Achieving gender balance at the top of scientific research

Guidelines and tools for institutional change

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This project has been funded with support from the European Commission. This publication refl ects the views only of the author, and the

Commission cannot be held responsible for any use which may be made of the information contained therein.

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Quote this document as follows:

Genova Angela, De Micheli Barbara, Zucco Flavia, Grasso Claudia, Magri Benedetta, (2014) Achieving gender balance at the top of scientific research: guidelines and tools for institutional change. Genis Lab project Rome.

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Introduction

In the European Union countries, women account for 45% of those who achieve the title of doctor of research but only 30% of active researchers and 20% of professors[1]. In the past two decades, various initiatives have been developed to promote greater gender equality in research. However, the results have been extremely limited and haven't overcome discriminatory structural and cultural barriers[2]. Inequalities are produced and maintained in many different, often invisible, aspects of organisations, consolidating an inequality regime in the scientific and academic workplace[3].

With the aim of challenging inequalities within organisations, the EU Commission DG Research has established a specific funding line in the Seventh Framework Program for Research and Development supporting projects promoting structural changes in scientific organizations in order to promote gender equality.

These guidelines, resulting from the activity of one of the first projects to be funded under this line, present a set of tools to enforce efficient gender management to implement structural and institutional changes in research organizations, based on the experiences of the Genis Lab project.

Six Scientific Organisations across Europe have committed into a process of structural change their common aim was to improve their working environment and dynamics with the objective of overcoming the institutional factors that hamper women's career in research.

1. European Commission. 2013. Gender in Research and Innovation. Statistics and Indicators. Brussels. http://ec.europa.eu/research/science-society/document_library/pdf_06/she-figures-2012_en.pdf

2. European Commission. 2012. Structural Change in Research Institutions: Enhancing Excellence, Gender equality and Efficiency in Research and Innovation. Brussels. http://ec.europa.eu/research/science-society/document_library/pdf_06/she-figures-2012_en.pdf

3. Acker, Joan 2006. 'Inequality Regimes. Gender, Class, and Race in Organisations'. Gender & Society20(4): 441–464.

Along the four years of the project's process, these organizations have received the support of three technical partners which have helped them sharing their knowledge and innovative tools, in the framework of the Genis Lab approach: participatory gender audit methodology, gender budgeting, gender awareness training for human resource managers, initiatives addressing gender stereotypes in science (as the Re-act theatre) and institutional culture. These tools have been applied to define tailored gender action plans in each organisation, with the aim of activating a process which could involve different organizational areas (managers, researchers, and administrative staff) into discussing, identifying obstacles and defining strategies to overcome them.

These guidelines offer an overview on the approach and describe the tools applied during this journey, with the wish they might be useful to start up and implement institutional change processes in similar organisations, either with the aim of promoting gender equality but also in view of fostering structural changes for Responsible Research and Innovation. They have been developed by the three technical partners of the project: Fondazione Giacomo Brodolini (coordinator of the project); Associazione Donne e Scienza (Italian women in science organizations); International Training Centre of the International Labour Organization (Gender Unit), UN Agency.

The first chapter briefly outlines the aims of the Genis Lab project, presentation of the partnership and methodological approach. Then the second discusses some pivotal aspects concerning stereotypes and organizational scientific culture as a background for presenting some specific tools to improve women's awareness of specific discrimination in science. The third chapter describes the Participatory Gender Audit and the fourth focuses on Gender Budgeting. Suggested concluding remarks end these Guidelines.

1. The Genis Lab project: institutional changes for women's participation in science

(Barbara De Micheli, Fondazione Giacomo Brodolini)

1.1 Presentation of the partnership, aims and structure of the project

Genis Lab is a *support action* funded by the European Commission DG Research within the 7th Framework Programme year 2010. It aimed to implement structural changes in a group of selected scientific organizations in order to overcome factors that limit the participation of women in research.

Genis Lab has been implemented by a consortium, lead by Fondazione Giacomo Brodolini, with the participation of a group of scientific research bodies aiming at improving the gender dimension of research institutions together with three technical partners who involved experts that provided and shared innovative methodologies for gender mainstreaming in science.

Genis Lab's main objectives were:

- to improve women researchers' working conditions;
- to improve women researchers' career opportunities in research organisations;
- to improve the organisation's environment and workplace, acting on the organisational culture's pattern;
- to fight against negative stereotypes, within the research organisations but also in a more wide and general context;
- to contribute to the creation of positive profiles of and for women

Genis Lab scientific partners were:

- CSIC (Spanish Superior Council for Scientific Research) - Institute for Polymer Science and Technology, Spain
- IPF – Leibniz-Institut für Polymerforschung Dresden, Germany
- INFN - National Institute for Nuclear Physics, Italy
- BTH - Blekinge Institute of Technology, Sweden
- FTM UB - Faculty of Technology and Metallurgy, University of Belgrade, Serbia
- NIC - National Institute of Chemistry, Slovenia

Genis Lab technical partners were:

- FGB - Fondazione Giacomo Brodolini, Italy
- ITCILO - International Training Centre of the International Labour Organization (Gender Unit), UN Agency
- ADS - Associazione Donne e Scienza (Italian women in science organizations)

The Genis Lab project process, lasting in total 48 months, has been structured in six Work packages (WP): 3 transversal WPs, 3 consequential WPs, the latter representing Genis Lab's core activity. The 3 transversal WPs, each one lasting the whole project lifespan (48 months), were meant to ensure project management (WP1), project evaluation and self-assessment (WP5) as well as constant dissemination activities (WP6), including a specific awareness campaign on gender stereotypes. A continuous interaction has been ensured between these WPs and consequential WPs, ensuring the Genis Lab process implementation: WP2 Gender – targeted and comparative organisational analysis (month 0-9), WP 3 Cooperative pooling of gender management tools (month 10 –19) and WP4 Implementation and definition of self-tailored action plans (month 18-48).

Each work package contained a detailed description of tasks and partner roles and it was based on a participatory approach stimulating partners' active commitment.

1.2 Specificities of the methodological approach used in the Genis Lab project

The most relevant element in the Genis Lab approach has been the constant attempt, despite challenges deriving from organizational contexts, to maintain and promote a systemic approach supporting each organization in the definition of comprehensive Gender Equality Plans.

In this view a significant effort was spent in the assessment phase with the aim of creating a baseline of shared gender-relevant data and a common knowledge on the state of gender equality within the organisations. An important effort was also spent in providing a set of approaches and analytical tools that remain with the organisation and create the conditions for the sustainability of the structural change process at the end of Genis Lab (as the PGA and Gender Budgeting).

Since its conception the Genis Lab approach focuses its attention on three levels:

- the organisational level: identification of specific management tools and definition of self tailored action plans aimed to promote internal structural changes;
- the social/environmental level: promotion of a communication and awareness campaign aimed at fighting stereotypes; efforts made at finding their embedding in work organisation and de-constructing the stereotyped relation between women and science;
- the trans - national European level: promotion of a networking and mutual learning among the involved scientific organisations to support the exchange of experiences, good practices, efficient management tools.

and on the three organisational dimensions:

- Human Resources Management: HRM policies and practices are key to pro-

mote gender equality in an organization and are crucial to address when promoting structural change.

- Gender Budgeting: financial choices reflect the dominating culture, as power is created through the concentration of resources. It is then important when addressing gender equality to understand and monitor how resources are distributed and the gender dimensions of this distribution.

- Organizational culture and stereotypes: since stereotypes have a fundamental role when dealing with gender issues, the Genis Lab consortium has decided to dedicate further efforts on this area, considering it as a separate dimension, which interacts with all the others. According to this assumption, we have identified two main areas of intervention regarding the cultural dimension of discrimination: gender stereotypes in science and the evaluation criteria.

Each dimension was taken care of by one of the technical partners and was characterized by the adoption of specific tools and approaches, as detailed in the following chapters.

- FGB in charge of Gender Budgeting,
- ITC-ILO in charge of Human Resource Management,
- ADS in charge of Organizational Culture and Stereotypes .

The three dimensions have their specificities: two of them mainly provide tools for analysis, planning and management in defined areas of the organisation while the third dimension – Organisational culture and stereotypes – has proved to be a cross cutting issue, crucial in any process of structural change.

The Participatory Gender Audit and Gender Budgeting enabled scientific partners in qualitative and quantitative self-assessment, re-visit their resource allocation and HRM policies and practices, and plan specific initiative/actions/indicators. The Organisational Culture and Stereotype dimension fed the debate around institutional change within each organisation and at a transnational level, with insights and specific contents (the IAT test on gender stereotypes, the paper on resistances, the paper on excellence).

For this reason the chapter on Organisational Culture and Stereotypes provides a description of the overall approach adopted, while the chapters on Participatory

Gender Audit and Gender Budgeting present the main tools used in the areas of HRM and Gender Budgeting.

1.3 Genis Lab's TAPs

The Genis Lab approach foresaw the definition, implementation and monitoring of Gender Equality Plans, called TAPs (Tailored Action Plans) specially tailored for each organisation.

The Consortium has defined a common four step approach for the definition of the Tap in each scientific organisation.

- *The first phase, Assessment*, was dedicated to the carrying out of Participatory Gender Audits in each organization; the collection of all main outputs emerged from the Participatory Gender Audits, from in-depth further investigations, from the Gender Budgeting and Stereotype Perspectives, and from additional information collected by FGB and ADS.
- *The second phase, Planning*, brought each scientific organisation to define its TAP tackling what emerged from the assessment phase. Each plan was officially approved by the internal top management. The TAPs contain a detailed description of activities for the period of January 2013 until December 2014. These activities are coherent with the emerging issues identified in the Assessment phase.
- The *third phase, Implementation*, started in month 19 and is still an ongoing process, with a view of sustainability after the end of the project.
- The *fourth phase, Monitoring*, started with the release of the TAPs and is still an ongoing process. It is a periodical assessment of TAPs using qualitative and quantitative indicators included in the plans.

The Tailored Action Plans (TAPs) represent a milestone in Genis Lab's implementation and express a level of complexity which is higher than the sum of the activities in the three dimensions.

They were a key output implemented in the framework of the collaboration be-

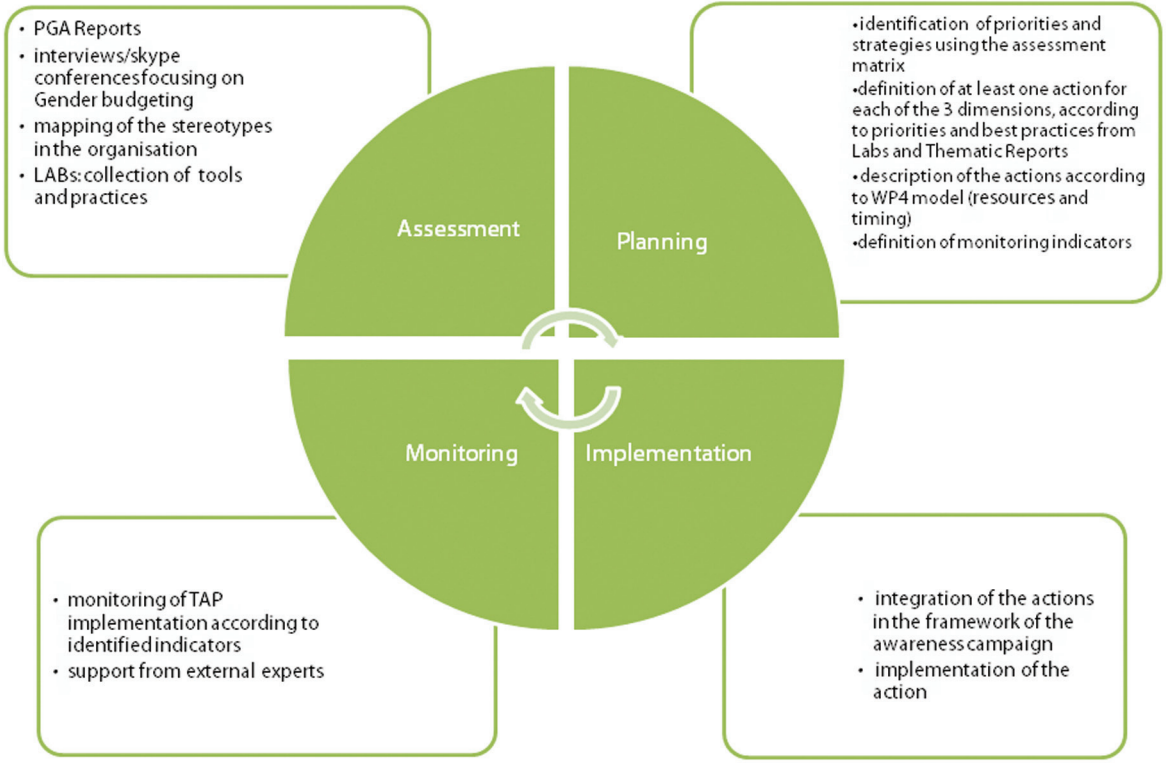
tween technical partners and scientific partners for the first 2 years of project activities and represented the basis for the implementation of further steps.

