

# A Methodology for Participatory Gender Audit in ICT/IST Research Institutions

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**Abstract:** Research institutions with a strong component in ICT/IST present specific issues in terms of gender equality: this field is recognized as being among research sectors most affected by gender inequalities at all levels, characterized by a significant under-representation of women that, starting from students (Bachelor, Master and PhD) and researchers, becomes more and more severe going up to the levels of professors and top managers. A critical step in order to identify gender bias at the institutional level and accordingly advice the required measures and actions for enhancing gender equality is the phase of internal assessment of gender inequalities. Existing methodologies for gender assessment typically follow two main approaches: a quantitative approach, based on measurable indicators, and a qualitative approach, based on participatory techniques and tools. In this paper we propose an innovative methodology for gender assessment developed within the EQUAL-IST project (Gender Equality Plans for Information Sciences and Technology Research Institutions). The methodology exploits a mixed strategy integrating quantitative and qualitative techniques adapted to the specific context of ICT/IST research institutions. On one hand, quantitative indicators are computed on gender disaggregated data; the presence of a quantitative approach is essential to provide measurable information that supports monitoring and evaluation processes, and facilitates longitudinal analysis and monitoring of gender equality policies impact over time as well as comparative analysis among different research institutions and different geographical levels (local, national, EU). On the other hand, a qualitative approach based on participatory techniques makes use of intense interactions with the staff of an organization to trigger reflection, internal conversations and dialogues on individual and collective rules, behaviors and beliefs, and their impact on gender equality; this approach is essential for really understanding processes and procedures, organizational culture and individuals self-perception about gender issues. Beside describing the methodology and its main features, the paper elaborates on the collaborative process of design and development, the rationale behind the chosen indicators for the quantitative part as well as the adaptation of the ILO PGA (Participatory Gender Audit) used as a blueprint for the qualitative part to be adapted to ICT/IST research institutions; based on feedbacks from the 7 research institutions of the EQUAL-IST consortium, the methodology design went through several steps of adaptation and customization.

**Keywords:** gender equality in ICT/IST research institutions, participatory gender audit, quantitative and qualitative approach

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## 1. Introduction

Awareness on the gender inequality in research and innovation is evidently shown in *She Figures*, a wide source of comparable statistics on gender equality in research and innovation institutions published each 3 years since 2003. This study allows to compute and compare the gender equality situation in one organization with national and EU institutions, and clearly shows the under-representation of women in the area (European Commission, 2016). The Information Sciences and Technology (IST) field connects the disciplines of Computer Science and Business Administration. As such, the IST field, like the other STEM and ICT fields, faces the issue of gender imbalance, but also presents specific characteristics associated with its interdisciplinarity. The under-representation of women in the IST field, aside from its implications for gender equality in career progression, also has far-reaching negative consequences for human capital utilisation and innovation potential (Trauth, 2011). Presence of women in key areas of academia is increasingly recognised as one factor in the gendering of research content, including the shaping of science priorities, research agendas, and methods (Ranga, M., & Etzkowitz, H. (2010). Reasons and dynamics behind these phenomena are complex, as the extensive literature from Gender and Organization Studies has highlighted: gender inequalities are embedded at all levels of work organization, affecting both human resources and management procedures, institutional levels and working interactions among individuals, shaping behaviours and gendered identities of workers and organisations also in relation to other social differences and discriminations, such as class, race, age and sexual orientations (Ashcraft & Mumby, 2004).

The EQUAL-IST project was approved in 2016 within the H2020 Science With And For Societies program following a well established policy framework on promoting gender equality in research institutions dating back to the

FP7. The project gathers 7 RPOs (Research Performing Organizations) engaged into internal structural change through GEPs (from Germany, Finland, Italy, Liechtenstein, Lithuania, Portugal, Ukraine) supported by two organizations providing communication, management and gender expertise. Running for 36 months, it took the challenge of approaching the specific research fields of Information and Communication Technologies and Information Systems (ICT/IST), filling a gap which is a precisely the lack of discipline-specific research and intervention as far as gender equality in academia/research is concerned (Benschop & Van den Brink, 2011).

