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Synthesis Report

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General Information on EFFORTI

EFFORTI (Evaluation Framework for Promoting Gender Equality in R&I) seeks to analyse and model the influence of interventions to promote gender equality on research and innovation outputs and on establishing more responsible and responsive RTDI (research, technology, development, innovation) systems. For this purpose, EFFORTI will:

- develop an evaluation framework which enables evaluators, science managers, policy-makers and programme owners to conduct a sound analysis of the research and innovation outputs, outcomes and impacts of gender equality measures across Europe, with a focus on the national level;
- design a differentiated concept to analyse a variety of policy measures and assess their performance, taking into account the diversity in the national policies as well as organisational contexts;
- derive general lessons for evidence-based and thus "good" policy-making in the field of gender equality within RTDI systems. This means that not only has progress towards more gender equality in RTDI been achieved, but also that RTDI has been able to benefit from this progress through enhanced scientific and innovation outputs and productivity, as well as through a higher responsiveness to societal needs and challenge.

Terms of use

This document was developed within the EFFORTI project, funded by the European Commission within Horizon 2020, by a consortium consisting of six partners, the Fraunhofer Society represented by the FRAUNHOFER ISI in Karlsruhe and the CeRRI in Berlin (coordinator, Germany), JOANNEUM Research (Austria), AAHUS UNIVERSITY (Denmark), UOC - UNIVERSITY OF CATALONIA (Spain), NaTE - THE ASSOCIATION OF HUNGARIAN WOMEN IN SCIENCE (Hungary), and INTRASOFT International (Luxembourg).

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Executive Summary

Main Objectives

The main objective of WP4 was to consolidate and validate the EFFORTI evaluation framework developed in WP3.

The specific objectives were to:

- Carry out concept and implementation analysis as well as impact assessments for the selected case studies
 - Develop and verify a theory of change for the selected case studies (log-frame/ theory of change)
 - Identify good practices of promoting gender equality in R&I.

Methodological Approach

- Development of case study guidelines including research questions, reporting templates (schematic and narrative) and semi-structured interview guidelines
- Carrying out of 19 case studies of gender equality in R&I interventions in 6 countries (Austria, Denmark, Germany Hungary, Spain, Sweden)
- Each case study used documentary analysis and between 4 and 12 semi-structured interviews with policymakers, programme managers, practitioners and beneficiaries.
- A log-frame and theory of change was developed for each case study based on analysis of the design, implementation and impact assessment of each case study
- Feedback of the case study work into the first draft of impact stories (version 1) developed in WP to feed into 'good practices' per type of intervention
- Comparative case study analysis was carried out using N-Vivo coding programme
- Validation of the indicators included in the EFFORTI Toolbox 1.0
- Validation of our approach by getting feedback from policymakers, programme managers and evaluators

Strengths

We carried out 19 case studies throughout Europe and a comparative analysis of the design (strengths and weaknesses), implementation (hindering and facilitating factors) which affect outcomes and impact (GE & R&I). The ToC approach meant that we were able to develop an approach that was relevant for each specific intervention but at the same time facilitated a cross-case comparative analysis. Providing a useful ToC methodology, template, tool and guidance for others to be able to apply the ToC to their own interventions for a better evaluation.

Weaknesses

Each case study was more time/resource intensive than initially envisaged. Each case study generated much more material than was initially foreseen – impacting on the comparative work. The wide range of types of interventions meant that the comparative analysis was challenging. A well-structured methodology including very well structured templates however facilitated the comparative analysis. We now have a great deal of in-depth information about the 19 GE intervention in R&I. A challenge is having the time and resources to carry out further analyses of the case study work.

Main Results

The 19 Case Studies demonstrated various strengths and weaknesses in the **design of the intervention** which could be linked to the types of interventions and their sub-fields of action. Strengths included: **data-driven and evidence-based intervention design**; **mainstreaming of gender equality** throughout every step of assessment procedures; tailoring a mix of measures, i.e. combining those interventions aiming for a greater gender balance higher up the career ladder with more structural change interventions. **Innovative intervention designs** for example ‘future potential analysis’ – where a candidate for a leadership position is assessed for her/his ‘future potential’ as oppose to past achievement was seen as a huge step forward really challenging those often gender biased assessment procedures. How **monitoring and transparency were embedded into intervention design** was also deemed a critical factor influencing impact. It was in those **interventions integrating the gender dimension into research content and tertiary education where the confluence between both gender equality and R&I outcomes and impacts** could be most easily detected. How the **gender equality concept is conceived**, i.e. as equal participation of women and men in R&I or as organisational and cultural change affected outcomes and impact

Various **facilitating and hindering factors were identified as impacting on implementation** throughout the case study work and unlike the analysis of design – these tended to be cross-cutting across all types of interventions and sub-fields of action. The **governance framework** was identified as a key driver contributing to impact – for example where legislation had not only been passed but was being acted on by an accreditation agency -integrating the gender dimension into tertiary education was being effectively implemented. Whilst **top-level commitment** is identified by the majority of our case studies as a key factor – **bottom-up buy-in** was also seen as an essential factor in interventions targeting both the HES and BES sectors. Another factor that seemed to effect the implementation of the intervention was **whether or not it was promoted as positive action measure**. In some instances – funding targeted specifically at women was perceived negatively, yet in other instances it provided a more concrete objective for the programme – which led to a higher demand. **Developing synergies with other initiatives** was deemed important and legitimizing for interventions in this field, so for example DFG standards in Germany and the Excellence initiative – were highlighted as trend setters, paving the way for the acceptance of gender equality interventions in R&I. **Resources** were deemed crucial in almost every case study for creating an effective and long-term impact. **Gender competence, experience and knowledge**, was highlighted as key – and in those case studies where implementation was not optimal – it could be linked to a lack of gender competence and experience. In one case study – external gender expertise could be brought into project design and this level of support greatly facilitated implementation. It was also highlighted how including the gender dimension or the participation in gender equality actions as positively evaluated in research curriculum might provide an incentive to boost competence. **Formulating targets and standards** followed up by **monitoring** were deemed necessary for successful implementation and conversely a lack of accessible data and information were deemed to have a negative impact on the smooth implementation of interventions. **Positive attitudes, interest and motivation** to participate were identified as crucial to successful implementation and on the contrary **resistance** was

identified as stymying an optimal implementation. Specifically **strategies dealing with resistance have proven effective**, for example integrating gender equality issues into meetings with directors and managers can underline gender equality as a relevant issue for the institution.

Gender equality and R&I outputs, outcomes and impacts were tracked throughout our 19 case studies and could be seen to be linked to type intervention and field of action. In some case studies where the main objectives were linked to gender equality - it was more difficult to discern R&I impacts and vice versa. In those programmes or interventions promoting scientific excellence or innovation – if they did not include an explicit gender equality objective – gender equality impacts were more difficult to track. If the case study included both objectives – both types of outcomes and impacts could be identified – but these might not be related. It was in the field of **integrating the gender dimension in research content and tertiary education – where impacts could really be classified under gender equality and R&I**. Unintended outcomes and impacts must also be taken into consideration.

Regarding the evaluations of the selected case studies we can see that the intensity and quality of programme evaluations is highly dependent on the national evaluation cultures. Some interventions were not monitored and had no data gathering mechanisms built into the intervention. Others were monitored but no evaluation or impact assessment had been carried out. In a few case studies, comprehensive monitoring had been carried out accompanied by evaluation which may or may not include impact assessment. **Thus, in cases where a strong evaluation cultures exists (like Austria, Germany and Sweden), the programs are more comprehensively evaluated than for example in Spain and / or Hungary.**

The validation work revolved around (a) Theory of change approach, (b) Key Indicators, and (c) Impact Stories. In some case studies the **theories of change we developed were verified by programme managers but in other case studies these were refuted**. In the majority of cases we were not able to substantiate with empirical evidence the links between a greater gender equality and higher R&I impacts although we were able to identify potential areas for future research. Regarding the indicators – in the majority of case studies – all useful indicators were included in the EFFORTI framework – we managed to **validate 251 out of a possible 692 indicators**. Case study work also fed back into the **EFFORTI impact stories** that form part of D4.4.

The ethical and methodological reflections highlighted the difficult and problematic nature of ascribing outcomes and impacts as direct effects of the interventions. A whole range of **contributory factors** must be taken into consideration.

Main Lessons Learned

- The log-frame/ theory of change approach has proved to be a valuable tool to think about how different factors may 'contribute' to the impact of interventions
- The log-frame/ theory of change approach useful to begin identify possible R&I outcomes and impacts of gender equality interventions (majority of cases no empirical data on R&I outcomes and impact)
- The I-O-O-I approach is useful to structure thinking in the evaluation logic, but it is important to emphasise the non-linearity of inputs from an intervention over processes to actual and measurable types of R&I effects.

- Various case studies cited that a lack of information and indicators regarding the intervention hindered effective monitoring and evaluation. In some cases project reports and monitoring data were inaccessible due to data protection regulations
- The intervention logic model supports and guides choices of relevant indicators, e.g. identified through the EFFORTI toolbox, to be included in the actual GE evaluation
- In the majority of case studies relevant indicators could be easily found within the toolbox (251 out of the existing 692 were used)
- In relation to the very slow pace of structural change, the most ill-placed assumption regarding the intervention is that its' impacts can and should be observed in a short period of time and its success is directly measurable
- Given the time-frame of the intervention it is impossible to carry out a thorough impact assessment detailing outcomes and impacts
- The intensity and quality of programme evaluations is highly dependent on the national evaluation cultures.
- A general consensus arising from the case study work is that interventions 'contributed' to the outcomes and impact of the intervention in combination with a complex array of contextual contributory factors
- Both gender equality and R&I outputs, outcomes and impact were more readily detected in those types of interventions aiming to integrate the gender dimension into research content and tertiary education
- Unintended outcomes and impacts must be taken into consideration in any thorough evaluation of a gender equality intervention in R&I

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Glossary

BES	business enterprise sector
CEWS	Centre of Excellence Women and Science
CV	curriculum vitae
DFG	German Research Foundation
EC	European Commission
EFFORTI	Evaluation Framework for Promoting Gender Equality in Research and Innovation
EGERA	Effective Gender Equality in Research and the Academia
EIGE	European Institute for Gender Equality
ERA	European Research Area
ERC	European Research Council
EU	European Union
GE	gender equality
GENERA	Gender Equality Network in the European Research Area
GEP	gender equality plan
GOV	government sector
H2020	Horizon 2020
HEI	higher education institution
HES	higher education sector
HR	human resources
IGAR	integration of gender analysis into research
ILO	International Labour Organisation
I-O-O-I	inputs, outputs, outcomes and impact
ISCED	International Standard Classification of Education
IT	institutional transformation
KPI	key performance indicator
MINT	mathematics, information technology, natural sciences and technology
MORRI	Monitoring the Evolution and Benefits of Responsible Research and Innovation
NGO	non-governmental organisation
OECD	Organisation for Economic Cooperation and Development
PhD	Doctor of Philosophy
PI	principal investigator

R&D	research and development
R&I	research and innovation
RFO	research funding organisation
RIA	Research and Innovation Action
RIO	Research and Innovation Observatory
RPO	research performing organisation
RRI	responsible research and innovation
RTDI	research, technological development and innovation
S&T	science and technology
SET	science, engineering and technology
SMEs	small and medium-sized enterprises
STEM	science, technology, engineering and mathematics
STEMM	science, technology, engineering, mathematics and medicine
STI	science, technology and industry
STRIDE	Science and Technology Recruiting to Improve Diversity and Excellence
SWAFS	Science with and for Society
TBIE	theory-based impact evaluation
ToC	theory of change
UN	United Nations
WP	work package

1. Introduction

This deliverable compares and summarises the 19 gender equality interventions in RTDI case studies carried out across Europe (Austria, Denmark, Germany Hungary, Spain and Sweden) in the framework of EFFORTI (Evaluation Framework for Promoting Gender Equality in R&I) H2020 research project.

This report details the findings of the comparative analysis of the 19 case studies carried out in the framework of the project. For each case study a theory of change was developed which was based on three main axes: concept/ design analysis, implementation analysis, and an impact assessment. These 19 case studies were delivered to the Commission (D4.1 Condensed reports of results on content level and methodological level for each case study) and are not publicly available. This report synthesises the findings across all case studies focusing on the strengths and weaknesses of the design of interventions by sub-fields of action, the common facilitating and hindering factors that have shaped the implementation of the intervention and lists the gender equality and RTDI outputs, outcomes and impacts of our case studies by sub-fields of action. Case study evaluations are then discussed followed by a summary of the ethical and methodological reflections of the case study authors. Case study work to validate the EFFORTI evaluation framework is then presented regarding the theory of change approach, the validation of the EFFORTI indicators and the EFFORTI impact stories.

The main objective of the case study work was to consolidate and validate the EFFORTI evaluation framework developed in WP3.

The specific objectives were to:

- carry out concept and implementation analysis as well as impact assessments for the selected case studies,
- develop a theory of change for the selected case studies (log-frame/ theory of change),
- validate the indicators used in the EFFORTI framework – particularly those included in the EFFORTI Impact Stories.

This report firstly outlines the EFFORTI conceptual framework – which uses a theory -based impact evaluation (TBIE) approach. It then presents the main EFFORTI logic model which considers inputs, throughputs and outputs and their gender equality and RTDI effects in the three main ERA gender equality objectives.

It goes on to provide a conceptual discussion of the theory of change work which we have applied to our 19 case studies carried out throughout Europe. This considers concept/ design analysis, implementation analysis and impact assessment.

The intervention typology is highlighted regarding intervention type and sub-field of action.

The methodology for the case study work is discussed regarding, the validation of the EFFORTI framework (theory of change; indicators and impact stories) ,the case study selection, methods, the individual case study reports and the comparative analysis.

The key findings are presented in relation to the strengths and weaknesses of intervention design and the common facilitating and hindering factors for implementation. Output, outcome and impacts by sub-field of action are subsequently identified.

Evaluation and monitoring of the 19 case study interventions is then discussed as is the validation of the EFFORTI framework and we conclude with some ethical and methodological reflections of the case study authors.

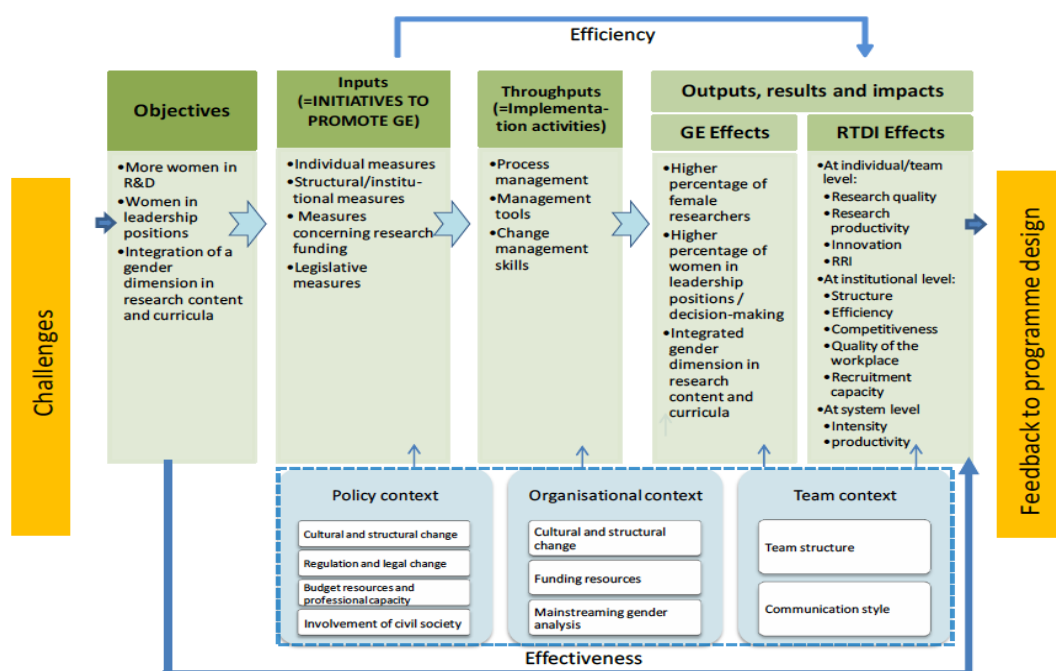
2. Conceptual Framework

The report “A Conceptual Evaluation Framework for Promoting Gender Equality in Research and Innovation, toolbox – A Synthesis Report” (D3.3) details the EFFORTI Evaluation Framework. It discusses the process, starting at the systematic review of the literature to the description of the evaluation model and further development of the overall tentative proposal of the evaluation framework of EFFORTI.

The EFFORTI framework uses a theory-based impact evaluation (TBIE) approach, “why and how” questions are asked instead of “how things would have been without” like counterfactual approaches do. The goal is to answer the “why it works” question by identifying the theory of change “how things should logically work to produce the desired change”) behind the programme and assessing its success by comparing theory with actual implementation (Leeuw 2003; Leeuw & Vaessen 2009; Leeuw 2012; European Commission 2013a). The main elements of theory-based impact evaluations are thus (i) an intervention or programme theory, i.e. an action and change theory that makes implicit or explicit assumptions on how and why an intervention should work, identifying impact pathways and mechanisms, and (ii) an empirical investigation of the programme/intervention theory. For this purpose, a contribution analysis is frequently used (Mayne 2015), addressing attribution through contribution analysis, using performance measures sensibly (Leeuw 2012; European Commission 2013a).

The EFFORTI intervention logic model forms the conceptual basis for the case study work. As seen in Figure 1, the EFFORTI Intervention Logic Model considers inputs, throughputs, and outputs, as well as results and impacts of the former two, and does so by differentiating between three levels (team, organisation, country). The Intervention Logic goes beyond the state of the art in evaluating GE initiatives by also focusing on outputs or effects related to RTDI. More specifically, the model aims at providing both theory and tools for analysing how GE related interventions contribute to the achievement of the three main objectives stated in the model below (more women in R&D, women in leadership, and integrating the gender dimension in research). The model also aims at showing how, once achieved, these objectives or effects can further affect desired RTDI effects such as the number of patents and number of publications and citations, but also new RTDI effects, such as providing answers to grand challenges and further promoting RRI. Additionally, the model includes three levels, i.e. team level (research quality, productivity, innovative outputs, and other RRI effects), organisational/ institutional level (workplace quality, recruitment capacity, efficiency, RRI orientation, competitiveness), and country/ system/ policy level (intensity, productivity, ERA orientation, etc). However, some interventions will most likely overlap between different levels, which will be taken into account in the development of the toolbox (EFFORTI Conceptual Evaluation Framework, D3.3, 2017:8).

Figure 1: EFFORTI Intervention Logic Model



D3.3 includes also the core set of indicators developed based on the EFFORTI logic model for the conceptualisation and construction of the framework and the EFFORTI Toolbox 1.0. The core set of indicators is described and the use of indicators for different types of stakeholders is clarified.

ERA Gender Equality Objectives

In EFFORTI, the gender equality objectives defined in the European Research Area (ERA) constitute the starting point of the intervention logic model. Within the scope of Horizon 2020, gender equality is a cross-cutting issue. Three objectives for fostering GE in research and innovation are promoted: (1) the number of women in RTDI, (2) the number of women in leadership positions, and (3) the integration of the gender dimension in research and curricula (European Commission 2014b). The objectives are briefly discussed in the following as they constitute the point of departure for the development of the conceptual evaluation framework.

2.1 More women in R&D

The European Union (EU) aims to make full use of its human capital in RTDI. Promoting gender equality contributes to higher research performance (European Commission 2012a), and research reveals that mixed-gender teams work more efficiently (if they are well-managed), are more creative and demonstrate better quality in terms of decision-making (European Commission 2014a, 12).

Improving women's participation in research requires impartial selection and recruitment processes conscious about gender biases, involving open job advertisements, and considering atypical career patterns. To increase the attractiveness of RTDI for women, equal payment, opportunities for growth and progression, as well as access to grants and funding must be ensured (European Commission 2014a, 10-14).

Moreover, it is essential that employers of researchers follow national and EU legislation on anti-discrimination and equal treatment. Research performing organisations (RPOs) and research

funding organisations (RFOs) are encouraged to consider gender in connection with faculty recruitment, promotion, leaves and absences, and work climate, among other things (Lipinsky 2014, 11).

2.2 More women in leadership positions

A competitive global RTDI economy depends on involving female scientists also in leadership and decision-making positions. Excluding women from top positions in research may provoke social distrust, followed by reduced support for science and its institutions (European Commission 2012b).

The goal of having more women in decision-making positions addresses these problems and risks. This goal can be achieved by increasing the visibility of women who already work at the institution, for example, by nominating women for prizes and awards to provide role models for students and other female staff. Moreover, holding a decision-making position means having the possibility to influence research agenda and careers of young (female) researchers, to design curricula and be visible, for example, by participating in conferences as a (keynote) speaker (European Commission 2012b).

Getting more women into leadership positions in RTDI goes along with structural changes – EU-wide, nation-wide and, in particular, within research organisations and teams. For instance, gender-balancing committees and boards in RPOs and RFOs require that criteria, nominations and elections to committees and boards must become more transparent (European Commission 2012b).

2.3 Integration of the gender dimension in research content and curricula

The third ERA goal, integrating the gender dimension in research content, means considering biological as well as evolving social and cultural characteristics of both women and men throughout the research process. The results of such consideration are the so-called gendered innovations, capable of identifying gender biases and recognising how they operate in science and technology (European Commission 2014b; Schiebinger & Schraudner 2011). Society benefits from gendered innovations because research becomes more responsive to societal needs, and business gets higher value through new ideas, patents, and enhanced technology (European Commission 2013c).

The report *Gendered Innovations: How Gender Analysis Contributes to Research* (European Commission 2013c) offers concrete case studies and methods of sex and gender analysis. Relevant subjects when developing gendered innovations include, for instance, rethinking research priorities and outcomes, analysing how sex and gender interact, and using participatory research designs. Enabling scientists and engineers to analyse sex and gender criteria in basic and applied research produces excellence in research, policy and practice in the fields of science, health and medicine, and engineering (Ovseiko et al. 2016).

The third ERA goal further requires that the gender dimension is integrated in teaching and curricula. A gender-sensitive curriculum addresses the needs of women and girls with regard to how developments in RTDI may constitute a benefit or disadvantage for them. It also addresses the horizontal segregation between males and females in education and the labour market by portraying both groups in non-stereotypical ways and by making science and technology classes more attractive to girls and women (UN Women 2011, 5, 8). (EFFORTI, D3.3: 7-8).

3. Theory of change: Identifying assumptions, risks and contextual factors

Why do we need to develop theories of change in relation to gender equality and RTDI?

Gender equality programmes and initiatives in RTDI are about change. They are an attempt to overcome the well-known underrepresentation of women as researchers and the lack of gender balance in decision-making (positions of leadership and bodies), latterly taking an institutional transformation approach to tackling the barriers that women in research organisations face. Interventions have also been developed to integrate the gender dimension into research content with an increasing acknowledgement of the negative effects of a predominantly androcentric research agenda and subsequent applications. The European Commission and member states have been, to varying degrees, active in formulating recommendations, policy initiatives and programmes to effect change for greater gender equality and gender-inclusive research and applications at the team level, at the institutional level and at the research system level. Vogel (2012, 8) highlights three main drivers that have contributed to the mainstreaming of the theory of change approach: the importance of context; an increased emphasis on impact; and a recognition of complexity. All three elements have become increasingly important in the field of gender equality and science interventions.

Research that explicitly examines the effects and impact of GE programmes is relatively scarce and uneven throughout Europe. It is, in fact, very difficult to attribute changes in gender equality (be it measured by the number of women researchers/in leadership positions and on decision-making committees, or perceptions of impact/lack of impact on career development, work climate, etc.) to the GE programmes themselves, rather than attributing these developments to wider contextual trends and factors. Some research has even shown a negative correlation between the existence of certain equality measures and the proportion of women scientists (Ruest-Archambault et al. 2008). This can be explained by a compound of contributory factors – but the real explanatory power lies in the field of context, e.g. the size of a country's business enterprise sector negatively affects women's representation in research (see also section 3.1) (Ruest-Archambault et al. 2008, 8). Taking the theory of change approach enables and indeed requires one to factor the context into any explanation of change.

In recent years, the field of policy-making has also seen an increasing trend towards measuring impact (Vogel 2012). Impact assessments that attempt to measure and therefore demonstrate the societal and economic impact of policies have gained currency in times when resources for social policies are increasingly limited and programmes need to be justified in terms of cost effectiveness. Kalpazidou Schmidt and Cacace note how most approaches to societal impact assessments focus on simple, linear models and these often embed a reductive causal chain logic (2017, 2). For example, the World Bank's *Impact Evaluation in Practice* states that "the focus on causality and attribution is the hallmark of impact evaluations and determines the methodologies that can be used" (Gertler et al. 2011, 8).

In line with the increasing recognition of the importance of context, notions of "attribution" have therefore generally been replaced by ideas of "contribution." An approach that "attempts to provide rigorous accounts of how and why an intervention *contributed* to producing the observed effects" seems to offer a more promising approach that can factor in complexity as well as context (Mayne & Johnson 2015).

Kalpazidou Schmidt and Cacace (2017, 2) cite Cullen, Junge and Ramsden (2008, 127) highlighting that there is a “substantial body of evidence that the complex combination of structural, cultural, institutional and economic factors that create barriers for women in science, engineering and technology (SET) require a correspondingly integrated and sophisticated strategic and operational response.”

Theories of change

“‘Theory of change’ is an outcomes-based approach which applies critical thinking to the design, implementation and evaluation of initiatives and programmes intended to support change in their contexts” (Vogel 2012, 3). In her review of the use of “theory of change” (ToC) in international development, Vogel highlights that there is consensus on those basic elements that make up the theory of change approach (see Figure 2).

She identifies that at a minimum a theory of change encompasses the following points (Vogel 2012, 4):

- **Context** for the initiative, including social, political and environmental conditions, the current state of the problem the project is seeking to influence, and other actors able to influence change
- **Long-term change** that the initiative seeks to support and for whose ultimate benefit
- **Process/sequence of change** anticipated to lead to the desired long-term outcome
- **Assumptions** about how these changes might happen, as a check on whether the activities and outputs are appropriate for influencing change in the desired direction in this context
- **Diagram and narrative summary** that captures the outcomes of the discussion

Amongst her review findings, the following points are highlighted:

- Theory of change is both a process and a product.
- The quality of a theory of change process rests on “making assumptions explicit” and making strategic thinking realistic and transparent.
- Critical thinking is cross-checked with evidence from research (qualitative and quantitative) and wider learning that brings other analytical perspectives, referenced to stakeholders’, partners’ and beneficiaries’ contextual knowledge.
- A number of theories of change are identified as relevant “pathways” to impact for any given initiative, rather than a single pathway, with acknowledgement of the non-linearity and emergent nature of these.