They have been crucial in order to achieve Genis Lab's objective of structural change in scientific organizations, since they contain, for each organisation:

- A synthesis of the results of the qualitative gender assessment, focusing on the 3 Genis Lab dimensions (PGAs reports + focus groups/interviews/mapping on Gender budgeting and Organizational Culture and Stereotypes);
- a description of challenges selected for intervention;
- a definition of an implementation strategy;
- an operational description of specific actions with related tools;
- a provision of quantitative and qualitative indicators for monitoring and evaluation of the process.

As such, the definition and implementation of Tailored Action Plans required a four-step process, combining the three dimensions (HRM, GB and OCS) and the three levels (organizational, social /environmental, transnational and European) identified for Genis Lab's project. The three levels were integrated in a systemic approach in order to face internal and external resistances to change.

A picture showing the four-step process follows:


• PGA Reports
• interviews/skype conferences focusing on Gender budgeting
• mapping of the stereotypes in the organisation
• LABs: collection of tools and practices
Assessment
Planning
•identification of priorities and strategies using the assessment matrix
•definition of at least one action for each of the 3 dimensions, according to priorities and best practices from Labs and Thematic Reports
•description of the actions according to WP4 model (resources and timing)
•definition of monitoring indicators
Monitoring
Implementation
• monitoring of TAP implementation according to identified indicators
• support from external experts
• integration of the actions in the framework of the awareness campaign
• implementation of the action

The four step process has been defined and explained in detail in the Guidelines for the definition of the Action Plan.

- Moreover, technical partners supervised two scientific partners each, throughout the Planning phase. This choice was made in order to guarantee a systemic approach during the elaboration of each TAP overtaken by scientific partners with the support of the involved technical organisation. Thus: FGB was assigned to ICTP/CSIC and BTH, ITC-ILO was assigned to INFN and IPF, ADS was assigned to FTM UB and NIC.

A final version of the TAPs was ready and approved by the top management of each organization within the beginning of year 2013.

Each scientific organization tailored the TAP on its specific necessities, with the support of the technical partners; nevertheless they all followed a similar structure in designing their TAPs. TAPs include a division in three dimensions GB, OCS and HRM; they also list a number of activities to be implemented and a related timetable, the sustainability of each action, the objective/s, methods involved, expected outputs, human resources involved, other resources needed, process indicators and result indicators.

1.4 Lessons learnt

The Genis Lab process has been complex, resource intensive and challenging to implement in its will to combine a systemic approach (the TAPs) with specific actions focusing on each dimension. Sometimes the application of different approaches and tools has required additional effort to technical partners in order to fine tune and find the best possible options for each organisation.

In addition, the four year project implementation has coincided with a huge European economic crisis which has produced, in most of the involved countries, an increasing reduction in resources and funds allocated to research at a national level.

In such a context, characterised by deepening inequalities and an increasing competition for funds and positions, particularly for young researchers – women and men - it has been hard to advocate for the role of gender equality as a critical factor of excellence and innovation in research.

Most of the organisations expressed the feeling that scientific research organisations are living an historical moment of change, but change to improve gender equality was in some cases, and in some parts of the organisations, perceived as a "luxury" that can be only afforded in times of resource availability. Technical partners recognized in this reaction one of the many faces that "resistance to gender equality" can show. Francesca Molfino, ADS, analysed in depth the issue in a specific document she wrote and shared with scientific partners. Some, however, were able to see change as the opportunity to integrate innovative and more gender-friendly management structures and practices.

The most successful experiences have been those in which commitment and support coming from the heads of the organisations were concrete and explicit and where an extended group of gender equality promoters/agents was established. Both these elements have been pre conditions for further developments in the path of institutional change.

2. Guidelines on Stereotypes and Organizational scientific culture

(Flavia Zucco and Claudia Grasso, Donne e Scienza Association)

2.1 Introductory notes

Our topic is women discrimination in academic and private research. Science is, as stated a long time ago, a place of increasing power (*Knowledge is power,* Francis Bacon) due to its wide impact on society. Thus, discrimination in science leaves power amongst those who have handled it since ever: men. This discrimination is practiced by a series of rules and structures that have been built by men according to their needs and behaviors. Moreover, it is also supported by subtle and invisible mechanisms which rely on the lack of awareness, strong enduring presence of stereotypes and work conditions.

Four points of reference should be taken into account in introducing these guidelines: the first one is the existence of a specific type of discrimination against women in the scientific world. This is demonstrated by the fact that even in EU countries where the number of women holding high institutional and government positions is consistent, the presence of women at the top levels of scientific careers is scarce and equivalent to very low numbers recorded all over Europe.

The second point is that this discrimination is not easily recognized by all researchers, since they feel that science cannot be affected by this kind of bias. It is in fact considered an outstanding activity, generally accepted as neutral, practiced by highly educated people, continuously confronting themselves at an international level.

The third point is that, concerning women and science, we should be aware of the so called "double absence", meaning that feminism has poorly influenced women scientists in their working life and *viceversa* their alarming situation in science has not been foreseen in the list of the feminist claims.

The fourth point is resistance to change, which has several causes, starting from the general economical situation of research ending to personal and subjective feelings.

2.2 Stereotypes in Science

Stereotypes are affecting science, its statute and its relationship with society. Science has moved from the *Olympus* to the *Agorà* and the *Ivory Tower* is not anymore existent. Scientists have to face a strong interrelationship with markets and society, thus the scientific world representation is radically changed.

Women are also penalized by the usual stereotypes that affect them in society at large. However, women scientists are specifically troubled by various and more "fitting" stereotypes. One is not being able to elaborate high levels of abstraction, due to the prevalence of emotional aspects (feelings) in their reasoning. The second one is that they cannot fully cope with the mission of science, which asks full-time engagement. The family burden is perceived as a hard obstacle to overcome if total devotion to research is the main assumption.

The impact of gender stereotypes, activated by sex categorization in these social relations, is sufficient to create gender inequality in work's outcomes. In addition to this aspect, biased bureaucratic practices (lack of information and transparency, selection criteria and so on) are activated.

Gender stereotypes in science go hand in hand with "scientific culture stereotypes". This results as ineffective in order to change stereotypes, unless the traditional ways of conceiving work in science change. In this sense, the pattern of such a culture in the different organizational structures has to be analyzed in detail.

2.3 Analysis of the Organizational Culture

The analysis has to be conducted through a series of planned steps, common to all the scientific research institutions:

a) Participatory Gender Audits (local interviews);

b) Mutual learning activities (virtual labs, on-line forum on the project's intranet).

The objectives of the virtual labs were to explore the "scientific and gender culture" of the organizations, to build maps and assemble toolkits detecting where gender stereotypes are hidden in the everyday life of organizations and to find global and local gender/science stereotypes; to suggest good practices to help the overcome of hindrances in women's careers and leaderships.

c) Maps of each scientific institution detecting the specific areas where stereotypes may be nested, as they strongly affect women's careers from the distribution of resources to the evaluation of excellence, including gender differences in external responsibilities and duties.

If we explore the **Human Resource Management** dimension of intervention, the following stereotypes can be found:

- Women not suitable to management and to leadership;
- Women less available, due to family burden;
- Women's caring model endorsed also in the work environment;
- Women have biased evaluations in careers and calls.

Among the **Gender Budgeting** dimension, stereotypes can be found, hidden in different resource areas such as:

- TIME. Women aren't fully committed;
- SPACE. As women don't consider space as a symbol of power, they don't claim it and therefore it seems they don't need it!
- STUDENTS and PhDs. Men use juniors to empower their position, women perceive them as a major responsibility and do not use *ad libitum*: again they do not need many of them.

MONEY. managing finances is perceived by women as a major responsibility, thus it is interpreted as poor commitment in found/grant research

d) Dragging out automatic stereotypes and proposing issues, that can produce displacement, provocation, distraction, heterogeneity, because these reactions can tackle the implicit levels where stereotypes are formed. This kind of objective can be pursued by:

- pointing out the positive and negative benefits for men in order to change mentality;
- pointing out positive and negative benefits for women to change mentality;
- exploring to which extent participants want to deal with male and female confrontation and/or with gender identity challenges (i.e. family versus work);
- enquiring to which extent participants are ready to advocate conflicts with male or female colleagues in interpersonal relationships, including sex harassment;
- investigating participants' level of awareness of the traditional "scientific culture".

2.4 Actions: how to stimulate awareness of discrimination at a cultural level and how to help the overcome of possible existing stereotypes

Through the awareness campaign consisting of circulation of relevant existing documents on the topic, a "daily stereotype diary" kept by each employee registering suffered gender discrimination on a daily basis, the "white sheet paper" held by the employees in labs collecting all the invisible work in order to make it visible, and last but not least the interactive Implicit Association online Test (see box below).

IAT

Here is a tool that allows each of us to discover hidden cognitive biases. Most people are aware of their own overt biases, but it is very difficult for us to become aware of our covert biases. This is a test that can be taken by each individual for their own benefit. Implicit Association Test (IAT) is excellent for showing bias and how our unconscious drives our day to day decision making. It helps all of us, from all backgrounds; recognize unconscious/hidden biases which may unknowingly distort our objective evaluation and treatment of others based upon race, gender, religion, culture, etc. It also opens pathways for participants, once their unconscious bias awareness is raised (in spite of most people's surprise that they still have room for growth), to take specific behavioral steps to help interrupt some of those biases in their professional and personal performance and interactions. "Psychologists understand that people may not say what's on their minds either because they are unwilling or because they are unable to do so. The unwilling-unable distinction is like the difference between purposely hiding something from others and unconsciously hiding something from your self. The Implicit Association Test makes it possible to penetrate both of these types of hiding. The IAT measures implicit attitudes and beliefs that people are either unwilling or unable to report.

https://implicit.harvard.edu/implicit/

Other methods and tools used to enhance awareness and empowerment towards change are strongly tied to communication skills, internal to the Institution. Participative discussions held on a periodic basis (transnational meetings with other similar institutions) are crucial, discussions with target groups (female junior researchers, assistant and associate professors and administrative staff) and workshops with target groups and corresponding male counterparts seem to be very supporting for the creation of awareness in a team/group context.

Special mention goes to the theatre play with actors - which we call "Re-Act" as *act again*, *re-do* (see box below). Contents of the show were based on the out-

comes of local workshops held at the institution gathering the major number of employees possible (especially top management).