In the need of crafting a gender audit methodology targeted at ICT/IST Departments and Faculties, who should perform an internal state of play analysis before kicking off the design of Gender Equality Plans to be implemented and monitored during the project course, two specific choices were made to guide the methodology design process:

- a mixed methodology featured by a **quantitative and qualitative approach**
- a **participatory strategy** able to trigger discussions, create ownership of the project's goals, identify challenges and needs in a more thorough way letting a collective idea generation process take shape

In this paper we are going to argue for the reasons which guided these methodological choices (Section 2), we'll present the quantitative and qualitative features of the PGA (Section 3) while the concluding section will provide insights on how the methodology was received and adapted in the 7 ICT/IST RPOs that made use of it.

## **2. Assessing internal state of play of gender inequalities: Adaptation of participatory gender audit to ICT/IST research institutions**

The design of the EQUAL-IST gender audit methodology (Canali, 2017) has been based on the selection and adaptation of existing methods for gender audit previously developed by other European research projects and qualified international institutions. Specifically, the EQUAL-IST Project Task 2.1 State of the Art Analysis provided useful insights for identifying the most effective gender audit methods and tools to consider for the development of the EQUAL-IST methodology. Via a desk research we have analysed tools and methods designed and used by other past and ongoing EU funded projects, and verified how the choice of combining quantitative data collection with qualitative assessment methods appears to be the most common and effective one.

Relevant inputs were provided by the STAGE project (FP7), which presented an advanced framework of understanding for data collection and monitoring about the state of the art of gender equality in research institutions. The strategy proposed in the STAGES Guidelines was based on the collection of existing available data (both quantitative and qualitative). A strong emphasis was given to the importance of presenting collected data to internal stakeholders to design actions based on that, and of setting data collection and policy assessment to become permanently embedded as routine actions to start with the approval and implementation of GEPs (Cacace, et al. 2015). This input was strongly influencing the EQUAL-IST project approach: in fact, emphasis was put in EQUAL-IST methodology design on conducting internal audits to showcase gender equality plans as an example of evidence based policy design and on 'translating' existing gaps in gender disaggregated data availability into specific and permanent actions to be embedded within GEPs.

The Garcia Project has proposed guidelines to integrate statistical data collection into the analysis of organizational cultures, with the aim of integrating Gender Budgeting into research and scientific organizations (Bozzon, Murgia & Poggio, 2016). Interviews with key players from Departments were conducted as well as funds allocation was analysed to understand its relation with performance indicators and resources distribution from a gender perspective. Takeaway from this project has been the need for blending qualitative and quantitative analyses and the attention paid to the resources dimensions: during the two capacity building sessions of the EQUAL-IST project dedicated to test, integrate and validate the audit methodology with the project partners, specific sessions have been held to discuss the importance of looking at resources distribution with gender lenses. Partners have reported how at the initial stage of the project, preliminary internal awareness building was needed before making the gender budgeting argument understandable in their contexts: an agreement has been reached on developing this aspect further during the second iteration of GEPs implementation.

EIGE (European Institute for Gender Equality) recently commissioned a research and the release of a Gender Equality in Academia and Research (GEAR) TOOLKIT, which is providing step by step guidance as well as documented arguments and plenty of selected resources to all research institutions interested into committing

themselves to achieve structural changes towards gender equality. Possible actions are grouped into “core” and “complementary” assessment activities, whereas strictly necessary core ones consist of reviewing legislation, analysing staff disaggregated data on students and staff, and identifying existing measures promoting gender equality. It is suggested that an internal state of play assessment can be further enriched by surveying staff members on working conditions and how inequalities are perceived, and interviews or focus groups (EIGE, 2016). The choice of prioritizing quantitative data collection, analysis and mapping of internal policies over qualitative methods is clearly due to the broad audience that the Toolkit is intended to reach: boosting the adoption of structural change programmes and GEPs beyond the restricted domain of EU funded projects is the objective and, in absence of additional resources, qualitative studies are clearly too time consuming to be undertaken.

Within the EQUAL-IST Project and the available funding from H2020, the partners could benefit from having the opportunity to choose the most complete option and to both collect and analyse quantitative sex disaggregated data, and foster the understanding of their internal institutional and gendered dynamics through qualitative methods.