A theory of change has two main elements. First, it can be seen as a tool or methodology that explicitly maps out the logical sequence of an initiative from the activities of the initiative to the change that it has contributed to (Vogel 2012, 9). Second, it encompasses a deeper reflective process where assumptions of change linked to the programme are made explicit. As Mayne and Johnson state, “ToCs set out the framework for telling a credible performance story of an intervention. As such, a verified or partially verified ToC can be used as the basis for reporting on what contribution the intervention has made” (2015, 419–420).

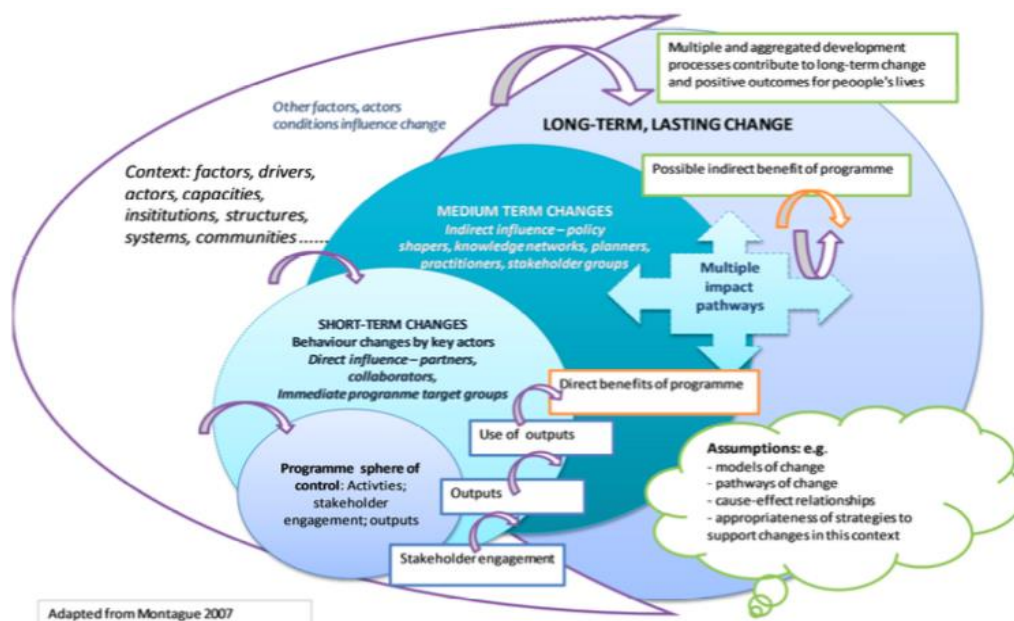


Figure 2: Theory of change thinking (Vogel 2012, 22)

Articulating assumptions is the main part of developing a theory of change. These assumptions have been described as *support factors*, i.e. events and conditions needed to bring about a contribution to effecting change (Cartwright & Hardie 2012). Using evidence to identify, check and challenge these key assumptions and map the implicit and explicit linkages of the intervention (input/resource, throughput, output, outcome/result, impact and context) forms part of developing a theory of change (Vogel 2012, 40). This approach can represent the specific components and context of each programme/initiative and its interaction with contextual variables whilst at the same time remaining scalable.

Mayne and Johnson (2015) identify that theories of change can be used at various stages of an intervention:

Designing/planning interventions:

1. Designing interventions
2. Understanding and agreeing on interventions with stakeholders
3. Identifying and addressing equity, gender and empowerment issues
4. Ex-ante evaluation of proposed intervention

Managing interventions:

5. Designing monitoring systems
6. Understanding implementation, managing adaptively, and learning

Assessing interventions:

7. Designing evaluation questions, methods, and tools
8. Making causal claims about impact
9. Reporting performance

Scaling:

10. Generalising to theory, to other locations and for scaling up and out

Theories of change can be used as a model of how change is expected to happen (ex-ante case) or how change has happened (ex-post case) (Mayne & Johnson 2015, 416). In this project, theories of change are specifically used as a tool to examine how change has happened, particularly focusing on assessing impact. This is in line with a growing line of research that values the contributions that ToCs can make to evaluating interventions. Developing a ToC is an iterative process that requires time to revisit, validate and refine initial configurations. The process of ToC development should also include stakeholder involvement – for example, programme managers need to be asked to validate or at least confirm that configurations developed accurately explain impact. In the EFFORTI project we wanted to develop a comprehensive theory of change that covered all three main elements related to the policy cycle: concept/ design analysis, implementation analysis and impact assessment. This would enable to see whether an intervention has been a) well designed b) well implemented and c) had an impact.

3.1 Concept Analysis

Concept analysis is concerned with the design of the intervention. It can be seen to be closely linked to programme theory – i.e. how a programme or an intervention is supposed to work. A log-frame – which details the programme logic can be constructed on the basis of the concept analysis. In our case study work we looked at developing a log-frame for each case study which would detail a) the interventions' main aims and objectives, b) the target group, c) the main activities, d) resources for the intervention e) the design of the intervention, i.e. how is the intervention supposed to work as well as f) expected outputs, outcomes and impact, g) identification of key players, amongst other elements. Donaldson and Lipsey (2013:64) highlight that on a practical level a well developed and articulated programme theory can be useful for framing evaluation questions and designing evaluations that are sensitive and responsive. Articulating what is assumed and expected in the in terms of programme outcomes and impact – may help evaluators and programme managers identify those performance dimensions that are critical for its success- and therefore will form a key part of the assessment of the programme (ibid). It also enables evaluators to distinguish between a poor/ well designed intervention and a poorly/ well implemented intervention – therefore providing the evaluator with key clues about why outcomes and impact have either been met or have failed to be met.

3.2 Implementation Analysis

Monitoring data which is collected systematically throughout programme implementation can indicate that a programme is on-track – or can highlight if there is a problem with implementation that needs to be addressed.

Monitoring data does not usually enable an assessment of impact but can provide very useful information regarding the quality of the implementation process – which can then be used in an impact evaluation to distinguish between:

1. Programme design failure – where the programme may have been adequately implemented but did not produce the intended effects (how the programme should work is incorrect)
2. Implementation failure – where the programme did not produce the intended impacts because it was not well implemented (Rogers et al, 2015:28).

In order to assess implementation it is also necessary to identify enabling and hindering factors. Kalpazidou Schmidt and Cacace (2017:107) divide these enabling and hindering factors – into structural and processual factors which both effect implementation. The former may impact on implementation at the project level - and refers to those cultural, social and normative features of the organisation and its environment. Process factors are those implementation dynamics and strategies that are highlighted by programme managers that they may have used to respond to those structural circumstances. In the EFFORTI case study work regarding implementation we therefore assessed implementation regarding a) congruence with objectives, b) change over time c) responsibilities d) decision-making bodies e) fixed working procedures f) factors that inhibit or promote implementation and g) barriers and whether these could be overcome.

3.3 Impact Assessment

There are various different types of impact evaluation and assessment approaches and methods (Rogers et al, 2015:25). These approaches tend to revolve around different notions of causality and has implications on the relevant methods and design of evaluations. See the following table for an overview:

<i>INTENDED USE</i>	<i>TYPICAL EVALUATION QUESTION</i>	<i>CONDITIONS</i>	<i>RELEVANT METHODS AND DESIGNS</i>
ATTRIBUTION	Did the intervention cause the impact(s)	Requires a single cause and a small number of effects. Needs either a homogenous effect (it works the same for everyone) or knowledge about the contextual factors that influence impacts	RCTs, regression discontinuity, propensity scores
APPORTIONING	To what extent can a specific impact be attributed to the intervention	Requires a single effect, large data sets on relevant contributing factors.	Regression, econometrics, structural equation modelling
CONTRIBUTION	Did the intervention make a difference?	Requires an understanding of the different configurations that could produce the results (which can include contextual factors, variations of the programme and other programmes).	Contribution analysis, comparative case studies, process tracing, Bradford Hill criteria
EXPLANATION	How has the intervention made a difference?	Requires the development of a clear programme theory which sets out a change theory (how change is said to come about) and an action theory (what activities will be undertaken to trigger this). This can be informed by exploring how actors in the intervention attribute cause and investigate these for plausibility, as well as drawing on research literature and theoretical frameworks.	Actor attribution, theory-based evaluation realist evaluation, process tracing. Multi-arm RCTs with 2-3 way or 3-way interactions designed to identify the active ingredient'

<i>INTENDED USE</i>	<i>TYPICAL EVALUATION QUESTION</i>	<i>CONDITIONS</i>	<i>RELEVANT METHODS AND DESIGNS</i>
		Where it is possible to identify potential 'active ingredients' in the programme and develop different combinations of what is delivered and test their relative effectiveness. Requires homogeneity of effects as it only provides information about average effects.	
GENERALISABILITY OR TRANSPORTABILITY	Is the intervention likely to work elsewhere? What is needed to make it work elsewhere?	Need an understanding of contextual factors that have affected the implementation and results. Need to identify alternative action theories which might be more suitable in different contexts, or even alternative change theories.	Realist evaluation

Table 1: Different types of impact evaluation questions and relevant methods (as in Rogers et al., 2015: 25)

In the EFFORTI case study work we aim to demonstrate contribution, i.e. examine whether or not the intervention made a difference and this approach requires that we have an understanding of the different configurations that could produce the results, including context factors. Contribution analysis derives from theory-driven approach to evaluation that emphasizes the programme logic or programme theory of an intervention and combines this with external factors that might shape the outcomes. The process includes gathering evidence that can demonstrate the extent to which the programme worked as intended and those external factors that affect outputs and outcomes. Rogers et al (2015:39) identify that its main weakness for causal impact assessment is that it does not readily allow for quantification, i.e. the measurement of the attributable impact of an intervention.

4. Intervention typology

The typology developed by Kalpazidou Schmidt and Cacace (2017) was adapted to take into consideration some of our empirical case studies, for example gendered user involvement and integrating the gender dimension in tertiary education were not initially covered. This typology was also then related to the sub-fields of action promoted by the [GENERA](#) project. The fields of action can be seen to be broader than the intervention format and therefore facilitated our cross-case analysis in two ways. Firstly, by facilitating the grouping of interventions together with similar objectives for example mentoring programmes and support to career development – can be linked to Advancement. Secondly, the field of action can provide a bridge linking the type of intervention to the ERA priority. For example recruitment can be linked to more women in R&I, advancement is clearly linked to an increased gender balance in decision-making and leadership, and research and knowledge integrating the gender dimension in research content. The resultant intervention typology is presented in table 2 below. Intervention formats in bold mean that we have at least one case study that can be classified as this intervention type.

SUB-FIELD OF ACTION	INTERVENTION FORMAT
POLICIES	Mainstreaming actions
	Gender equality action plan
	Gender budgeting
NON-DISCRIMINATION	Gender-sensitive practices for the attribution of tasks
	Gender sensitive HR management
	Gender-sensitive study and working conditions (e.g. alternative study plans for pregnancy during laboratory work period).
	Guidelines regarding gender specifics
COMPOSITION AND INTEGRATION	Definition of targets regarding gender balance in decision- making positions
COMPOSITION AND INTEGRATION	Definition of targets regarding gender balance in research groups
	Institution of quotas
ADVANCEMENT	Mentoring programmes
	Gender-sensitive practices for assessment
	Introduction of chairs and positions reserved for women
	Support to career development
	Empowerment schemes
RECRUITMENT	Campaigns for inspiring women for MINT subjects
MONITORING	Monitoring appointments, promotions, or attributions of tasks
DECONSTRUCTING EXCELLENCE	Revision of internal policies regarding promotions
	Revision of internal policies regarding staff appointments
GENDER AWARENESS AND BIAS	Training courses (different targets)
LEADERSHIP ACCOUNTABILITY	Implementation of gender-sensitive leadership and personnel development
FUNDING	Targeting funding practices to improve women's access to research funding
	Targeted funding to improve the integration of gender dimension in research
	Targeted funding practices to encourage research organisations to promote gender equality measures
	Special funding for women researchers
RESEARCH	Gendered user involvement
	Inclusion of and monitoring the integration of the gender dimension an impact
KNOWLEDGE	Dissemination of information material
	Revision of teaching curricula and texts
	Introduction of single sex degree and specialization courses

SUB-FIELD OF ACTION	INTERVENTION FORMAT
	Provision of gender and women studies or modules
	Integrating the gender dimension in tertiary education
VISIBILITY	Networking
	Activities to make women (and their research) visible (e.g. introduction of awards reserved for women)
	Role models
CARE & FAMILY LIFE	Support in periods of absence for family needs
	Schemes for women returners
	Care services and facilities (for children, the elderly, and others)
	Support to mobility, including spouse relocation schemes
WORK-LIFE BALANCE	Introduction of flexible working hours (flexible schedules and telework)

Table 2: Overview of the developed intervention typology

5. Methodology

5.1 Case Study Work to validate EFFORTI framework

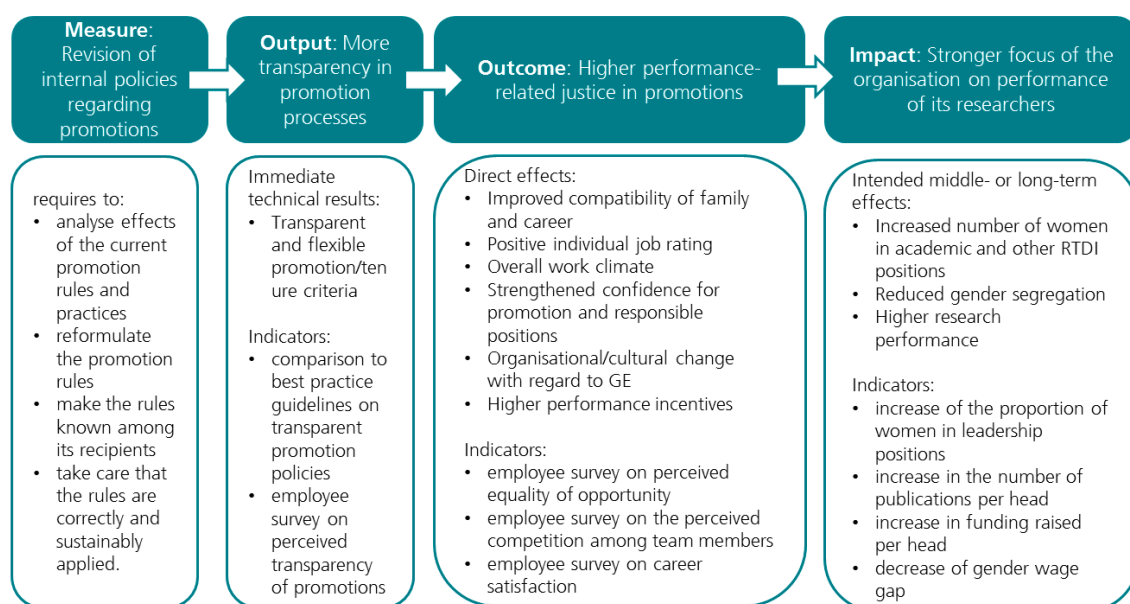
5.1.1. Validation of the EFFORTI framework

The 19 selected cases throughout six European countries were used to validate a) the EFFORTI theory based impact evaluation approach to assessing the outcomes and impact of gender equality interventions in RTDI, b) the impact indicators developed in WP3 c) the impact stories developed in D3.3.

The individual case study work enabled us to ensure that all important indicators are included in the framework whilst provided a feedback mechanism to include those indicators that are not presently included (see Annex 4). The multiple case study work enabled us to map those indicators used in the case study work onto the EFFORTI indicator framework – thereby providing a quick visual tool of those indicators found most useful across our 19 case studies. This enabled to highlight the most useful 251 indicators for our case studies from the 692 included in the initial framework.

How the case studies map onto the impact stories also forms an important part of this consolidation/ validation work. The impact stories build the bridge between conception and implementation by case studies and the online toolbox. Report D3.3. included 17 impact stories that were developed by the EFFORTI consortium that identified the different types of outputs, outcomes and impacts that might be found in different types of gender equality interventions in RTDI. Figure 3 shows the logic of the impact story approach by the means of an exemplary gender equality measure ‘revision of internal policies regarding promotions’.

Figure 3: Logic of an exemplary impact story



The Case Study work was used to validate, revise and provide greater input into the first version of the impact stories that were included in D3.3. The final version of the impact stories were included into the good practice report D4.4.

5.1.2 Case Study

Yin (1994:13) defines a case study inquiry as one that:

“Investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.”

So the case study method lends itself to research where contextual factors are highly pertinent to the phenomenon of study (ibid). Gender equality interventions and their subsequent impact in RTDI – the subject matter of the EFFORTI evaluation framework are highly dependent on a wide range of contextual factors (Kalpazidou Schmidt & Cacace, 2017). Case studies as a method have also been used extensively in evaluation research (see Cronbach et al, 1980; Guba & Lincoln, 1981, Patton, 1980; US General Accounting Office, 1990; Yin, 1993). Yin (1994) highlights how case studies have been used in evaluation research and identifies five different ways they have been used:

- to explain the ‘causal’ links in complex real-life interventions i.e. the programme ‘effects’ (US General Accounting Office, 1990),
- to describe an intervention within the real-life context in which it occurs,
- to illustrate or describe certain topics within an evaluation,
- to explore those situations in which the intervention being evaluated has no clear, single set of outcomes,
- a “meta-evaluation” a study of an evaluation study (Yin, 1994; 15).

In the case of EFFORTI we will use the case study method to inductively build on and validate the evaluation framework. The multiple case study work will shed light on those factors and mechanisms that shape and influence the effects of gender equality interventions in RTDI on research and innovation outputs. It will attempt to explain what works (and what does not work) in what context and why.

5.2 Case Study Selection

The project carried out 19 case studies distributed over 6 countries:

- 5 case studies in Austria,
- 3 case studies in Germany,
- 3 case studies in Denmark,
- 3 case studies in Spain,
- 3 case studies in Hungary,
- 2 case studies in Sweden.

Case studies were selected for a variety of reasons. We aimed to ensure we had a good mix of case studies regarding key attributes: i.e. scope (National, Regional, Institutional), Targeted sector (BES, HES, or BES & HES), ERA Priority (more women in RTDI, more women in leadership positions and integrating the gender dimension in research content), intervention type (14 different interventions types) and Target Groups (R&D companies; non-university research institutes; universities; networks; women entrepreneurs; women scientists and researchers; academic and non-academic staff). Case Studies were chosen on the basis of expert knowledge and are often flagship programmes either in the area of gender equality or RTDI. Some were chosen on the basis of their demonstrated impact and others were chosen due to the innovative way they integrated these two different types of objectives and impacts were alluded to.

CASE STUDY NUMBER	SCOPE	TARGETED SECTOR	ERA PRIORITY	MAIN TYPE OF INTERVENTION	SUB- FIELD OF ACTION	TARGET GROUP
EFFORTI CS_1	National level funding programme	BES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions 	Support to career development	Advancement	<ul style="list-style-type: none"> • R&D companies • non-university research institutions (fields of natural science and engineering)
EFFORTI CS_2	National level funding programme	BES & HES	<ul style="list-style-type: none"> • integration of the gender dimension in research content 	Funding to improve the integration of the gender dimension in research	Funding	<ul style="list-style-type: none"> • technology intensive companies • non-university research organisations • universities
EFFORTI CS_3	National level funding programme	BES & HES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions 	Introduction of chairs and positions reserved for women	Advancement	<ul style="list-style-type: none"> • female scientists • companies, non-university research institutes, universities and universities of applied science • the research policy community
EFFORTI CS_4	National level funding programme	BES & HES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions • integration of the gender dimension in research content and curricular 	Gender Sensitive Human Resource Management	Non-discrimination	<ul style="list-style-type: none"> • existing competence centres/ networks from previous projects • new project co-operations between industry/economy and research organisations

CASE STUDY NUMBER	SCOPE	TARGETED SECTOR	ERA PRIORITY	MAIN TYPE OF INTERVENTION	SUB- FIELD OF ACTION	TARGET GROUP
						<ul style="list-style-type: none"> • research consortia – which include partners from industry
EFFORTI CS_5	National level performance agreements	HES	<ul style="list-style-type: none"> • integration of the gender dimension in research content 	Gender Dimension in Tertiary Education	Knowledge	<ul style="list-style-type: none"> • public universities
EFFORTI CS_6	Regional level programme (STEM – sub-project).	BES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions • integration of the gender dimension in research content 	networking	Visibility	<ul style="list-style-type: none"> • Women entrepreneurs considering founding/ founding a start-up in the STEM fields
EFFORTI CS_7	National	HES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions 	• Gender equality action plan	Policies	<ul style="list-style-type: none"> • HEIs (universities, universities of applied science, arts and music colleges,)
EFFORTI CS_8	National	HES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions 	Monitoring appointments, promotions or attributions of tasks	Monitoring	<ul style="list-style-type: none"> • RPOs & RFO
EFFORTI CS_9	National level funding programme	HES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions 	<ul style="list-style-type: none"> • Empowerment schemes • support to career development 	Advancement	<ul style="list-style-type: none"> • women researchers
EFFORTI CS_10	Institutional level	HES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions • integration of the gender dimension in research content 	<ul style="list-style-type: none"> • monitoring appointments, promotions, or attributions of tasks 	Monitoring	<ul style="list-style-type: none"> • women researchers at associate professor level at Copenhagen University

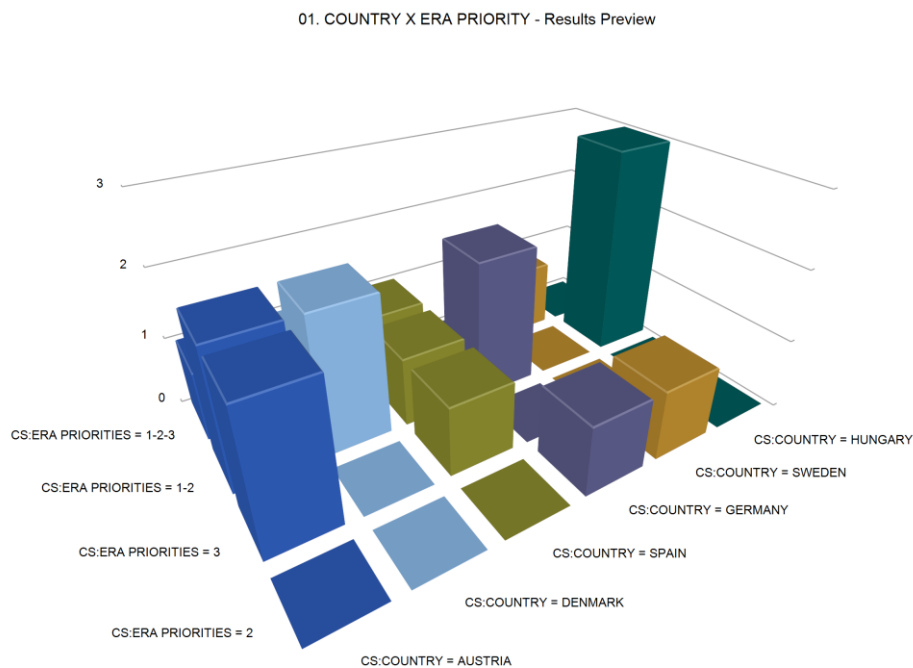
CASE STUDY NUMBER	SCOPE	TARGETED SECTOR	ERA PRIORITY	MAIN TYPE OF INTERVENTION	SUB- FIELD OF ACTION	TARGET GROUP
EFFORTI CS_11	Institutional level	HES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions 	-mentoring,	Advancement	<ul style="list-style-type: none"> • researchers at post-doc level
EFFORTI CS_12	Institutional level	HES	Integration of the gender dimension in research content	-Gender dimension in Tertiary Education	Knowledge	<ul style="list-style-type: none"> • The academic community specifically including researchers, teachers and students
EFFORTI CS_13	Institutional level	HES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions Integration of the gender dimension in research content	Gender equality plan	Policies	Academic and non-academic staff
EFFORTI CS_14	National funding programme	HES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions 	Targeting funding practices to encourage research organisations to promote gender equality measures	Funding	Cutting edge RPOs centers and units
EFFORTI CS_15	Company Wide	BES	<ul style="list-style-type: none"> • -more women in RTDI • -more women in leadership positions 	-support to career development -	Visibility	<ul style="list-style-type: none"> • ambitious women GE employees • women current and potential GE employees
EFFORTI CS_16	National fellowship programme	HES	<ul style="list-style-type: none"> • -more women in RTDI • -more women in leadership positions 	-introduction of awards reserved for women	Visibility	<ul style="list-style-type: none"> • women scientists below 45 years old employed at a higher education research institute or at a research institute of

CASE STUDY NUMBER	SCOPE	TARGETED SECTOR	ERA PRIORITY	MAIN TYPE OF INTERVENTION	SUB- FIELD OF ACTION	TARGET GROUP
						the national academy of science
EFFORTI CS_17		HES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions 	<ul style="list-style-type: none"> • schemes for women returners 	Care & Family	Researchers of the National Academy of Science (15 research institutes and 89 research groups) who have children under the age of 10 and who have taken parental leave
EFFORTI CS_18	National level	BES & HES	<ul style="list-style-type: none"> • more women in RTDI • more women in leadership positions <p>Integration of the gender dimension in research content</p>	definition of targets regarding gender balance in decision-making positions	Composition	Women scientists/ researchers
EFFORTI CS_19	Institutional level	HES	<ul style="list-style-type: none"> • more women in leadership positions 	definition of targets regarding gender balance in decision-making positions	Composition	Women scientists/ researcher