Re-ACT

A collective research method using theatrical tools to deconstruct gender stereotypes in science. Through gradual questions and simple actions, participants will be able to analyze and deepen their awareness of daily working life in order to introduce positive changes. Re-act derives from the Theatre of the Oppressed which is a theoretical framework and set of techniques developed by a Brazilian director, artist and activist Augusto Boal. Recognizing that humans have a unique ability to take action in the world while simultaneously observing them selves in action, Boal believed that the human was a self-contained theatre, actor and spectator in one. Because we can observe ourselves in action, we can amend, adjust and alter our actions to have different impact and to change our world. The theatre of the Oppressed engages people in discovery, critical reflection and dialogue and the process of liberation! Through the Theatre of the Oppressed we can better understand ourselves, our communities and our world. There are several series of techniques, tools and expressions of the Theatre of the Oppressed regularly used. Game playing is the core of the Theatre of the Oppressed. An extensive arsenal of well crafted and expertly facilitated games allows participants to stretch the limits of their imaginations, de-mechanize habitual behaviors and deconstruct and analyze societal structures of power and oppression. Plus, game playing is fun and builds community! The Forum Theatre is a performance that transforms a normal spectator (one who watches) into a spect-actor (one who watches and takes action). A short scene by Forum actors presents an issue of oppression and represents the world as it is–the anti-model. Audience members are then encouraged to stop the play and take the stage to address the oppression, attempting to change the outcome through action. The show engages Forum actors and audience members in fun, entertaining and enlightening community dialogue. www.theatreoftheoppressed.org

Last but not least again, through the use of gender-sensitive language in documents whenever possible (internal communication skills).

Use of gender-sensitive language

The purpose of looking at sexism in language is to avoid word choices which may be interpreted as biased, discriminatory or demeaning, by implying that one sex is superior to the other, and contribute to create gender stereotypes. Nonsexist language, on the other hand, far from being a form of censorship, is a conscious choice to address and include the whole of the audience. This is particularly important in male-dominated fields such as sciences where nonsexist language has been shown to increase female students' and researchers' self esteem. On May 19, 2008, the European Parliament issued a booklet to the Members of Parliament giving guidelines for gender-neutral language. Drawn up by a working group, under the auspices of the Parliament's High-Level Group on Gender Equality, these guidelines were the fruit of a long and close collaboration among the relevant linguistic services and provided suggestions and examples for each specific working language. What works in one language may not work in another. For each of the official languages, appropriate nonsexist terminology must be sought in accordance with national customs, taking into account any national legislation on the matter, existing guidelines at a national level or other authoritative sources.

Among good practices against stereotypes, the most successful have to be identified, chosen and presented to other international or national realities in order to accomplish public empowerment and awareness in pursuing the goal (exporting communication skills to other contexts).

2.5 Fighting resistance to change

Three levels for action can be identified:

a) Individual: will affect the identity and behavior. The change of each others' status quo alarms people and frightens them of a job loss possibility, a loss of earnings, humiliations, negative assessments, unrecognized work.

Resistance to gender equality projects

by Francesca Molfino

- *Denial of the gender inequality issue*
- *Shift onto external realities. Other institutions or historical, social or educational causes*
- *Minimizing the gender inequality issue*
- *Non awareness of stereotypes*
- *Difficulties also women have in seeing discrimination*
- *Insufficient motivation and conflict among staff*
- *Various forms of individual experiences of dissent*
- *Lack of data, information, communication*
- *Isolation of people dealing with gender issues*
- *Stereotyping the gender inequality issue*
- *Stereotyping in relationships in order to discriminate*
- *Stigmatization of women involved in positive actions*
- *Disadvantages and male hostility*
- *Overwhelming of the gender issues for women scientists*
- *Conflicts among women*
- *Individual diversity hides gender*
- *Ineffective monitoring systems*
- *Tendency to delegate decisions to managers*

b) Institutional and structural: implies a social re-organization. Hidden traps usually obstacle changes. The most obvious trap is when you don't start implementing tailored gender action plans correctly: in other words when there is no link between theory and practice. When tailored actions are implemented, but the people involved are not skilled or motivated for such specific actions, results will not be efficacious and may even go against the objective of the action. When action plans are too generic or vague and the objectives are not clear and achievable and also when actions are not supported by suitable tools for their implementation, including adequate funding and other required resources, results tend to failure.

c) Symbolic and cultural: languages, norms, values (this level is crucial: no positive action has long-lasting effects without changes at this level).

2.6 Evaluating excellence: actions

Recruitment at the beginning of careers is the very moment in which several stereotypes concerning science and women take place, such as not full devotion to the job (the possibility of starting up/having a family), scarce availability in mobility (conference, stages etc.), not very versed on or gifted in hard sciences.

In advancement in careers and leadership strong scientific CVs measured according to parameters fixed by men must be presented, where hard skills such as assertiveness, single mindedness provide *high evaluation*, and soft skills such as flexibility, diplomacy, curiosity, motivation and dedication have *low evaluation*.

As stated before, women also face the hard stereotype of their weak attitude towards leadership and management and subsequent problems in handling financial resources.

The first step is to fix the concept of excellence. Scientific excellence is the ability of a scientist or an institution to impact on a field of study producing a major change, leading other scientists towards the asking of new questions, producing new, important, useful contributions to knowledge, and using new methodologies. The quality of excellence must be proven by a number of means such as publications, citations, funding, students and must be recognized by the peers

and by the bestowing of various honors, prizes and other awards (Topic report: *Gender and Scientific Excellence* by Elisabetta Addis with the assistance of Costanza Pagnini in *Meta-analysis of gender and science research*).

Second step is to show available data demonstrating that the previously mentioned assumptions (prejudices) aren't correct.

Third step is to state the importance of soft skills that are functional to the advancement of contemporary science. Covering a role with a service attitude, working towards a careful and responsible research, transferring the model role of a responsible and creative researcher to the younger generation, collaborating towards a more equal work environment.

Differences in attitude

WORK:	*for men it overlaps with the social role;* *for women it is part of life's wider idea.*
CAREER:	*for men it is based on the competitiveness;* *for women is based on competence and scientific interests.*
HIERARCHY:	*for men it is seen as power gain;* *for women is seen as acquiring responsibility.*
TIME:	*for men is evaluated in economical terms;* *for women is evaluated in terms of quality of the product.*
GOALS:	*for men they are reached by fighting;* *for women they are reached by autonomy acquisition.*

The evaluation procedure must be transparent and fair as follows:

- Calls to be advertised at least 2 months in advance;
- All evaluation criteria to be published along with the job description;
- CVs of the evaluation board's members to be published;
- The board must be gender balanced;
- CVs of the candidates to be published;
- List of the winners along with their CVs to be published;
- The decisional powers must be re-installed in the official institutions (delegitimizing the old-boys' network);
- Better evaluation of research in multidisciplinary fields, actually considered borderline;
- Evaluation of the scientific outputs normalized against the inputs coming from resources;
- Abolish gender bias (quotas for men) in favour of meritocracy, evaluated according to new criteria;
- Criteria must be scientific as well as related to behavioural capacities (see CERN evaluation report).

2.7 Concluding notes

From what has been previously said, it is clear that the awareness campaign must touch the culture of the Institute and implement changes in the knowledge and behaviors on gender issues, towards all the population of the institute.

The involvement of the management level and of the main stakeholders is thus crucial for both the definition of contents and for the implementation strategy, in order to enable proposed activities to be fully operative and incisive. The pro-

posed tool kit must be submitted and discussed with each scientific partner who will have all the needed technical support in order to plan out the most appropriate tools and related activities for the promotion of equal opportunities.

Participation of management is also fundamental for the identification, promotion and efficacy of the messages spread throughout the campaign, within external institutes.

Through the involvement of management we pursue a top-down process of organizational and cultural change is pursued. Beneficiaries of the campaign will be all the people (women and men) that work in the involved organizations who will take advantage from a cultural shift in management: managers in fact face the problem of working with very *diverse people*.

Diversity Management cannot exist without it being embedded in a moral and legal pattern. Ethics and laws concerning anti-discrimination are not just a part of the organization's environment; the organization's identity itself has to reflect our human rights tradition.

Scientific careers depend on managerial skills meant as a capacity to deal with a team, ability to attract and manage funds, to follow the bureaucratic process behind the launch and implementation of projects, to be able to show organizational capacities together with a fertile networking attitude.

All these activities, crucial for the scientific career advancement, are not included in the professional training and evaluation of people who therefore lack a set of competences. These competences are devolved at an individual level (mainly male) and therefore considered personal qualities assessed on a subjective basis and kept alive through an informal transmit. This enables gender bias and discrimination to deeply root.

It is therefore of major importance that managerial skills are gained not amongst the informal and often privileged relationships with someone who is ahead in the career advancement but through training and mentoring time credited by the institution and open to the all personnel.

Lesson learnt

Firstly there are striking commonalities to all of our six scientific partners: the crisis and fear of the forthcoming future, the transition period - which is particularly harsh for former east countries in relation to globalization and work flexibility and conciliation issues in family over work.

As it clearly comes up from the mapping of the six countries, history affects the specific culture especially for the former communist nations where stereotypes concerning women's scientific capacities (not present in the past) are moved to women covering management roles. In addition family seems to be perceived as an "only female" issue, in the meanwhile most of the social support provided by communism have been lost.

Generally speaking we are assisting to a change of the internal structure of science: science in relation to industrial companies, seek for multi tasking working performances, specialized technicians who have a stable contract where researchers don't. The perception of productivity of science is also changing: men are now asking "*how can you state that women produce more science?*" without thinking that women are more motivated in searching stable carriers, not caring to much about payments, whereas men are chasing high salaries.

This change doesn't match accordingly with the adaptation of innovated practices, the relations with the administration board, with dealing of culturally different people, and lastly with the knowledge of existing and updated national and international regulations. On this respect the generational conflict acquired, in some case, new strength and connotation.

A big gap has been found; Genis Lab (and probably also the sister projects) had to face the responsibility to fill it in with knowledge, constructive criticism and positive actions.

3. Participatory Gender Audit as a tool for organizational change towards gender equality

(Benedetta Magri, International Training Centre of the International Labour Organization, Gender Unit)

In grateful and loving memory of Petra Ulshoefer

3.1 Introduction

This section of the Genis Lab Guidelines describes how the participatory gender audit methodology was used in the six scientific organizations taking part in Genis Lab project, with the aim of promoting organisational changes and increase the presence of women in science[4].

The section is comprised of three parts: the first describes what the participatory gender audit (PGA) is, the second discusses why it is a useful tool to promote women in science. The third illustrates how this already soundly tested methodology was adapted and applied in the Genis Lab project. Finally, it offers some conclusions and lessons learnt.

4. A special word of thanks should go to Blerina Vila and Simonetta Cavazza, ITCILO, who generously contributed to the adaptation of the PGA methodology and the delivery of many participatory gender audits in partners institutions.

3.2 What is the Participatory Gender Audit (PGA)?

The methodology used in Genis Lab is an adaptation of a well tested tool for organizational change, the "ILO Participatory Gender Audit"[5], which, over the last 10 years, has been has been successfully applied by the ILO[6] internally and across a broad range of public sector institutions, employers' organisations and trade union organisations.

A participatory gender audit is an action-research methodology that helps "mapping" an organisation from a gender equality perspective.

The word "audit" shouldn't confuse the reader, since it is a totally different concept from the traditional "financial audit". While a traditional audit checks the factual compliance of an organisation to a set of pre-defined rules, the PGA combines the objective observation of facts and data with a more indepth and qualitative reflection on individual and collective rules, behaviours and beliefs, and their impact on gender equality. For this reason the team of the PGA is made of "facilitators" rather than "auditors".

Through a process of data collection, direct observation and intense interaction with the staff of an organisation, a "Gender Audit Facilitators Team" produces a collectively agreed report that describes the capacity of an organisation to promote and sustain gender equality in its daily operations, as well as the gaps that still need to be filled in.

The reasons for gender disparities in organisations are rarely explicit, but more frequently are hidden in the rules, modes of functioning and culture of an organisation. PGA helps improving performance in relation to gender equality. The PGA essentially is a journey of self-reflection that the Gend Audit Team undertakes together with the organisation to assess and transform its social dimension.

5. ILO (2012, rev.): *Participatory Gender Audit: A Manual for Facilitators.*

6. The International Labour Organisation is the UN Specialized Agency dedicated to the promotion of social justice in the world of work. Gender equality is a cross-cutting objective of the ILO guiding policy framework, the "Decent Work Agenda"

3.3. Why is PGA a useful tool for organisational change towards gender equality?

Statistics related to women's steadily growing participation rates in scientific research, and their dramatic drop at decision making levels point to a clear correlation between low levels of women at the top of scientific carreers and the way in which scientific research organisatons are structured. Although this is a largely accepted principle in most workplaces[7], the world of scientific research finds it harder to acknowledge, given that science is believed to be the place of objectivity, recognition of excellence and collegiality.

