

# The SAGA Project

## Improved Measurement and Policies for Gender Equality in STEM

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### An introduction to the SAGA Toolkit

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The SAGA<sup>1</sup> Toolkit has been developed in the framework of the SAGA Project, a global UNESCO project supported by the Government of Sweden. This initiative's main objective is to improve the measurement and policies for gender equality in science, technology, engineering and mathematics (STEM) by offering governments and policy-makers a variety of tools to help decrease the current global gender gap in STEM fields existing at all levels of education and in research.

#### What is the SAGA Toolkit?

The SAGA Toolkit is designed for policy-makers and statistical entities in governments. It provides practical tools to monitor and evaluate gender equality and to integrate gender aspects in science, technology and innovation (STI) policies, a field where sex-disaggregated information is often still lacking and relies primarily on anecdotal evidence. Furthermore, it also contains definitions of STEM, based on international classifications of education levels, fields of study or research, and occupations.

By linking policies to indicators, it becomes easier to monitor and evaluate the impacts policies have and it provides evidence for improving gender equality in STEM. Therefore, **the SAGA Toolkit establishes a new basis to design evidence-based policies on gender in STEM, by providing countries with instruments to assess the current state of their policies and statistics and by providing recommendations for improvements.**

The SAGA Toolkit is being tested in a number of pilot countries and regions in all parts of the world. SAGA pilot countries can choose from all or a combination of SAGA tools included in the Toolkit, to achieve the following outcomes:

- **Identify main gaps in gender-related STI policies**, by applying the [Science, Technology and Innovation Gender Objectives List \(STI GOL\)](#) (Tool 1) by means of the *SAGA Matrix* (Tool 2);
- **Assess the coverage of national STI gender-related policies**, through the use of the *Survey of Science, Technology, Innovation Policies and Instruments* (Tool 3);
- **Collect further information on drivers and barriers to careers in science and engineering (S&E)**, in instances where existing information on drivers and barriers is insufficient, by using the *Survey of Drivers and Barriers to Careers in Science and Engineering* (Tool 4).

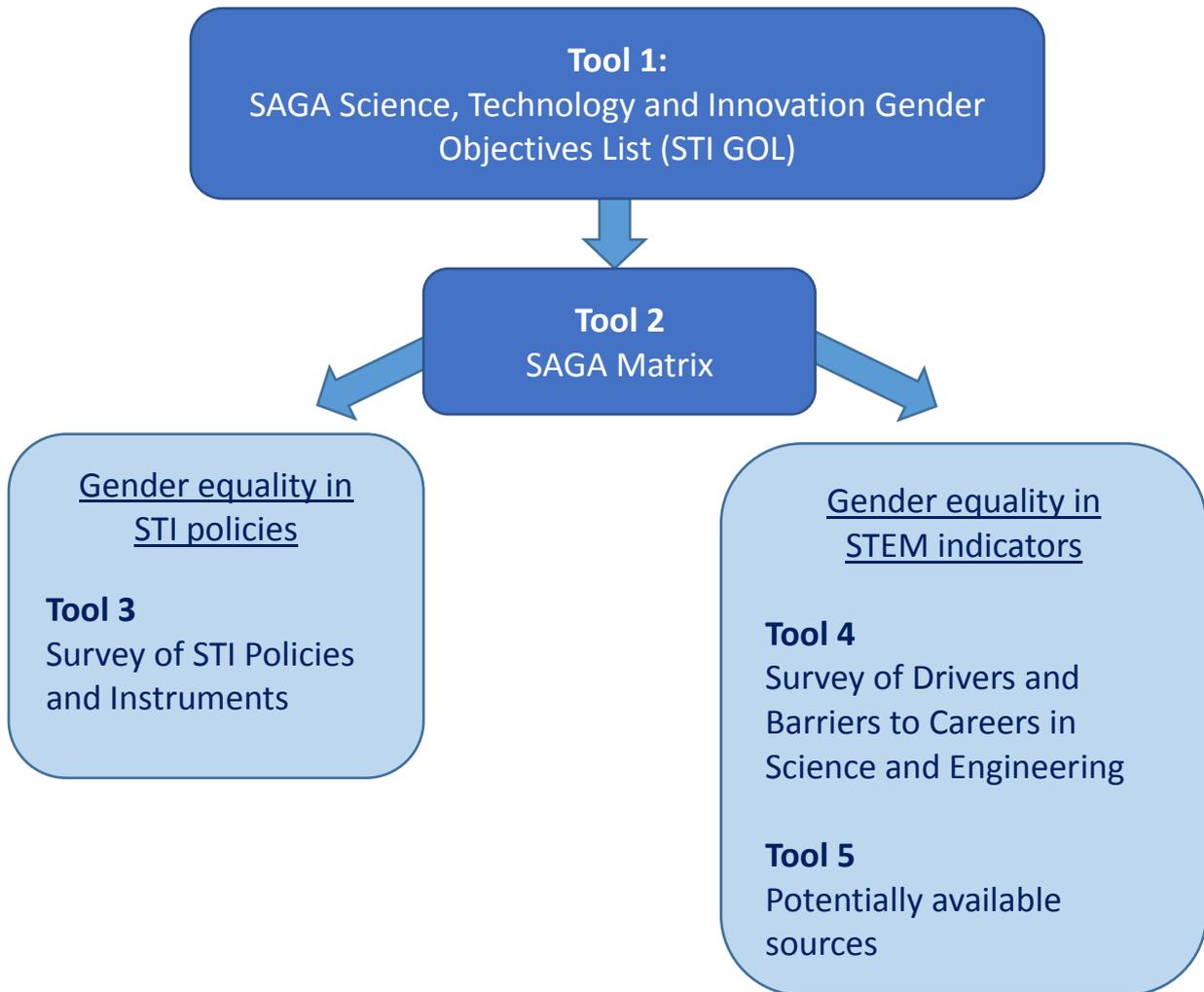
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<sup>1</sup> SAGA stands for **Stem And Gender Advancement**