Table 3: Case Study Characteristics

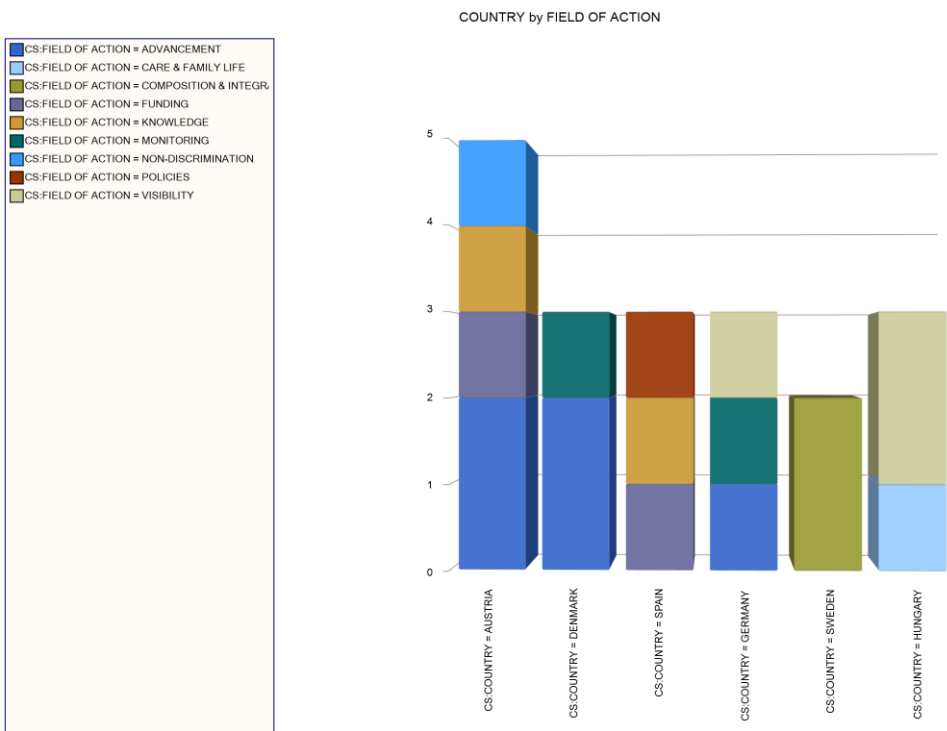
5.2.1 Country by ERA priority

Figure 4: Case study characteristics: country and ERA priority



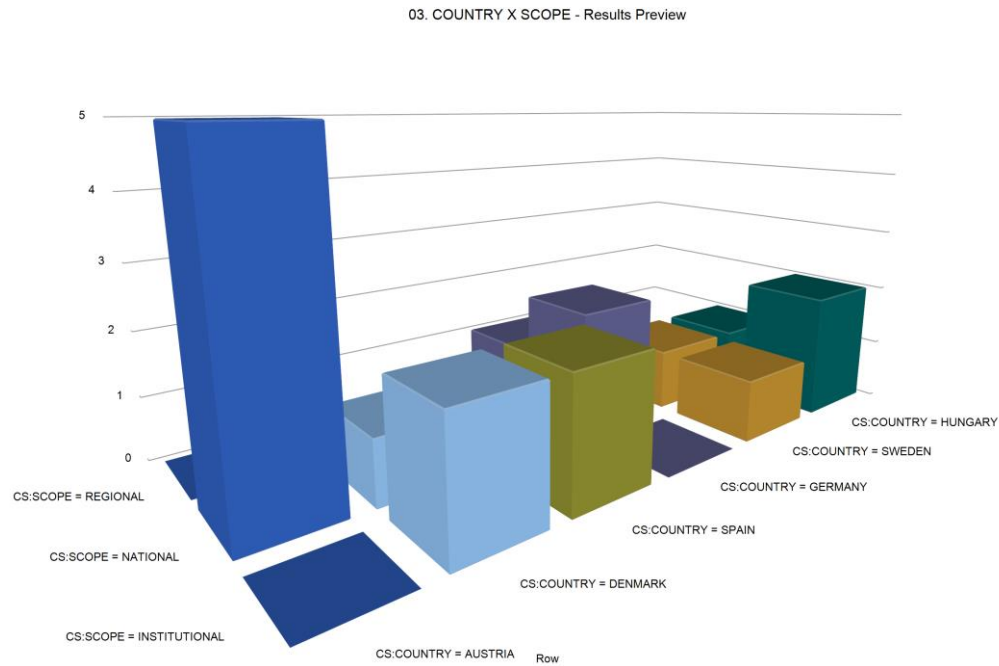
5.2.2 Country by field of action

Figure 5: Case study characteristics: country and field of action



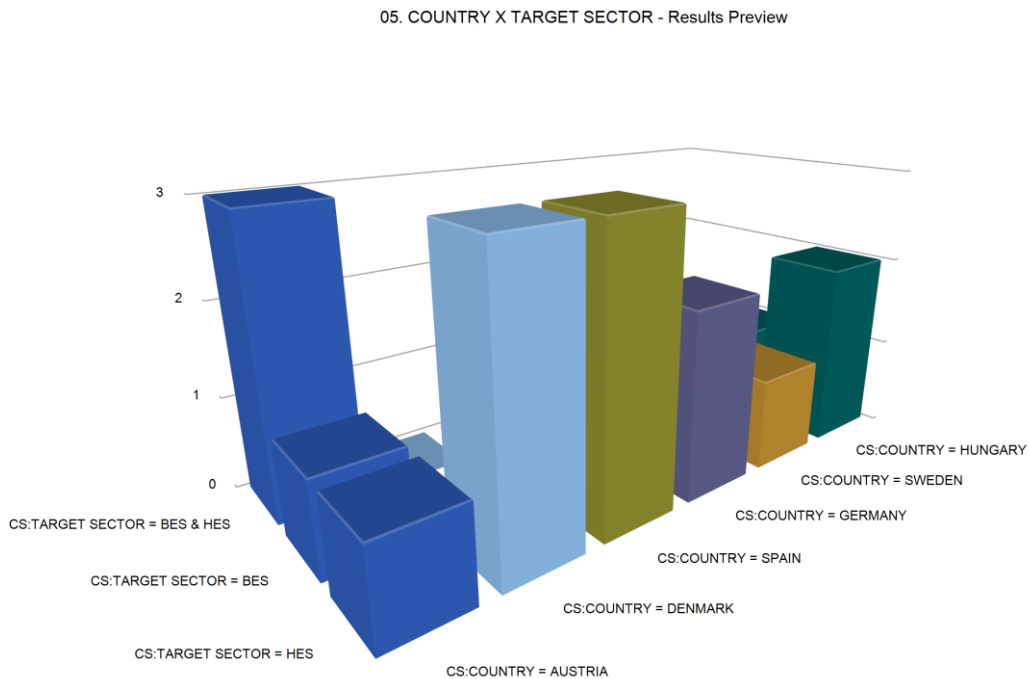
5.2.3 Country by scope

Figure 6: Case study characteristics: country and scope



5.2.4 Country by target sector

Figure 7: Case study characteristics: country and target sector



5.3 Methods

The case study guidelines document served as a practical guide for carrying out the Case Study work during the EFFORTI project (see Annex 1). It provided concrete instructions and guidance for data collection, including research questions and detailed interview guide to be used throughout the course of the case study work. Each partner was responsible for carrying out the case studies in their country, except for the Nordic partner who was responsible for carrying out cases studies in both Denmark and Sweden.

The methods used in the case study work were documentary analysis and semi-structured interviews with policy makers, programme managers, practitioners and beneficiaries. Between four and eight semi-structured interviews were carried out in each case study. Various templates were also provided in the annexes to facilitate the reporting of the case studies including the EFFORTI Case Study Evaluation Design Template and the EFFORTI Case Study Narrative Report Template amongst others (See Annex 1). These templates create a standardised reporting framework to facilitate the comparative work. These guidelines also include a template to record the researchers ethical and methodological reflections – which acted as a feedback tool to ensure that the research design can be adapted as the research progresses.

The following table details the research questions and the data collection methods for the context analysis, the concept analysis, the implementation analysis and the impact assessment for each case study.

	RESEARCH QUESTIONS	MULTIPLE CASE STUDY QUESTIONS	CASE STUDY QUESTIONS	DATA COLLECTION METHODS AND METHODS OF ANALYSIS
	How do interventions that promote gender equality in R&I influence research and innovation outputs?	<ul style="list-style-type: none"> • Inductive consolidation/ validation of conceptual framework 		
CONTEXT		<ul style="list-style-type: none"> • What are the factors and mechanisms that shape and influence the effects of gender equality interventions in RTDI on research and innovation outputs? • What works (and what does not work) in what context and why? <ul style="list-style-type: none"> – Is the intervention likely to work elsewhere? – What is needed to make it work elsewhere? 	<ul style="list-style-type: none"> • How does the national/ science/GE/ GE in RTDI system context influence the intervention? <ul style="list-style-type: none"> – What are the main contextual elements that shape the intervention? – What are the main agendas, strategies, policies that frame the intervention? – Who are the main/relevant actors? • What are their interests, preferences & agendas? • What is their role in the system? • How does the institutional context influence the intervention? [This requires an overview of the main/relevant institutions that might influence/effect the intervention] • Are the general conditions for effective gender equality policies in place? <ul style="list-style-type: none"> – Is the intervention comprehensive and tailored? – Does it include gender related targets? – Does it include special interventions “to overcome the effect of historical 	<ul style="list-style-type: none"> • Country notes- Identify main national/ science system contextual factors identified in the EFFORTI country reports that impact on the case studies • Documents, publications, interviews with policy makers used to identify the main institutional contextual factors that impact on the intervention

		<p>discrimination and accelerate the attainment of substantive equality for women?" ((UNDP 2014:33)</p> <ul style="list-style-type: none"> – Do multiple actors have responsibility for the intervention? – Are sufficient resources (human, financial and institutional) available for correct implementation? – Is the intervention embedded into existing structures and management procedures? – Are interventions accountable and transparent? – Is the intervention flexible and resilient? – Is the intervention publicized and promoted? 	
CONSOLIDATION & VALIDATION	<ul style="list-style-type: none"> • Indicators: What are the most common indicators (across cases)? • Indicators: What are the most 'innovative' or 'novel' indicators? • Framework: How do the case studies map on to the impact stories? 	<ul style="list-style-type: none"> • What indicators can be synthesised that are relevant for the framework? • Are all important indicators in each case study included in the framework? • What is the logframe/ impact pathway for each case study? • What is the theory of change for the case study? [including the main assumptions]? 	<p>Multiple kinds of literature and data are used, including interviews and documents, in order to triangulate views and enhance the validity of findings.</p>

Constructing the Theory of Change for each Case Study

CONCEPT ANALYSIS: IMPACT PATHWAY/ LOG FRAME INPUT	DESCRIBE THE HISTORY OF THE INTERVENTION, HAVE THERE BEEN PREDECESSORS? WHAT ARE THE INTERVENTION'S MAIN AIMS AND OBJECTIVES?	DOCUMENTARY EVIDENCE (WEB-SITE/ REPORT/LITERATURE/ EVALUATION AND MONITORING REPORTS), INTERVIEWS WITH POLICY MAKERS
	Who is the target group?	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports), interviews with policy makers
	What are the main activities?	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports)
	What resources are available for the intervention? (Specify: HR, financial, time, etc.)	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports) interviews with policy makers
	Elaborate its design: How should it work? Step by step (functional mechanism)?	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports) interviews with policy makers
	What impacts are expected? Did policy makers only intend GE effects or were R&I impacts also foreseen?	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports) interviews with policy makers
	Who are the key players? (funders, the set-up phase, the implementation, evaluation etc.?)	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports) interviews with policy makers
	Significance of policy intervention, e.g. are core underlying problems addressed, do planned activities imply a significant change relative to existing institutional settings, do they fit with overall agendas, strategies. Can the objectives be fulfilled – given the amount of resources? • is the allocation of financial and personnel resources to implement the policy adequate? • are targets/goals realistic?	Interviews with policy makers and existing monitoring, evaluation reports and internal documents.

IMPLEMENTATION ANALYSIS: THEORY OF CHANGE INPUT		Does the implementation of the intervention correspond to the objectives?	Interviews with key stakeholders (including programme managers and practitioners) and existing monitoring and evaluation reports.
		To what extent has implementation changed over time? What has changed?	Interviews with key stakeholders (including programme managers and practitioners) and existing monitoring and evaluation reports.
		How are the responsibilities for the implementation of the intervention distributed?	Interviews with key stakeholders (including programme managers and practitioners) and existing monitoring and evaluation reports.
		What are the main decision-making bodies involved with the implementation of the intervention? Is there a commitment from top-level decision-making bodies?	Interviews with key stakeholders (including programme managers and practitioners) and existing monitoring and evaluation reports.
		Have any fixed working procedures been established to implement the intervention?	Interviews with key stakeholders (including programme managers and practitioners) and existing monitoring and evaluation reports.
		What factors inhibit or promote the implementation of the intervention in line with its objectives?	Interviews with key stakeholders (including programme managers, practitioners and beneficiaries) and existing monitoring and evaluation reports.
		What barriers were encountered during the implementation? Was it possible to overcome these barriers and how?	Interviews with key stakeholders (including programme managers, practitioners and beneficiaries) and existing monitoring and evaluation reports.
IMPACT ASSESSMENT : THEORY OF CHANGE INPUT		<p>What are the main outputs that can be observed?</p> <p>Do these coincide with the expected outputs?</p> <p>How are these measured?</p> <p>Are these consistent with the categories, dimensions, sub-dimensions and indicators identified in the relevant EFFORTI impact story?</p>	Existing monitoring reports, evaluations and literature highlighting relevant bibliometric analysis etc. Interviews with programme managers, practitioners and beneficiaries. Relevant EFFORTI Impact Story.

		<p>What are the main outcomes (per target group) (any specific to RTDI) that can be observed?</p> <p>Do these coincide with the expected outcomes?</p> <p>How are these measured?</p> <p>Are these consistent with the categories, dimensions, sub-dimensions and indicators identified in the relevant EFFORTI impact story?</p>	<p>Existing monitoring reports, internal documents, evaluations highlighting relevant bibliometric analysis etc., literature and surveys. Interviews with programme managers, practitioners and beneficiaries.</p> <p>Relevant EFFORTI Impact Story.</p>
		<p>What (type of) main impacts (indirect/ direct, intended/ unintended/ RTDI) can be observed?</p> <p>Do these coincide with expected impacts?</p> <p>How are these measured?</p> <p>Are these consistent with the categories, dimensions, sub-dimensions and indicators identified in the relevant EFFORTI impact story?</p>	<p>Existing monitoring reports, internal documents, evaluations highlighting relevant bibliometric analysis etc., literature and surveys. Interviews with programme managers, practitioners and beneficiaries.</p> <p>Relevant EFFORTI Impact Story.</p>
		<p>What are the main factors that have hindered/ supported the impacts of the intervention?</p>	<p>Interviews with programme managers, practitioners and beneficiaries and existing monitoring, evaluation reports and internal documents.</p>

Table 4: Research Questions and Data Collection Methods and Analysis

5.4 Case Study Reports

The deliverable 4.1 included 19 case study reports. As previously mentioned each partner was responsible for developing the case studies in their countries except for our Nordic partner that covered two countries.

Each case study report is structured in the following way:

- Glossary,
- Case Study Narrative: Theory of change
 - Executive Summary
 - Introduction
 - National Context
 - Concept/ Design Analysis
 - Implementation Analysis
 - Impact Assessment
 - Evaluation
 - Ethical and Methodological Reflections
 - Conclusions
 - References
- Annex 4 filled in:
 - Characterisation of the intervention
 - National Context
 - Concept Analysis
 - Implementation Analysis
 - Impact Assessment
- Ethical and Methodological Reflections

5.5 Comparative Analysis

The comparative analysis has been carried out using the software programme N-vivo. Nodes were developed for each part of Annex 4 of the Case Study Guidelines – Annex 1 to this report). This enabled us to systematically analyse all the case study material. A case study classification was also developed to enable us to group and analyse the case studies according to different characteristics. This encompassed: country, ERA priority, scope, target sector, target group, main type of intervention, and field of action (see below table for the case study classifications). We then identified possible matrix queries where we crossed different case study attribute values to nodes for example impact by field of action.

6. Key Findings

6.1 Design: Strengths and Weaknesses

The design of the case studies were analysed according to their main strengths and weaknesses which could be seen to be linked to the types of interventions and their sub-fields of action.

Regarding **policies** – specifically the **gender equality plan** case studies – the explicit definition of goals, measures and indicators were highlighted as a strength of the design. In one of these case studies – it was stated that the design of the plan as based on a gender equality audit- strengthened the intervention harnessing the benefits of an evidence based, data-driven approach to intervention design. This case study is an example of the importance of availability of data to address gender inequalities. One of the aims of this equality plan was to obtain more in-depth information on the situation of the organization regarding different dimensions. An important effort has been made to obtain comprehensive figures and more in-depth information has supposed a better understanding of existing inequalities, both regarding numerical representation at different levels of the organization and existing imbalances in recruitment, promotion or the distribution of complementary salary.

Regarding **gender sensitive human resource management** the mainstreaming of gender equality throughout every meeting and throughout every step of the assessment procedure (from applications, to assessment to interim and ex-post evaluations) was identified as the major strength integrated into the design of this intervention. Whilst in this intervention gender equality is an explicit objective – it should be given more visibility as an important objective. In this case study gender equality is conceived as equal participation of women and men –i.e. the share of women in RTDI – but a lack of reflection on organisational and cultural change was deemed a weakness of the design thereby affecting subsequent actions.

Case study interventions intended to **define targets regarding gender balance in decision-making positions**, were located in the sub-field of action **composition and integration**. Strengths of one of the case studies' programme design included promoting female research and leadership qualifications with an emphasis on collaboration between academia, industry and/ or the public sector -nationally and internationally. A change in target group from women to both women and men meant that it was more difficult to mobilise researchers to take part. The programme has become less attractive – with a less clear strategic goal with a subsequent decrease in the number of applicants. In another case study the target group – senior researchers and teaching staff were to undertake a leadership training programme within an university. In this case study – it was recognised that it was not enough to focus on increasing the number of women in leadership positions (i.e. at vice-rector and rector level) without improving women's participation in top research positions, i.e. associate and full professors.

Regarding those case study interventions that were classified under the **advancement** sub-field of action and so included types of interventions linked to **providing support to career development, the introduction of chairs and positions reserved for women, empowerment schemes, and mentoring** – a diverse range of strengths of design could be detected including innovative designs, how the programme is framed and the tailored mix of measures.

Regarding innovative designs for advancement – the analysis of one of our case study interventions highlighted the importance of going beyond the standard assessment procedures to encourage the promotion of women leaders in RTDI. 'Future potential analysis' – where a candidate for a leadership position is assessed according to her/his 'future potential' as oppose to past achievement was seen as a huge step forward really challenging those often gender biased assessment procedures that can limit the representation of women in top leadership positions. This same case study intervention also highlighted as a strength of design the firm embedding of the gender equality discourse to one interlinked with RTDI impacts, regarding excellence, management and careers.

Interestingly for the types of interventions grouped together under the sub-field of action **advancement** – it could be seen how these type of interventions (i.e. those aiming for a greater gender balance higher up the career ladder) need to be combined with other more structural change interventions or initiatives. So in one of our case studies – funding is allocated to universities but part of the funding requirements includes the development of an institutional wide gender equality plan, thereby linking a more individual targeted approach with a structural intervention. In one case study which foresees two GE Outcomes: Individual achievement of women in the form of high-level positions and structural outcomes through improved GEPs and GE measures.

Other case studies also highlighted the benefits of mixing different types of measures which address recruitment, job entry-phase and company structures can be combined to pursue a more targeted career development for women. Those case studies that did not explicitly combine a more individual approach with a more structural and cultural approach identified this as a design weakness. For example one case study identified how the main objective to strengthen talent development through funding cannot stand alone or be an isolated one-shot action.

Case studies classified as promoting **advancement** varied in their assessment of the chosen target beneficiary group. For example, one of our case studies that was designed to specifically target women researchers (as oppose to women and men) - attracted more applicants to the programme and mobilized the target group to a higher degree (than the subsequent programme that was open to all). Whilst in another case study – despite the fact that funding was allocated specifically for women professorships- beneficiaries spoke of the importance of a regular appointment process with no special conditions, i.e. those benefiting from the professorships were not aware that the funding was specifically to create professorships for women. In one of our case studies the wrong target group was identified as a weakness of programme design. The intervention was designed like a research funding intervention but addresses HR managers – not researchers. HR managers do not have the know-how and skills to write a research proposal.

Other strengths for the types of interventions included in this sub-field of action specifically targeting the business and enterprise sector include interventions that are flexible/ tailored to enable the best fit to various company structures – whilst at the same time being structured enough to achieve sustainable results.

Regarding those types of interventions set up to **monitor appointments, promotions, or attributions of tasks** – strengths of programme design included the public formulation of overall objectives – thereby promoting transparency. In one of our case studies- a programme at the national level - funded RPOs report about increased budgets for gender equality and diversity activities, the establishment of a continuous monitoring system, including active communication on goal attainment; target quotas in accordance with the cascade model; programme evaluations; the promotion of internal and external dialogues; employee surveys to measure change, diversity criteria as part of the variable income parts.

At the institutional level another case study highlights how monitoring supported the implementation of financial incentives – and how this combination led to the desired outcome. In this case study monitoring was identified to have increased the transparency, awareness and accountability in relation to gender equality issues in recruitment and promotion. In this case study the action plan included revisions of internal policies regarding the promotion and staff appointments. The monitoring does not in itself imply a significant change to existing organisational settings – yet the overall action plan, supported through financial means, included revisions of

internal policies regarding promotion and revision of internal policies regarding staff appointments.

For those interventions more specifically linked to **funding** – for example for **targeting funding practices to encourage research organisations to promote gender equality measures** strengths were identified as defining measurable, realistic milestones – that could be achieved by the end of the funded period by the funded centres. The programme however does not contain concrete measurable gender and RTDI targets because each research centre has to define their own milestones in their plan. As the programme does not contain global indicators, they cannot disseminate the results in terms of achievement of RTDI and gender equality related targets.

For interventions **targeting funding to improve the integration of the gender dimension in research** strengths of design were related to initiating projects in research, technology and innovation with gender-relevant content – how this contributes to future relevant research fields and products with a concrete gender dimension. Another strength of the design was, that gender has to be implemented throughout the whole research process (beginning with the research question, gender-sensitive methods and samples, gender sensitive analysis and publication). Strengths of the design of the programme ensured increasing the acceptance and interest in gender in research projects amongst scientists as well as those tailor made innovative solutions that are developed through the funded projects. However it was also recognised how expectations can be too high given the low level of invested funds.

Knowledge -based interventions – our case studies are both concerned **with integrating the gender dimension in tertiary education**. One of the strengths includes how integrating the gender dimension in university teaching as one of the objectives of the performance agreement has consolidated the acceptance of gender-related education. On the other side one major weakness is, that no specific funding however is available. Performance agreements – do not have status of legal agreement – although monitored to date, no finance has been withdrawn from universities – if they do not meet targets set out in the performance agreements. At the institutional level – taking a comprehensive approach to integrating the gender dimension into teaching – reflected by the extensive nature of this section of the plan can be seen as a strength but it is imperative that the number of measures in the plan can be realistically implemented.

Regarding those interventions aiming at increasing the **visibility** of women and their research and innovations, it was recognised that one of our case studies – was well designed, assessed as having a thorough planning and implementation process. It was also highlighted that - the circle of potential applicants as very wide-was a positive element of the programme as well as the tools used to reach objectives being well chosen. Other strengths related to the design of the intervention included, media attention, financial human resources, success of the initiative in previous years. Despite the strength of the intervention it was a struggle to convince the international top-management that it was worth funding the programme at the national level, as well. In another of the EFFORTI case studies the design of the intervention was criticised for its short-term basis, funding was only provided for 2 years – what will happen after the funding finishes? STEM founders – are claimed to be a resource intensive target group due to needs for a very specific support infrastructure and their more complex business model.

For our intervention classified as within the sub-field of action **Care and Family Life** a well-defined target group was highlighted as a major strength of the intervention and how the– subsequent design of the intervention concentrating on a women returners was well-designed specifically for them, i.e. the inclusion of an age-limit extension rule in criteria for assessment. A potential weakness however was identified as not being comprehensive as it focuses on one issue.

6.2 Implementation: Common facilitating and hindering factors

6.2.1 Governance framework

The governance framework could be identified as a key element in either facilitating or hindering the EFFORTI case study interventions. Governance frameworks can include legally binding measures to a weak governance approach – where policy makers operate at the level of positive incentives. EFFORTI interventions spanned legally binding measures to providing positive incentives. For example the Catalan law of 2015 obliges universities to introduce the gender perspective and was seen as a major facilitator of introducing the gender perspective in tertiary education – possible sanctions include courses not being accredited by the evaluation agency. In the other extreme GEPs are not legally binding and therefore ensuring the implementation of the measures is a difficult task, non-compliance cannot be sanctioned, so implementation often depends on the good will of the responsible body or person. In one EFFORTI case study, a targeting funding practice to encourage research organisations to promote gender equality measures it was highlighted how calls do not specify the types of gender equality actions to be implemented. These actions do not have a specific score in the evaluation criteria -there are no sanctions if centres do not develop these. Some centres therefore develop very innovative measures and others do not introduce any relevant change. In this scenario successful implementation and impact therefore becomes dependent on top-management commitment.

6.2.2 Top-management commitment

Eleven of our case studies spanning each participating country explicitly stated that top-management commitment was a key facilitating (or lack of was a hindering) factor for the implementation and impact of the intervention. This ranged from the ministry level, through to regional and city government levels to the programme level and implementing institutions, i.e. RPOs and companies. Governmental bodies were seen to play an important role in ‘steering’ the agenda, for example in Spain top-down initiatives coming from governmental bodies or superior organisations linked to the institution- have facilitated that GE issues and plans are normalized in RTDI organisations. In one of our countries at the programme level it was identified that the lack of support of executives and decision-makers put into question the existence of a gender specific funding line. At the level of RPOs and companies it was highlighted that managers – must work top-down (not only bottom-up) by starting with hiring and changing the management culture as well as developing gender competence. If the managing directors are not convinced of the relevance of equality measures HR can be hindered in the enforcement of sustainable action. Top-management commitment can be demonstrated by the resources that are allocated to gender equality and the institutional structures for gender equality which may include a strong position of the equality officer or in the decision-making bodies of the HEIs, their budget, and independence or conversely a lack of designated person in charge of implementation of the intervention.

6.2.3. Bottom-up: participation and buy in

Whilst top-commitment is identified by the majority of our case studies as a key factor – bottom-up buy-in was also seen as an essential factor in interventions targeting both the HES and BES sectors. Progress for GE can, only be achieved if the responsibility for what is done lies with the organisation themselves, whilst the intervention is tailored to their needs. For example in one of the German HES case studies the importance of tailoring targets was emphasized, the Cascade principle is used to set realistic targets. It makes sense that the RPOs set these target figures itself by making calculations and predictions about what is achievable in their local context–

which means that target figures are realistic. Whilst autonomy was highlighted as important at the level of the RPO it was also recognised that their sub-units might also have high levels of autonomy. In various case studies in Germany the implementation of GE within those sub-units was identified as challenging. There is great range between the sub-units, some are outstanding and some have no or very little knowledge and know-how. One strategy to tackle this through a GEP was to include a responsible person for equality policies at the faculty level.

In the BES sector it was also identified as highly important for small companies – to involve all levels of the company. In small companies it's important that the manager takes time to engage actively and openly in the process which has a signaling effect for the employees and highlights the importance of the issue. All employees should have the opportunity to participate from the beginning and be informed. This strategy raises awareness for the topic, gains more acceptance for measures, e.g. amongst men for women only measures and increases the motivation, while decreasing resistance. Although it was recognized that implementing gender equality in small companies may be more difficult than in larger institutions – due to the smaller number of available positions.

6.2.4 Promoted as Equal Opportunities or Positive Discrimination?

How gender equality interventions are promoted was seen to have an effect on the success of the intervention. In one case study it was explicitly stated that not being marked as a 'women's promotion programme' – was important to those women leader beneficiaries – because it would have hurt their career. Gender equality interventions should not be seen as funding women or men- but about creating/ supporting inclusive work life realities. The fear of being perceived as a "quota woman" is still persistent and in one intervention in particular there were individual cases where HEIs had a negative experience when informing the appointed women about the funding background of their professorship. In this case study the appointment is regular and the women professors often do not know that their position is financed by the programme. This was backed up by other interventions for example, one case study in Denmark it was stated that it administratively looks and works like other research council programs for young research leaders, and that this highly facilitates that implementation of the intervention.