The PGA by definition is not simply a method to acquire baseline data in an organsation, but the initial step of a change strategy, starting from within. Although it does provide a relatively objective and measurable "picture" of an organisation from a gender perspective, it bases its analytical strenght on the knowledge created through individual and collective dialogue with its staff.

Organisations are complex realities, and for this reason change towards gender equality cannot be planned in a linear way or simply imposed through policies and top-down action plans. Social change can take big leaps forward, thanks to a new policy or law, and then live moments of stall, or even regression, when the law is not enforced, or top decision-makers change. This is extremely visible in organisations. The PGA explores the multiple formal and informal dimensions that constitute the life of an organisation and invites staff – at all levels – to participate in an iterative and self-reflective process of change of mind-sets, behaviours and, when necessary, rules and policies, to make their organisation a truly good workplace for women and men ("gender-friendly" or even "gender-transformative").

The PGA as applied in the Genis Lab project is a change management approach based on the following key assumptions:

7. For the concept of "systemic" and "institutional" discrimination see ILO, (2003): *Time for Equalty at Work, Report of the Director General on the Declaration of Fundamental Principles and Rights at Work*.

3.3.1. Change towards gender equality cannot be done with scattered ad hoc actions, but must be structural, integrated and systematic

Gender mainstreaming is the systematic process of assessing the different implications for women and men of any planned policy action, including legislation and programmes, in all areas and levels, and re-programming[8] so that they do not replicate inequalities and favor more equitable relations between women and men. The PGA is the application of gender mainstreaming to organisations.

> *"The terms mainstreaming and institutionalising are often used interchangeably in development literature. The term 'institutionalisation' does connote longer term, sustained change, which in turn recognises the conflict between regular practices of organisations, which inevitably reflect a particular set of interests, and their responsiveness to change (Kanjee, 2003)*

Gender disparities in workplaces and more specifically in scientific organisations may be dependent on external factors (for instance, scarcity of qualified female researchers) or on lack of interest on women's side ("they opt out", "they need to strengthen their leadership potential"), however there is no doubt that gender disparities in workplaces are largely dependent on the needs and expectations of a stereotypical "male worker/decision maker/scientist" who is available 24/24 hours and 7/7 days and does not need to reconcile his dedication to science with other conflicting priorities, such as family. Also, hidden biases still influence career progression mechanisms, evaluation and resource allocation processes. The participatory gender audit navigates through the detail of organisational structures and culture, untangles stereotypes and unconscious biases from behaviours and rules, and initiates a change process from within.

8. In 1997, United Nations Economic and Social Council (ECOSOC) defined "Mainstreaming a gender perspective is the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in any area and at all levels. It is a strategy for making the concerns and experiences of women as well as of men an integral part of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres, so that women and men benefit equally, and inequality is not perpetuated. The ultimate goal of mainstreaming is to achieve gender equality."

3.3.2 Sustainable change needs political will and sustained leadership support

The role of leadership is important in hierarchical and flatter organisations. Leadership can set the tone and the pace of change. Changes in leadership can have tremendous positive or negative impact in advancing gender equality policies. The PGA requires direct engagement with the organisation's top leadership , discussion on the findings and recommendations, endorsement of the collective efforts, and support to the development and implementation of the ensuing action plans.

3.3.3 Sustainable change requires participation, qualitative self-assessment and ownership in the change process

The PGA is not an external evaluation but an opportunity for those working in an organisation to self-reflect on their own understanding of gender equality, workplace life and well-being, express concerns, share them with colleagues, propose joint solutions.

3.3.4 "Triple loop" organisational learning: from positive deviance to change in institutional rules and systems

The PGA aims to build on "positive deviance"[9] , facilitating the transfer of positive behaviours from the individual to the work unit to the collective culture and practice of the institution.

> *In every community there are certain individuals or groups whose uncommon behaviors and strategies enable them to find better solutions to problems than their peers, while having access to the same resources and facing similar or worse challenges. (www.positivedeviance.org)*

9. "Positive deviance" is an approach to behavioural and organisational change originally used in public health programmes and now largely recognized as a successul change management tool. Cfr. Pascale, R.; Sternin, J; Sternin, M. (2010): *The Power of Positive Deviance: How Unlikely Innovators Solve the World's Toughest Problems.*

3.3.5 Experiential learning[10]

Through focused self-reflection on individual and organisational practices, PGA workshops and interviews offer opportunities to learn about gender equality in a contextualized way. This applies both to the individual and to the organisation. "Positive deviance" behaviours at an individual level (E.g. mentoring, work-life solutions, knowledge sharing mechanisms) can be systematized and, through management support, institutionalised.

3.3.6. Sound gender analysis and framework planning

The gender analysis framework adopted by the PGA is inspired from Kabeer's social relations gender analysis framework[11]. This framework looks at gender relations in the interaction of three inter-dependent systems:

- **macro** : laws, policies, macro-economic context. Policies and rules: are there equality policies at national/sectoral or organisational level? Are they reflected in the organisation's policies and rules?
- **meso** : institutional policies, service delivery, rules, regulations at the workplace. Work organization practices and structures: what do they show about gender equality? Are good policies translated into good practices? Are there existing good practices that can be better institutionalized and shared? What are the expressed common organisatonal values?
- **micro**: individual behaviours. How do they "fit" the rules? What are the non-expressed organizational values? How are they translated in working relations between women and men? Are they influenced by stereotypes?

10. D. Kolb, D. (1988) *The experiential learning: Experience as the source of learning and development*. NJ: Prentice-Hall.

11. Kabeer, N. Kabeer, Naila; *Subramanian, Ramya (1999). Institutions*, relations and outcomes: A framework and case studies for gender-aware planning. New Delhi, India.

3.4 How to implement PGA in scientific organizations

In the context of Genis Lab, the ILO PGA methodology was adapted to meet the needs and specificities of the involved research institutions.

3.4.1. Areas for analysis

The original PGA methodology comprises an analysis of:

- Staffing (HR issues and related equal opportunity practices: do they promote hinder gender balance at all levels?)
- Substance (the products of the organisation: are they "gender sensitive"?)
- Structure (what is the long-term vision? Programmes? Are organisational systems conducive to gender equality? Monitoring and evaluation? Resource allocation?)

The Genis Lab project did not foresee a gender impact assessment of the research policies and scientific products of the project partners, being the focus more on women's participation. The analysis was therefore mostly limited on "Structures" and "Staffing", with particular focus on three dimensions:

Genis Lab dimension	Key questions
Organizational culture and stereotypes	
	- Does the organizational culture challenge or reinforce stereotypes related to gender and science? - How far does a stereotypical vision of science influence gender inequalities? - To what extent do these stereotypes have an influence on scientific excellence? - In the context of "post-academic science", can we think of new, more equitable and efficient criteria for scientific excellence?
Human Resource Management policies and practices	
	- To what extent is the organization able to translate its formal commitments to gender equality in its human resource management policies, rules, practices and working arrangements? - To what extent is the organization able to meet the different work-life conciliation needs of its staff, women and men? - Are there structural obstacles to women's scientific careers and if so, how can they be tackled?
Financial dimensions and gender budgeting	
	- Are there gender differences in the allocation of financial resources? - If so, are there structural/organizational causes for these difference? - What are the impacts? - How does access to financial resources impact access to other resources? - Which of these have an impact on career differentials?

Table 1 illustrates how the PGA areas of organisatonal analysis[12] were used to collect and elaborate information according to the above-described dimensions.

12. The original 12 areas of the ILO PGA have been consolidated in a shorter list in the 2012 edition of the ILO PGA Manual.

TABLE 1 – PARTICIPATORY GENDER AUDIT AREAS FOR ASSESSMENT AND SOURCES OF INFORMATION

	ORGANISATIONAL AREA	Relevant for Genis Lab DIMENSION	Level of information gathering	Source of information
A	Current national/international gender issues and gender debate affecting the audited institution; and unit's relationship with national gender equality institutions and organizations of women scientists/researchers	HRM Budgeting* Stereotypes/ Culture	Organization Work Unit	All staff through On-line Staff Questionnaire Selected samples of staff (different categories) during workshops Interviews with management and internal Genis Lab team
B	Organization's strategy on gender equality as reflected in the organization's (or work unit) operational objectives, programme and budget	Budgeting HRM	Organization (Samples)	Senior Management Staff On-line staff Questionnaire Workshops
C	Mainstreaming of gender equality in the implementation and budgeting of research programmes and projects *(only analysis of resource allocation no contents of research)*	Budgeting	Organization	Scientific Boards Work unit documents Questionnaire
D	Existing gender expertise and strategy for building gender competence	HR Stereotypes	Organization HR and managerial staff	HR department staff interviews, questionnaire, workshops

	ORGANISATIONAL AREA	Relevant for Genis Lab DIMENSION	Level of information gathering	Source of information
E	Information and knowledge management	Stereotypes	Organization (Sample) + work unit	Equal Opportunities committees, training department, library, HR Dept; direct observation work unit's docs and workshops
F	Systems and instruments in use for monitoring and evaluation (of scientific products)	HRM Stereotypes Budgeting	Organization Work unit	Work unit interviews and workshops; Researchers, Heads of Research; Directors of Departments;
G	Choice of partner organizations	HRM Stereotypes Budgeting	Organization Work unit	Research staff during workshops Equal opportunity committees (if existing); Management
H	Products and public image	Stereotypes (no analysis of contents of research products)	Organization and work unit	Desk review, direct observation, communication departments, scientific secretariats, admin staff, webmasters..
I	Decision-making	HR, budgeting, stereotypes	Organization and work unit	Questionnaire Interviews, workshops

	ORGANISATIONAL AREA	Relevant for Genis Lab DIMENSION	Level of information gathering	Source of information
J	Staffing and human resources	HR Stereotypes	Org: policy level Unit: imple-ment.	Desk review, questionnaire Interviews, workshops
K	Organizational culture	HR Stereotypes	Organization (superficial) Work Unit (in-depth)	Desk review, questionnaire Interviews, workshops
L	Perception of achievement on gender equality	HR Stereotypes	Organization - Work Unit (in-depth)	Interviews/Public documents / Annual reports /Questionnaire

* The analysis of resource allocation required the development of an ad hoc methodology. The initial analysis done during the PGA served to raise awareness on the fact that institutions were not able to provide information or data related to resource allocation by gender. GRB analysis become therefore part of the tailored action plans prepared by the institutions as a result of the audits.

Relevant evaluative questions were developed under each of these headings, to guide the interviews, the workshops and the desk reviews. Specific adaptation was needed in particular to:

- Finetune the tools to capture the organisational culture characterising the research and academic environment
- Create new tools and activities to capture the hidden forms that stereotypes can enact (this was specifically done with further work taken over by Associazione Donne e Scienza) in the everyday life lived in "the lab".
- Explicit adequate statistical information disaggregated by gender , particularly in relation to resource allocation.

3.4.2 Scope of the analysis

The PGA normally implies conducting several gender audits at a unit level within the same organisation. The process is very effective but also extremely labour intensive and resource-demanding. In some cases ITCILO has trained a group of staff on PGA techniques internal to the audited organisation who then rolled out the gender audits, with limited technical support (the "GEOSA approach"[13]). Such an option was not possible as these scientific institutions naturally could not rely on internal expertise in sociological matters and change projects. It was decided to opt for a different approach and – given the limited size of most the nvolved institutions i - to perform a PGA at both an organisational level and a selected work unit level, adapting the scope of the analysis to the specificities of each institution.

