisms). We show the importance of mapping the national research and innovation landscape through the policy instruments approach to produce evidence-based policies and to detect policy-implementation gaps and pathologies. We show how the GO→SPIN methodological approach has been included by the UN IATT to be used as an input for the construction of STI roadmaps for SDGs.

Bibliography²

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UNESCO GO→SPIN Country Profiles Series

- 1) Mapping Research and Innovation in the Republic of Botswana. G. A. Lemarchand and S. Schneegans, eds. UNESCO (2013) *GO→SPIN Country Profiles in Science, Technology and Innovation Policy*, vol.1. United Nations Educational, Scientific and Cultural Organization: Paris.
- 2) Mapping Research and Innovation in the Republic of Zimbabwe. G. A. Lemarchand and S. Schneegans, eds. UNESCO (2014) *GO→SPIN Country Profiles in Science, Technology and Innovation Policy*, vol. 2. United Nations Educational, Scientific and Cultural Organization: Paris.
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- 6) Relevamiento de la Investigación e Innovación en la República de Guatemala. G. A. Lemarchand, ed. UNESCO (2017) *Colección GO→SPIN de Perfiles Nacionales en Políticas de Ciencia, Tecnología e Innovación*, vol. 6. Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura: París.
- 7) Mapping Research and Innovation in the Republic of Lao People's Democratic Republic. G. A. Lemarchand and A. Tash, eds. UNESCO (2018) *GO→SPIN Country Profiles in Science, Technology and Innovation Policy*, vol. 5. United Nations Educational, Scientific and Cultural Organization: Paris
- 8) Relevamiento de la Investigación e Innovación en la República de Paraguay. G. A. Lemarchand, ed. UNESCO (2018) *Colección GO→SPIN de Perfiles Nacionales en Políticas de Ciencia, Tecnología e Innovación*, vol. 8. Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura: París.

² To be downloaded as one pdf and one ZIP file from <https://www.researchkits.org/training/uganda> (Lecture 1)

LECTURE 2: April 13, 2021 – 14:00 to 17:00 hrs

Description: we present a detailed version of the GO→SPIN methodological approach and their analytical units, which include: (a) A long-term description of the national political, economic, social, cultural and educational contextual factors; (b) A standard content analysis of the explicit SETI policies, including those research and innovation policies implemented in other sectors, such as agriculture, energy, health, industry, communications and mining sectors; (c) Historical analysis of SETI policies and institutions; (d) Description of the SETI policy cycle; (e) A complete analysis of the SETI organizational chart at five different levels (policy-making level; promotional level; research and innovation execution level; scientific and technological services level and evaluation level); (g) An institutional ecosystem analysis of all the STI government bodies and organizations related both to research and innovation and to science and technology services; (h) Analysis of the STI legal framework, including acts, bills, regulations and international agreements on STI issues, (i) Description of a standard inventory (including 18 different analytic dimensions) for all the SETI operational policy instruments in place; (j) Analysis of gender in science and engineering national behaviour; (k) correlation between policies and long term series of indicators (i.e. R&D input indicators, scientometric analysis of scientific publications, patents, trademarks and utility models, etc.). The lecture will be customized to analyse the case of the Republic of Uganda.

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³ To be downloaded as one pdf and one ZIP file from <https://www.researchkits.org/training/uganda> (Lecture 2)

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- 2) *Co-Designing Science in Africa: First Steps in Assessing the Sustainability Science Approach on the Ground* (UNESCO 2019)
- 3) *Doing Business in Africa: From Economic Growth to Societal Development* (Palgrave 2021)
- 4) *Economic Impacts of Intellectual Property: Conditioned Government Incentives* (Springer 2016)

- 5) *Flagship Universities in Africa* (Palgrave 2017)
- 6) *Governance Theories and the Practice of Science Policymaking* (Danish Institute for S&T Policy 2001)
- 7) *Handbook of Innovation Policy Impact* (Edward Elgar 2016)
- 8) *Handbook of Politics and Technology* (Routledge 2015)
- 9) *Incentives for Research, Development, and Innovation in Pharmaceuticals* (Springer 2011)
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- 15) *Policy Instruments for Environmental and Natural Resource Management* (Routledge 2011)
- 16) *Science for Policy Handbook* (Elsevier 2020)
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- 18) *Sustainability Science* (UNU Press 2011)
- 19) *The Liberalisation of the Telecommunications Sector in Sub-Saharan Africa and Fostering Competition in Telecommunications Services Market in Uganda* (Palgrave 2018)
- 20) *The Politics of Innovation: Why Some Countries are Better than Others at Science and Technology* (Oxford 2016)
- 21) *UNESCO Science Report: Towards 2030* (UNESCO 2015)
- 22) *UNISPAR Manual on Technology Business Incubators* (UNESCO 2000)

LECTURE 3: April 14, 2021 – 14:00 to 16:30 hrs

Description: we present a description on the analyses of long-term temporal series of indicators and its relationship with the implementation of SETI policies and policy instruments. We will present a detailed analysis of input and output R&D indicators, as well as innovation, higher education, gender, and contextual indicators. We will show how the indicators are theory- dependent and how using some international innovation or competitiveness composite indexes might be inadequate for policy design. We will identify the major gaps in the national STI indicators production. We will analyse how the political stability and government effectiveness in the implementation of different policies have a strong impact on SETI policies which are also reflected in the long-term behaviour of different types of indicators.

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⁴ To be downloaded as one pdf and one ZIP file from <https://www.researchkits.org/training/uganda> (Lecture 3)

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- 15) *Cracking the Code: Girls' and Women's Education in Science, Technology, Engineering and Mathematics_STEM* (UNESCO 2017)
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- 18) *Women and Sustainable Human Development: Empowering Women in Africa* (Palgrave 2020)

LECTURE 4: April 15, 2021 – 14:00 to 16:30 hrs

Description: This lecture describes how the UNESCO GO→SPIN Platform works and how we should explore and access all the information on SETI policies, SETI policy instruments, SETI legal framework, SETI input-output indicators and other contextual indicators, impact on SDGs, digital library etc. which are available from around 90 developing countries around the world.

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⁵ To be downloaded as one pdf from <https://www.researchkits.org/training/uganda> (Lecture 4)

LECTURE 5: April 16, 2021 – 14:00 to 16:30 hrs

Description: This lecture describes how to complete the national UNESCO GO→SPIN Survey focused on three main dimensions: (1) A complete inventory of all the STI government bodies and organizations related to research and innovation, higher education institutions; business-enterprise and non-profit organizations which performs research and innovation activities and those institutions which perform science and technology services; (2) A complete standardized inventory of the SETI legal framework, including acts, bills, regulations and international agreements; and (3) A standard inventory using 18 different analytic dimensions of all the SETI operational policy instruments which are in place in country.

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- Templates to collect the information on STI operational policy instruments, STI legal framework and STI institutions.
- Toolkit with examples on the inventory of STI operational policy instruments.
- Toolkit with examples on the inventory of STI legal framework.
- Toolkit with examples on the inventory of STI institutions.
- Survey of the UNESCO's Recommendation on Science and Scientific Researchers.

⁶ To be downloaded as one pdf and one ZIP file from <https://www.researchkits.org/training/uganda> (Lecture 5)