These sentiments were also mirrored in interventions targeting the BES. Potential women founders had ambivalent views on the target group of the intervention, i.e. women entrepreneurs. Women entrepreneurs are confronted with stereotypes and difficulties in the current start-up environment, e.g. venture capital investors may hold stereotypes against start-ups by women. This may result in difficulties to finance a business start-up and potentially make women less likely to realise a start-up. Whilst, some participants saw it as an advantage that participation is open for women only -so that participants can be freer to talk about topics of their interest, in another case as the target group of the intervention shifted from women only to all young researchers – this had the effect of discouraging the participation of some women.

6.2.5 Synergies with other initiatives

The inclusion of gender issues linked to excellence in research at the EU level facilitates the willingness of research centres to introduce gender issues it also convinces those responsible for the need to incorporate gender equality measures. Case studies in Austria, Spain and Germany highlight these synergies. This is complemented by the existence of prestigious and international recognition schemes that accredit excellence in science and include gender equality measures such as HR excellence and national level initiatives (in Germany see the Excellence initiative, the

DFG standards, the “Offensive Chancengleichheit”, Pact for R&I and the HEI Pact) and international funding programmes that address gender equality in their programme documents, call texts and evaluation procedures. In Germany it was recognized how both the DFG standards and the Excellence Initiative have had a positive effect on funding, which put more pressure on the system and led to a change in discourse. Some HEIs already had experience with the strategic development of gender equality concepts as these were required by the DFG funded excellence initiative and their gender equality- orientated standards too, thus the incentives given by the DFG were seen to have a strong beneficial effect. In Austria this feeds into gender-related indicators of the impact-orientated budgeting and links with general, formal requirements.

6.2.6. Resources

Resources were cited as the major facilitating factor for a successful GE intervention in RTDI. These ranged from resources allocated to gender equality and RTDI at the national level, regional or institutional levels. For example one case study cited how in Germany a general increase in R&I budgets over the past decade- even during the financial crisis impacted on the gender equality in RTDI landscape. At the regional level – those states that actively supported their HEIs could increase their chances of success in one intervention. In Austria in one intervention at the Programme level – it was identified that the budget was relatively scarce – so promising proposals had to be rejected. With more financial support fewer promising proposals would need to be rejected and/ or projects with a higher workload could be funded.

Funding also acted as a real incentive to encourage companies to participate in one case study intervention in Austria. Funding in this instance was said to contribute to more extensive research with a higher expert involvement – which was seen to lead to a better groundwork, more learning within the project team and a better result. Increased funding in terms of a substantial budget increase was seen as a positive factor for an intervention in Germany – as the programme was not seen to be about redistribution or competition for scarce resources but additional funds. This backs up another of our case study findings in Austria – how competition for resources can serve as potential barrier and how expansion of respective funding possibilities would also be an important signal for the relevance of the subject. In one case study it was cited that the call was not as competitive as in other calls and therefore the success rate and intensive preparation is perceived more positively, which could possibly generate higher quality proposals.

Resources to help prepare proposals to respond to calls from funding programmes was identified as a critical factor. For example one of our case study interventions was identified as needing much more information, consultancy, explanation and support than other funding programmes. This was especially true for companies-when the responsibility to apply for funds lays with HR managers who are not used to writing proposals. When a business consultant was hired to approach companies and support them in proposal writing – the number of applicants increased.

In another case study the first come first served method of resource allocation favours, in practice large universities. During the first two phases primarily (big) universities participated successfully, smaller universities of applied sciences -lacking administrative resources were often not in a position to submit a convincing GEP.

6.2.7 Gender competence, experience and knowledge

Wroblewski (2016) highlights how gender competent project leaders implemented gender better and at an earlier stage than their conventional counterparts. Gender experts with a strong standing in the project team, a responsibility for content issues and a clear distribution of tasks were also more successful (and vice versa) Wroblewski (2016, pp.19-20). Ideally, the thorough implementation of gender can lead to three impacts; firstly, giving gender a better standing in non-university research, secondly raising awareness for the relevance of gender in research and lastly, improving the quality of the research projects' results (Wroblewski, 2016, p27). In one of our case studies a National Level Funding Programme the requirement of gender expertise in the form of experts is met in most funded projects- but in different ways: 20% of the project gender expertise is present in the broad majority of the project members, one third of projects provides the expertise through the partner organisations and 16% made use of an external expert.

Regarding the integration of the gender dimension in the projects, Wroblewski states that despite the overall existence of gender expertise, only one third of the projects defined the term gender for their project use (Wroblewski, 2016, p27). Also, as the role of the gender experts is evolving with the project, their involvement ranged from rudimentary (e.g. only in the proposal) to thoroughly (ensuring that gender is integrated consistently in every step) (Wroblewski, 2016:28). Sometimes proposal don't meet quality standards because proposal writers have too little expertise and some of those companies that need to integrate gender expertise into the proposal – don't know how to find a gender expert.

A main barrier that was mentioned in several interviews throughout various case studies was a lack of expertise and awareness for gender equality. A lack of people with expert knowledge on GE smart practices in RTDI or specifically devoted to GEP implementation. This makes it difficult to define concrete measures to achieve the desired objectives or find alternative strategies to overcome barriers. Interviewees in this case study pointed out that it is very important to revise other GE Plans and count on the examples of best practices and measures of other RTDI organisations. One incentive would be to include the gender dimension or the participation in gender equality actions as positively evaluated in research curriculum. One of our case studies had difficulties to integrating GE know-how as a transversal CV asset. It has not been possible to include GE training courses as a cross-cutting asset to count on CV assessment for all vacancies because decision-making bodies considered that it should only be considered in vacancies directly linked to HR and staff management positions.

6.2.8 Transparency, Targets Standards and Monitoring

Formulating target values for the representation of female researchers and recommendations like developing a strategy on how to increase the representation of women in management/ leadership positions enhances the obligation and puts more pressure on the centres to actively promote gender equality. Setting realistic but measurable targets is of crucial importance. Furthermore the monitoring and reporting duties on gender equality make this even more binding and effective. It is essential to be open about data and facts. The research orientated standards of the DFG, which require a comprehensive annual reporting on GE are supportive too. In Austria gender monitoring has become a topic in the agency that implemented the programme, but also at the ministry (driven by impact orientated budgeting) which has facilitated the implementation of the intervention. The transparency of the responsibility of improving the representation of women to the individual faculties facilitated success in one of our case study interventions.

The annual reports easily highlighted which departments and faculties fulfilled their obligations, i.e. an increased decentralized accountability. The visibility of performance differences delivered by the continuous monitoring system was decisive in this case study.

A lack of transparency regarding the links between being entitled to the age limit extension and successfully applying for a research grant was identified as potentially hindering the impacts of the measures in one of the Hungarian case studies – coupled with a lack of monitoring.

6.2.9 Lack of accessible data and information for implementing the intervention

In the Spanish case studies difficulties in obtaining disaggregated data was highlighted as problematic. In one case study data that depended on other departments/ registration systems (e.g. data regarding PhD students or sex-disaggregated data regarding work/life balance permits) was particularly difficult to access. To date it has not been possible to obtain sex-disaggregated data regarding work/life balance permits' requests: these permits are registered with other types of permits, that are covered by the social security system and the current registration system does not enable you to visualize separately the work/life balance categories.

Other difficulties in showing data on existing inequalities due to data protection and confidentiality reasons were highlighted. Even though there has been considerable improvement in understanding how complementary payment regarding "productivity incentives" is distributed and how it negatively affects maternity/ paternity or care related permits, these figures are considered to be confidential and are only partly shown (GE evaluations include data on percentages of deviation in the perception of these salary supplements by women and men but not salary amounts).

In one case study difficulties in monitoring sexual/ gender harassment prevention and assessing the protocol were reported. Interviewees remarked that few notifications about sexual harassment are received, and in the few cases for which complaints have been informed, to date formal complaints have not been finally processed. Therefore, the functioning of the harassment protocol has not been evaluated. The Occupational Health Department is in charge of managing sexual/ gender harassment prevention as well as mobbing prevention – and highlights as problematic that the reasons why complaints are (or not) finally formally processed cannot be accessed due to confidentiality reasons.

Another case study aimed to introduce a new measure on gender equality in the programme. One of the selection criteria for the accredited centre are based on research performance during the last five years, they wanted to consider maternity leave in the evaluation, but the IT department told them that it was not possible to introduce this change. To collect this data. Due to this the programme has not been able to introduce this measure.

A lack of information about the interventions were also identified to have a detrimental impact on them, for example whilst the age limit extension is included in every call for proposals – it is not separately advertised. This may mean it is overlooked by researchers who are beyond the age limit, but would be entitled to the benefit of the extension. In another case study a large share of post-docs and assistant professors at The University were not aware of the mentoring programme.

Difficulties in assessing the effectiveness of dissemination were also cited as problematic in one case study. Difficult to know if information regarding existing inequalities and the measures planned actually reaches all institutional members beyond centre directors and department leaders. To overcome dissemination barriers, the information of GE audits has been simplified

and synthesized to make it more accessible. Information on GE audits is extensive including lots of figures and legal information. It might be useful to present this information on GE plans and Audits in a more visual way by highlighting key elements.

6.2.10 Attitudes: interest and motivation to participate

The willingness and interest of staff members and the target group to participate in the intervention was highlighted in many of the cases as a decisive factor. For example in one of our case studies integrating the gender dimension into teaching was seen as a priority of the students. In another case study the attitude of the HR department was identified as key. The conscientious dedication to obtain more in-depth sex-disaggregated data and regularly informing the General Secretary – acted as a catalyst for the intervention. In this case study an increased awareness among worker's representatives on GE issues also greatly facilitated the acceptance of planned measures amongst staff.

6.2.11 Resistance

Linking gender equality to research excellence was cited as preventing resistance in more than one case study.

In one case study the financial incentives provided to encourage the recruitment and promotion of female professors – was subject to discussion and resistance. For example, a professor reported the financial incentives initiative to the Minister of Research as well as to the Tribunal for Equal Treatment – as being against equal opportunities. Complaints in both instances were dismissed.

Resistances to integrating gender issues in the daily routines were identified in a case study according to some interviews, research staff can be reluctant to address gender equality issues as GEP measures can be seen as an added task to the usual workload. To overcome these resistances an effort has been made to present the GEP as a strategic issue in the institution; GEPs have been disseminated with a statement by the institution president – so that gender equality is not perceived as a matter of the HR department but as a strategic issue directly linked to the institution's governing bodies. Regarding resistances of people in leadership positions GEP issues are included in meetings with directors and managers so that gender equality is highlighted as a relevant matter for the institution.

In another case study it was recognized how the human resource departments usually leads the implementation of gender equality measures, and academics may resist putting them into practice because they are not willing to introduce changes proposed by non-scientific departments. It was also recognized how researchers can be resistant to participating in Gender Equality Committees or actions because the time dedicated to these activities are not valued as a merit in the evaluation of research curriculum for career advancement.

In one case study specifically targeting the BES sector resistance was observed at the level of middle management.

6.2.12 Sustainability of the action

In two case studies one specifically targeting the BES sector, and the other targeting HES and BES it was highlighted that the implementation of the project was difficult because of the high

turnover of staff. In one of these case studies –it was stated that another reason for not sustainably implementing gender equality measures was that other topics are prioritized and suppress gender equality.

Regarding the practical implementation of results at the project level -in one of our case studies that aims to increase innovation capability, create new markets and expand existing markets, it was recognized that to ensure the sustainability of the action it is best to create a long-term utilization model outlasting the funding period; company partners can therefore play an important counterpart to the academic side. The sustainable implementation of results –was identified as the biggest challenge in this case study. Currently, the reconnection to the respective user community e.g. in the construction sector should be improved in order to achieve implementation in practice. Otherwise the results remain with a small group of experts; in this context having strong company partners can be hindering as in their opinion knowledge can often reach competing companies.

Projects developed though this case study in an educational context, highlighted how the rigidity of the system can interfere with the a sustainable implementation. The individual schools has little autonomy and decision-making powers in regards to what forms part of the curricula, do not have the resources for the bureaucratic effort of implementation and can therefore only put a limited number of projects into action. Even more challenging is the establishment of projects into the regular lessons in order to enable its existence after the project duration. If financial and personal resources, as well as responsibility for the organisation especially of complex projects are not ensured, the project is more likely to end as teachers cannot fit extra tasks in their working time.

In another of our case studies it was recognized how research results need time to mature, to evolve into new products and processes etc.

In one intervention implementing in the higher education sector – the difficulties in improving the numerical representation of women at all levels of the organisation in the short-term was recognised: to modify horizontal segregation/ vertical segregation is a slow process and this impact cannot be observed in two years of GEP assessment.

6.5.13 Characteristics of the area of intervention itself (Gender & Science)

In some case studies the very problematic nature of some of the issues the intervention aimed at addressing were highlighted as hindering factors for maximum impact i.e. small pool of women researchers, slow pace of change, 'old boys network', glass ceiling, precarious employment particularly for women in research and the individualistic research culture of academia.

In one case study recruiting genders equally -proved problematic: - one gender dominated the group e.g. due to a low share of women in industry. In another case study it was identified that recruiting female staff with excellence although a top priority was conditioned by the small pool of women in certain fields of research, it was difficult to reach a gender balance in the research team. This is visible from the assessed monitoring. In some case studies this was explicitly related to the country context, i.e. horizontal segregation of higher education in Austria was recognised as resulting in a low pool of female researchers in some scientific disciplines and fields. In this case study the relatively small pool of female students and early stage researchers in specific fields of science and engineering studies was cited as making it difficult to increase the participation of women in some centres as the number of potential female applicants for open

positions is very limited. In another structural barriers were still being encountered, e.g. glass ceiling, male alliance structures and less opportunity to work with industry

In one case study it was recognized how despite very gradual change – human resources can make an impact “if proportion of women is gradually increasing - how patient do you want to be –[it’s a] strategic decision- do you want to employ a younger person or an experienced man?” In the same case study the following factors were cited as hindering the impact of the intervention: old boys network prevent women from advancing, lack of representation of women in decision-making bodies is a central obstacle; image of researcher has been male for centuries and the image of the 24 hour availability still exists; precarious employment situation in HES – especially for women continues and still motivates promising female researchers to drop off from the system.

6.3 Output, Outcome, Impact by Sub-field of action (GE & RTDI)

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
POLICIES	GEP	To overcome gender inequalities in the institution	GE Outputs: <ul style="list-style-type: none"> Ratio of men and women in the distribution of the basic salary and complementary salary supplements has been analysed A list of all decision-making bodies has been drawn up and composition by gender analysed RTDI Output: <ul style="list-style-type: none"> Actions have been carried out to raise awareness among research projects' leaders on the importance of integrating the gender dimension Statistics on the number of research projects integrating the gender dimension have been elaborated and the information has been disseminated
			GE Outcomes: <ul style="list-style-type: none"> Establishment of institutional data gathering: Data collection has been improved and its successive evaluations A greater understanding has been acquired about remuneration inequalities RTDI Outcome: <ul style="list-style-type: none"> A new axis has been incorporated into the plan – regarding the integration of the gender dimension in research content, overcoming reluctances that existed years ago
			Impact:
NON-DISCRIMINATION	Gender-sensitive HR management	To integrate gender equality targets into an innovation policy measure	GE & RTDI Output: <ul style="list-style-type: none"> Higher awareness of gender equality related to personnel and research content Higher commitment of the centre management to promoting gender equality Implementation of activities and measures to promote gender equality Higher capacity for implementing gender equality measures
			GE Outcomes: <ul style="list-style-type: none"> Increased pool of and recruitment of female researchers Higher recruitment capacity and broader pool of female talent

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
			<ul style="list-style-type: none"> • Improved career opportunities of female researchers • Number of female students (interns/ write Masters or PhD thesis)/ Average number and share of women among applicants for vacant positions/ higher recruitment capacity and broader pool of female talent/ <p>RTDI Outcome:</p> <ul style="list-style-type: none"> • More research projects applying gender sensitive methodologies • Increased number of publications applying a gender perspective (no empirical evidence) <p>GE Impact:</p> <ul style="list-style-type: none"> • Higher share of female researchers (compared to BES or cooperative sector) • Share of women increased over the years <p>RTDI Impact:</p> <ul style="list-style-type: none"> • Establishment of a research group on gender in research content • Defining a research priority on integrating the gender dimension in research content
COMPOSITION & INTEGRATION	Definition of targets regarding gender-balance in decision-making positions	To provide opportunities for women's leadership qualification by co-financing mobility grants for women in research fields of strategic importance	<p>GE Outputs:</p> <ul style="list-style-type: none"> • Increase in researchers receiving a mobility grant <p>RTDI Output:</p> <ul style="list-style-type: none"> • Career progress & academic promotion- Indicator: academic titles of participants (academic positions & leadership) <p>GE Outcomes:</p> <ul style="list-style-type: none"> • Strengthening of female researchers': research and leadership competences, international or national networks • Provision of opportunities for collaboration for women researchers <p>RTDI Outcome:</p> <ul style="list-style-type: none"> • Increased international collaboration • Increased knowledge transfer • Increased networking

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
			<ul style="list-style-type: none"> • Strengthened leadership capabilities • publications, participation in conferences
			GE Impact: <ul style="list-style-type: none"> • More women in research leadership positions • More female role models • More women in research • Raised awareness of gender equality in R&I RTDI Impact: <ul style="list-style-type: none"> • Increase in qualified individuals – future leaders of RPOs
ADVANCEMENT	Mentoring programmes	To overcome the problem of the leaky pipeline by empowering young female scholars and promoting academic careers	GE Outputs: <ul style="list-style-type: none"> • Number of participants (early career and mentors) > support women pursuing research career RTDI Output: <ul style="list-style-type: none"> • Number of participants (early career and mentors) > promote high quality research
			GE Outcomes: <ul style="list-style-type: none"> • Greater clarification of career paths (early career participants) • Greater awareness of GE issues (mentors) • Increased social relation competences (mentors) RTDI Outcome: <ul style="list-style-type: none"> • Increase in collegial support • Increase in knowledge sharing, networking and collaboration across seniority ranks
			GE Impact: <ul style="list-style-type: none"> • Assume: more female researchers pursuing an academic career, more female role models, greater awareness about gender issues in the university RTDI Impact: <ul style="list-style-type: none"> • Assume: more and higher quality research

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
	Introduction of chairs and positions reserved to women	Provide greater visibility for excellent women and their work, to create female role models for future (male/ female) researchers, to prepare/train women for/ in management/ leadership	<p>GE Outputs:</p> <ul style="list-style-type: none"> • Making female research work visible: • Number of publications, presentations, participation etc. • Making scientific leadership competence visible: Indicators; qualification of the research director, leadership qualities as evaluated by employees/ partner, scientific reputation of the centre • Achieved adequate proportion of female researchers in the team commensurate with the field of research: Indicators; Number of female researchers during timespan of the intervention according to research fields; influence of the number of female researchers on the atmosphere of the research team; influence on the work of the research team <p>RTDI Output:</p> <ul style="list-style-type: none"> • Several publications, dissertations, theses, products, patents, licenses <p>GE Outcomes:</p> <ul style="list-style-type: none"> • Proof of concept: Women can do this • Personal goals achieved, career advances (of female staff) changed way of doing research • Personal development of the centre head, leadership style changed, achieved scientific goals <p>RTDI Outcome:</p> <ul style="list-style-type: none"> • Employees got offered high-profile positions in science and industry • Start-up activities, acquired follow up project & financing <p>GE Impact:</p> <ul style="list-style-type: none"> • Good working relationship/ atmosphere in the team, increased reputation, career advances > “new research culture” <p>RTDI Impact:</p> <ul style="list-style-type: none"> • Advances in research

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
	Support to career development	Structural change in R&D companies and non-university research institutions	<p>GE Outputs:</p> <ul style="list-style-type: none"> • Number of applicants and funded projects; Outputs of funded projects; number of trained and number of hired women, number of people who increased their gender knowledge, training programme for job starters, tool for individual analysis for skills and defined career path within the company <p>RTDI Output:</p> <ul style="list-style-type: none"> • No output target defined and no output was identified. <p>GE Outcomes:</p> <ul style="list-style-type: none"> • Systematic personal and professional development in the funded companies • Improvement in flexible working hours and reconciliation of career and family life • More systematic and targeted recruitment • Moderate organisational changes regarding women's promotion • Little changes in the proportion of women in leading positions • Assume: quality of applications has improved over the years > increase in knowledge of gender equality in the companies • Assume: Project level: implementation of target agreements with newcomers, transparency of functions, salaries and hierarchy in the company development of job descriptions, definition of career paths, focus on performance reviews etc. <p>RTDI Outcome:</p> <ul style="list-style-type: none"> • Non-identified <p>GE Impact:</p> <ul style="list-style-type: none"> • Change in recruitment procedures. Visibility of women and the companies public image > increased awareness and an increase in the number of women in funded companies. • More women promoted and involved in management training • Project level: increased awareness of work-life balance issues and professionalization of recruitment <p>RTDI Impact:</p>

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
			<ul style="list-style-type: none"> • Better ability to meet gender criteria in other funding programmes > better quality re-search • Applying for more funding > better success rates • Project level: increased heterogeneity of the team > improved proposal writing • Gender fair – company more attractive to international specialists
MONITORING	Monitoring appointments, promotions, or attributions of tasks	Increase the number of women professors through means of transparency, accountability, and awareness of gender issues in recruitment and career advancement by monitoring developments in the staff composition at the faculties	<p>GE Outputs:</p> <ul style="list-style-type: none"> • RPO level: Establishment of central GE committee – responsible for monitoring progress at faculty level to fulfilling targets and objectives of GEPs • Faculty level: gathering gender-segregated data on recruitments and promotions, developing and submitting written reports • Financial incentives: establishing a central pool to reward faculties funding for additional professorships and bonuses. <p>RTDI Output:</p> <ul style="list-style-type: none"> • Key revisions of internal policies regarding promotion and staff appointments <p>GE Outcomes:</p> <ul style="list-style-type: none"> • Increased transparency, awareness and accountability of gender issues in recruitment and career advancement – through monitoring developments in staff composition <p>RTDI Outcome:</p> <ul style="list-style-type: none"> • Increased numbers of RTDI positions and RTDI decision-making positions in all faculties > may lead to changes in composition of research teams and greater diversity. • Improved transparency of advancement • Assume: Better quality recruitments – attraction and retention of competent researchers. <p>GE Impact:</p> <ul style="list-style-type: none"> • More female professors and more women in research leadership. • More female role models and more women in research • Change of culture regarding gender equality <p>RTDI Impact:</p>

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
			<ul style="list-style-type: none"> • Assume: Higher quality research • Financial incentives & monitoring > faculties managements' retained commitment to increasing the number of female professors • Assume Greater diversity in decision-making positions> higher quality research > greater social relevance • Assume: Attract talent > contribute to better working environment > increase employee satisfaction and increase productivity
FUNDING	Targeting funding practices to improve the integration of the gender dimension in research	Increase innovation capability, create new markets and expand existing markets	<p>GE Outputs:</p> <ul style="list-style-type: none"> • Number of funded projects: RTDI projects with gender-relevant content <p>RTDI Output:</p> <ul style="list-style-type: none"> • The integration of gendered user involvement activities into technology development processes like gender divided test groups, gendered needs assessment, usability tests, participatory co-designing etc. • Number of funded projects: RTDI projects with gender-relevant content • Form of projects' results/ type of project results • Diversity of disciplines of the funded projects • Project outputs: review of product or service from a gender perspective; tutorials, didactic concepts/ training concepts or manuals, presentations of results, scientific publications, patents, open access of results and other dissemination activities.
			<p>GE Outcomes:</p> <ul style="list-style-type: none"> • Unintended: high proportion of women among project leaders. • Increased gender knowledge • Increased awareness of the gender dimension <p>RTDI Outcome:</p> <ul style="list-style-type: none"> • More information and knowledge created on gender-specific (and diversity-specific) user requirements for the product/ service/ study to be developed. • Greater gender-specific knowledge

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
			<ul style="list-style-type: none"> • Further use of project results – starting points for further research. Indicator: Number of projects apply project results in practice, Number of projects committed to apply project results. Number of projects that plan to submit another proposal to this or another funding stream. • Increased gender competence of researchers > better research proposals in other funding streams or for teaching , trainings and other research projects. • New quality standards in the service sector • Assume: Higher awareness of researchers of interdisciplinary and/ or participative research
			<p>GE Impact:</p> <ul style="list-style-type: none"> • Assume: Gender criteria implemented in other funding schemes • Assume: Organisational change – those that submit for this funding stream then go on to submit a proposal for organisational change. <p>RTDI Impact:</p> <ul style="list-style-type: none"> • Increased collaboration through projects
	Targeting funding practices to encourage re-search organisations to promote gender equality measures	Consolidate the scientific capabilities of research centres and units to reinforce their leadership in their research fields. The programme includes the elaboration of a gender action plan to overcome gender inequalities within the accredited centres but the call does not identify any concrete target goal in this field.	<p>GE Outputs:</p> <ul style="list-style-type: none"> • Programme level: Revision of current funding procedures to avoid gender bias, Indicator: adapting the guidelines of funding processes • Centre level: Organisational/ cultural change with regard to GE: <ul style="list-style-type: none"> – Design and implementation of a gender equality plan: Indicator: Establishment of institutional data gathering – Creation of Gender Equality Commission composed by the Management, the Human Resources Department and researchers – The creation of new units and professional profiles that are in charge of introducing gender equality measures as part of career development of the staff – Indicators: grants for early career development; support for career and life transitions (e.g for returners), grants fieldwork, conferences, professional development, offer of grants, adaptations in guidelines, employee rights, spousal appointments, capacity building to GE

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
			<ul style="list-style-type: none"> • Centre level: Awareness/ commitment to GE for recruitment <ul style="list-style-type: none"> – Transparent recruitment process – Number of trainings/ participants • Leadership of women researchers <ul style="list-style-type: none"> – Guidance for women in research and in planning academic/ non-academic career – Implementation of leadership development programme <p>RTDI Output:</p> <ul style="list-style-type: none"> • Development of new infrastructure and tools to measures research performance from a gender equality perspective <ul style="list-style-type: none"> – IT application to collect and monitor sex disaggregated data on call applicants – IT tool to register career path of a PhD graduate from the centre – IT tool to monitor the participation of women in research projects and publications – Job satisfaction questionnaire from a gender perspective <p>GE Outcomes:</p> <ul style="list-style-type: none"> • Organisational/ cultural change towards GE <ul style="list-style-type: none"> – Increased awareness of gender inequalities in the research centres – Revised recruitment processes – attraction of talent – Financial support for mothers to attend conferences • Leadership and professional achievements <p>RTDI Outcome:</p> <ul style="list-style-type: none"> • Assume: New practices on recruitment and promotion > attracting and retaining of the best talent
			<p>GE Impact:</p> <ul style="list-style-type: none"> • Difficult to measure – long term change is promoted. • Assume: Organisational change: more awareness and commitment to gender equality • More women candidates for job positions: Indicators: Number of women finalists for the job positions in each call; How many men and women apply for each job position