To fully take advantage of the transnational character of the project, ensure comparability and possibily gain an overview of results across the six scientific partners, a set of standardised tools[14] was developed and used as relevant in each institution. For instance, the on-line questionnaire on "gender quality" in the or-

13. See ITCILO, 2012 "Gender and organisational Self-Assessment", www.itcilo.org/gender

14. Details on the process and results of each PGA are available at the project's website http://genislab-fp7.eu. The used tools were the results of re-adaptation of the tools presented in the ILO PGA Manual (2009).

ganisation is today offering an interesting perspective of the perceptions on gender equality of some 650 women and men working in the research environment across 6 EU countries. The same on-line questionnaire can easily be re-administered in the future to assess progress and change. Table 2 below illustrates scope and tools used to gather the quantitative and qualitative dimensions during the audits.

Table 2 – Scope and tools for organisational assessment

Type of data	Level	Tool and info used
Quantitative (HR statistics)	Organisation	Statistics provided by HR (desegregated by work-unit/Department whenever possible)
Quantitative (resources)	Organisation (selected components – see GRB Chapter)	Data provided by finance departments or research departments.
Qualitative	Organisation	Desk review of key programmatic documents, HR policies, reports of research departments, visibility materials, websites etc. Workshops for staff coming from different work units Workshops for staff divided in professional categories On-line Questionnaire for all staff Individual interviews with a broad sample of staff from different professional categories/ sex
Qualitative	Work unit	Workshops with all staff from selected work-units Individual interviews with staff from one selected work unit

3.4.3 The process: actors

a. The internal Project Team

The Project Team internal to the organization played a key role in the PGA. The Team should comprise a diverse representation, and should include a top-level decision maker who will champion the initiative throughout the project. The establishment of the internal Genis Lab project team acting also as internal focal point for the PGA.

This preparatory moment was critical to the success of the PGA. Not only the focal point but above all the management of the institutions needed to be aware of the purpose and mode of realisation of the process. They also needed to be able to

- liaise and acquire all the necessary information,
- help identify the reference group of colleagues directly involved in the field visit and mobilize them.

This, in itself, proved to be a learning process for the involved Genis Lab teams i.

Some discovered that sex-disaggregated information is virtually not available, in spite of existing laws and policies

Others found out that when a project is "systemic" and not just a "specific initiative for women", much more resistence is encountered.

Others met keen interest and curiousity….

ToRs (Terms of Reference) for internal project teams and specific information on the PGA process and data requirements were distributed as early as possible and discussed with all organisations.

b. The audited organisation

Organizations or Department

- Everyone consulted an on-line questionnaire
- A reference group, i.e. a meaningful sample (30-40 people) directly engaged in collaborative inquiry activities (interviews and focus groups during PGA team visit) including:
- Cross-cutting representation (admin/research)
- Women and men (at least 50 – 50)
- Management and HR representatives

c. The external PGA team

An external PGA facilitation team (2-4 people from ITC and FGB), including experts/facilitators in gender sensitive organizational change and HR practices, gender budgeting, gender and science.

3.4.4 The process: steps and methods

The process below is a standardisation of the model used in the six scientific partners. Each audit took place over a total period of approximately 3 months. Slight variations needed to be made according to the size and structure of each institution. In order to guarantee a full participation and create trust among all staff not only the "top level" of researchers

- Activities took place in English and in the national language
- Confidentiality on the results of individual interviews was systematically guaranteed.

Desk Review: gender mapping of the organization

This implied

- Preliminary collection of statistical information by gender and whenever possible by age. Specific attention was given to atypical forms of work (tem-

porary arrangements, PhD fellowships, etc.)

- Dissemination and analysis of an on line questionnaire to all staff (anonymous): mapping of individual carrier paths, work-life balance needs and perceptions about gender equality
- Desk review of key policies, procedural, programme and budgetary documents

Field visit: participatory audit

During a five-day visit to the organization, the PGA team individually interviewed an average of 20 – 30 people - beloging to the - staff per organisation, across all professional categories and hierarchical levels.

Methods used in this phase comprised:

- **individual interviews** with a reference group, including HR staff and staff responsible for resource mobilization
- **focus groups** with a reference group, including HR staff and staff engaged in resource mobilization/allocation
- specific **briefing** and **de-briefing sessions** with management

c. Reporting

A draft report was prepared by the PGA Team and presented to the management, including:

- Consolidated findings, including gaps and good practices
- Conclusions
- Recommendations for future actions

The Report was considered ownership of the organization who committed to follow up on the recommendations. All institutions agreed to openly share the findings of the audit reports, which testifies the high degree of trust created among technical and scientific partners.

3.5 Results and follow up of the Participatory Gender Audits: gender performance indicators and self-tailored action plans

3.5.1 Comparative analysis and benchmarking tools to start action-planning

The participatory process resulted particularly useful as most of the recommendations were acceptable for institutions as they either built on existing schemes (eg. specific mentoring schemes for women researchers in Germany) or proposed changes that had been discussed with management and staff. Recommendations served the institutions to start an internal discussion on how to develop the tailord action plan. An additional effort was made to organise the results of the audits in a systematic and comparative manner. This allowed the six partners to benchmark themselves on the basis of a set of "evidence based indicators of gender performance" and, on this basis, organise their responses to the audit recommendations in a systematic manner. Technical partners encouraged the scientific partners to adopt result-based planning techniques, which in some cases were adopted. The resulting Action Plans are not simply a list of activities but include medium-term strategic result areas.

Table 3 and **Table 4** present the "evidence based gender performance indicators", as well as a comparative table of "challenges and gaps". Technical partners proposed an initial benchmark but participating organisations were invited to self-assess themselves and to adopt the tool to monitor progress for the future.

TABLE 3. Evidence-based indicators of gender performance at macro-meso-micro levels (Baseline collected through PGAs)

Evidence- Based Indicator of Good Practice 1. Institutional mechanisms for gender equality (Laws, policies, institutions)		Inst 1	Inst 2	Inst 3	Inst 4	Inst 5	Inst 6
External	National Legislation promoting equality and non-discrimination in employment						
	Local-Regional Legislation						
	Specific mechanisms to promote women in Science and Technology						
Internal	Equality policy/action plan within institution						
	Ombudsman/Equal opportunities counsellor Gender Equality advisory board/Works committees						
	Sexual harassment prevention policy						

Evidence- Based Indicator of Good Practice 2. Human Resources Management		Inst 1	Inst 2	Inst 3	Inst 4	Inst 5	Inst 6
Recruitment	Formal affirmative action to recruit women in non traditional positions (e.g. IT)						
	Policies to attract (young) women (and men) into scientific careers (or re-convert)						
	Recruitment committees receive guidance in methodologies for recruitment or performance assessment free from gender bias						
	Quotas in selection/promotion committees						
	Adoption of EU Charter for Researchers						

Evidence- Based Indicator of Good Practice 2. Human Resources Management		Inst 1	Inst 2	Inst 3	Inst 4	Inst 5	Inst 6
	Use of Marie Curie Programme						
Performance Management	Broadening of evaluation criteria (fund-raising, soft skills, team management)						
	Open peer review system						
	Mentoring initiatives for women scientistis (ad hoc, individual Professors)						
	Support measures to avoid negative impact of maternity break (individual initiatives)						
	Routine letters for students and researchers to confirm period of maternity and breastfeeding						
	Evaluation period for publications extended for women scientists who have been on maternity leave						
	Other support measures (individual)						
Working Conditions	Family-friendly scheduling of meetings						
	Teleworking allowed to scientists (informally)						
	Policies on flexible working hours for researchers (formal)						

Evidence- Based Indicator of Good Practice 2. Human Resources Management		Inst 1	Inst 2	Inst 3	Inst 4	Inst 5	Inst 6
	Policies on flexible working hours for non-scientific staff (formal)						
	Restrictions on week-end work and night work in labs						
	Family-friendly scheduling of meetings						
	Teleworking allowed to scientists (informally)						
	Policies on flexible working hours for researchers (formal)						
	Policies on flexible working hours for non-scientific staff (formal)						
	Restrictions on week-end work and night work in labs						

Evidence- Based Indicators of Good Practice *3- Organisational Culture/Stereotypes*		BTH Sweden	CSIC Spain	FTM Serbia	IFP Germany	INFN Italy	NIC Slovenia
Organizational culture	Policy on gender sensitive language						
	No stereotypes on scientific potential and capacities of women researchers or technicians						
	Role Models: Women in key positions e.g. Director/Dean of institution/Professorships						

	Role models of active fatherhood / men coaching other men							
	Acceptance of paternity leave as «normal»							
	In-house discussion on gender and science							
	Flat non-hierarchical structure (at work Unit level)/collegial culture… but team as a family (paternalistic management approach?)							
	Marketing/orientation policies for student recruitment that are gender friendly							
	Campaigns/policies to encourage youth into science (Some with particular emphasis upon girls)							
	Weekly meetings to discuss progress including gender issues (e.g pregnancy /research work)							
	Workshops where each of the group members can present his/her research or project results							
	Participate in "family-friendly enterprise" initiatives or other certification body							

TABLE 4 – Benchmarking table of challenges to gender equality as identified by the Participatory Gender Audits

Challenges **1.** *Institutional Set –Ups for law implementation*		BTH Sweden	CSIC Spain	FTM Serbia	IFP Germany	INFNI Italy	NIC Slovenia
	Administrative procedures frequently not adequately flexible to meet needs of staff who need to reconcile work and family life						
	Limited child care facilities inevitably leave women with *having* to manage child care						
	Despite legislation, gender aspects not adequately addressed in planning and monitoring						
	Gender equality structures not effective/low status						
	Lack of awareness of rights/sexual harassment policies						

Challenges **2.** *Human Resources Management 1*		BTH Sweden	CSIC Spain	FTM Serbia	IFP Germany	INFN Italy	NIC Slovenia
Recruitment	Approximation to parity between employment of men and women but….						
	Women under represented in senior positions						

	In the current economic environment (including transition into new status) career opportunities in science are perceived to be limited and in extreme competitive environments and women in some countries are "opting out"						
Performance management	Women frequently unable to reconcile the pressure of quantitative performance in terms of publications and patents with family life						
	Active mentoring (by male and female superior) can be a critical factor but it is rarely institutionalized.						
	Mobility: Constraints in both "home" and "host" organisations that inhibit mobility for women researchers between institutions						
	Women need longer than men to advance their career						
Performance Evaluation	Limited discussion on the potential biases in evaluation of excellence/performance and on the obstacles to gender equality hidden in the accepted social representation of science.						
	Those in managerial positions need to deploy a large set of soft skills – including management of gender and other types of diversity – but do not currently benefit of organisational support in this respect						

	Those in managerial positions need to deploy a large set of soft skills – including management of gender and other types of diversity – but do not currently benefit of organisational support in this respect						
Working Conditions	Tendency towards increased use of non-permanent contracts – particularly detrimental for women						
	Part-time work perceived as putting a break on women's careers						
	Pay gap – a fact. Does it depend on gender-bias in job classification /evaluation?						
	Lack of career prospects/motivation schemes for administrative staff – mostly women						
	Maternity leave perceived as putting a break on women's careers						

Challenges *3. Organisational Culture/Stereotypes*		BTH Sweden	CSIC Spain	FTM Serbia	IFP Germany	INFN Italy	NIC Slovenia
Culture and stereotypes	General perception that demanding nature of research work does not allow for easy conciliation of work-life balance						
	Leadership is often – unconsciously – related to male behaviours and symbols and assumption women not interested in managerial careers						
	Primary child minders and caregivers for the family remain women						
	Maternity leave perceived as putting a break on women's careers						
	Women still remain mainly responsible for domestic chores						
	There tends to be a high degree of awareness gender stereotypes but in reality a tendency to "accept" these.						
	"Women must make a choice" between career and family life						
	Both women and men contribute to the cultural transmission of stereotypes and permit their institutionalisation						
	Potential gender biases in evaluation of excellence/performance and hidden in the accepted social representation of science.						

3.5.2 Institutional change for gender equality: examples of interesting results

In BTH Sweden

Following the presentation and public discussion of results of the PGA with management, the internal committee for equal opportunities, which had been dormant for a few years, was revived and given higher visibility. The Head of the committee is the Head of Human Resources. As a further result, the Head of Human Resources has started an in-depth screening of HR procedures from a gender perspective, finding that more needs to be done.