Furthermore, EQUAL-IST has been featured since the very beginning of the project design phase by the willingness of opting in for a *participatory approach*. The rationale behind this preference for enhancing bottom up push, without neglecting the importance of keeping the high and middle management levels engaged, comes from the awareness shared by project promoters of the risks entailed into implementing gender equality policies at large by reducing them to merely technical-bureaucratic “ticking the boxes” exercise (Squires, 2007), that organizations/institutions undertake as they are enforced by legislations or for opportunistic reasons, when public resources are made available to implement them. Moreover, as stated in (Powell, 2017), demands for change must start with answering, in a collaborative way, what problem we are trying to solve when we start a new GE project, in order for it to be relevant to the specific context; otherwise, GE risks being the captive of consensus politics and gender inequality will persist. Additionally, it has been considered how accentuating participatory aspects could be more suitable to ‘shake’ a seemingly immobile situation in a highly male dominated environment and trigger discussions on gender equality; this is especially true for a strongly discipline-oriented project, such as EQUAL-IST, targeting Research Institutions in the ICT/IST domain, where gender bias is particularly severe.

In view of this, the ILO PGA (Participatory Gender Audit) methodology has been identified as the most well structured, comprehensive and worldwide acknowledged good practice to start with: the ILO has been providing capacity building on how to implement PGA in the last decade to members of a variety of organizations (local and national authorities, trade unions, NGOs) mostly within the International Development Cooperation context (ILO, 2007). More recently, ILO has transferred its model and adapted the methodology to the Accademia and Research Organization framework by taking part to the GENISLab Project on structural changes in research institutions.

The original PGA methodology revolves around the following pillars :

- staffing (HR issues and equal opportunity practices);
- substance (to what extents products/projects of the organisation are gender sensitive)
- structure (programmes, long-term vision, organisational systems and resource allocation).

During the GenisLab project, the original methodology has been recognized to be quite complex and time consuming, and was adjusted to the available resources and project timeline. The deployed model was featured by the following elements:

- 3 months duration
- quantitative-qualitative approach with focus on participation of staff members from different levels of the organization via focus groups and workshops
- PGA teams composed both by external gender experts from the consortium conducting field visits at the involved research organizations during the audit and internal staff from the GenisLab teams at each scientific organizations (Genova, De Micheli, Zucco, Grasso & Magri, 2014).

### **3. Methodology for a participatory gender audit**

Starting from the GenisLAB adaptation of Participatory Gender Audit, in the EQUAL-IST project we have proceeded to customize the PGA to ICT/IST institutions based on the following assumptions:

- work more systematically on the quantitative data collection and design/propose a composite set of statistical indicators, that could makes the whole process more sound and credible in highly male dominated environments
- further simplify the original methodology keeping it focused on a set of actions such as: short preparatory surveys; individual in depth interviews with managers; workshops. In particular, the number of required workshops was reduced.
- providing a set of guided interviews and workshops templates as well as suggestions for group-exercises, leaving to each partner the freedom to further adapt to their own context

The Gender Audits have been entirely handled by internal staff members both to avoid high travelling costs for field visits from external experts and due to a precise choice of merging the initial gender training of EQUAL-IST team members and Working Groups with the purpose of delivering a PGA process in their own organizations.

Two capacity building sessions have been organized to present and discuss the core elements of the Gender Audit Methodology during the ongoing design process: this was therefore an open and participatory design process in itself, where all EQUAL-IST partners had the opportunity to provide inputs. This action was lead by an approach to gender training which emphasizes the active experimentation, concrete experience and reflective observation steps of a learning cycle (Sangiuliano, 2014). The abstract conceptualization step was postponed to inputs provided by the State of the Art analysis Research delivered within the project on good practices in designing and implementing Gender Equality Plans in Research Organizations (Sangiuliano, 2017), and the joint reporting phase of the PGA done at the end of the process.

#### **3.1 Quantitative data analysis and indicators system**

The areas chosen to measure gender equality across ICT/IST institutions are consistent with the ones that are considered crucial to assess gender equality by other EU funded projects dealing with gender equality in research and higher education institutions, like EGERA (<http://www.egera.eu/>) and GenderTime (Badaloni & Perini, 2016). In defining gender equality within the ICT/IST institutions, we adopt a vertical perspective by measuring gender equality across different levels within different areas, including academic and non academic staff, and students. The finer focus on ICT/IST prevented us to take a horizontal perspective by focusing on gender differences across disciplines as in Silander, Haake and Lindberg (2013) analysis of gender equality in Swedish higher education.