- **Draw information from existing sources of data**, such as research and development (R&D) surveys, to gain a better perspective of the drivers and barriers faced by the STEM population. Methodologies on how to best extract information from these potentially existing sources are presented as Tool 5.

The following diagram provides an overview of the Toolkit and its different components.

### SAGA Toolkit Content



What follows is a brief introduction to each of the tools to better understand their content and purpose.

### **Tool 1- SAGA Science, Technology and Innovation Gender Objective List (STI GOL)**

The STI GOL configures the conceptual backbone of the SAGA project and is useful for classifying STI policies and indicators. It enables the categorisation of policies and policy instruments, and assists in analyses aimed at preparing regional or country profiles, as well as identifying gaps in the STI policy mix, thereby supporting policy-makers worldwide in establishing, implementing, monitoring, and evaluating gender equality policies in STI.

The STI GOL aims at encompassing all aspects of gender equality in STI policy-making, as identified through research conducted in the framework of SAGA. It does not necessarily constitute a formal classification since policies and instruments might fall under more than one STI Gender Objective. The STI GOL is based on the following seven main objectives:

1. Social norms and stereotypes
2. Primary and secondary education
3. Higher education
4. Career progression
5. Research content and practice
6. Policy-making processes
7. Entrepreneurship and innovation

These seven areas configure a first level of STI Gender Objectives. The SAGA STI GOL also contains a second level, and for some a further breakdown, allowing for more in-depth analyses.

**Key actors for its implementation:** The whole national team of a SAGA pilot country and the SAGA team

### **Tool 2- The SAGA Matrix**

The SAGA Matrix is a multi-purpose tool as it provides the linkages between STI gender policies and indicators, using the objectives from the SAGA STI GOL as the interface. Following the implementation of the SAGA Survey of Science, Technology and Innovation Policies and Instruments, policy-makers can use the SAGA Matrix to assess the coverage of policies in place and to trace which indicators are the most adequate to provide evidence for each gender objective.

The Matrix can also be used as a guide to review all data sources and indicators nationally available. Each of the gender objectives can be matched with indicators, in order to highlight the information needed, and which may be already available, as evidence in assessing gender-related STI policies.

For some objectives, aggregate information may not provide sufficiently precise information to assess specific situations and contexts. To address this, the SAGA Survey of Drivers and Barriers to Careers in Science and Engineering was developed to address these potential gaps in information – see Tool 4 for more information.

Annex 1 provides an example of the SAGA Matrix for one of the STI Gender Objectives as a model.

**Key actors for its implementation:** National STI authorities, statistical entities, national gender equality authorities (the whole national team) and the SAGA team

### **Tool 3- Survey of Science, Technology and Innovation Policies and Instruments**

The SAGA Survey of STI Policies and Instruments is a tool for gathering information on gender equality policies in STI on different facets such as the legal and institutional framework, the policies in place, and the decisions and actions taken to promote, regulate and use STI.

The information produced by this survey allows policy-makers, policy analysts and scholars to cluster policies, detect flaws in the policy mix, and establish an agenda for filling the gaps. The information collected includes policies and policy instruments deliberately designed to promote gender equality in STI, as well as policies with indirect or differential effects on gender equality in STI.