The new BTH management scorecard includes gender equality as an area of performance.

In INFN Italy

Following up on the results of the PGA, an innovative pilot system for HR management, competency-based and free from gender bias has been developed. The system was inspired by CERN Competency based system, as CERN has a similar mandate than INFN. With support from technical partners, the INFN Genis Lab team conducted participatory focus groups to collect colleagues ideas on the values and the core behavioural competences needed to work well in their organisations. "Respect for differences" has been included in the core values of the institute mission statement.

In NIC Slovenia

The PGA found out that in spite of conducive work-family legislation, an historically high presence of women in technical professions, and positive, more recent, trend of young men's attitudes towards sharing family responsibilities, unconscious biases about women as mothers and gender stereotypes still play an important role. NIC decided to tackle this structural problem introducing rules on the use of gender-sensitive language in the institution, and with a visual campaign on women's role in chemical research. In addition, in collaboration with the union, a new policy prohibiting sexual harassment was adopted.

3.6 Conclusions

- The participatory approach proved itself as being particularly successful in opening a conversation on a topic that met a high degree of resistance or "fatigue" in the participating organisations.
- The standardisation of the methodology allowed comparability of results and at the same time adaptability to specific organisational dimensions or structures.
- A challenge related to the HR dimensions is that many scientific organisations do not have a proper "HR department" but rather "personnel administration" and depend for their recruitment, promotion and separation processes on national level laws. This was used sometimes as a system to "discharge responsibilities" but through dialogue it was possible to find areas which still called for useful organisational level actions . Where HR departments take a more "modern" approach, innovative and promising initiatives have taken place.
- The audit raised a lot of expectation and enthusiasm but the ensuing process of action planning took a long time. In future projects it will be necessary to preceed or accompany the PGA with specific capacity building actions for the internal project teams.
- Although all institutions had committed to the process at a top level, in some cases this was more on paper than in practice. Accountability and "passive resistance" at top decision making levels is an issue which will need to be addressed openly at the outset of similar initiatives.
- The inclusion of gender equality monitoring - as part of the ordinary institutional monitoring systems - has been systematically included in the action plans of all participating organisations as it is the basis for any further structural change.

4. Gender Budgeting

(Angela Genova and Barbara De Micheli, Fondazione Giacomo Brodolini)

4.1 Introduction

This part of the Genis Lab Guidelines focuses on the dimension of gender budgeting and is based on the results of the introduction of gender budgeting in the six scientific organizations taking part in Genis Lab project, with the aim of promoting structural changes in the organizations to increase the presence of women in science.

While gender budgeting has been used as tool for gender mainstreaming at administrative levels, such as regions and municipalities, there is limited literature on implementation of gender budgeting in scientific organizations[15], therefore the proposal for a theoretical and methodological approach to implement gender budgeting in these organizations has been drawn up through active discussions with several stakeholders representatives of these organizations and international experts taking part in the project[16].

This part of the Guidelines focusing on gender budgeting is articulated in three main parts. The first introduces the definition of gender budgeting, the second discusses the reason for using such tool in promoting women in science. The third outlines the details of the theoretical and methodological framework developed in the Genis Lab project. Then some general concluding notes and learnt lessons are suggested.

15. Gender Budgeting as an instrument for managing scientific organizations to promote equal opportunities for women and men - with the example of universities; September 2006 August 2008, http://frauenakademie.de/projekt/e_projekt.htm.

16. The team of external evaluators supporting Genis Lab project was composed by: Elizabeth Villagomez, Francesca Bettio and Ailsa McKay who prematurely passed away.

4.2 What is Gender Budgeting ?

Budget is considered a gender-neutral policy instrument because its data, expenditure and revenue do not mention women and men either. Budget appears gender neutral, but the issue is that budget usually ignored the different, socially determinate roles, responsibilities and capabilities of men and women[17]. This gender neutral approach is a taken for a granted framework that brings about unequal gender outcome. Although the provisions in a budget may appear to be gender neutral, they actually affect men and women differently because their roles, responsibilities and capabilities in any organization are never the same. Therefore more than neutral gender budget has to be considered gender blind[18].

Gender budgeting aims at mainstreaming gender into the decision process of resource allocation in organizations. The generally accepted definition of gender budgeting emerges from the report of the special group of the Council of Europe, which in 2005 reached the conclusion that:

"Gender budgeting is an application of gender mainstreaming in the budgetary process. It means a gender-based assessment of budgets, incorporating a gender perspective at all levels of the budgetary process and restructuring revenues and expenditures in order to promote gender equality."[19]

The same definition is then also used in the framework of the European Union. The overall aim of gender budgeting is not the mechanical division of financial means into equal parts or in equal proportion to the existing number of men and women, but rather an overall concept, based on solid analyses, for the financing and distribution of available resources according to the needs of both genders so

17. Source: Diane Elson (1997a), 'Gender-neutral, gender-blind, or gender-sensitive budgets? Changing the conceptual framework to include women's empowerment and the economy of care', Preparatory Country Mission to Integrate Gender into National Budgetary Policies and Procedures, London: Commonwealth Secretariat, p 1.

18. Debbie Budlender, Diane Elson, Guy Hewitt and Tanni Mukhopadhyay Gender Budgets Make Cents. Understanding gender responsive budgets. The Commonwealth Secretariat, 2002

19. Council of Europe (2005) Gender budgeting Final report of the Group of specialists on gender budgeting (EG-S-GB) http://www.coe.int/t/dghl/standardsetting/equality/03themes/gender-mainstreaming/EG-S-GB(2004)RAPFIN_en.pdf p.5

that they can be used by both men and women, as far as possible equally. If one of the groups is disadvantaged it would be possible to rectify such a situation by equalizing measures or redevelop the specific needs of the given group in this direction.

The European Union's commitment to gender budgeting was also reflected in the Roadmap for Equality between Women and Men (2006-2010), which considered gender budgeting as a tool for the implementation of gender equality. In 2009 the Council of Europe published a handbook on the practical implementation of gender budgeting[20].

4.3 Why applying GB as tool for institutional changes?

Financial choices reflect the dominating culture with related power relationships, as power is created through the concentration of resources. It is then important when addressing gender equality to understand and monitor how resources are distributed and what effects the assignment of resources has on each gender.

The experience of the Genis Lab project shows that Gender budgeting is a crucial tool to contribute in tackling several issues to promote structural changes in research institutions towards gender equality. Gender budgeting, in fact, specifically contrasts opaqueness in decision making process that has been considered as the first main problems faced by research institutions towards structural changes for gender equality.

Data from the Genis Lab project confirm that decision making process is mostly concentrated within bodies and committees that do not adequately include women and that their processes and decision-making mostly fail to be gender-sensitive, in tune with the already available European data[21]. Therefore, gender

20. Gender Budgeting: practical implementation, Handbook prepared by Sheila Quinn, Directorate General of Human Rights and Legal Affairs, Council of Europe, April 2009. Available at: http://www.coe.int/t/dghl/standardsetting/equality/03themes/gender-mainstreaming/CDEG(2008)15_en.pdf.

21. European Commission (2012) Structural change in research institutions: Enhancing excellence, gender equality and efficiency in research and innovation. Report of the Expert Group on Structural Change. Chairperson: Inès Sánchez de Madariaga . Rapporteur: Tiia Raudma http://ec.europa.eu/

budgeting contributes in increasing transparency in processes contrasting the phenomenon of the "old boys" networks and patronage[22].

Moreover, gender budgeting, as a tool of social accountability, contributes in increasing awareness of direct and indirect discrimination of systems and structures, policies, processes and procedures in scientific organizations. Therefore, Gender budgeting, despite does not directly work on stereotypes, aims to increase awareness on discrimination and therefore it is a crucial tool to be implemented as part of a broader strategy to foster women participation in science.

The principle of Gender Budgeting contributes on one hand to the fair distribution of financial resources and on the other hand increases the transparency of budgetary expenses. In the final phase this results in ensuring the maximum efficiency of the used means.

4.4 How to implement gender budgeting in scientific organizations[23]?

In tune with the main literature on gender budgeting[24], gender budget implementation in scientific organizations would comprise two main phases:

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research/science-society/document_library/pdf_06/structural-changes-final-report_en.pdf

22. European Commission (2012) Structural change in research institutions: Enhancing excellence, gender equality and efficiency in research and innovation. Report of the Expert Group on Structural Change. Chairperson: Inès Sánchez de Madariaga . Rapporteur: Tiia Raudma http://ec.europa.eu/research/science-society/document_library/pdf_06/structural-changes-final-report_en.pdf p. 15

23. This part of the guidelines presents the theoretical and methodological proposal for the implementation of gender budgeting in scientific organizations that has been developed within Genis Lab team, based on the existing literature and adapting the previous well know methodology to the context of the scientific organizations. Fondazione Brodolini has been responsible for developing and implementing gender budgeting, nevertheless the theoretical and methodological approach is the result of the discussion with the other technical partners (ILO and Donne e Scienza) and with the Genis Lab team of each scientific organization taking part in the project.

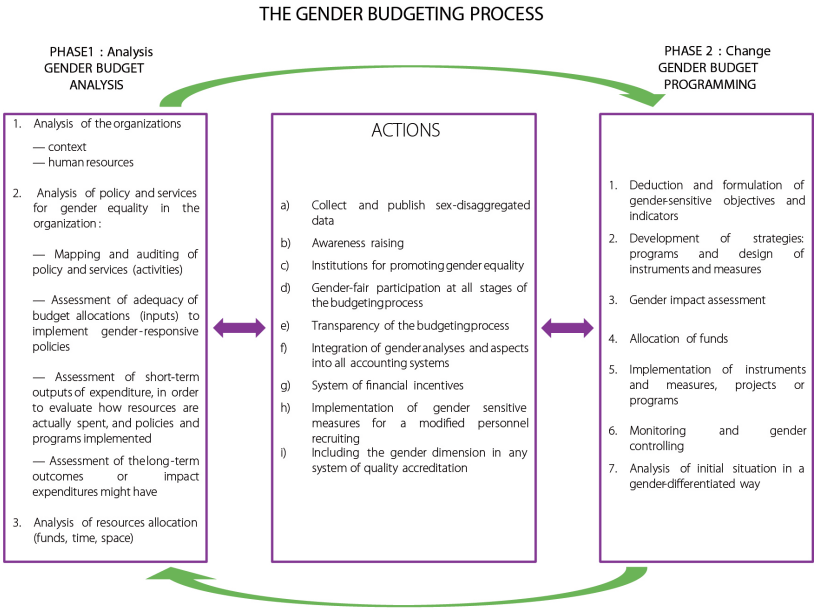
24. Elson, Diane. 2002. "Gender Responsive Budget Initiatives: Some Key Dimensions and Practical Examples", in *Gender Budget Initiatives: Strategies, Concepts and Experiences*, Unifem, New York, pp. 15–29.

1. Gender budget analysis aimed at assessing, from a gender perspective, the distribution of resources in the organization;

2. Gender budget programming aimed at changing the distribution of resources according to gender-aware criteria.

Gender budgeting analysis is the first phase towards gender budget programming. The gender budget analysis and gender budget programming have been each subdivided into several main steps, as outlined in Figure 1.

Figure 1. The phases of gender budgeting.



The phase of analysis is articulated in three main stages.