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
			RTDI Impact: <ul style="list-style-type: none"> • Assume: when research centres are more sensitive they achieve better research performance and scientific results
KNOWLEDGE	Integrating the gender dimension in tertiary education	To promote a gender perspective in teaching and research content	GE Outputs: <ul style="list-style-type: none"> • Inclusion of gender content in the curricular: indicators: Proportion of graduate degrees/post-graduate degrees and Masters/ that incorporate a specific module on gender; Proportion of gender modules that are optional; Proportion of gender modules that are obligatory (graduate degrees/post-graduate degrees and Masters); Number of/ proportion of students undertaken gender modules (Optional/ Obligatory: graduate/ post-graduate); ECTS points taught; Number of / proportion of PhDs read that a) focus on gender b) have a gender dimension • Gender in Research Content unit/ committee in place • Revised curricula/ text-books • Existence of annually up-dated resource bank/ awards scheme/ database on gender related courses • Implementing respective organizational entities (i.e. institute, department etc) RTDI Output: <ul style="list-style-type: none"> • Number of gender related professorships and teaching staff • Number of new courses • Training sessions, number of female and male participants; guidelines to introduce the gender perspective in teaching; space on the website to disseminate gender research
			GE Outcomes: <ul style="list-style-type: none"> • Gender sensitive teaching and research: relevant indicator might be the appearance of gender in studies of any subjects and the existence/ absence of knowledge on sex and gender in research fields. • Incorporation of knowledge and sex • Increased awareness of gender aspects at all levels of the universities hierarchies RTDI Outcome:

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
			<ul style="list-style-type: none"> • Greater interdisciplinarity in research projects: Indicators: Consideration of gender aspects in university document/ strategies/ milestones etc; Amount of interdisciplinary research projects; anticipation of gender aspects in R&I projects and education; • Research quality; integration of a gender dimension/ perspective in research and content, in research projects, patents and agreements • Improved accreditation process <p>GE Impact:</p> <ul style="list-style-type: none"> • Inclusive excellence • Broader consideration of gender-sensitive paradigms in RTDI processes due to increased awareness and competence of students at an early stage in their professional or academic career <p>RTDI Impact:</p> <ul style="list-style-type: none"> • Increased number of research projects and publications dealing with gender will increase awareness; Number of innovations considering GE and Number of research projects considering GE
VISIBILITY	Networking	Increase the visibility of women STEM founders and promote networking among women STEM entrepreneurs themselves and with relevant institutions	<p>GE Outputs:</p> <ul style="list-style-type: none"> • Events for networking <ul style="list-style-type: none"> – Number of events/ number of participants • “mastermind class” of 5-6 women who are interested in founding a business or have done so successfully –work together <ul style="list-style-type: none"> – Number of groups/ duration of working together <p>RTDI Output:</p> <p>GE Outcomes:</p> <ul style="list-style-type: none"> • Networking events <ul style="list-style-type: none"> – increased standing amongst other entrepreneurs – Good professional image – Increased collaboration among women entrepreneurs and supporting institutions – Empowered participants

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
			<ul style="list-style-type: none"> – Improved self-promotion skills RTDI Outcome: <ul style="list-style-type: none"> -
			GE Impact: <ul style="list-style-type: none"> • Assume: Create role models RTDI Impact: <ul style="list-style-type: none"> • Assume: number of STEM related start-ups founded by women
	Activities to make women (and their re-search) visible (e.g. introduction of awards reserved for women).	Aims to encourage and recognize the contribution of women in science	GE Outputs: <ul style="list-style-type: none"> • Media trainings for awardees • Public speaking courses for awardees • Television and radio interviews, newspaper articles, media appearances RTDI Output: <ul style="list-style-type: none"> • Number of awarded scientists
			GE Outcomes: <ul style="list-style-type: none"> • International recognition • A boost to the career climb of younger awardees • Recognition of senior awardees positively affects their students and mentorees • Role models • Spin-off/ follow-up programmes which demonstrate successful female research careers (e.g. in schools) RTDI Outcome: <ul style="list-style-type: none"> • More successful applications for prestigious calls for papers • Awarded women thrive in their careers and this contributes to the success of their re-search teams • New patents • Knowledge transfer • Scientific cooperation which may result in new and relevant research outcomes

SUB-FIELD OF ACTION	TYPE OF INTERVENTION	OBJECTIVE	OUTPUTS, OUTCOMES & IMPACT
			GE Impact: <ul style="list-style-type: none"> • Increase in the number of young girls who choose STEM careers RTDI Impact: <ul style="list-style-type: none"> • Increased public attention to RTDI
CARE & FAMILY LIFE	Scheme for women re- turners	To improve the situation and to increase the num- ber of female researchers	GE Outputs: <ul style="list-style-type: none"> • Revised age limit criteria for competitive funding calls (to take into consideration parental leave) • Number of applicants who submit applications which claim the age limit extension RTDI Output:
			GE Outcomes: <ul style="list-style-type: none"> • Researchers with children, who are slightly above the age limit can still apply for grants – to ensure that the time they spent on parental leave does not hinder their career. • Contributes to their professional advancement. RTDI Outcome: <ul style="list-style-type: none"> • Enhanced career opportunities of the co-workers of beneficiaries and improved overall research performance of their team.
			GE Impact: <ul style="list-style-type: none"> • Assume: Increase in the number of women in STEM RTDI Impact:

Table 5: Output, Outcome and Impact by Sub-field of Action (GE & RTDI)

7. Evaluation

The intervention case studies and their subsequent evaluations ranged from no monitoring or evaluation to comprehensive monitoring and evaluation including impact assessment.

Neither monitoring nor evaluation was identified for two of our case studies.

Several of our case studies were monitored but no impact assessment nor summative evaluation has been made. These findings are consistent with programme or intervention logic where programme managers strictly monitor the progress and fulfilment of project targets. For example one of our case study “gender equality plans” is a classic example of this type of monitoring strategy. The evaluation of the second plan focuses on monitoring the extent of the implementation of the measures and does not focus on impacts and outcomes. The first monitoring report contains a statistical description of the number of measures carried out, those pending and those currently being implemented. The evaluation of the second plan has extended this approach and has designed a group of indicators in order to develop knowledge about the level of implementation of each of the measures specified in the plan.

One of our interventions has been monitored and interim impact has been identified but no summative evaluation has been carried out. Formally, there is only the final evaluation of the predecessor programme, ongoing monitoring and two interim impact analyses. Gender equality is only discussed in the second impact monitoring, but not very broadly or deeply. Monitoring and evaluation are used to control and steer the centres. Monitoring data has to be provided by the centres on a yearly basis and personnel statistics have to be disaggregated by sex, and for publications, the names and sex of the authors have to be reported. Furthermore in all evaluations (ex-ante, mid-term and ex-post) specific questions on the implementation of strategies and activities promoting gender equality are included. The monitoring data is used to assess the attainment of target values – in the context of gender equality a target value is defined for the participation of women. This is measured as the share of female researchers among all researchers at the centres. Specific guidelines for monitoring and evaluation procedures are available which define the main impact indicators but this table of indicators does not include any indicator on gender equality. Two impact analysis studies have been commissioned by the programme management. These studies try to assess the results (outputs, outcomes, and impact) of the programme as a whole. In the first impact assessment gender equality or the participation of women was not considered at all despite being an explicit objective. The second study takes gender equality into account but does not make a linkage to other RTDI impacts or results.

Another evaluation of a case study intervention focused on concept and implementation analysis – although no impact assessment has been carried out. This intervention has been subject of two evaluations and one review. General monitoring consists of proposals being counted and funded projects per year. In another of our case studies no impact assessment has been attributed to a lack of operational defined objectives not clear targets which made it difficult to actually determine impacts.

Some case study evaluations used a mixed-method approach which included document analysis, analysis of monitoring data, online surveys, expert interviews and case studies. The two programme evaluations for this case study looked at the intended, expected and direct effects, but less at unintended and unexpected outcomes and impacts. In another of our case studies short-term effects were evaluated focusing on two aspects:

- Intervention's ability to attract female applicants who did not previously view themselves as research project leaders,
- Applicants' perceptions and experiences of the intervention.

First an analysis of applicant characteristics for RFO programmes in the period 2009-2014 were carried out focusing on the development in female applicants, the characteristics of the applicant pool for the programme compared to other programmes and re-applying patterns of the programme's applicants. A survey was sent to all applicants to uncover the motivation for applying, strategy for applying and gains from applying. Interviews with grant holders applicants were conducted to provide additional insights into the survey. The main limitation of this approach is that it focuses on short term effects. In another case study a simple evaluation was carried out – asking all participants about their degree of satisfaction with the programme participation.

A couple of our case studies carried out comprehensive monitoring & evaluation including impact assessment. For example, one of our case study interventions was the subject of two evaluations and identified some outcomes and impacts. Funded companies and a control group – were asked about internal changes regarding:

- Conditions for the reconciliation of work and family or private life improved,
- Sensitivity of managers on gender equality issues has increased,
- Idea of equal opportunities more firmly anchored in the organisational culture,
- Conditions for female researchers and technicians improved overall,
- Women's share of new hires in the research technology sector has risen,
- Structural/ Organizational changes made to promote women more effectively,
- Proportion of women researchers in management positions has risen,
- Percentage of women in expert groups.

The main problem of many of effects however were mentioned in qualitative interviews – but no empirical evidence could be provided. Further studies would be necessary.

One of our case studies included a comprehensive, indicator-based set of monitoring processes and reporting as well as being subject to an evaluation. Indicators were derived from the objectives; quantitative and qualitative indicators; quantitative figures refer to all centres – so it is a programme based evaluation. The scientific outcomes of this intervention was evaluated to be considerable: 230 publications, 21 dissertations, 41 bachelor's and master's theses, 2 patents and two licenses. 90 researchers were active in the centres as well as 8 directors. Gender equality outcomes and impact have been identified – derived from continuous monitoring and reporting mechanisms – but these results cannot be generalized to all centres. These included career advances of female staff, changed way of doing research and a good working relationship/ atmosphere in the team, increased reputation and career advances – creating a “new” research culture.

8. Validation of EFFORTI Evaluation Framework

8.1 Theory based evaluation approach: Theory of Change

Our approach of using a theory-based evaluation framework is appropriate even though in the majority of cases it has not been possible so far to demonstrate concrete research and innovation impacts. The theory of change approach has proved to be a valuable tool for researchers,

programme managers, policy makers and evaluators to think about how different factors may contribute to the impact of interventions, i.e. context, design and those facilitating and hindering factors shaping its implementation. In some case studies the theories of change we developed were verified by programme managers but in other case studies these were refuted. In the majority of cases we were not able to substantiate with empirical evidence the links between a greater gender equality and higher RTDI impacts. In one case study however, a social network analysis was used to demonstrate a growing acceptance and interest in the gender dimension in research – the group of beneficiaries expanded from call to call, whilst the growing number of proposals was identified as an RTDI outcome. Despite the fact that in the majority of cases we were not able to provide empirical evidence, the theory of change approach was deemed useful to begin identify possible RTDI outcomes and impacts of gender equality interventions. The subjective perceptions of some interviewees about the link between the GE intervention and research and innovation outcomes and impacts – provides a good starting point – for where future research in this field should be concentrated. It was perhaps in either those interventions that included both gender equality and RTDI objectives – where outcome and impacts in both areas could be detected or those interventions that aimed to integrate the gender dimension in either research content or tertiary education – where outputs, outcome and impacts could perhaps be classified in both fields.

8.2 Validation of Indicators

	NUMBER OF INDICATORS IN FRAMEWORK	NUMBER OF INDICATORS USED IN CASE STUDY WORK
PERSONNEL	60	19
WORKING CONDITIONS	121	73
PROFESSIONAL CAPACBILITIES	103	69
STRUCTURAL FEATURES	71	32
RRI	337	58
TOTAL	692	251

Table 6: Validation of EFFORTI Indicators

The case study work was used to validate the indicators that were included into the EFFORTI toolbox 1.0. Please see annex 3 for the indicator table highlighted according to the indicators used throughout the case study work. In the majority of case studies relevant indicators could be easily found within the toolbox. In just a couple of case studies relevant indicators were highlighted as needing to be included in the framework. These were those predominantly related to integrating the gender dimension in tertiary education and some related to sexual harassment.

8.3 Impact Stories

EFFORTI D4.4. Collection of Good Practices and Lessons Learnt includes 22 impact stories. Overall, a common constraint in evaluations of GE interventions concerns the complex interacting links between processes, outputs, outcomes and impacts that are usually non-linear in time and direction and therefore often need clarification, i.e. an intervention logic model. The I-O-O-I approach is useful to structure thinking in the evaluation logic, but it is important to emphasise and keep in mind the non-linearity of inputs from an intervention over processes to actual and measurable types of RTDI effects. Again, the intervention logic model supports and guides

choices of relevant indicators, e.g. identified through the EFFORTI toolbox, to be included in the actual GE evaluation.

The intervention logic model is translated into so-called impact stories. The impact stories are (1) ideal type impact chains, describing the outputs (immediate technical results), outcome (direct social effects) and impacts (intended middle- or long-term effects beyond the beneficiaries) of commonly used gender equality measures. Furthermore, the impact stories explain (2) how the elements of the I-O-O-I chain (input, output, outcome and impact dimensions) causally interact with each other, (3) through which indicators the expected positive effects can be verified, and (4) which positive as well as negative unintended effects have to be taken into account and how they can be fostered or, respectively, avoided.

Methodologically, the impact stories not only form the core of the EFFORTI online toolbox, they also set a cornerstone for the case studies. In preparation of the case studies, change models of the examined programmes are built based on the impact stories. During the case study work, the change models were assessed for their reliability and functionality and revised. In turn, the case studies allow for validation, refining or readjustment of the impact stories.

9. Ethical and Methodological Reflections

Attribution and contribution

Various case studies reflected on the attribution/ contribution dilemma and a general consensus arising from our analysis is that interventions ‘contributed’ to the outcomes and impact of the intervention in combination with a complex array of contextual contributory factors. In one case study a problem of the funding programme was that it mainly attracts already sensitized companies- so it was difficult to know to what extent the intervention ‘contributes’ to greater gender awareness. In another it was hypothesised that the intervention contributed to the implementation of gender criteria in other research programs by some interview partners – however this could not be verified.

In another case study it was identified how ‘contribution’ can be confirmed if the interventions are of same kind as expected in parallel interventions, i.e. by referring to the intervention logic model. This case study intervention was targeting women researchers, who may as well apply for similar funding in parallel non-gender specific interventions. With a success rate of 3 percent, the competition in this intervention was more intense than at the parallel interventions. Hence, outcome and impact of the programme is not necessarily different from outcome and impacts of parallel interventions. In addition, other implications are considered such as earlier funding, speeding of career, research leadership, role models, recognition and confidence, increased awareness etc., all identified through interviews and an evaluation of funded as well as non-funded applicants subsequently applying for similar parallel funding from the research council.

In another case study it is difficult to assess to what degree the monitoring intervention contributed to the increase of women in top research positions or this increase would have happened while only providing financial incentives.

Lack of available information, data and indicators

Various case studies cited that a lack of information and indicators regarding the intervention hindered effective monitoring and evaluation of the intervention. In some cases project reports and monitoring data were inaccessible due to data protection regulations. In order to overcome

this – for the EFFORTI case studies online project descriptions and qualitative interviews, in which outputs, outcomes and impacts were reported but could not be verified empirically. In one case study it was identified that if the monitoring data had been available a bibliometric analysis could have been carried out and its results connected to gender equality indicators. Although this particular intervention had a lot of available data on RTDI effects, no link to gender equality measures has been established so far – partly due to a lack of awareness on this issue. Another case study, identified as a politically sensitive, one-time intervention where it was difficult to access information as well as relevant stakeholders, in particular practitioners. Case studies dealing with these problems tended to rely mostly on qualitative interviews in which outputs, outcomes and impacts were reported but could be verified empirically.

In one case study field access was facilitated through the personal contacts and personal networks developed as a researcher and evaluator in RTDI in particular in facilitated access to ministry and agency representatives. In addition, the intervention is well documented and researched, and has been subject to an accompanying evaluation. Centre heads were very open and willing to share all the information that they have on their work in the centre / with partners. Also, ministry and agency representatives were very open-minded, also showing interest in the results of this work.

Time lag

In three of our case study interventions it was explicitly stated that given the time-frame of the intervention it is impossible to carry out a thorough impact assessment detailing outcomes and impacts. In one of our case studies – that began in January 2018 – it was therefore decided to carry out an ex-ante evaluation. In another case study it was not possible to carry out a thorough evaluation of the intervention at this stage – whilst an evaluation of the short term effects of the program have been carried out, this analysis does not provide an exhaustive mapping of the outcomes. Another case study author reflected: to measure outcome and impact it would have been better to choose a company whose project had been completed for a longer time.

In relation to the very slow pace of structural change, one case study author recognizes: “the most ill-placed assumption regarding the intervention is that its’ impacts can and should be observed in a short period of time and its success is directly measurable”. Regarding integrating the gender dimension in tertiary education it was highlighted that a major problem assessing impacts is the time-lag between the students’ education period and impacts that occur as a result of this education in later professional career. Students are also ‘lost’ from further examination of impacts after finishing studies.

Creating an increased awareness of the importance of integrating the gender dimension into teaching and research content is a long-term process. Building competences of researchers in the gender dimension is also a long-term process that requires in some cases challenging accepted ‘norms’ in certain scientific disciplines. It’s a long-term project that may, in some disciplines, challenge received wisdom and therefore may take a great deal of time. Outcomes and impacts in this instance may be gradual – slightly increased awareness may eventually lead to a better ‘more inclusive’ way of doing science.

In another case study the interviewees highlighted that the impact of their gender equality measures are related to mid-term and long-term changes such as the number of female group leaders that requires more time to be detected. They also detected some cultural changes towards gender equality that are difficult to measure.

Outcomes and Impact Context Dependent

In almost all case studies outcomes and impact were identified as context dependent. For example one case study the context of a very male dominated BES sector with male dominated organizational cultures means that it is very difficult for a funding programme to find companies who are interested in handing proposals. This context affects impact on a programme level.

In another case despite being an international flagship program, it has scarce resources due to weak political backing. This affects output, outcome and impact of the funding program because only few projects can be funded per call.

In another case study the strong focus on numbers and on raising the participation of female researchers is visible in the recruitment efforts of the centre and in the defined target values. Furthermore the high degree of horizontal segregation in higher education at the national level limits the success in terms of an increase in the share of female researchers. This focus on numbers seems to limit the scope of interventions as organisational and cultural changes are not perceived as priorities.

In other case studies it was identified how the outcomes and impacts of the intervention are strongly context dependent. One intervention is characterized by a complex multi-actor constellation as 17 policy actors in total (the federal government and 16 federal states) are responsible for its implementation. At the level of the beneficiaries, the size and type of the HEIs also play a crucial role. Furthermore, in certain countries HEIs have a rather high level of autonomy and the relationship between the government and the HEIs is characterized by a "weak" governance structure, which uses primarily positive incentive. Framing another intervention was the fact that gender equality is seen as an important value and goal by the Swedish public and that gender equality initiatives (gender mainstreaming) is an explicit strategy of the Swedish government has most likely had a positive effect on the implementation of the intervention as well as the outcome and impact.

The national context has mattered for the implementation of another of our case studies. First, there has been legislative barriers, which have impeded the intervention since it is prohibited to positively discriminate people on the basis of gender, meaning that affirmative action is illegal in this country. Our case study intervention therefore required a law dispensation. This resulted in a lot of public attention and a lot of opposition towards the program and some of the grant receivers felt under pressure from the press as to justify their funding. Moreover, the fact that the success rate of the intervention was so low also discouraged some (although limited numbers) of women researchers in applying for funds in the next round of applications.

As previously stated, the common perception in this particular national context is that men and women have equal opportunities and that discrimination based on gender is not present (since it is illegal by law). This means that structural factors leading to gender inequalities are – in general – not acknowledged. This may partly explain why the studied case was reluctant to launch initiatives aimed at women researchers and why the intervention was changed from being a programme aimed at women and promoting women researchers' careers, to be targeted at all early career scholars at the university.

Another case study demonstrates a need to factor in the context which has 'contributed' to the 'success' of this intervention. The favourable policy environment at the European, Spanish and Catalan levels have facilitated the integration of the gender dimension in teaching and research. The plan however has successfully operationalized the legal framework to integrate the gender dimension into teaching and research.

10. Conclusions

The 19 Case Studies demonstrated various strengths and weaknesses in terms of the design of the intervention and these could be linked to the types of interventions and their sub-fields of action. Strengths included: data-driven and evidence-based intervention design; mainstreaming of gender equality throughout every step of assessment procedures; tailoring a mix of measures, i.e. combining those interventions aiming for a greater gender balance higher up the career ladder with more structural change interventions. Innovative intervention designs for example ‘future potential analysis’ – where a candidate for a leadership position is assessed for her/his ‘future potential’ as oppose to past achievement was seen as a huge step forward really challenging those often gender biased assessment procedures. How monitoring and transparency were embedded into intervention design were also deemed as critical factors influencing impact. It was perhaps in those interventions integrating the gender dimension into research content and tertiary education where the confluence between both gender equality and RTDI outcomes and impacts could perhaps be most easily detected. Also how gender equality is conceived, i.e. as equal participation of women and men in RTDI yet without reflection on organisational and cultural change was deemed a weakness.

Various facilitating and hindering factors were identified throughout the case study work and unlike the analysis of design – these tended to be cross-cutting across all types of interventions and sub-fields of action. The governance framework was identified as a key driver contributing to impact – for example where legislation had not only been passed and but was being acted on by an accreditation agency -integrating the gender dimension into tertiary education was being effectively implemented. Whilst top-level commitment is identified by the majority of our case studies as a key factor – bottom-up buy-in was also seen as an essential factor in interventions targeting both the HES and BES sectors. Another factor that seemed to effect the implementation of the intervention was whether or not it was promoted as positive action measure. In some instances – funding targeted specifically at women was perceived negatively, yet in other instances it provided a more concrete objective for the programme – which led to a higher demand. Developing synergies with other initiatives was deemed important and legitimizing for interventions in this field, so for example DFG standards in Germany and the Excellence initiative – were highlighted as trend setters, paving the way for the acceptance of gender equality interventions in RTDI. Resources were deemed crucial in almost every case study for creating an effective and long-term impact. Gender competence, experience and knowledge, was highlighted as key – and in those case studies where implementation was not optimal – it could be linked to a lack of gender competence and experience. In one case study – external gender expertise could be brought into project design and this level of support greatly facilitated implementation. It was also highlighted how including the gender dimension or the participation in gender equality actions as positively evaluated in research curriculum might provide an incentive to boost competence. Formulating targets and standards followed up by monitoring were deemed necessary for successful implementation and conversely a lack of accessible data and information were deemed to have a negative impact on the smooth implementation of interventions. Positive attitudes, interest and motivation to participate were identified as crucial to successful implementation and on the contrary resistance was identified as stymying an optimal implementation. Specifically strategies dealing with resistance have proven effective, for example integrating gender equality issues into meetings with directors and managers can underline gender equality as a relevant issue for the institution.

Gender equality and RTDI outputs, outcomes and impacts were tracked throughout our 19 case studies and could be seen to be linked to type intervention and field of action. In some case studies where the main objectives were linked to gender equality - it was more difficult to discern RTDI impacts and vice versa. In those programmes or interventions promoting scientific excellence or innovation – if they did not include an explicit gender equality objective – gender equality impacts were more difficult to track. If the case study included both objectives – both types of outcomes and impacts could be identified – but these might not be related. It was in the field of integrating the gender dimension in research content and tertiary education – where impacts could really be classified under gender equality and RTDI.

Regarding the evaluations of the selected case studies we can see that the intensity and quality of programme evaluations is highly dependent on the national evaluation cultures. Some interventions were not monitored and had no data gathering mechanisms built into the intervention. Others were monitored but no evaluation or impact assessment had been carried out. In a few case studies, comprehensive monitoring had been carried out accompanied by evaluation which may or may not include impact assessment. Thus, in cases where a strong evaluation cultures exists (like Austria, Germany and Sweden), the programs are more comprehensively evaluated than for example in Spain and / or Hungary.

The validation work revolved around three main elements:

1. Theory of change approach
2. Key Indicators
3. Impact Stories

In some case studies the theories of change we developed were verified by programme managers but in other case studies these were refuted. In the majority of cases we were not able to substantiate with empirical evidence the links between a greater gender equality and higher RTDI impacts although we were able to identify potential areas for future research. Regarding the indicators – in the majority of case studies – all useful indicators were included in the EFFORTI framework – we managed to validate 251 out of a possible 692 indicators. Case study work also fed back into the EFFORTI impact stories that form part of D4.4..

The ethical and methodological reflections highlighted the difficult and problematic nature of ascribing outcomes and impacts as direct effects of the interventions. A whole range of contributory factors must be taken into consideration.

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12. Annex 1: Case Study Guidelines



Project acronym: EFFORTI
Project full title: Evaluation Framework for Promoting Gender Equality in R&I
Project number: 710470
Programme: Horizon 2020 - Science with and for Society (SWAFS)
Objective: GERI-3-2015, "Evaluation of initiatives to promote gender equality in research policy and research organizations"
Type of action: RIA

EFFORTI – Deliverable 4.1

Case Study Guidelines:

fieldwork and validation

Authors: Palmén, Rachel
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1. Introduction

This document serves as a practical guide for carrying out the Case Studies during the EFFORTI project. The project will carry out 21 case studies distributed over 7 countries. The main objective of the case study work is to consolidate and validate the EFFORTI evaluation framework developed in WP3. The specific objectives are to:

- carry out concept and implementation analysis as well as impact assessments for the selected case studies,
- develop impact pathways/ log frames and theories of change for the selected case studies,
- validate the indicators used in the EFFORTI framework.