Therefore a system of indicators has been proposed to measure it for different level of analysis, including different groups of people involved within the institution:

- Students
- Academic Staff
- Non Academic Staff

and different areas:

- Gender equality indicators (in terms of access to academic course, position in employment, governance, pay gap)
- Degree of work-life balance
- Equal Opportunities policies and dedicated committees

The presence of a quantitative approach is essential to provide measurable information that supports monitor and evaluation processes, and facilitates a comparison through time among:

- Different institutions (e.g., EQUAL-IST partner RPOs)
- Different geographical levels (local RPOs vs. national and European situation)

The proposed system of indicators is summarized in Table 2.



**Table 2:** The system of indicators

Indicators		
Gender Equality Indicators	Work-life balance	Gender Equality Policies/Committees
Representation Index	Parental leaves	GEP
GE in governance	Tele-working	Gender Budgeting
Structure of employment	Flexible hours	EO Committees
Wage differentials	Childcare facilities	Counselling Service

### Gender Equality Indicators

**Representation index** measures the incidence of women in a given position and with reference to the different considered groups of people.

The representation index may be defined as the fraction  $F_{ji}/T_{ji}$  between the number of women and the number of people in a specific area  $i$  and at a specific level  $j$ . For students,  $i$  represents the study field and  $j$  is the degree level (bachelor, master or PhD); for academic staff,  $i$  represents the research area and  $j$  the position level (researcher, associate or full professor); for non academic staff,  $i$  is the area (administrative or technical) and  $j$  is the position level (employee, middle or high manager).

**GE in governance** measures: the Rector (M - F); ViceRector/s' gender; Executive Board composition by gender; Academic Senate (or other equivalent high level Council) composition by gender.

Data on the distribution by gender and term of contract (part-time, full-time, temporary, permanent) by area of research/employment are collected to compute representation indexes to evaluate the **structure of employment**.

Data on gross wages by gender and position are collected in order to compute **gender wage gap** by level at Department and University level.

### Work-life Balance

Work-life balance is a crucial dimension in the achievement of gender equality (OECD, 2017; Genova *et al.*, 2014). We have included in this area indicators connected to the use of parental leaves and child care facilities (whose heterogeneity across EU countries is well documented in Blum, Koslowski, and Moss, 2017) as well as flexible time arrangements and tele-working (on the relevance of these practices in affecting gender equality at the workplace see OECD, 2017; on the effect of time flexibility in academia on the reproduction of the gender segregated division at home see Rafnsdóttir and Heijstra, 2013).

**Parental leaves by gender:** ideally according to the National Laws, parental leaves should be computed upon eligible employees as following: fraction of employees taking the leave over employees eligible for the leave. We could then exploit the value of the index to compute a gender gap in the take up of parental leave. A similar indicator at EU level can be found in the Eurostat database and it is referred to the 2010 LFS (Labour Force Survey) ad hoc module on the reconciliation between work and family life.

### Childcare facilities (Kindergarten)

0 - no kindergarten and no agreement with local public or private institutions for reserved access

1 - agreement with public or private institutions for access at reduced rate

2 - presence of kindergarten

**Teleworking** positions by gender + coefficients of representation amongst non-academic staff

- employees can take tele-work
- number of employees in teleworking by gender and compute (as in the representation index) to what extent women and men are represented in this contract

This indicator is limited to non academic staff assuming that academic staff members have more flexibility in terms of working hours. Anyway, if a different situation occurs at some RPOs, this indicator should be extended to include academic staff.

**Flexible hours arrangements** (% by gender on the whole administration)

- employees can enjoy flexible work arrangements
- number of employees in flexible work arrangements by gender and compute (as in the representation index) to what extent women and men are represented in flexible work arrangements
- Time bank presence (0 no, 1 yes)

**Gender Equality Policies/Committees**

A wider focus on the equal opportunity machinery and policies within the ICT/IST research institution is kept by measuring the following indicators: existence and quality (in terms of including a system of evaluation) of **gender equality plans (GEPs)**; existence and quality of **gender budgeting** within the institution; the **equal opportunities committees** at work within the institution and the existence of a **service devoted to counselling and/or of a Ombudsperson** (about mobbing, discrimination, harassment, ...). The inclusion of this dimension allows to detect the degrees of development of equal opportunity machineries and policies within the organization (LeFeuvre, 2009).

The proposed system of indicators can be put in relation with the gender equality situation of the country (national level) where the ICT/IST institution is located by exploiting the European Institute Gender Equality Index, a synthetic composite indicator that evaluates equality with regards to work, money, knowledge, power, time and health across EU countries and by each country (EIGE, 2015), and the specific indicators available in OECD and Eurostat metadata. Finally, a comparison will be done with the European situation: if data are not available at the European level, a reference to partners' network of the project averaged value will be considered.