- **The first aims** to outline the context of the organization, along with its human resource elements, within a gender-aware perspective.
- **The second stage** analyzes policy and services aimed to support gender equality. It considers the activities and the related input invested, as well as the output and the long-term outcome of this policy. This is a crucial element, since, in most of the organizations, certain policies have already been developed to promote gender equality, however they have not yet been properly evaluated with regards to their impact[25]. Organizations taking part in the process of implementing gender budgeting as a tool for achieving structural changes highlight the need of indicators to monitor and evaluate improvement in women's participation in research activities, taking into account services that have been offered to facilitate the balance between family and work responsibilities. Gender budgeting therefore represents the framework for collecting and monitoring such gender-disaggregated data.
- **The third and final stage** in the analysis phase consists in focusing on gender differences in the allocation of resources in the organization. The specific characteristics of scientific organizations have rendered necessary the extension of the concept of *resource*, allowing the analysis not only of the traditional economic resources available to the organization, but also of another two resources that are fundamental for carrying out research: time and space. According to the literature, time allocation among academic faculties presents gender differences, affecting scientific outputs[26]. Regarding space, in 1999, at the Massachusetts Institute of Technology (MIT), the Committee on Women in Faculty brought the existence of discrimination, between women

25. Timmers, Tanya Marie, Tineke M. Willemsen and Kea Gartje Tijdens. 2010. "Gender diversity policies in universities: A multi-perspective framework of policy measures." *Higher Education,* 59(6), 719–735.

26. Winslow, Sarah. 2010. "Gender Inequality and Time Allocations Among Academic Faculty", in *Gender & Society, Vol. 24, No. 6,* December 2010, pp. 769–93.

and men, to light relating it to space allocation[27]. Therefore, in investigating resource allocation in scientific organizations, time and space were considered as important elements to be analyzed.

For an organization devoted to research activity, economic resources are certainly important. The application of gender budgeting includes the analysis, from a gender perspective, of the allocation and management of the economic resources, distinguishing principally between internal resources allocated by boards within the scientific organization, and external ones that are allocated through competition with other organizations. EU projects, governmental and non-governmental national projects, and some private enterprises, are examples of external funds. These external funding sources have enjoyed increased attention in recent decades, becoming a crucial source of economic resources.

All Genis Lab partners agreed on the importance of investigating internal and external resource allocation. Some data from the Serbian partner showed that, compared to men, women have lower application rates for funds, and that they gain access to innovative sources of funding later than men, although women's success rate for applications is higher. (MTF Genis Lab Narrative Report).

The first element to consider in implementing gender budgeting in scientific organizations is the analysis of the fund allocation procedure, examining how it might be made more transparent, and how gender-fair policies might be incorporated in it. To this end, the number and role of women in the resource allocation procedures requires a specific focus. Criteria of allocation play an important role, and the discretionary power regarding internal fund allocation must also be investigated from a gender-aware perspective.

27. Massachusetts Institute of Technology MIT. 1999. "A Study on the Status of Women Faculty in Science at MIT How a Committee on women Faculty came to be established by the Dean of the School of Science, what the Committee and the Dean learnt and accomplished, and recommendations for the future." Massachusetts Institute of Technology.

In the Spanish scientific organization, project leaders are mainly male, with regard to all the different typologies of projects. In 2011, the total number of male project leaders is twice those of female project leaders. (CSIC Genis Lab Narrative Report).

Moreover, investigating the sources of external funds, the attention paid to any gender issue has to be analyzed. Some external funds could be a target for improving research with a gender focus, such as gender medicine, or gender engineering; or there could be funds aimed to improve gender equality in the organizations. The rate of women applying for and coordinating projects has to be analyzed, as the gender composition of the research teams.

Gender budgeting implementation in the Swedish organization showed that female researchers' activities depend more on sources of external funding, especially for post graduate and lecturer grades. The results confirm misallocation of resources being of such an extent that there is no equal opportunity for men and women doing research or career development. Moreover the review of research strategies and interviews with heads of schools confirms the lack of gender perspectives. No school was able to present a current strategy or a commitment to equalizing resources between sexes. However, most of the deans were open to such work (BTH Genis Lab Narrative Report).

Time and space are other resources of fundamental importance in the carrying out of research activities. The application of gender budgeting in scientific organizations requires, therefore, an analysis of time and space management from a gender perspective. The analysis of time management not only focuses on the distribution, between genders, of housework, family care and work[28], but also,

28. Gálvez-Muñoz, Lina, Paula Rodríguez-Modroño and Mónica Domínguez-Serrano. 2011. "Work and Time Use By Gender: A New Clustering of European Welfare Systems," *Feminist Economics*, 17:4, 125-157. Anxo, Dominique, Letizia Mencarini, Ariane Pailhé, Anne Solaz, Maria Le-

regarding the time dedicated to work, it looks in detail at time management procedures for the various activities required in doing research. An analysis of gender differences in the use of time devoted to research and to the many other activities required such as teaching is therefore made.

Data collection concerning time and space requires the introduction of innovative tools. The discussion within the gender budgeting working groups on tools to measure time management brought a common skepticism towards the use of daily diaries (to be filled in by personnel) to light, in part because of the added workload that this would represent for the researchers, and in part because it might be perceived as a tool for scrutinizing the actions of members of the organizations, and would therefore meet considerable resistance[29]. Nevertheless, some outcome indicators have been selected to measure the gender-specific time management among researchers. Foremost among these we have the number of publications and patents, the number of teaching hours and travelling time.

Patents name and publishing in scientific journals are considered as output indicators of research. Comparative analysis show that male researchers have a more favorable results in both of these indicators. Data from Spanish organization show that the male name is more frequent in the first place in patents while are male names the last the most prestigious, in scientific publications. The number of scientific publications with male names as last is double to those with female name. (CSIC Genislab Narrative Report).

Space distribution represents an underestimated dimension of analysis in a gender perspective. However, it would be necessary to collect the data systematically before expressing any judgment on the issue. Most of the organizations taking part in the project did not consider space allocation to be a crucial dimension. Nevertheless, one of the southern scientific partners, when discussing the defini-

tizia Tanturrie and Lennart Flood. 2011. "Gender Differences in Time Use over the Life Course in France, Italy, Sweden, and the US." *Feminist Economics,* 17:3, 159-195.

29. Implementing a short questionnaire would be have been helpful to identify the supporting work usually done by women.

tion of the gender budgeting methodology, brought to light its own experience: in the process of reallocation of office space after refurbishing one of the buildings: the map of the assigned offices showed a clear gender-divided imbalance. Members with the same roles had been assigned different types of office. Men had single rooms, while women had shared rooms. Based on an analysis of the literature and on this experience, space has been introduced as one of the relevant resources to consider in implementing gender budgeting in scientific organizations.

Another issue was to identify the items on which to focus in investigating space distribution. Three main features were defined: office distribution, laboratory access and infrastructure access. The first was assessed through mapping the offices, incorporating a gender variable. Access to laboratories presents more sensitive elements. The presence or absence of explicit criteria in accessing laboratories is the first element to consider.

The southern partners discussed how difficult it is for some young research women to access the laboratory during daytime hours, when it is mainly used by senior men professors, who have priority of access at any time of the day. The issue assumes different aspects in eastern and northern experiences, where the number of women researchers is higher, and gender equality is a more consolidated issue. However, all partners agreed on the importance of collecting data on this variable.

For the main three types of resource — funds, time and space — different sub-dimensions to be investigated have been outlined, and for each of these a specific item to be analyzed has been defined. In order to make the process clearer, leading questions have been presented, and actions and methodologies suggested in order to obtain the outlined output and related indicators.

Concerning time allocation

Data from the Swedish Agency for Higher Education in 2007, pointed out that the distribution of working hours differs between men and women, as men devoted more time for research than women. Female lecturers and research assistant spend less time on research and more time on other tasks compared to men. Similar results have been shown in the survey involving 51 academic staff in the Swedish organization taking part in the project. (Data from BTH Report).

Concerning space allocation

Data analysis points out that in both organizations the majority of staff members have offices next to another person of the same sex as themselves. Therefore women sit side by side with women, men sit with men (Data from Spanish and Swedish report).

Table 1. Summary of dimensions to be considered in the gender budgeting analysis implementation among scientific organizations.

Dimension	Sub-dimension	Item
Funds	Internal funds	Procedure of allocation
		Allocation criteria
		Beneficiaries
		Targeted towards equal opportunities
	External funds	Source of funds
		Access criteria
		Beneficiaries
		Topic of research

Time	Professor	Research activities
		Managerial — coordinator of activities
		Fund raising
		Teaching
	Junior	Research activities
	researcher	Managerial — coordinator of activities
		Fund raising
		Teaching
	Non-structured	Research activities
	junior researcher	Managerial — coordinator of activities
		Fund raising
		Teaching
Space	Office	Professor
		Structured researcher
		Non-structured researcher
	Laboratories	Professor
		Structured researcher
		Non-structured researcher

The second phase in the gender budgeting implementation, based on the results of the first phase, consists of programming changes in resource allocation within the organization, in order to foster equal opportunities. In the programming phase, gender equality objectives,strategies, and gender impact assessment tools, will be developed according to the allocated resources. Changes will be monitored and reanalyzed periodically, to determine whether adjustments are

needed. Adequate dissemination of the results of the gender budgeting analysis is recommended, in order to increase gender awareness and implement further gender-focused structural changes.

Moreover, a certain selection of actions[30]has to be considered crucial and common to both phases:

The collection and publication of **gender-disaggregated data** is a fundamental element in revealing gender discrimination and debunking the apparent gender neutrality of the budget. As the experiences on gender budget show all over the world, the publishing and discussing gender-disaggregated data, as part of the gender budgeting process, raise awareness about gender discrimination and inequalities[31]. However, obtaining disaggregated data may well represent the first serious operational challenge. Gender-disaggregated data were not available in all of the scientific organizations involved in the project. Therefore, to facilitate the process of introducing a system to collect gender-disaggregated data, the following steps have been defined: (1) check whether gender-disaggregated data are already collected in the organization, even if they have not yet been analyzed; (2) if data are not collected, check whether it would be possible to add gender-disaggregated information to the existing data-collection system, or to introduce a new system; (3) where necessary, update or replace data-collection systems, ensuring that resources are adequate to the task, and that responsibilities concerning the gender-disaggregated data are well defined.

1. The whole process of implementing gender budgeting must be supported by **actions to raise awareness of gender discrimination**. Most of the organizations have a consolidated experience in gender equality campaigns and actions. However, stereotypes remain the most difficult aspect to tackle. The neutrality of science is at odds with the widespread over-representation of men. In most of the organizations, the gender neutrality of criteria applied in evaluating scientific careers (such as, for example, number of publications

30. Gender Budgeting as an instrument for managing scientific organisations to promote equal opportunities for women and men - with the example of universities; September 2006 August 2008, http://frauenakademie.de/projekt/e_projekt.htm.

31. Sharp, Rhonda and Ray Broomhill. 2002. "Budgeting for Equality: The Australian Experience", in *Feminist Economics,* 8(1), pp. 25–47.

and hours of teaching) penalized women who have children, because childcare responsibilities are not considered. Nevertheless, even in those cases in which they are formally recognized, stereotypes are still playing a significant role, affecting the evaluation process: "the same element can be judged positively if it is in a man's curriculum vitae or negatively if it is in a woman's curriculum" according to a member of Genis Lab working group who has had experience as an equal opportunities representative in a recruitment board

2. **Institutions specifically aimed at promoting equal opportunities** should **be extensively involved in the process of implementation** of gender budgeting in scientific organizations. In all of the studied organizations, these institutions have a weak role, although there are relevant differences between northern and eastern organizations, on one hand, and southern organizations, on the other. The former present an organizational culture that takes gender equality for granted because of the concerted effort applied to this theme during the 70s and 80s. Nevertheless, while many institutions or committees dedicated to gender equality were established decades ago, their functions have since then diminished to such an extent that they have now become mere formal institutions with no resources or power. In the Swedish and German experiences, the gender equality commissions at the beginning of the Genis Lab project, year 2011, were no longer active, although action to revitalize them had been recently introduced. In the Spanish and Italian scientific organizations taking part in the project, gender-equality committees had been established in the last ten or fifteen years, but with very few resources and rather vague objectives. Moreover, the analysis of the role of gender-equality committees in the six scientific organizations taking part in the project shows that, when they are present, most members of the organizations are not really aware of their work and role. Therefore, in order to promote a more active relationship between members of the scientific organizations and gender-equality committees, the possibility of identifying a gender-aware member in each local department or research group has been discussed. Its main role would be to report data periodically and provide a brief analysis of the research group's activities according to a gender perspective, supporting the process of gender-disaggregated data collection.