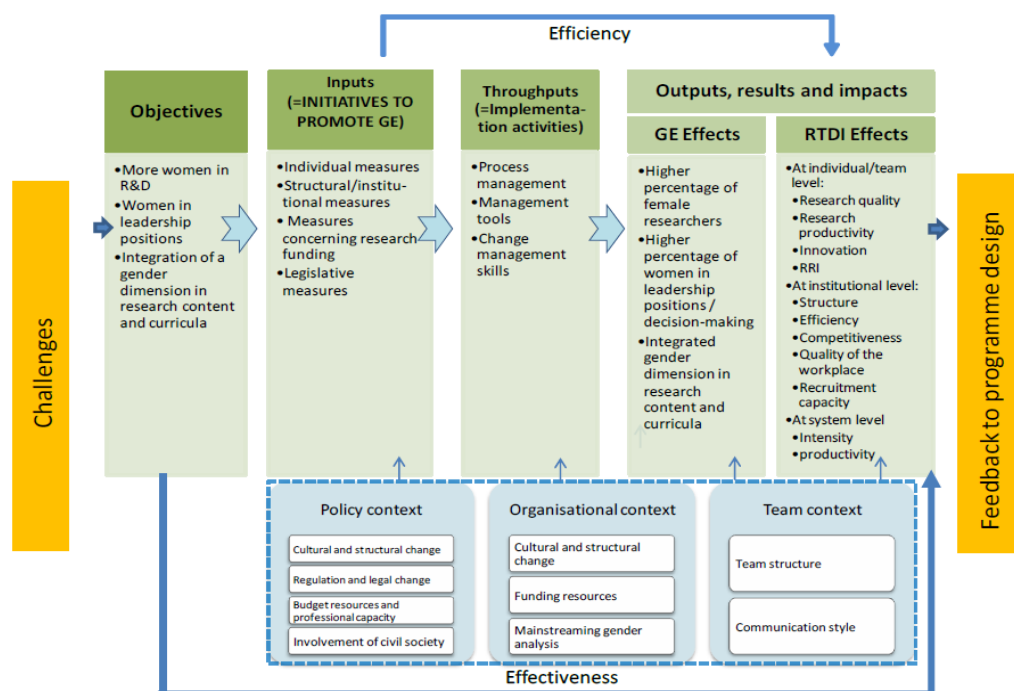
It provides concrete instructions and guidance for data collection, including a detailed interview guide to be used throughout the course of the case study work. Various templates are also provided in the annexes to facilitate the reporting of the case studies including the EFFORTI Case Study Evaluation Design Template and the EFFORTI Case Study Narrative Report Template amongst others. These templates create a standardised reporting framework to facilitate the comparative work. These guidelines also include a template to record the researchers ethical and methodological reflections – which acts as a feedback tool to ensure that the research design can be adapted as the research progresses.

This present document needs to be read in conjunction with the overall Evaluation Framework (see EFFORTI deliverable 3.3.), the EFFORTI Data Management Plan (see D1.3) and the EFFORTI deliverables on Ethics (D7.1 and D7.2).

2. EFFORTI Intervention Logic Model

The EFFORTI intervention logic model forms the conceptual basis for the case study work. As seen in Figure 1, the EFFORTI Intervention Logic Model considers inputs, throughputs, and outputs, as well as results and impacts of the former two, and does so by differentiating between three levels (team, organisation, country). The Intervention Logic goes beyond the state of the art in evaluating GE initiatives by also focusing on outputs or effects related to RTDI. More specifically, the model aims at providing both theory and tools for analysing how GE related interventions contribute to the achievement of the three main objectives stated in the model below (more women in R&D, women in leadership, and integrating the gender dimension in research). The model also aims at showing how, once achieved, these objectives or effects can further affect desired RTDI effects such as the number of patents and number of publications and citations, but also new RTDI effects, such as providing answers to grand challenges and further promoting RRI. Additionally, the model includes three levels, i.e. team level (research quality, productivity, innovative outputs, and other RRI effects), organisational/ institutional level (workplace quality, recruitment capacity, efficiency, RRI orientation, competitiveness), and country/ system/ policy level (intensity, productivity, ERA orientation, etc). However, some interventions

will most likely overlap between different levels, which will be taken into account in the development of the toolbox (EFFORTI Conceptual Evaluation Framework, D3.3, 2017:8).



3. The Case Study Method

Yin (1994:13) defines a case study inquiry as one that:

“Investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.”

So the case study method lends itself to research where contextual factors are highly pertinent to the phenomenon of study (ibid). Gender equality interventions and their subsequent impact in RTDI – the subject matter of the EFFORTI evaluation framework are highly dependent on a wide range of contextual factors (Kalpazidou Schmidt & Cacace, 2017). Case studies as a method have also been used extensively in evaluation research (see Cronbach et al, 1980; Guba & Lincoln, 1981, Patton, 1980; US General Accounting Office, 1990; Yin, 1993). Yin (1994) highlights how case studies have been used in evaluation research and identifies five different ways they have been used:

- to explain the ‘causal’ links in complex real-life interventions i.e. the programme ‘effects’ (US General Accounting Office, 1990),
- to describe an intervention within the real-life context in which it occurs,
- to illustrate or describe certain topics within an evaluation,
- to explore those situations in which the intervention being evaluated has no clear, single set of outcomes,
- a “meta-evaluation” a study of an evaluation study (Yin, 1994:15).

In the case of EFFORTI we will use the case study method to inductively build on and validate the evaluation framework. The multiple case study work will shed light on those factors and mechanisms that shape and influence the effects of gender equality interventions in RTDI on

research and innovation outputs. It will attempt to explain what works (and what does not work) in what context and why. It will also explore whether the intervention is likely to work elsewhere and what is needed to make it work elsewhere. It will also attempt to explain how the national/ science system context influences the intervention in terms of the main contextual elements as well as the main agendas, strategies, and policies that shape the intervention. How the institutional context influences the intervention will also be taken into consideration – as will an assessment of whether the general conditions for effective gender equality policies are in place.

The case study work will both consolidate and validate the evaluation framework. The multiple case study work will identify the most common indicators used across the cases, whilst it will also attempt to highlight the more ‘innovative’ or ‘novel’ indicators. One approach could be to highlight those indicators which are not yet part of traditional R&I impact assessments, for example the RRI indicators.¹ Finally, we should generally stress to use not only easily countable indicators like increase in number of women in teams but also more qualitative indicators.

The individual case study work will enable us to ensure that all important indicators are included in the framework and provide a feedback mechanism to include those that are not presently included. How the case studies map onto the impact stories also forms an important part of this consolidation/ validation work – which we conceive of as an iterative process. The impact stories will provide an initial ‘input’ into the impact pathways/ logframes we want to develop for each case study. These will then be revised taking into consideration the relevant literature, monitoring and evaluations- to identify key assumptions that will lead to the development of a theory of change for each case study. The theories of change that will be developed will be able to portray the complexity inherent in the relationship between the intervention and the context and its contribution to the outcomes and impact of the intervention. These will then be verified by the programme manager of each case.

4. Tailored EFFORTI Case Study Evaluation Design Questions:

Yin (1994:71) splits case study questions into four different levels:

- questions asked of an entire study – for example, calling on information beyond the multiple cases and including other literature that might be reviewed (L1),
- questions asked of the findings across multiple cases (L2),
- questions asked of the individual case (these are the questions in the case study protocol) (L3),
- questions asked of specific interviewees (L4),

This table states the EFFORTI research questions 1-3 and Level 4 questions can be found in the interview question.

¹ A second approach would be to use more complex indicators. For example, bibliometric analysis should not only count the pure number but look at the level of interdisciplinarity, or, in the case of patents it is important to not just look at numbers but also take into consideration patent citations.

	Research Questions	Multiple Case Study Questions	Case Study Questions	Data Collection Methods and methods of analysis
	How do interventions that promote gender equality in R&I influence research and innovation outputs?	<ul style="list-style-type: none"> • Inductive consolidation/ validation of conceptual framework 		
Context		<ul style="list-style-type: none"> • What are the factors and mechanisms that shape and influence the effects of gender equality interventions in RTDI on research and innovation outputs? • What works (and what does not work) in what context and why? <ul style="list-style-type: none"> – Is the intervention likely to work elsewhere? – What is needed to make it work elsewhere? 	<ul style="list-style-type: none"> • How does the national/ science system context influence the intervention? <ul style="list-style-type: none"> – What are the main contextual elements that shape the intervention? – What are the main agendas, strategies, policies that frame the intervention? – Who are the main/relevant actors? • What are their interests, preferences & agendas? • What is their role in the system? • How does the institutional context influence the intervention? [This requires an overview of the main/relevant institutions that might influence/effect the intervention] • Are the general conditions for effective gender equality policies in place? 	<ul style="list-style-type: none"> • Country notes- Identify main national/ science system contextual factors identified in the EFFORTI country reports that impact on the case studies • Documents, publications, interviews with policy makers used to identify the main institutional contextual factors that impact on the intervention

			<ul style="list-style-type: none"> – Is the intervention comprehensive and tailored? – Does it include gender related targets? – Does it include special interventions “to overcome the effect of historical discrimination and accelerate the attainment of substantive equality for women?” ((UNDP 2014:33) – Do multiple actors have responsibility for the intervention? – Are sufficient resources (human, financial and institutional) available for correct implementation? – Is the intervention embedded into existing structures and management procedures? – Are interventions accountable and transparent? – Is the intervention flexible and resilient? – Is the intervention publicized and promoted? 	
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Consolidation & Validation		<ul style="list-style-type: none"> • Indicators: What are the most common indicators (across cases)? • Indicators: What are the most 'innovative' or 'novel' indicators? • Framework: How do the case studies map on to the impact stories? 	<ul style="list-style-type: none"> • What indicators can be synthesised that are relevant for the framework? • Are all important indicators in each case study included in the framework? • What is the logframe/ impact pathway for each case study? • What is the theory of change for the case study? [including the main assumptions]? 	Multiple kinds of literature and data are used, including interviews and documents, in order to triangulate views and enhance the validity of findings.
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Constructing the Theory of Change for each Case Study

Concept analysis: Impact Pathway/ Log frame input			Describe the history of the intervention, have there been predecessors? What are the intervention's main aims and objectives?	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports), interviews with policy makers
			Who is the target group?	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports), interviews with policy makers
			What are the main activities?	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports)
			What resources are available for the intervention? (Specify: HR, financial, time, etc.)	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports) interviews with policy makers
			Elaborate its design: How should it work? Step by step (functional mechanism)?	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports) interviews with policy makers
			What impacts are expected? Did policy makers only intend GE effects or were R&I impacts also foreseen?	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports) interviews with policy makers
			Who are the key players? (funders, the set-up phase, the implementation, evaluation etc.?)	Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports) interviews with policy makers
			Significance of policy intervention, e.g. are core underlying problems addressed, do planned activities imply a significant change relative to existing institutional settings, do they fit with overall agendas, strategies. Can the objectives be fulfilled – given the amount of resources?	Interviews with policy makers and existing monitoring, evaluation reports and internal documents.

			<ul style="list-style-type: none"> • is the allocation of financial and personnel resources to implement the policy adequate? • are targets/goals realistic? 	
Implementation Analysis: Theory of change input			Does the implementation of the intervention correspond to the objectives?	Interviews with key stakeholders (including programme managers and practitioners) and existing monitoring and evaluation reports.
			To what extent has implementation changed over time? What has changed?	Interviews with key stakeholders (including programme managers and practitioners) and existing monitoring and evaluation reports.
			How are the responsibilities for the implementation of the intervention distributed?	Interviews with key stakeholders (including programme managers and practitioners) and existing monitoring and evaluation reports.
			What are the main decision-making bodies involved with the implementation of the intervention? Is there a commitment from top-level decision-making bodies?	Interviews with key stakeholders (including programme managers and practitioners) and existing monitoring and evaluation reports.
			Have any fixed working procedures been established to implement the intervention?	Interviews with key stakeholders (including programme managers and practitioners) and existing monitoring and evaluation reports.
			What factors inhibit or promote the implementation of the intervention in line with its objectives?	Interviews with key stakeholders (including programme managers, practitioners and beneficiaries) and existing monitoring and evaluation reports.
			What barriers were encountered during the implementation? Was it possible to overcome these barriers and how?	Interviews with key stakeholders (including programme managers, practitioners and beneficiaries) and existing monitoring and evaluation reports.

Impact Assessment : Theory of change input			<p>What are the main outputs that can be observed?</p> <p>Do these coincide with the expected outputs?</p> <p>How are these measured?</p> <p>Are these consistent with the categories, dimensions, sub-dimensions and indicators identified in the relevant EFFORTI impact story?</p>	Existing monitoring reports, evaluations and literature highlighting relevant bibliometric analysis etc. Interviews with programme managers, practitioners and beneficiaries. Relevant EFFORTI Impact Story.
			<p>What are the main outcomes (per target group) (any specific to RTDI) that can be observed?</p> <p>Do these coincide with the expected outcomes?</p> <p>How are these measured?</p> <p>Are these consistent with the categories, dimensions, sub-dimensions and indicators identified in the relevant EFFORTI impact story?</p>	Existing monitoring reports, internal documents, evaluations highlighting relevant bibliometric analysis etc, literature and surveys. Interviews with programme managers, practitioners and beneficiaries. Relevant EFFORTI Impact Story.
			<p>What (type of) main impacts (indirect/ direct, intended/ unintended/ RTDI) can be observed?</p> <p>Do these coincide with expected impacts?</p> <p>How are these measured?</p> <p>Are these consistent with the categories, dimensions, sub-dimensions and indicators identified in the relevant EFFORTI impact story?</p>	Existing monitoring reports, internal documents, evaluations highlighting relevant bibliometric analysis etc, literature and surveys. Interviews with programme managers, practitioners and beneficiaries. Relevant EFFORTI Impact Story.
			<p>What are the main factors that have hindered/ supported the impacts of the intervention?</p>	Interviews with programme managers, practitioners and beneficiaries and existing monitoring, evaluation reports and internal documents.

5. Tailored EFFORTI Case Study Evaluation Design Process: From Impact pathway/ log frame to a comprehensive theory of change

Both researchers and practitioners have increasingly looked to theories of change as a valid approach to evaluation in a variety of sectors and fields (Coryn et al, 2011, cited in Ofek, 2017:175). A ToC can be used to shed light on the implementation of an intervention, i.e. “what is required to translate objectives into ongoing service delivery and programme operation” (Blamey and Mackenzie, 2007:444 cited in Ofek, 2017:175). It can also be used to shed light on programme theory, i.e. “the hypothesized casual chain and mechanisms linking interventions to outcomes, and the reasons behind the development of such mechanisms within specific contexts” (ibid).

Leeuw and Donaldson (2015) suggest that whether a theory of change is developed from either the implementation focus or the programme theory approach a theory of change should incorporate “tested and robust explanatory theories from the (social, behavioural and policy) sciences [which add] crucial insights about mechanisms and contexts underlying policies and programs including evaluation interventions” (p472). Ofek (2017:175) sheds lights on some of the commonalities of these two approaches’ use of ToCs, i.e. “the reliance on a sequence of steps leading from actions to final results, ultimately focusing on what programs should do or should have done.” Ofek (2017:175).

ToC can be developed through various steps.

Ofek (2017) highlights how the first step can involve identifying “the structure and mechanisms characterising the observed phenomena... via document reviews and interviews.” (Ofek, 2017:175). This is the approach that the EFFORTI case study work will follow. The relevant impact story and documentary analysis will be used as an initial input to develop an EFFORTI impact pathway/ log frame for each case study (Annex 5). In order to do this the concept analysis element of the EFFORTI Design Template (Annex 4) should be filled in. Interviews with key stakeholders – particularly with policy makers should also be conducted at this stage. (Please bear in mind however – the interview with the programme manager should be reserved for when a more complete picture of the intervention has been completed). During this first step, the impact pathway/ logframe visual template (Annex 5) should be constructed using the above information. This enables an initial picture to be drawn of how the programme was designed to work.²

The second step involves “developing potential theories to explain the phenomena observed or the anticipated outcomes.” (Ofek, 2017:175). Relevant evaluations, empirical research and possibly interviews with practitioners and beneficiaries should be reviewed/ carried out to shed light on the impact pathway/ logframe. Programme/ context assumptions should begin to be highlighted and evidence found that either supports or undermines the various assumptions and hypotheses embedded into the complex relationship between context, programme design, implementation and impacts. The filling in of the implementation analysis and the impact assessment section of the EFFORTI Design Template (Annex 4) –should be able to help us to begin to

² Please note that one of the main differences between a logic model/ impact pathway and a theory of change is that the latter factors in complexity and identifies/ tests the assumptions that the former is built on.

think about the relationships between inputs, outputs, outcomes, and impacts, i.e. the I-O-O-I model. Interviews with practitioners will enable us to understand the implementation of the intervention – whilst interviews with beneficiaries should help to shed light on the impact assessment section of the template.

The third step involves developing an EFFORTI Theory of Change for each case study and filling in the theory of change visual template using above information (Annex 6) and testing these theories “in the field to determine their accuracy or to refine them if needed, revealing the sequence leading from actions to results.” (Ofek, 2017:175). In the EFFORTI case study work the interviews particularly those with programme managers should be used to test the assumptions and sequences leading from actions to results – in the form of the Theory of Change. The theory of change should then be revised using the interview data and additional literature and evidence to identify the key assumptions and implementation issues related to the case study. By this stage all parts of the template (Annex 4) should be filled in.

6. Unit of analysis & Intervention Typology

Defining the unit of analysis is key in any case study work but it becomes especially important in large multiple case study work. Defining the “case” can be difficult given that case studies have been carried out about decisions, programmes, the specific implementation process, as well as organizational change. Even when the ‘unit’ has been decided – delineating that specific unit can also be problematic, for example with regard to a ‘programme’ there may be variations in programme definition according to different stakeholders, whilst there may also be temporal issues – especially when a programme is built on the basis of other initiatives (Yin, 1994:21). Case studies must be clear from the outset about how to deal with these conditions. Yin (1994:22) highlights how as a general guide the unit of analysis, i.e. the case should be related to how the initial research questions have been defined.

In our case the Unit of Analysis is the ‘Intervention’. We use the term intervention broadly – this may mean a national, regional or institutional level policy measure, programme or initiative. EFFORTI deals with three main levels of policy intervention, namely micro (dealing with individuals or teams), meso (focusing on organisational issues such as institutional rules, incentives, structures and processes), and macro (referring to rules, incentives, structures and processes at regional, national or supranational level). As the EFFORTI D3.3 states, “in practice, the distinction between micro, meso and macro levels may not be entirely clear-cut, since the levels are inter-related and many indicators can be applied at more than one of these levels” (EFFORTI, 2017, D3.3:16). Specifically for the case study work national policy interventions –are designed at the national level (by a National Ministry for example) yet these may be implemented at the organisational level (research organisations, universities, or R& D companies). This has implications for how the unit of analysis is delineated – in terms of the three main focus points of the case study work, i.e. concept analysis, implementation analysis and impact assessment. It is therefore important to indicate which unit of analysis each of the three sections (concept analysis, implementation analysis and impact assessment) refers to (see EFFORTI Case Study Evaluation Design Template) – for each case study.

The following EFFORTI intervention typology has been developed by synthesising the gender equality programmes in science classification framework developed by Kalpazidou Schmidt and Cacace (2017) and fusing it with the approach developed by the [GENERA](#) project focusing on fields of action.

Overview of the developed intervention typology

Type of intervention	Intervention format	Level
Policies	Mainstreaming actions	Structural/ organisational level and policy level
	Gender Equality/ Action Plan	Structural/ organisational level and policy level
	Gender Budgeting	Policy Level
Non-discrimination	Gender –sensitive practices for the attribution of tasks	Structural/ organisational level
	Gender –sensitive study and working conditions (e.g. alternative study plans for pregnancy during laboratory work period)	Individual/ team level and structural/ organisational level
	Guidelines regarding gender specifics	Structural/ organisational level
Composition & Integration	Definition of targets regarding gender balance in decision-making positions	Structural/ organisational level and policy level
	Definition of targets regarding gender balance in research groups	Structural/ organisational level and policy level
	Institution of quotas	Structural/ organisational level
Advancement	Mentoring programmes	Individual/ team level
	Gender-sensitive practices for assessment	Structural/ organisational level
	Introduction of chairs and positions reserved to women	Structural/ organisational level and policy level
	Support to career development (counselling)	Individual/ team level
	Empowerment schemes	Individual/ team level
	Campaigns for inspiring women for MINT subjects	Structural/ organisational level
Monitoring	Monitoring appointments, promotions, or attributions of tasks	Structural/ organisational level and policy level
Deconstructing Excellence	Revision of internal policies regarding promotions	Structural/ organisational level and policy level
Gender Awareness and Bias	Training courses (different targets)	Individual/ team level
Leadership Accountability	Implementation of gender sensitive leadership and personnel development	Structural/ organisational level
Funding	Targeting funding practices to improve women's access to research funding	Structural/ organisational level
	(Targeted) funding to improve the integration of gender dimension in research	Structural/ organisational level
	Special funding for women researchers	Structural/ organisational level

Type of intervention	Intervention format	Level
Research	Gendered user involvement	Structural/ organisational level
	Dissemination of information material	Structural/ organisational level
	Revision of teaching curricular and texts	Structural/ organisational level
	Introduction of single-sex degree and specialisation courses	Structural/ organisational level
	Provision of Gender and Women Studies or modules	Individual/ team level and structural/ organisational level
Visibility	Networking	
	Activities to make women (and their research) visible (e.g. introduction of awards reserved for women)	Individual/ team level and structural/ organisational level
	Role models	Individual/ team level and structural/ organisational level
Care & Family Life	Support in period of absence for family needs	Individual/ team level
	Schemes for women returners	Individual/ team level
	Care services and facilities (for children, the elderly, and others)	Structural/ organisational level
	Support to mobility, including spouse relocation schemes	Individual/ team level
Work-Life Balance	Inclusion and monitoring the integration of the gender dimension and impact	Structural/ organisational level
	Introduction of flexible working hours	Individual/ team level structural/ organisational level

Drawing on the developed intervention typology, the interventions of each of the case studies of the EFFORTI project were analysed and mapped accordingly. Examples of impact stories were developed for a broad spectrum of these intervention types in order to provide examples of the mechanisms regarding intervention intentions (see also chapter 3 for more on theory of change and chapter 6 of D3.3. EFFORTI Conceptual Framework on the impact stories). These impact stories will therefore provide important input for developing the impact pathway/ log-frame for each case study – in order to explain how the intervention *should* work- i.e. the concept analysis for each case. This typology also provides a common framework for understanding the multi-faceted interventions of the cases that will form the basis for the multiple case study report.

7. Timing of Case Studies and Time Requirements

The case study work will be carried out from January 2018 until September 2018. This includes the fieldwork, analysis of the documentary and interview data and the writing of reports for each case study. Each case study will be written up in a condensed report focusing on both content and methodology to be delivered to the Commission on the 30th September, 2018 resulting

in the deliverable “D4.1 Condensed reports of results on content level and methodological level for each case study” – these reports are not publically available. The case studies will be compared and the Synthesis Report “D4.2” will be delivered to the Commission in September 2018 – this is a publically available report.

The fieldwork for each case study should begin in January 2018 and last until the end of April 2018. The case studies (including the filled in case study template, the impact pathway/ log frame visual template, the theory of change visual template and the case study narrative report) should be finalised during September 2018 and sent to the UOC to enable the correct formatting of the reports and their timely delivery to the Commission on the 30th of September, 2018.

8. Research Methods

A mix of different research methods will be deployed for each case study including a) desktop research, b) interviews with policymakers, programme managers, practitioners and beneficiaries and c) existing monitoring data. Yin (1994) highlights how case study research should rest upon multiple sources of evidence so that data converges in a triangulating fashion.

8.1 Desktop Research

Impact Pathway/ Logframe will be developed and built on using documentary/ literature revision specifically on the case study intervention, evaluations on the case study intervention, reports and grey literature. The desktop research is also an important input into developing the EFFORTI Theory of Change. All literature referred to should be included into the EFFORTI Case Study Design Template under references.

8.2 Interviews

Semi-structured interviews form an important part of the case study work and there are four main types of key stakeholders that we would like to interview: policy makers, programme managers, practitioners and beneficiaries of the intervention. We recommend carrying out between 4 and 8 interviews for each case study.

8.2.1 Selecting interviewees

The interviews with the four different types of stakeholders serve different purposes. For example, interviews with policy makers are particularly important for the concept analysis, interviews with practitioners are particularly important for the implementation analysis whilst interviews with beneficiaries may be important for the impact assessment. Programme managers play a particularly relevant role as we presume them to have the most comprehensive overview of an intervention and will therefore provide input into all three key areas and will validate the developed theory of change. For each case study we would recommend one or two interviews with each of the key stakeholders – all groups should be covered.

It makes sense to stagger these interviews. For example, interviews with policymakers should be carried out first (in order to elaborate the concept analysis) whilst interviews with practitioners – implementing the intervention should be carried out before the interview with the programme manager. The interview with the programme manager should be carried out half way during the case study work – when the theory of change has somewhat been elaborated – so the programme manager is able to verify/ modify it.

All the case studies take place within the research and innovation system and our study objects

do not pertain to any vulnerable group that would need specific considerations such as patients or children. The main target groups of participants are programme managers, policy makers, academics, researchers, gender equality practitioners working in public or private higher education institutions, research performing organizations or ministries responsible for science and research.

8.2.2 Preparing for the interviews

All interviews will be conducted in agreement with the following guidelines. The initial preparation for the interviews contains contacting responsible experts / stakeholders by letter or email (which may be followed up by a phone call). The informed consent form (see Annex 11) should be sent in this initial communication. Where necessary, the interviewees will also be advised to seek the consent from their organisation to present their views before the interviews are arranged.

The informed consent form details the purpose of the study; the procedures to be followed; discomforts and risks; benefits; duration and timing; statement of confidentiality; right to ask questions; cost of participating; and voluntary participation. This includes explaining that the interviews will be recorded and transcribed (unless the interviewee does not wish for the interview to be recorded), and that the transcript will be used only for coding purposes, and is confidential only to the partner conducting the interview. Please also consult your own organizations specific principles and ethical protocols regarding research work, data protection and the ethical code of conduct before carrying out the interview.

The interviewees will be asked for a 90 minute -slot so that all of the main issues of the interview guideline can be covered.

Before the interview please adapt the interview guidelines taking into consideration the main role of the interviewee. Please bear in mind that policy makers should have the greatest input into the concept analysis, practitioners for the implementation analysis and beneficiaries for the implementation analysis as well as the impact assessment. Programme managers occupy a special place in the EFFORTI case study work and all sections of the interview guide should be used for programme managers including the section validating the developed theory of change.

Please also develop relevant sub-questions if you feel necessary based on your knowledge of the intervention. Whilst developing these please bear in mind the EFFORTI Case Study Evaluation Design Template (Annex 4) as this will form the basis of the narrative report.

Each interviewee will be assigned a number that only the collaborating partner will have access to.

8.2.3 Conducting the interview

The interviews will be conducted in line with the principles described in the Data Management Plan and the related documents listed above (e.g. Grant Agreement, Consortium Agreement, Project Handbook), as well as the deliverables on Ethics. At the beginning of the interviews the purpose of the interview, the processes for the management and use of data and sharing of the results will be discussed and explained to the interviewees. The Informed Consent Form contains the key facts. The signed Consent Forms will be collected from the interviewees prior to conducting the interview, i.e. the forms will be administered and signed by participants before the start of the case studies. Participants will be asked to have their completed ICF signed and ready on the first day when interviews are carried out. Furthermore, they will be informed:

- why and how they have been contacted,
- the legal (country specific) framework that regulates the storage and handling of the submitted information,

- procedures to follow in case of a request for the deletion of the personal data and recording (see Annex 3 Interview Guidelines/ Summary Report).

Users will be informed that they have the right to withdraw at any point. The interviews will be conducted in the native language of the interviewees. The interviews will be taped unless the interviewee requests to not be taped. The taped interviews will be transcribed by subcontractors, which will be contractually obligated to adopt the same principles as the consortium partners with regard to personal data. Interview Summary Reports will be composed based on the transcripts or written hand notes in the cases where the interview has not been taped. The Interview Summary Reports will be sent to the interviewees for review and approval prior to archiving, if requested by the interviewee or if the interviewer is unsure of whether the report contains information which the interviewee considers confidential and harmful to be published even after aggregation and anonymization. All interview data will be confidential to the partner conducting the interview and the subcontractor transcribing it, and will not be disclosed even within the EFFORTI consortium. Access to raw data will be granted only to nominated persons in the organisations which collected the data. The data will be stored in the respective organisations' secure databases.