Together with the system of indicators, a platform to collect them has been proposed and the outcomes have then been summarized by means of Fuzzy Expert System (Addabbo & Facchinetti, 2013). The latter application is consistent with the application of Fuzzy Expert System to the evaluation of firms' gender equality developed in (Addabbo et al., 2006).

### **3.2 Qualitative participatory tools**

The participatory tools included in the EQUAL-IST gender audit methodology consists of:

- Individual semi-structured interviews
- Workshops

**Individual Semi-structured Interviews**

Semi-structured interviews represent a qualitative method of inquiry that combines a pre-determined set of open questions (questions that prompt the discussion) with the opportunity for the interviewer to explore particular themes or responses further. The goal of this tool is to identify the main weaknesses and strengths in the target areas of the EQUAL-IST project and the main actions (past and on-going ones) carried out to promote gender equality. Specifically, the methodology foresees at least 1 interview in the areas of Research design and delivery, Student Services and Institutional Communication, and 2/3 interviews in the area of HR practices and management that includes different sub-areas: academic, non academic, organizational well-being and work-life balance, etc. The selection of interviewees should ensure the identification of key people (e.g., managers, decision makers) directly involved in decision-making process in each target area to capture the vision of the high levels of the hierarchy on gender-equality. Their view on gender equality initiatives has been complemented by interviews to Equal Opportunities officers and/or responsible of Equal Opportunity machineries. It's important to select people able to provide specific information on the background and future plans of the organization in terms of gender-equality in the specific area, and information to understand to what extent gender mainstreaming fits into the overall direction of the area management.

## **Workshops**

The methodology includes five workshops - four thematic workshops plus one final global workshop – divided as follows:

- W1 - HR practices and management for academic staff
- W2 - HR practices and management for technical and administrative staff
- W3 - Research design and delivery
- W4 - Student services
- W5 - Final workshop

Institutional Communication is considered a cross-cutting topic to be covered in each workshop.

Each thematic workshop should involve at least 15 participants (number may vary depending on the size of the Research Institutions), while at the final workshop all the participants at the thematic workshops are invited.

In each thematic workshop, participants should be invited belonging to different levels of the hierarchy in each targeted area. It is important to keep in mind the need to facilitate an open discussion during the workshops, where everybody should feel free to express his/her opinion, evaluating case by case whether the presence of high-level managers is compatible with this conditions. Moreover, balance among participants should be taken into account in terms of gender, age, ethnicity and/or country/region of birth as well as representation of different contractual statuses (e.g., fixed terms; permanent contracts; full time; part time).

Short preliminary questionnaires should be submitted to the participants of the four thematic workshops prior to the workshops with the following purposes:

- Participants start thinking about gender-related concepts and potential issues
- Capture the initial perception about gender (in)equalities within the organization
- Define a useful baseline for workshops discussion through the collected answers

The main goals of the thematic workshops are:

- Raise awareness and start a self-reflection process on gender-related concepts and institutional situation in terms of gender equality
- Identify the main internal gender issues and collect feedback and personal perception about them.
- Start thinking about possible actions to improve gender equality and their applicability within the institution.

The final workshop is foreseen as the conclusive step of the gender audit process, with the following goals:

- Sharing with all participants to previous workshops the results of identified challenges and potential solutions
- Progress in the discussion about suitable strategies and feasible actions to be potentially included by each RPOs in their own GEPs

## **Workshop participatory exercises**

Each thematic workshop includes specific participatory exercises divided into core (mandatory) and optional exercises.

Core exercises:

- CE1 Gender Focus Group - group discussion about the main weakness emerged by previous interviews and questionnaires: a good way to warm up participants, raise awareness and self-reflection about the internal situation and start a deeper discussion about gender equality .
- CE2 Historical Timeline - creation of the historical timeline of organization's gender policy: aimed at discussing institutional gender-related policies and start a reflection on possible actions to improve gender equality and on their applicability within the institution.