3. Action should be taken to guarantee **gender-fair participation and full transparency at all stages of the budgeting process**. The main challenge

is to make the fund allocation process explicit, considering the formal and informal elements. Moreover, the fair participation policy has to overcome the under-representation of women in higher hierarchical positions. In most of the cases, therefore, this is one of the dimensions that should be considered as the principal aim of the gender budgeting process.

4. Gender analysis must be part of the **whole accounting and quality-accreditation system**. In recent decades there has been an increasing attention paid to the quality accreditation system in all scientific organizations. Attention to the gender dimension is part of the system in the northern and eastern countries, but is not yet considered in the southern ones. For example, gender analysis is not requested in the quality accreditation system in Italy. The organizations taking part in the program discussed the opportunity of introducing an experimental focus on gender, adding this dimension in the presentation of the organization's data, and then supporting activities lobbying its introduction at a national level. In the Swedish organization, a specific gender scorecard has been introduced as part of the Genis Lab project output.

5. Another action to be considered is a system of financial incentives together with an implementation of gender-sensitive measures for a modified **personnel recruiting strategy**. This is a rather controversial issue. Neutrality of science would not allow any kind of explicit discrimination in favor of women that thereby undermine male prospects.. Nevertheless, the experience of Sweden during the 1970s highlights the effect that positive discrimination actions have had on increasing the number of women in science. Nowadays, in some of the recruitment systems of the analyzed organizations, there are features that have to be considered as fostering equal opportunities, such as the opportunity of considering the relationship between number of children and years of research activities and publications. Nevertheless, a detailed microanalysis should be implemented in order to evaluate its correct implementation.

4.5 Lesson learnt

In all organizations taking part in our Genis Lab project the issue has not been the lack of a legal framework for equal opportunity rights, but the real accessibility to these rights. Gender budgeting has been therefore an innovative tool to **practically support** strategies and promote actions to narrow the gap between a formal and a substantial equality.

Structural and institutional changes in organizations towards gender equality require a deep awareness of inequalities among all members of the organization. Inequalities that are not recognized by the single member of the organization and by the entire organization are unquestioned and therefore perpetuated. Gender budgeting is a crucial tool to support the **increase of awareness on gender discrimination**, both formal and informal, focusing on punctual analysis of resource allocation in a gender perspective.

Nevertheless, the introduction of gender budgeting in scientific organizations brought several key aspects, that have to be considered in promoting institutional changes, to light:

1. the initial **resistance** (see chapter 2 by Donne e Scienza) and skepticism of the members of these institutions. This is due in part also to the existence of a limited literature on implementation of gender budgeting in scientific organizations. The lack of consolidated methodology based on previous experiences of gender budgeting had the effect of disorienting partners. Therefore, the first challenge in introducing gender budgeting in scientific organizations was to build up an innovative methodology. This part of the guidelines summed up the effort done to define a specific gender budgeting methodology to enforce gender budgeting in scientific organizations.

2. **Data collection** presented several criticalities. Data concerning fund allocation where the most accessible even if their analysis required additional qualitative information to better interpret them. While the collection of data on time and space allocation, according to a gender perspective, has been a completely new process. Quantitative and qualitative data concerning time and space allocation need to be carefully collected by gender sensitive trained researchers.

3. **The turnover in management staff**. Gender budgeting has to be considered as a specific tool to foster gender mainstreaming in scientific organizations as part of a broader tailored action plan. In tune with the literature on policies to contrast discrimination in organizations, the commitment of the heads of administrations and management has been crucial in supporting gender budgeting implementation. In some of the scientific organizations taking part in the project, the turnover in management staff affected differently gender budgeting implementation.

4. **Gender sensitive organizational culture** in the scientific institutions. The widespread gender sensitive organizational culture is pivotal to guarantee adequate implementation of gender budgeting. Therefore introduction of gender budgeting should be accompanied by training activities concerning gender, targeted to all members of the organizations.

5. **Gender budgeting as circular activities**: between analysis and programming. Data gathering is one of the pivotal features in gender budgeting implementation and specifically in its first phase: the analysis. Once data have been collected, analyzed and discussed, new objectives have to be settled to foster gender equality, according to a circular approach. Therefore gender budgeting should be part of a regular set of actions and not an isolated and sporadic experience.

6. **Gender budgeting to break down the 'Matthew effects'**. The 'Matthew effect' is the systematic under –recognition accorded to those who have little to start with, as theorized by Robert Merton in 1968 based on the Bible, Matthew's gospel 13:12. Introducing gender budgeting in scientific organization would be a starting point to put in discussion such widespread path in science, directly affecting women who are rarely holding a leading position in scientific organizations. Implementing gender budgeting would support the promotion of the opposite effect, called 'Matilda effect' named after Matilda Gage, who was the American suffragist and feminist critic[32].

32. Margaret W. Rossiter (1993) *the Matthew Matilda Effect in Science*, Social Studies of Science. 23: 325 – 341.

To conclude, based on the active involvement of Genis Lab teams in each scientific organization and of all the other technical partners, Genis Lab has defined a detailed theoretical and methodological approach to introduce gender budgeting in scientific organizations, presenting many potentialities to foster institutional changes towards more gender equality and innovation. Nevertheless these guidelines are the starting point for a process that necessary involves a widespread knowledge of gender discrimination in each scientific organization across Europe and a strong commitment of management, helped by a national and European support, to gender equality policies. Therefore, Gender budgeting in scientific organizations could play a crucial role in institutional changes towards gender equality in science; nevertheless, its potentiality can be fully accomplished only when it is part of a long-term strategy aiming at supporting innovation and improvement in the organization, within a broader context of promoting women's participation in science.

Overall concluding remarks

Genis Lab and the institutional change experience

The analysis of TAPs showed some important commonalities among the six scientific partners: the impact of the crisis and uncertainties about the future, the perception of science as undergoing an important period of transition, the increase of new forms of work both as a negative trend (precariousness, fierce competition, increasing dependency on needs of external economic actors) but also in their more positive aspects (collaborative, going beyond institutional borders, innovation spurred by partnerships with private actors, calling for stronger accountability of research). All these elements showed strong gender dimensions, in some cases increasing challenges and in other offering opportunities to make science a more enabling environment for women and the youth. The need to strike a balance between work and private life as well as to re-cognize and redistribute care work was also a common trend for those institutions in countries which do not recognize care services as a matter of public policy.

Some interesting differences can be detected among the various institutions, in relation to their countries' historical contexts:

- In Sweden, the concurrence of a history of high female labour market participation - particularly in the public sector – with high-quality public provision of care services, gender stereotypes seem to be more influencing the choice of studies and careers. Occupational segregation and related wage-setting mechanisms seem to be having an impact on a persistent pay gap, since female-dominated. In addition, Swedish authorities seem to have come to the recognition that "collegial culture" in universities and research institutions still give space to a "grey area" in which potential discrimination against women can still persist.
- The relatively recent, and somewhat patchy policies to attract and maintain women in the labour market of countries like Italy and Spain seem to coun-

terbalance the negative impact on labour market participation with a more positive trend in diversification of academic subjects and careers, and a relatively higher interest of women to undertake scientific careers. However, the lack of adequate care policies and age plus male-dominated working cultures and environments seem to function as "sticky floors", obliging women to choose between scientific research and family.

- Countries that have experienced egalitarian policies during the communist time stand out for both higher levels of participation and lower levels of occupational segregation. However, egalitarian policies with their generous provisions targeting mothers (e.g. long maternity benefits) did not challenge gender roles. New and more transformative policies are being adopted but there are resistances to see parental responsibility as a shared task still today, and also accept that leadership in science does not imply "giving up" motherhood.

- The received idea of women who make it as scientific leaders as a "non-women" or "an aggressive person" was reported as persistent in most institutions, which opened up a reflection on how the organizational environment and career paths can be made more gender-friendly and more open to "diverse" leadership styles.

All the six pilot Scientific Organisation involved in Genis Lab, despite their different dimensions and the different cultural environment in which they perform, have shown some similarities and some challenges in the definition and implementation of the Tailored Action Plans:

- a gender oriented structural change process has been launched in all the organisations, and despite the quantitative and qualitative impact that can be monitored in a 2 year lasting process, an innovation process, with an impact in terms of innovating the institutional mechanisms, has been started up.

- the Genis Lab experiences have shown that is very important to start the change/innovation process from the creation of a baseline in order to be able to monitor developments concerning change and gender equality. Involving organizations since the beginning in creating the base line (ie via a participatory audit process) is already part of the process of change.

- It is also important to recognize that scientific research institutions can rarely count on internal change management or sociological capacities. Since the outset, it should be clear that internal project teams need to be established with full and continued management support, and specific capacity development actions (on gender analysis and planning, change management, advocacy and lobbying, as relevant) should be foreseen in support of internal change agents.

- At the same time the exchange of information/knowledge between technical and scientific partners has been crucial in order to define the fact that Universities and Scientific Research centers are "special forms of organisations", in which the organization's specific level of autonomy has continuously to struggle among different forces: the International Scientific Community –which gives the rules for the definition/recognition of excellence; the National Research Policies and Funds and the single senior researcher's autonomy in research. The organizational level of autonomy and the identification of different levels of power of different stakeholders have, of course, a huge impact on determining structural change.

- In addition, in the framework of a project dealing with different cross cultural issues, systematic and continued efforts needed to be done to be sure all partners shared the same intendment on the words they used (defining and re-defining is part of the process of change)

- All organizational change initiatives face resistance, and this is expressed in multiple ways. In the case of Genis Lab, although there was not explicitly resistance against gender equality in science, many partners found it difficult to accept that gender disparities may be related to the negative interplay between gender and science stereotypes. Finding internal and external allliances with the right stakeholders, planning negotiating steps and procedures, engaging and building on common interests of different groups within the organization are all crucial elements for success.

Acknowledgements

We would like to thank all the persons who have contributed to the good implementation of the project, namely:

Manuelita Mancini, Antonio Dell'Atti, Annamaria Simonazzi, Barbara Leda Kenny, Silvia Sansonetti (FGB);

Blerina Vila, Simonetta Cavazza, Carita Pettersson, Marija Babovic, Claudia Fuggiaschi (ITCILO)

Cristina Mangia (ADS);

Ivanka Popovic, Bojana Obradovic, Aleksandra Peric Grujic, Petar Uskokovic, Andjelika Bjelajac (FTM UB);

Majda Žigon, Polona Pečnik, Maja Mirič, Zorica Crnjak Orel (NIC);

Sandra Martinka, Achim von Dungern, Victoria Albrecht, Brigitte Voit, Alla Synytska, Kerstin Lippmann, Anita Förster (IPF);

José Maria Kenny, Nicoletta Rescignano, Laura Peponi, Carmen Mjiangos, Rebeca Hernandez (ICTP/CSIC);

Oretta Di Carlo, Mariella Paciello,Patrizia Cenci, Sandra Leone, Kristina Zima, Sara Arnone, Sabrina Argentati; Roberto Gomezel; Alessandra Filippi; Daniela Ferrucci; Giovanni Mazzitelli; Speranza Falciano; Antonio Zoccoli; Luigi Giunti; Renato Carletti; Silvia Dalla Torre; Umberto Dosselli (INFN);

Lena Trojer, Kerstin Gustavsson, Rebecka Molin, Linda Paxling, Pirjo Elovaara (BTH);

A special mention goes to the scientific committee of the Genis Lab project, who took care of the external evaluation of the activities with TAPs, namely:

Lenni George, Nat Clegg, Elizabeth Villagomez, Francesca Bettio, Brigitte Mühlenbruch, Maren Jochimsen, Mina Teicher, Päivi Korvajärvi

Finally a special expression of gratitude goes to those who contributed with expertise and passion, but passed away during the course of the project:

Francesca Molfino, senior researcher of ADS on gender stereotypes.

Petra Ulshoefer, senior gender expert and audit facilitator, ITCILO.

Ailsa McKay, member of the Scientific committee.