8.2.4 Interview Data Analysis

The analysis of the interview data may be carried out through a qualitative research software package. This may however vary within the consortium as different organisations will have access to different qualitative analysis software programmes. The UOC team for example will use the N-Vivo programme for analysis.³

Data analysis should be carried out in conjunction with the fieldwork. Merriam, (1998:178) defines data analysis as “the process of making sense out of the data. And making sense out of the data involves consolidating, reducing, and interpreting what people have said and what the researcher has seen and read – it is the process of making meaning” (Merriam, 1998:178). This approach will ensure that the research design responds to each of the case study contexts. For example, Stake (1995) “highlights the significance of the skills that researchers need in order to carry out a qualitative research. They include “Knowing what leads to significant understanding, recognizing good sources of data, and consciously and unconsciously testing out the veracity of their eyes and robustness of their interpretations. It requires sensitivity and scepticism” (Stake, 1995, p50)” (Yazan, 2015:143). This iterative process in line with a more qualitative methodologist approach that advocates for an emerging design. As Yazan, (2015:145) states: “the preliminary analysis of the data may lead to alterations in the ensuing phases of the research”. In line with this approach the EFFORTI consortium will meet on the 14th and 15th of February, 2018 and review the design of the case study work to ensure that this approach will be able to deliver feedback on the EFFORTI framework as well as provide the necessary material for the deliverable “D4.1 Condensed Reports of Results on Content Level and Methodological Level for Each Case Study” and the publically available “D4.2 Multiple Case Study Report”.

8.3 Existing Monitoring Data

The mechanisms of monitoring of gender equality policies in science and research vary considerably throughout Europe (Sekula and Pustulka, 2016:13). Different organisations engage in monitoring including government bodies, research performing and funding organisations and some NGOs. There are different ways of monitoring which usually include the use of HR statistics

³ See: http://help-nv10mac.qsrinternational.com/desktop/concepts/using_NVivo_for_qualitative_research.htm

which may or may not be combined with activity reports which may include regular reporting and performance indicators. Other not so common mechanisms are used in specific contexts, for example Austrian public institutions including universities are obliged to provide 'income reports' providing details on gender pay gaps every year. As Lipinsky, (2014:20) highlights monitoring instruments depend on the type of institution and varies within the national science system – it may also be variable within the institution – as for example, departments may have their own monitoring systems (Sekula and Pustulka, 2016:13). For the EFFORTI Case Study work please explore all publically available monitoring data as well as consulting your interviewees, especially programme managers about any monitoring reports that they are able to share with you.

8.4 Data protection and storage strategy

In the EFFORTI project there are four basic types of data: research data, analysed research data, project data and reports and communication data.

1. research data: e.g. audio recordings and interview transcripts,
2. analysed research data: e.g. interview reports, data analysis,
3. project data e.g. agreements, protocols, financial statements,
4. reports and communications: e.g. deliverables, articles, presentations (EFFORTI, Data Management Plan, p10).

These Case Study Guidelines cover the first two types of data: research data and analysed research data.

Research data covers the data collected on the project subject matter, namely Gender Equality interventions and their impact on the research and innovation system. The data is collected through secondary data but also interviews with beneficiaries and owners of the interventions. The data types of the latter are e.g. audio recordings, transcriptions and possibly handwritten interviewer notes from interviews.

Analysed research data means the reports composed by the interviewer on the main content of the interviews. Analysed data also refers to qualitative and quantitative data analyses conducted on the data. Project related workshops and stakeholder engagement events are public events and the workshop notes of project partners will be treated in the same way as analysed research data (i.e. the notes will be shared within the consortium).

Each data type is treated differently with regard to the level of confidentiality – different levels are the following: Public, Confidential to the consortium (including Commission Services) and Confidential to the Partner/ Subcontractor. Research data – must remain solely with the partner or subcontractor that is responsible for collecting it. This includes: audio recordings of the interviews, interview notes and transcripts. Analysed research data – spans the levels of confidentiality from public to confidential to the consortium/ EC, specifically with regards to the case study work anonymised research data will be publically available whilst anonymised case study reports and notes regarding case studies will be confidential within the project consortium/ EC.

The data flows in time and the transitions of data – through processing – from one level of confidentiality to another are of crucial importance as well. Untreated data which has not been anonymised will not flow from Partner/ Subcontractor level of confidentiality to consortium level of confidentiality. This is particularly important in the case study work. The consent forms signed by the interviewees have been drawn up to this effect.

9. Ethical and Methodological Reflections

To collect information on methodological issues in the course of the evaluation, all researchers will take detailed methodological notes in a comparable manner (See Annex 8: Ethical and Methodological Reflections).

The project aims to provide new evidence on the impact of gender diversity on research performance. It thus situates itself within the wider context of striving for gender equality and social justice. This implies to adhere to an ethics of recognition and mutual respect. Since the history of gender is a history of social exclusion and marginalization, a history of power differences that manifest itself in the form of structural disadvantages and systematic undervaluing of ways of knowing, EFFORTI (just like other projects on the issue like GEDII) makes an explicit effort to recognize gendered differences. We conduct our research within an ethic of respect for the person, knowledge, democratic values and social justice. All stakeholder needs must be represented, recognized and valued; EFFORTI furthermore is committed to generating new knowledge and support initiatives that unmask and counter social injustice based on gendered hierarchies and beyond.

The EFFORTI Ethics protocol has been created taking into account several recommendations and guidelines regarding the ethical conduct of research and data / privacy protection. These include:

- “Data Protection and Privacy Ethical Guidelines”, produced by the European Commission, September 18th 2009 (http://ec.europa.eu/research/participants/data/ref/fp7/89827/privacy_en.pdf).
- “European Textbook on Ethics in Research”², produced by the European Commission, 2010 (http://ec.europa.eu/research/science-society/document_library/pdf_06/textbook-on-ethicsreport_en.pdf).

These guidelines orient our privacy and data protection policies. In addition, “The European Code of Conduct for Research Integrity”, published by the European Science Foundation and ALLEA (All European Academies) provides the foundation for the ethical conduct of the research itself. The code of conduct, although not specifically geared towards social sciences research, mirrors ethical principals listed for example in the Code of Ethics of the American Sociological Association (<http://www.asanet.org/images/asa/docs/pdf/CodeofEthics.pdf>), the Ethical Principles of Psychologists and Code of Conduct of the American Psychological Association (<http://www.apa.org/ethics/code/principles.pdf>), or the Code of Ethics of the International Sociological Association (http://www.isasociology.org/about/isa_code_of_ethics.htm). Each partner is also responsible for observing their own organisation’s specific guidance as well as national legislation, in addition to the above mentioned documents. In the cases where third parties have been contracted by project partners to transcribe interviews, the project partner responsible for contracting a third party is responsible for contractually obligating these third parties to abide by the same legal, ethical and project related documents and principles as which direct the research work of the project partners themselves.⁴

Please also consult your own organisations ethical code of conduct and data protections policies.

⁴ This section is taken from the EFFORTI data management plan, (D1.3, p9/10)

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13. Annex 2: Data Management Plan

See EFFORTI Data Management Plan.

14. Annex 3: Key Stakeholder Interview Guidelines/ Summary Report

For the case study work there are four main types of key stakeholders that we would like to interview: policy makers, programme managers, practitioners and beneficiaries of the intervention. Please feel free to adapt the interview guide according to the role of your interviewee. You may want to particularly focus on the concept analysis section of the interview guide to policy makers, the implementation analysis and the impact assessment sections of the interview guide to practitioners and beneficiaries. For programme managers all sections of the guidelines are important – and to this group of stakeholders (one per case study) it is important to present them with the developed ‘Theory of Change’ for their input. Not every question has to be answered by every interviewee – use your judgement to pose relevant questions - but it is important to aim for the most extensive coverage of the following questions between the pool of interviewees for each case study. Feel free to use the following table as a template summary report for each interview- but make sure that that no information is included that could lead to the possible identification of the interviewee.

	Template
Introductory Information: For all Interviewees	
Please explain to the interviewee the purpose of the interview.	
<ul style="list-style-type: none"> • General objectives of EFFORTI • The role of the case study work 	
Please explain to the interviewee why and how they have been contacted.	
Please explain the legal (country specific) framework that regulates the storage and handling of the submitted information.	
Please explain the procedures to follow in case of a request for the deletion of the personal data and recording.	
Please inform the interviewee that they have the right to withdraw at any point	
Check that the interviewee has received and signed the consent form.	Yes/ No
1: Role & Relationship to intervention: For all Interviewees	
1.1: Could you please briefly describe the intervention?	1.9 [Brief Description of the intervention]
1.2: Could you please describe your role with regard to [name of intervention]?	-
1.3: How long have you been working with or involved with [name of intervention]?	-
2: Design/ Concept Analysis: Particularly important for Policy Makers	[Impact pathway/ Log Frame Visual Template]
2.1: What is the intervention trying to address? [Problem/ Objectives]	3.6 [Elaborate its design: how should it work?]
2.2: How long has the intervention been in place? Planned until when?	1.2 [Start/ End Date]

	Template
Introductory Information: For all Interviewees	
2.3: Could you briefly explain how the intervention should work?	3.6 [Elaborate its design: how should it work?]
2.4: Could you please describe the history of the intervention? Do planned activities (of this specific intervention) represent a continuity or a significant change of other interventions' activities implemented by the organization?	3.2 [Describe the history of the intervention, have there been predecessors?] 3.11 [Significance of policy intervention-planned activities change/ fit in]
2.5: What impacts of the intervention were initially foreseen?	3.9 [What impact is expected?]
2.6: In your opinion given the amount of resources is it possible to fulfill its main objectives?	3.12. [Can the objectives be fulfilled given the amount of resources] 3.13 [Is the allocation of financial and personnel resources to implement the policy adequate?] 3.14 [are targets/ goals realistic?]
2.7 Are the general conditions in place to ensure the effectiveness of the intervention? (comprehensive and tailored/ inclusion of targets/ special interventions for women/ multiple actors responsibility/ sufficient resources/ embedded into structures and procedures/accountable and transparent/ flexible and resilient/ publicized and promoted)	
3: Implementation Analysis: Particularly important for practitioners, programme managers and beneficiaries.	
3.1: Can you briefly describe the implementation process?	4.2 [Does the implementation of the intervention correspond to the objectives?]
3.2: How is the work and responsibilities for the implementation of the intervention distributed? (for example one organization or collaboration between various organisations/ units of the same organisation?)	4.4 [How are responsibilities for the implementation of the intervention distributed?]

	Template
Introductory Information: For all Interviewees	
3.3: Can you describe the “beneficiaries” or “target audience” of your intervention. How are these addressed and involved? If the intervention would stop over night, who would notice first?	3.3 [Who is the target group?] 5.3 [What are the main outcomes per target group to be observed?]
3.4: What are the main decision making bodies involved in the implementation of this intervention? Is there commitment from top-level decision making bodies?	4.5 [What are the main decision-making bodies involved in the implementation of the intervention?]
3.5: Are there any (fixed) working procedures established for the implementation of this intervention, such as for example periodic meetings, reporting to management, fixed office space, online presence and distribution channels (visibility)?	4.6 [Fixed working procedures established to implement this intervention]
3.6: What resources are available to implement this intervention? This includes human resources dedicated to the implementation but also financial resources or infrastructure such as office space, online presence, financial resources for traveling etc.	3.5 [What resources are available for the intervention?]
3.7: In your opinion has the intervention been implemented correctly?	4.2 [Does the implementation of the intervention correspond to the objectives?]
3.8: Has this changed over time?	4.3 [Has this changed over time?]
3.9: What has facilitated the correct implementation of the intervention?	4.7 [What factors inhibit or promote the implementation of the intervention in line with its objectives?]
3.10: Can you describe the barriers and challenges during the implementation process of this intervention? How have these been addressed and possibly overcome?	4.8 [What barriers were encountered during the implementation? Was it possible to overcome these?]
4: Impact Assessment: Particularly important for practitioners, programme managers and beneficiaries.	
4.1: Can you briefly describe what have been the main outcomes of the intervention? [we understand outcomes as...] Per target group/ Any in specific relation to RTDI? Are these the expected outcomes? How are these measured?	5.3 [What are the main outcomes/ target group/ RTDI?]

	Template
Introductory Information: For all Interviewees	
4.2: Can you briefly describe what have been the main impacts [direct/ indirect, foreseen/ unforeseen] of the intervention? [we understand impacts as...] Per target group/ Any in specific relation to RTDI? Are these the expected impacts? How are these measured?	5.4 [What are the main impacts direct/ indirect, intended/ unintended/ RTDI?]
4.3: What are the main factors that have hindered/ supported the impacts of the intervention?	5.5 [What are the main factors that have hindered/ supported the impacts of the intervention?]
5: Theory of Change Validation: Only with programme managers	[Theory of Change: Visual Template]
5.1: Discuss your theory of change (taking into consideration the interview)	
6: Please ask your interview for any material, ie. Monitoring data, evaluations that have been conducted on the intervention.	Feed into references.

15. Annex 4: EFFORTI Case Study Evaluation Design Template

The EFFORTI case study template has been designed to help standardise the information that will be collected through the case study work to be carried out in the seven countries throughout the EFFORTI project to validate the EFFORTI Evaluation framework. For every piece of information that you add please reference the source of information. For the case study interviews please make sure you do not write the name of the interviewee- but refer to the confidential identification number that you have given each interviewee.

1: Characterisation of intervention
Please use official reports about the intervention and for 1.6.2
1.1. Name of Intervention: [Original name & English Translation]
1.2. Start/ End Date:
1.3. ERA Priority:
1.4. Functional Mechanism:
1.5. Target Groups:
1.6. Objectives of the Intervention:
1.6.1 General objective of the intervention:
1.6.2 Definition of concrete measurable targets and verifiable objectives:
1.7. Type of Intervention (according to GENERA taxonomy):
1.8. Intervention Format (according to Kalpazidou Schmidt and Cacace (2017):
1.9 Brief Description of the intervention
1.10 Primary reason for selection of case study

2: Context

Please use the relevant country note to identify the main national/ science system contextual factors that impact on the case studies. Please also use other relevant documents, publications, and interviews to identify the main institutional contextual factors that impact on the intervention. For every piece of information that you add please reference the source of information. For references to interviews remember to include the confidential identification number that you have assigned to each interviewee (and not use their name).

2.1. How does the national/ science system context influence the intervention?

2.2. What are the main contextual elements that shape the intervention?

2.3. What are the main agendas, strategies, policies that frame the intervention? This would be an important issue also for the interviews with the programme owners

2.4 Are the general conditions for effective gender equality policies in place?

[For this section please refer to Sekula and Pustulka, 2016, ff10-12] and consider:

- Is the intervention comprehensive and tailored?
- Does it include gender related targets?
- Does it include special interventions “to overcome the effect of historical discrimination and accelerate the attainment of substantive equality for women?” ((UNDP 2014:33)
- Do multiple actors have responsibility for the intervention?
- Are sufficient resources (human, financial and institutional) available for correct implementation?
- Is the intervention embedded into existing structures and management procedures?
- Are interventions accountable and transparent?
- Is the intervention flexible and resilient?
- Is the intervention publicized and promoted?

2.5. Who are the main/relevant actors?

2.6. What are their interests, preferences & agendas? This would be an important issue also for the interviews in general

2.7 .What is their role in the system?

2.8. How does the institutional context influence the intervention? [This requires an overview of the main/relevant institutions that might influence/effect the intervention]

3: Concept analysis: (this section will be used to create the log-frame/ impact pathway)

Documentary evidence (web-site/ report/literature/ evaluation and monitoring reports), as well as interviews for questions 3.2, 3.3, 3.5, 3.6, 3.8., 3.9 and 3.1.4. For every piece of information that you add please reference the source of information. For references to interviews remember to include the confidential identification number that you have assigned to each interviewee (and not their name). For 3.7, 3.8, 3.9 please refer to the relevant impact story amongst other sources of information.

3.1 Please state the 'Unit of Analysis' for the concept analysis for this case study (it may be national, regional, or institutional, etc.)

3.2. Describe the history of the intervention, have there been predecessors?

What are the intervention's main aims and objectives?

3.3. Who is the target group?

3.4. What are the main activities?

3.5 What resources are available for the intervention? (Specify: HR, financial, time, etc.)

3.6. Elaborate its design: How should it work? Step by step (functional mechanism)? (int)

3.7. What outputs are expected? (please refer to the relevant impact story, amongst other sources)

3.8. What outcomes are expected? (please refer to the relevant impact story, amongst other sources)

3.9. What impact is expected? (please refer to the relevant impact story, amongst other sources)

3.10. Who are the key players? (funders, the set-up phase, the implementation, evaluation etc?)

3.11. Significance of policy intervention, e.g. are core underlying problems addressed, do planned activities imply a significant change relative to existing institutional settings, do they fit with overall agendas, strategies

3.12. Can the objectives be fulfilled – given the amount of resources?

3.13. is the allocation of financial and personnel resources to implement the policy adequate?

3.14. are targets/goals realistic?

4: Implementation analysis

Interviews with key stakeholders – particularly practitioners, beneficiaries and programme managers. Consult existing monitoring and evaluation reports. For every piece of information that you add please reference the source of information. For references to interviews remember to include the confidential identification number that you have assigned to each interviewee (and not their name).

4.1 Please state the 'Unit of Analysis' for the implementation analysis for this case study (it may be national, regional, or institutional, etc)

4.2. Does the implementation of the intervention correspond to the objectives?

4.3. To what extent has implementation changed over time? What has changed?

4.4. How are responsibilities for the implementation of the intervention distributed?

4.5. What are the main decision making bodies involved with the implementation of the intervention? Is there a commitment from top-level decision-making bodies?

4.6. Please describe the fixed working procedures established to implement this intervention (periodic meetings, reporting to management, fixed office space, online presence and distribution channels).

4.7. What factors inhibit or promote the implementation of the intervention in line with its objectives?

4.8. What barriers were encountered during the implementation? Was it possible to overcome these barriers and how? (beneficiaries)

5: Impact Assessment

Existing monitoring reports, relevant EFFORTI impact story, internal documents, evaluations, literature and surveys. Interviews with programme managers, practitioners and beneficiaries. For every piece of information that you add please reference the source of information. For references to interviews remember to include the confidential identification number that you have assigned to each interviewee (and not their name). Please indicate the relevant Categories, Dimensions, Subdimensions and Specific Indicators in the EFFORTI Toolbox 1.0. Please also indicate relevant indicators that are currently not included in the EFFORTI Toolbox 1.0. Please also highlight outputs, outcomes and impacts – specifically focusing on innovation, patents, publications, funding, knowledge dissemination, science communication, research based teaching and a wide range of societal impacts (D3.3. p24).

5.1 Please state the 'Unit of Analysis' for the impact assessment for this case study (it may be national, regional, or institutional, etc.)

5.2. What are the main outputs that can be observed? Do these coincide with the expected outputs? How are these measured? Are these consistent with the categories, dimensions, sub-dimensions and indicators identified in the relevant EFFORTI Impact Story?

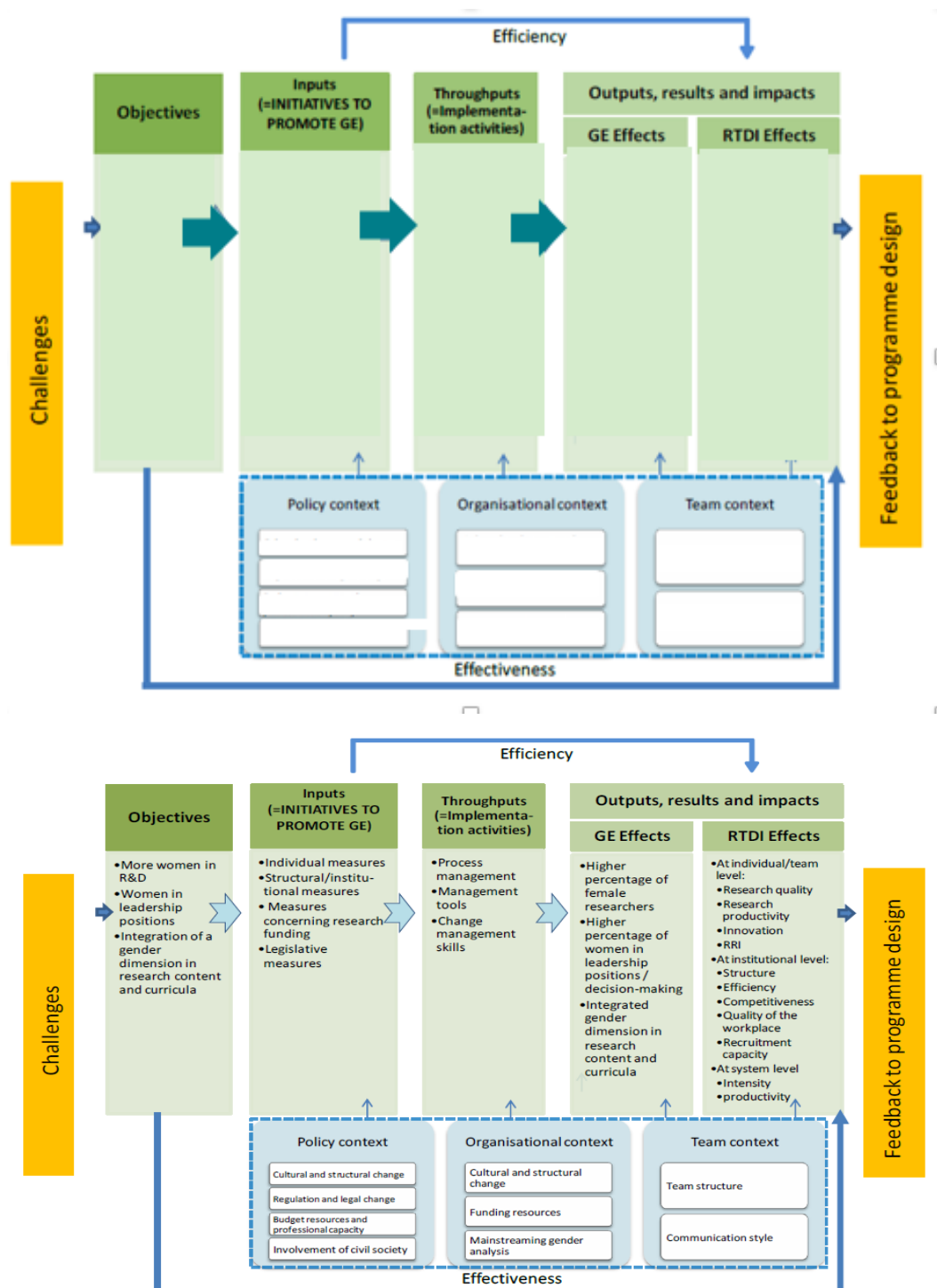
5.3. What are the main outcomes (per target group) (any specific to RTDI) that can be observed? Do these coincide with the expected outcomes? How are these measured? Are these consistent with the categories, dimensions, sub-dimensions and indicators identified in the relevant EFFORTI Impact Story?

5.4. What (type of) main impacts (indirect/ direct, intended/ unintended/ RTDI) can be observed? Do these coincide with expected impacts? How are these measured? Are these consistent with the categories, dimensions, sub-dimensions and indicators identified in the relevant EFFORTI Impact Story?

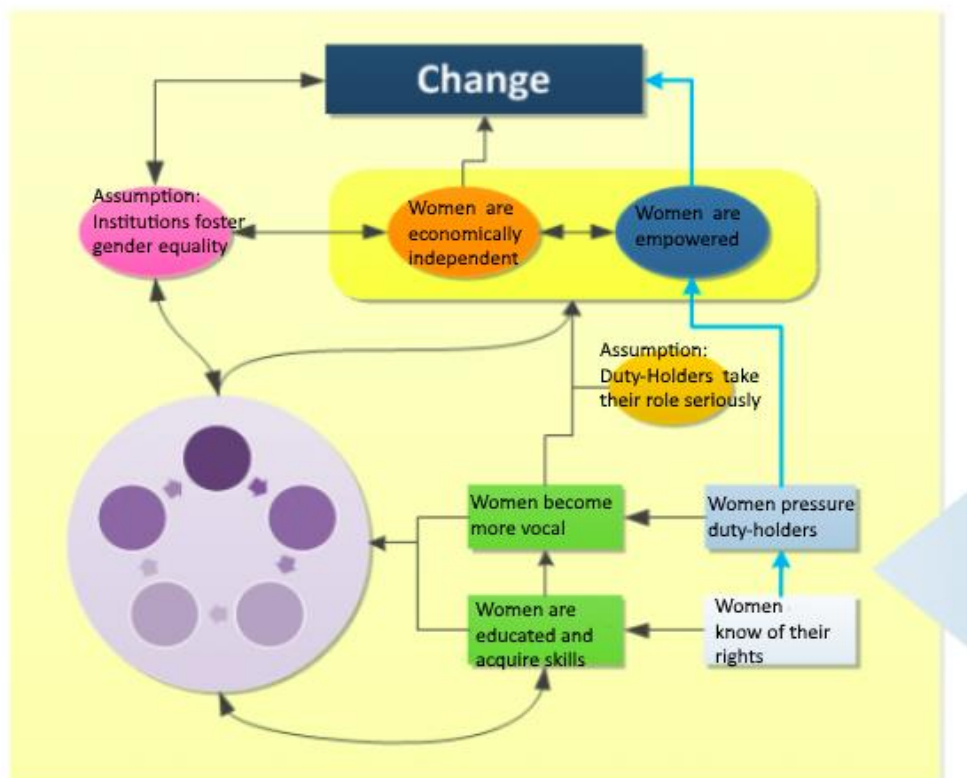
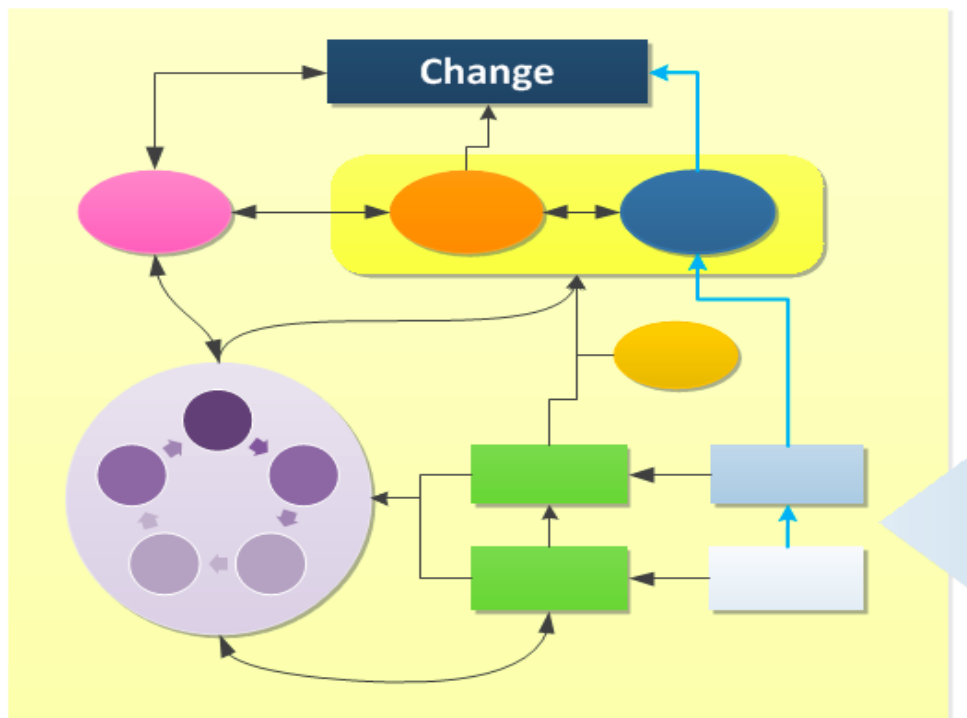
5.5. What are the main factors that have hindered/ supported the impacts of the intervention?