Optional exercises:

- OE1 Gender knowledge and awareness - evaluation of staff knowledge of gender-related concepts: suggested for those institutions where the results from preliminary questionnaires evidence the lack of background in terms gender culture.
- OE2 Classification of projects and activities - reflection on how different types of activities/projects can contribute to promoting gender equality: considered very useful and well received since it is directly related to work experience and the application of gender concepts.
- OE3 Hofstede's onion/Organizational culture - an onion as a metaphor for the organization: aimed at discovering the organizational culture and its implications in terms of gender equality, including unconscious perceptions about the organization public image and internal culture.
- OE4 Institutional Communication Analysis - analysis of the internal and external institutional communication: aimed at evaluating if the official textual and visual communication of the organization is gender-sensitive and gender-balanced.

The selection and use of the optional exercises are left to the discretion of the gender audit facilitation team in each RPO, except for the OEX4 that is required in at least one workshop.

#### **4. Conclusions**

All the Auditing processes were successfully concluded: 458 people took part to the proposed activities overall in the 7 Universities, and led to 22 common identified challenges and 52 ideas generated.

Along the way, the partners reported on a series of internal conditions and limitations which had an impact on the process (Sangiuliano, 2017):

- KTU and UTU stressed how they have been faced with a widespread internal opinion that gender equality is already achieved at their own Universities
- Difficulty in finding and collecting gender disaggregated data was mentioned as a limitation or as an element complicating the PGA process by UNIMORE, UNILI, KHNU, UMINHO.
- All partners described the PGA process as time consuming, requiring to face communication challenges and the difficulty of engaging people to take physically part to the workshops.

The latter point has been one of the key motivations for partners to change and adapt the Gender Audit Methodology to their own internal contexts, thus causing delays in implementing the PGA itself. However, a facilitating element has definitely been found in clearly communicating that the process had the support from the highest management levels (Uminho, KhNUE, UNIMORE), possibly jointly with a formal authorization to devote time to it within regular working hours.

The PGA Methodology has been flexibly interpreted by partners: although it has remained as the backbone and main framework for the operations of almost all partners, individual RPOs had the opportunity to adapt it to their internal conditions and contexts. Results of the audits have been thoroughly analyzed in a dedicated project deliverable (Sangiuliano & Grandi, 2017) and the following concluding remarks can be highlighted.

Though the process PGA methodology has been adapted to ICT/IST institutions to get to a model that could be replicated reducing the criticalities experienced in its application, lack of time and available human resources have been repeatedly raised as reasons for shortening the originally proposed versions of the methodology, together with an initially limited awareness of gender equality issues and their relevance in the context of research in general and in IST/ICT fields in particular. This is echoing the literature findings, which confirm the precarious situation of public funding for R&I in times of austerity in the EU (Izsak et al. 2013) and the still very partial readiness to value and embrace gender equality policies in academic environments (ERA, 2014).

Moreover, the participatory approach has been found to be highly appreciated in all pilot implementations of the methodology, resulting in a twofold impact: first, assessing the internal hurdles and the main challenges to address structural gender inequalities in academic IST/ICT environments; second, initiating an internal raising awareness and dialogue process on the complex dynamics behind gender issues. This responds positively to the calls for a more participatory approach to gender policies (Squires, 2007; Benschop and Verloo, 2011). Furthermore, the multiplicity of institutional areas identified during the audit process as affected by gender



inequalities (HR, management, teaching and students services, institutional communication, research design and delivery) also confirms findings from previous studies about gender inequalities as being entrenched into academic and research structures (Cuny & Asprey, 2002; Rosser, 2004).

To summarize and conclude the EQUAL-IST Gender Audit Methodology has proven to be a flexible instrument that can be adapted to local situations and, by mixing quantitative and qualitative analyses, allows to reach a multifaceted view of gender equality within ICT/IST Research Institutions which can be used to design and implement with higher awareness gender equality policies for structural changes.