**Key actors for its implementation:** National STI authorities and the SAGA team

### **Tool 4- Survey of Drivers and Barriers to Careers in Science and Engineering**

Survey of Drivers and Barriers to Careers in Science and Engineering has been developed closely in conjunction with the STI GOL to assist in the collection of information on drivers and barriers to careers in science and engineering. This information is often not available from existing national sources and this new instrument will enable key actors to assess the roles and the magnitude of the different drivers and barriers commonly identified to explain the gender imbalance in STEM. The ultimate goal of this instrument is to provide decision-makers with indicators and evidence for effective STI policy design.

The target population for the survey varies based on the national needs, from students at higher education level to individuals in the S&E workforce. The survey includes core questions on drivers and barriers to gender equality in S&E careers. Additional modules are available for countries wishing to collect information on specific drivers and barriers to S&E careers and include the following themes: education experience, employment experience, transition to workforce, work-life balance, policies and programmes, role models, discrimination and harassment, time-use and attitudes and social norms. The tailoring of modules countries desire to use in order to better represent the national setting will be done in close cooperation with the SAGA team.

**Key actors for its implementation:** Authorities of selected universities, statistical entities and the SAGA team

### **Tool 5- Existing sources of data**

The SAGA Toolkit provides statistical methodologies and procedures to extract relevant information for a large number of sources including R&D and higher education surveys, national surveys of PhD holders, funding agencies, bibliometrics, and other big data sources to assess gender disparities in access, progress, and retention of both sexes within STEM fields. Data already available represent valuable sources of information from which countries can benefit in order to measure gender balance and therefore assess gender equality in a variety of contexts. In most cases, the information is already available or may require minimal adjustments in order to produce the data by sex and STEM fields as recommended by SAGA.

**Key actors for its implementation:** Statistical entities and the SAGA team

## **Conclusion**

The SAGA Toolkit is a comprehensive suite of instruments designed to improve the measurement of gender equality in STEM. The guidelines and instruments consist of a range of statistical and policy-related tools from which to draw better conclusions. The complementarity of the instruments offers an innovative approach to promoting gender advancement in STEM by supporting policy design with solid data. The SAGA Toolkit will help countries in promoting gender equality and development thereby contributing to the achievement of the 2030 Agenda for Sustainable Development.

**For more information, please visit**  
<http://www.unesco.org/new/en/saga/>  
**or contact us at: [saga@unesco.org](mailto:saga@unesco.org)**

**Annex 1: Example of how to use the SAGA Matrix**

Objective 3: Attraction, access to and retention of women in STEM Higher Education				
Objective	Policies and instruments	Indicators	Potential Data Sources	
3.1	<p><b>Promote access of and attract women to STEM higher education (including Masters and PhD), including through specific scholarships and awards.</b></p>	<ul style="list-style-type: none"> <li>- Mulheres Mil- Brazil (A thousand Women- Unofficial translation)</li> <li>- Programa Mulher e Ciência- Brazil (Women and Science Program- Unofficial translation)</li> <li>- Programa Ciencia y Género- Costa Rica (“Science and Gender Program”- Unofficial translation)</li> <li>- Apoyo a Madres Jefas de Familia- Mexico (Support to Mothers Heads of Family)</li> <li>- Scholarships/loans program of the Ministry of Higher and Tertiary Education, Science and Technology Development- Zimbabwe</li> <li>- Women in Science Award- South Africa</li> </ul>	<ul style="list-style-type: none"> <li>Distribution of individuals <u>admitted</u> and <u>enrolled</u> in higher education by:                             <ul style="list-style-type: none"> <li>- sex</li> <li>- fields of education (broad and narrow)</li> <li>- education level - Masters and Ph.D. (programme and year at level for progression)</li> </ul> </li> <li>Distribution of scholarships and awards in STEM-related higher education programmes</li> <li>Distribution of scholarships/awards <u>applicants</u> and <u>recipients</u> by:                             <ul style="list-style-type: none"> <li>- sex</li> <li>- fields of study (broad and narrow)</li> <li>- education level - Masters and Ph.D. (programme and year at level for progression)</li> </ul> </li> <li>Grants and scholarships amount awarded by:                             <ul style="list-style-type: none"> <li>- sex</li> <li>- fields of study (broad and narrow)</li> <li>- education level</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Surveys of formal education</li> <li>University administrative data:                             <ul style="list-style-type: none"> <li>- registrar’s office</li> </ul> </li> <li>University administrative data:                             <ul style="list-style-type: none"> <li>- on funding</li> </ul> </li> <li><b>Survey of Drivers and Barriers to Careers in S&amp;E</b></li> <li>Module education: EDU.5</li> <li>Funding agencies</li> <li><b>Survey of Drivers and Barriers to Careers in S&amp;E</b></li> <li>Module education: EDU.5</li> <li>Funding agencies</li> <li><b>Survey of Drivers and Barriers to Careers in S&amp;E</b></li> <li>Module Funding: FUND.1-FUND.5</li> </ul>