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## **References**

- Addabbo T., Facchinetti G., Lang T. and Mastroleo G. (2009) *"Pink Seal" a certification for Firms' Gender Equity*, *Frontiers in Artificial Intelligence and Applications (FAIA)*, 204, pp. 169-176
- Addabbo T. and Facchinetti G. (2013) 'Fuzzy logic and the capability approach', *CAPPaper*, 106. October 2013
- Ashcraft, K. & Mumby, D. (2004). *Reworking Gender. A Feminist Communicology of Organization*. Thousand Oaks California: SAGE
- Benschop Y., Van den Brink M. (2011). *Slaying the Seven-Headed Dragon: The Quest for Gender Change in Academia*. *Gender, Work and Organization Journal* 19(1), pp. 71-92
- Benschop, Y. and M. Verloo (2011). *Gender Change, Organizational Change and Gender Equality Strategies*, Jenaes, E., Knights, J. and D. Yancey-Martin (eds.), *Handbook of Gender, Work and Organization*, pp. 277-290, London- Wiley Publishers
- Blum S., Koslowski, A. and Moss P. (2017) *International Review of Leave Policies and Research 2017*, online: [http://www.leavenetwork.org/lp\\_and\\_r\\_reports/](http://www.leavenetwork.org/lp_and_r_reports/)
- Bozzon R., Murgia A. and Poggio B. (2016). *Supporting Early Career Researchers through Gender Action Plans. A Design and Methodological Toolkit*. GARCIA Working Papers n°9. GARCIA FP7 Project, GA 611737
- Cacace M., Balahur D., Bleijenbergh I., Falcinelli D., Friedrich M. and Kalpazidou Schmidt E. (2015) *Structural Transformation to Achieve Gender Equality in Science. Guidelines*. STAGES Project, FP7. GA 289051
- Canali C., Addabbo T., Grandi A. (2017), *Deliverable D2.4 EQUAL-IST Gender Audit Methodology for ICT Research Institutions v2*, EQUAL-IST Project, H2020 Programme, GA 710549
- Cuny, J. and W. Asprey (2002). *Recruitment and retention of women graduate students in computer science and engineering*, *ACM SIGCSE Bulletin*, 34(2), p.168.
- EIGE (2016). *Gender Equality in Academia and Research. GEAR Tool*. Luxembourg: Publications Office of the European Union, 2016
- European Research Area (2014). *Facts and Figures 2014*. Luxembourg: Publication Office of European Union.
- European Commission (2016) *She figures 2015*, Directorate-General for Research and Innovation, Directorate B – Open Innovation and Open Science, Unit B.7 Science with and for Society, Luxembourg: Publications Office of the European Union.
- Genova A., De Micheli B., Zucco F., Grasso C. and Magri B. (2014). *Achieving gender balance at the top of scientific research: guidelines and tools for institutional change*, Genis Lab project
- ILO (2007). *A manual for gender audit facilitators: the ILO Participatory Gender Audit Methodology*. Geneva:ILO
- Izsak K., Markianidou P., Lukach R. and Wastyn A. (2013). *The impact of the crisis on research and innovation policies*. Study for the European Commission DG Research by Technopolis Group Belgium and Idea Consult.
- Le Feuvre N. (2009) "Exploring women's academic careers in cross-national perspective: Lessons for equal opportunity policies", *Equal Opportunities International*, 28(1), 9-23.
- OECD (2017) *The pursuit of gender equality: an uphill battle*. OECD Publishing, Paris
- Powell S., Ah-King M. and Hussenius A. (2017). *Are we to become a gender university? Facets of resistance to a gender equality project*. *Gender, Work and Organization Journal*, First Online Version <http://onlinelibrary.wiley.com/doi/10.1111/gwao.12204/full>
- Rafnsdóttir, G. L. and Heijstra, T. M. (2013), *Balancing Work–family Life in Academia: The Power of Time*. *Gender, Work & Organization*, 20: 283–296.
- Ranga M. and Etzkowitz H. (2010). *Athene in the World of Techne: The Gender Dimension of Technology, Innovation and Entrepreneurship*. *Journal of Technology Management and Innovation*, 5(5), pp. 1–12.
- Rosser S. (2004). *The science glass ceiling: academic women scientists and the struggle to succeed*, New York- London, Routledge.
- Sangiuliano M. (2014). *Differences for the changing of organizations. Reflections on organizational learning and training in gender mainstreaming processes through the concept of intersectionality*. *European Journal of Research on Education and Teaching*, 10(2), pp. 179-199

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- Sangiuliano M. (2017). *State of the Art Analysis. Good practices in implementing Gender Equality Plans in Research Institutions*. EQUAL-IST Project, H2020 Programme, GA 710549
- Sangiuliano M., and Grandi A. (2017). *Deliverable 2.5. Gender Equality Assessment Report*. EQUAL-IST Project, H2020 Programme, GA 710549
- Silander C., Haake U. and Lindberg L. (2013). The different worlds of academia: a horizontal analysis of gender equality in Swedish higher education. *Higher Education*, (2), 173.
- Squires J. (2007). *The new politics of gender equality*. Basingstock, Hampshire: Palgrave-Macmillan