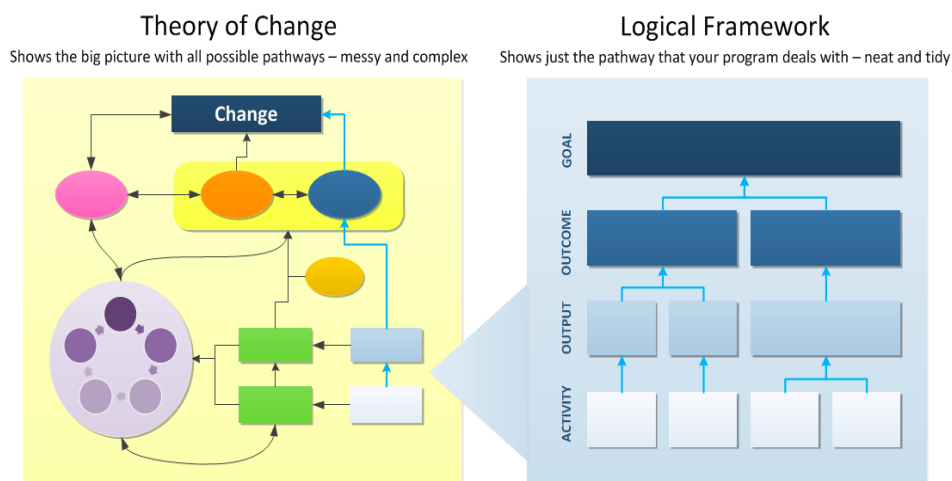
6: References
EFFORTI Country Notes:
EFFORTI Impact Story :
Interviews:
Monitoring Reports:
Evaluation Reports:
Other Reports:
Academic literature:
Websites:

16. Annex 5: Impact Pathway/ Log frame Visual Template



17. Annex 6: Theory of Change Visual Template





<http://www.tools4dev.org/wp-content/uploads/Theory-of-change-vs-Logical-framework1.png>

Adapted DFID Evaluation Department Draft Checklist for theories of change (July, 2012)

1. **Analysis of the content:**
Does the theory of change make sense as a response to analysis of the context, the problem and the changes needed? Is there one statement that sums up the theory of change?
2. **Clear hypothesis of change:**
Are impact pathways well mapped in a 'diagram'? I.e. in detail – including intermediate outcomes?, no missing links? Conceptually clear – no congested boxes containing several inputs, outputs, outcomes, or causal links all lumped together, presenting the specifics of this programme not just a generic type of intervention? Are assumptions made explicit (in the diagram or the text): about causal links? About implementation? About contextual and external factors? Does the narrative highlight and describe the overall logic of the intervention and the key hypotheses which the programme is based on?
3. **Assessment of the evidence:**
Is there a narrative assessment of the evidence for each key hypothesis? Is the strength of the evidence assessed? Does the assessment make sense given the evidence referred to?
4. **Other:**
Is the theory of change and logframe consistent? Do the evaluation questions mentioned in the management case pick up on hypotheses in the theory of change which have a weak evidence base? How to answer this last questions?

18. Annex 7: Feedback into the EFFORTI Evaluation Framework

Dimensions, sub-dimensions and indicators.

In order to use the content of the case studies as an input into the EFFORTI toolbox - case studies should make clear links to the categories, dimensions, sub-dimensions & indicators they refer to. For the impact assessment section of the EFFORTI Evaluation Design Template please make sure that all relevant categories, dimensions, subdimensions and indicators are indicated for all identified for outputs, outcomes and impacts.

Category	Dimension	Subdimension
1. Personnel	1.1 Positions	1.1.1 Increased number of women in academic and other RTDI positions
		1.1.2 Increased number of women in decision-making positions
	1.2 Recruitment capacity	1.2.1 Improved recruitment of talented women
2. Working Conditions	2.1 Work-life balance	2.1.1 Improved compatibility of family and career
	2.2 Job satisfaction	2.2.1 Appropriate respect/recognition for (academic/scientific/leadership) work
		2.2.2 Positive individual job rating
		2.2.3 Overall work climate
		2.2.4 Allocation of workload
	2.3 Competitiveness/promotion and career	2.3.1 Transparent, non-biased and flexible promotion/tenure criteria
		2.3.2 Strengthened confidence for promotion and responsible positions
		2.3.3 Improved support to advance research career
	2.4 Workplace	2.4.1 Equal workspace/facilities allocation
3. Professional Capabilities	3.1 Leadership	3.1.1 Increased confidence and ability of leadership roles
	3.2 Professional achievements	3.2.1 Increased professional development of work skills (for career success)
		3.2.2 Improvement of network building and use
	3.3 Awareness of/commitment to GE	3.3.1 Increased gender awareness
	3.4 Funding to promote GE in terms of female careers	3.4.1 Increased funding to promote GE
4. Structural Features	4.1 GE challenges/barriers	4.1.1 Decrease of GE barriers
	4.2 Organisational/cultural change with regard to GE	4.2.1 Organisational/cultural change with regard to GE
	4.3 Preferential treatment	4.3.1 Equal treatment
	4.4 Funding for structural transformation	4.4.1 Increased funding to achieve structural transformation

5. R&I/RRI	5.1 Research outputs and impacts	5.1.1 Scientific outputs
		5.1.2 Networks
		5.1.3 Training/human capital
		5.1.4 Strengthened R&I capacities/excellence
		5.1.5 Research priorities and outcomes in terms of GE
	5.2 Innovation outputs and impacts (incl. technological impacts)	5.2.1 Conventional innovation indicators
		5.2.2 Diffusion of innovation in products, services, processes
		5.2.3 Knowledge about sex and gender incorporated into engineering innovation processes
	5.3 Economic outputs and impacts (incl. entrepreneurship)	5.3.1 Economic impacts
		5.3.2 Entrepreneurship
		5.3.3 Strengthened framework conditions for R&I
		5.3.4 Jobs, growth & competitiveness of participants (incl. small and medium enterprises (SMEs))
	5.4 Gender-sensitive research	5.4.1 Achieved gender equality in research process
		5.4.2 Research quality: integration of a gender dimension/perspective in research and content, in research projects, patents, and agreements
		5.4.3 Contributions to strengthening gender-sensitive research
	5.5 Responsible Research and Innovation (RRI)	5.5.1 Gender equality
		5.5.2 Ethics
		5.5.3 Public engagement
		5.5.4 Science education
		5.5.5 Open access
		5.5.6 RRI/governance
	5.6 Societal challenges	5.6.1 Research priorities & outcomes in terms of GE
		5.6.2 R&I indicators
	5.7 Societal and environmental impacts	5.7.1 Societal impacts
		5.7.2 Environmental impacts

Validating Indicators:
1) Is the relevant indicator included in the “brief description list”?
> Yes (please identify) / No (see below)
> If not – is it in the board list of indicators?
> yes (please identify) / No (please write relevant indicator)

19. Annex 8: Ethical and Methodological Reflections

This ethical and methodological reflections template should be filled in during the case study work. We foresee that the case study work may prove difficult on various different levels. For example in their article Kalpazidou Schmidt and Cacace (2017) present six potential challenges in assessing impact of interventions in complex systems, namely:

1. establishing attribution,
2. lack of information and indicators,
3. timing and persistence,
4. expected scale and intensity,
5. context dependence,
6. assessment of societal interventions in general.

We have used the above issues and created six specific questions for the EFFORTI Case Study Work. These have been added to also provide a more general reflection on the field work.

1) Please specify the problematic assumptions that 'attribute' outcomes and impacts to the intervention – and how can this be avoided with this specific case study?

2) Please describe any problems you experienced concerning lack of available information, data and indicators for the studied intervention. How did you address this?

3) In your opinion do you think that the time-lag, i.e. the time span between the intervention and the assessment of particular impacts has affected how these impacts are reported?

4) Are all types of impact: intended, unintended, expected and unexpected, direct and indirect identified for the intervention?

5) In your opinion to what extent are the outcomes and impact of the intervention context dependent? (please provide evidence)

6) In your opinion is there a general consensus within the case study and the relevant literature as to what data should be collected to intervention the societal impact of the intervention?

7) Was access to the field difficult?

8) Did the interviews conducted wield the necessary information for the EFFORTI Design Template?

20. Annex 9: Case Study Narrative Template

Please use all the information collected in Annex 4: EFFORTI Case Study Evaluation Design Template as the basis to fill in this narrative template. Please use all the information collected.

1: Characterisation of the intervention
2: Context
3: Concept Analysis
4: Implementation Analysis
5: Impact Assessment
6: References

21. Annex 10: Informed Consent Form for EFFORTI

Fraunhofer ISI

Title of Project: *EFFORTI - Evaluation Framework for Promoting Gender Equality in R&I Include title of research study*

Principal Investigator(s): [Dr. Susanne Bühner, s.buehner@isi.fraunhofer.de; Fraunhofer ISI, Breslauer Str. 48, D-76139 Karlsruhe, Tel.: 0049 / 721 – 6809-148

1. Purpose of the Study

EFFORTI (Evaluation Framework for Promoting Gender Equality in R&I) seeks to analyse and model the influence of interventions to promote gender equality on research and innovation outputs and on establishing more responsible and responsive RTDI (research, technology, development, innovation) systems. For this purpose, EFFORTI will (1) develop an evaluation framework which enables evaluators, science managers, policy-makers and programme owners to conduct a sound analysis of the research and innovation outputs, outcomes and impacts of gender equality interventions across Europe, with a focus on the national level; (2) design a differentiated concept to analyse a variety of policy interventions and assess their performance, taking into account the diversity in the national policies as well as organizational contexts; (3) derive general lessons for evidence-based and thus "good" policy-making in the field of gender equality within RTDI systems. This means that not only has progress towards more gender equality in RTDI been achieved, but also that RTDI has been able to benefit from this progress through enhanced scientific and innovation outputs and productivity, as well as through a higher responsiveness to societal needs and challenges.

2. Procedures to be followed

Our approach foresees the conducting personal semi-structured interviews, on the telephone or face-to-face. The interviews shall be recorded in audio format and transcribed in order to assure a sound empirical analysis. However, we guarantee full anonymity of the information given.

3. Discomforts and Risks

There are no risks in participating in this research beyond those experienced in everyday life. None of the questions are personal and might cause discomfort.

4. Benefits

EFFORTI will contribute to a better understanding of the impacts of current gender equality initiatives, from the science-management and policy-making perspectives. In the medium term, it will help adapt gender equality initiatives and increase their efficacy, leading to an improved research intensity, productivity and responsibility and furthering the progress towards the achievement of the European Research Area. The findings will help to convince companies, HEIs, RPOs, RFOs and policy-makers to promote gender equality in RTDI systems through structural change interventions to reduce the loss of female talent and to assure women as well as men that their talents and skills are needed to foster creativity, research and innovation in research teams and organizations. Furthermore, it will provide evidence of good practice but also concepts and tools for monitoring and evaluating gender equality interventions and their effects on

RTDI. Specifically, EFFORTI aims to build and consolidate a community of experts and stakeholders on the assessment of GE interventions and their further development, to constitute a platform for sharing information, data, experiences and expertise, to further existing knowledge by developing new approaches, methodologies and tools, and to facilitate cross-national discussion and cooperation.

5. Duration/Time

We assume that an interview will take not more than 90 minutes, usually only one session is foreseen for the involvement.

6. Statement of Confidentiality

Your participation in this research is confidential. The data collection methods do not ask for any information that would identify who the responses belong to. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared because your name is in no way linked to your responses.

7. Right to Ask Questions:

Please contact Susanne Buehrer at Fraunhofer ISI (see above) with questions, complaints or concerns about this research. You can also call her office number if you feel this study has harmed you.

8. Cost of participating:

As the interview will be conducted by phone or through a visit in the interviewees professional environment (office), no additional costs will result from participation in the research.

9. Voluntary Participation:

Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. Refusal to take part in or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

You must be 18 years of age or older to take part in this research study.

You will be given a copy of this form for your records.

Participant Signature

Date

Principal Investigator

Date

22. Annex 11: Case Studies by Intervention Type

11.1 Policies

GEPs

CASE STUDY NUMBER	CS_13
SCOPE	Institutional
MAIN OBJECTIVE	To overcome gender inequalities in the institution
TARGETED SECTOR	HES
ERA PRIORITY	1,2,3
TYPE OF INTERVENTION	GEP
TARGET GROUP	Academic and non-academic staff

Table 7:

Concept/ Design Analysis

Objectives

Some of the objectives of the GEP are:

- to improve gender balance indicators in new hires;
- to monitor compliance with a balanced presence of women and men in recruitment panels,
- to improve gender balance in women/men's success ratio in free appointment for leadership positions,
- to monitor compliance with the existing gender/diversity measures regarding distribution of time and work/life balance,
- to monitor compliance with existing regulations on gender violence,
- to analyse the ratio per sex regarding salary (basic salary and complementary rewards) in order to improve, if needed, rewards linked to "productivities"; to achieve gender balance in teams and in management bodies,
- to ensure the integration of the gender perspective in research and innovation.

Activities

- Ensure a balanced presence of women and men in recruitment panels; Increase awareness of recruitment panels' members regarding unconscious gender bias in recruitment processes and merits' assessment; Raise awareness of gender equality of all members with staff management responsibilities (human resources directors, general secretaries, people in leadership positions, etc.); Analyse and disseminate results of success ratio by gender in competitive processes; Identify areas and vacancies in which gender courses can be considered as an item for CV assessment; Analyse sex-disaggregated data of the type of permits requested for maternity/paternity leaves, care of minors, etc.; Assess the application of the sexual harassment protocol; Disseminate existing protocols for sexual harassment prevention in a clear

and accessible way; Modify, the resolutions that regulate the payment of “productivity” to avoid negative retributive impacts in situations related to maternity and paternity permits; Raise awareness among the people responsible for research projects [about the importance of integrating the gender dimension]; Disseminate results on the amount of projects including the gender dimension into R&I content.

Strengths

- The Plan details specific goals, measures and indicators. It is based on a comprehensive GE audit and has incorporated actions regarding distribution of time and work/life balance measures, complementary payment regarding “productivity incentives”, and dissemination of information regarding disaggregated data about recruitment and promotion processes; numerical representation of women and men at different levels of the organisation and in collegiate bodies. It has incorporated an axis to monitor and foster the Integration of the gender dimension into R&I content.

Weaknesses

- The I Plan contained a minor number of actions and did not specify indicators.

Expected outputs

- Gender balance is guaranteed in all recruitment panels; Vacancies for stable positions consider periods of maternity leave and other care-related permits in the selection process; Recruitment panels have received recommendations to prevent unconscious bias in merits’ assessment; All staff with staff management responsibilities have received awareness raising actions on gender equality; Vacancies for stable positions count training courses on gender equality for candidates’ assessment; Various channels have been established to communicate situations of sexual harassment; The ratio of men and women in the distribution of basic salary and complementary salary supplements has been analysed; Actions have been carried out to raise awareness among research projects’ leaders on the importance of integrating the gender dimension; Statistics on the number of research projects integrating the gender dimension have been elaborated and the information has been disseminated.

Expected outcomes

- Improved gender equality indicators regarding researchers’ access to the R&I system; Gender balance is ensured in the composition of recruitment panels; Increased gender awareness regarding unconscious bias in recruitment panels; Improved gender balance in free appointment to non-competitive positions; Increased gender awareness among members with staff management responsibilities (directors, managers, general secretaries, team leaders, etc.); Improved gender balance regarding requests for work/life balance measures; Improved compliance with existing legal measures on the prevention and treatment of gender violence and sexual harassment; Improved gender balance in the distribution of variable salary rewards (p. ex. “productivity incentives”); Integration of a gender dimension in research content and in research projects.

Expected impacts

- Reduced inequalities between women and men’s numerical representation in the RTDI system and more women at the higher echelons of the academic career ladder; Fairness of evaluation in recruitment and appointment, in which unconscious bias have been removed; There is a transparent promotion system and women have equal opportunities in their career

progression in comparison to men; Improved compatibility of family and career in the RTDI system, in which women and men are equally keen to assume care and family-related responsibilities; The gender pay gap has been eliminated in the RTDI system; Increased research quality: integration of a gender dimension/perspective in research content and projects, patents and agreements.

Implementation Analysis

Facilitators

- Centralize the implementation tasks and the audit reports in one person who is in charge of compiling all data and writing the document.
- HR department attitude and, specifically, HR director's conscientious dedication to obtain more in-depth sex-disaggregated data and regularly inform the General Secretary.
- Increased awareness among workers' representatives on GE issues which has facilitated the acceptance of planned measures among staff and its dissemination.

Obstacles

- Difficulties to obtain disaggregated data that depend on other departments/registration systems; Difficulties to carry out face-to-face GE training due to lack of registrations ; Difficulties to show data on existing inequalities due to data protection and confidentiality reasons; Difficulties to monitor sexual/gender harassment prevention and assess the protocol; Lack of people with expert knowledge about gender equality or about smart practices in the Gender Equality Commission or specifically devoted to this GEP implementation; Resistances to integrate gender issues in the daily routines: according to some interviewees, the research staff is on occasions reluctant to address gender equality issues as GEP measures can be seen an added task to the usual workload.

Impact Assessment

GE Outputs

- Composition of recruitment panels has been monitored to ensure gender balance; Vacancies for permanent positions consider the periods that candidates are out of work related to risk pregnancy and maternity leaves. In cases when candidates cannot take part in selection processes due to risk pregnancy or maternity leaves, selection bodies have been provided with recommendations by the HR department on how to proceed; Recruitment panels have been provided with general recommendations on fair staff evaluation and gender equality; Training on GE has been included in the online course "Leadership Skills", oriented to all members with staff management responsibilities. The success ratio of women and men in competitive recruitment processes has been analysed. Two online courses on gender equality addressed to all staff members have been organised. Existing social action programs for victims of gender violence have been evaluated; Existing protocols for sexual harassment prevention are disseminated via the Intranet; Resolutions that regulate the payment of "productivity" has been modified to avoid negative retributive impacts in situations related to maternity and paternity permits; The GE Plan is published on the website; The existing protocols on gender violence and harassment are available on the Intranet.

RTDI Outputs

- Actions have been carried out to raise awareness among research projects' leaders on the importance of integrating the gender dimension.
- Statistics on the number of research projects integrating the gender dimension have been elaborated and the information has been disseminated.

GE Outcomes

- Establishment of institutional data gathering: Data collection has been improved in the Plan and its successive evaluations. A greater understanding has been acquired about remuneration inequalities and there is a more in-depth knowledge of women's representation in different scientific areas and at different levels of the organization.
- Work-life balance >> Improvement of compatibility of family and career.
- Regulation on variable payment linked to "productivity" has been modified so that maternity/paternity leaves do not affect retribution.
- Training on gender equality has been offered to CS2 members in leadership and staff management positions.
- Establishment of gender equality structures and procedures.
- Recommendations to selection committees have been elaborated to avoid bias in recruitment processes.

RTDI Outcomes

- A new axis has been incorporated into the plan – regarding the integration of the gender dimension in research content, overcoming reluctances that existed years ago

Evaluation

- Initially, two evaluations a year were planned but finally the Plan is evaluated once a year, as 6 months was considered to be little time to have series of data to make an in-depth assessment. The results of annual evaluations are used to introduce changes in the GEP and reformulate objectives, measures and indicators. The GEP is a living document that is updated during the implementation process. To date, two evaluations of the II Plan have been completed: in March 2017 and in March 2018. The modifications incorporated in this process refer to: analysing and disseminating sex-disaggregated data regarding recruitment processes; evaluating the protocol to prevent mobbing and sexual harassment and including information about it in the New Recruitments Handbook; carrying out more in-depth analysis of salaries; creating a GE Emblem for CS2 centres with best practices). In the last evaluation, a new axis has been incorporated in the II Plan to foster the integration of gender dimension into research content and research projects. Therefore, the GEP has evolved from tackling HR management issues related to career progression and achieving GE in all levels of the organisation to addressing other ambitious goals related with integrating the gender dimension into R&I projects.

11.2 Non-discrimination

Gender Sensitive HR Management

Case Study Number	CS_4
Scope	National
Main objective	to develop new expertise and encourage greater internationalisation as a sign of excellent cooperative research
TARGETED sector	BES & HES
ERA priority	<ul style="list-style-type: none">• more women in RTDI• more women in leadership positions in RTDI• integrate the gender dimension
Type of intervention	Gender Sensitive Human Resource Management
Target group	Networks; R&D companies; non-university research institutions

Concept/ Design Analysis

Objective

- Gender equality in funded centres is one of the objectives of this RTDI funding program but not its main focus. Gender Equality is assessed in the peer review process and throughout the funding period. The programme provides funding for gender equality measures implemented by the centres.

Activities

- The programme provides institutional funding for centres to foster science-industry relations and therefore is a RTDI funding measure. The centres are responsible for defining their budget for HR and gender equality measures and activities so these vary considerably between centres.

Strengths

- The integration of gender equality into the programme is very important as it is a highly visible funding programme. Therefore the mainstreaming of such measures into regular innovation policies is an important step.

Weaknesses

- It could be improved further if gender equality is more visible as an important objective and more emphasis could be put on organizational and cultural changes to promote gender equality. At the moment it seems that gender equality is only focusing on the equal participation of women and men in RTDI which is mirrored in the focus on the share of women in RTDI.

Expected outputs

On the level of the funding organization the following outputs are expected:

- More awareness of programme managers (experts) on gender equality in RTDI.
- Gender sensitive evaluation procedures and selection of reviewers (panel composition).
- Gender sensitive evaluation criteria.

Programme managers and programme owners are expecting the following gender equality outputs at the centre level:

- Higher organizational awareness for promoting gender equality in the centres.
- Gender mainstreaming and HR development plans of the centres including a set of activities to be implemented during the funding period.
- Higher awareness of the gender dimension in research for researchers employed in the centres.
- Budget allocated to activities promoting gender equality and gender sensitive research.
- Number of gender sensitive research projects.
- Interdisciplinary research teams.

Expected outcomes

- Improved career opportunities of (female) researchers in the centres but also in the private R&D sector; Higher number and share of female researchers on all hierarchical levels in the centres; Higher (intersectoral) mobility of researchers and increased knowledge transfer: More research projects applying gender sensitive methodologies

Expected impacts

- Increased number of female researchers in the cooperative sector; Increased number of female researchers in the private sector; Increased number of female researchers in leading positions; More gender aware research and innovation system; More user friendly and gender sensitive technologies

Implementation Analysis

Facilitators

- Promoting gender equality was included as a programme objective in the first programme document although it was later removed from 2016. Gender equality is still an important topic and specific evaluative questions address this issue. Therefore the topic is addressed continuously throughout the project runtime and centre management are held responsible for promoting gender equality. This secures a strong top down commitment but also a high level of awareness for gender equality from the centre management.
- The relevant funding body offers a wide range of specific funding programmes to promote gender equality and careers of students and early stage researchers in RTDI. These funding opportunities are used by the centres to attract female talent and to build up competencies and expertise on gender equality. These funding programmes provide additional resources for promoting gender equality in the CS_4 centres.
- Other national as well as international funding programmes that address gender equality issues in their programme documents, call texts and evaluation procedures.

Obstacles

- A lack of gender equality expertise and awareness. Whilst this has changed a lot during the duration of the programme there are still some people in management positions who do not perceive gender equality as a relevant issue and show little awareness for gender inequalities in RTDI.
- On the level of the CS_4 centres the main barrier for promoting gender equality is the relatively small pool of female students and early stage researchers in specific fields of science and engineering studies. Therefore it is very hard to increase the participation of women in some CS_4 centres as the number of potential female applicants for open positions is very limited and research organisations are competing against each other in a quite small market. Other CS_4 centres which recruit mainly in fields with a higher share of female students and researchers do not report these kind of problems.

Impact Assessment

GE Outputs

Programme level

- Higher awareness for gender equality within the centres: including two gender equality dimensions – the personnel dimension and the research content related dimension
- Higher commitment of the centre management for promoting gender equality
- Implementation of activities and measures to promote gender equality
- Higher capacity for implementing gender equality measures

RTDI Outputs

- Besides a higher awareness for the relevance of a gender dimension in research content no other RTDI output could be observed.

GE Outcomes

- Increased pool of and recruitment of researchers
- Higher recruitment capacity and broader pool of female talent
- Improved career opportunities for female researchers
- Indicators: Number of female students (interns/ write Masters of PhD thesis)/ Average number and share of women among applicants for vacant positions/
- Increased use of flexible working time arrangements and parental leave by men and women
- Higher satisfaction of employees with working time arrangements, actual working hours and the work-life balance.
- Less burdens caused by long working hours
- Participation in work family audits to increase efforts and to make them more visible through a certification process

RTDI Outcomes

- More research projects applying gender sensitive methodologies
- Increased number of publications applying a gender perspective: this indicator could be interesting but there was no data available to provide any empirical evidence.

- Other outcomes especially on RTDI could not be assessed as there was no primary or secondary data available to provide empirical evidence on a connection between gender equality and RTDI effects. But as the CS_4 programme is a policy to boost research and innovation there are significant RTDI effects which were reported in two impact analysis studies but a connection to gender equality was not investigated.

GE Impacts

- Impacts could be observed on the level of personnel, in terms of culture valuing work-life balance, of employer attractiveness and an improved work climate.
- The most important impact is that the CS_4 centres exhibit a significantly higher share of female researchers as for instance the business enterprise sector or the cooperative sector.
- Also the share of women has increased over the years and is significantly higher than for the previous programme's centres i.e. the predecessors of the CS_4 centres.
- Among newly hired staff the share of women is significantly higher than among all research staff. This makes it evident that recruitment measures were successful.

RTDI Impacts

- For the integration of the gender dimension in research content no data was available to measure impacts.
- RTDI impacts have been reported in the impact analysis studies but without considering any linkage to gender equality.

Evaluation

- The CS_4 programme is using monitoring and interim impact analysis to control and to steer the CS_4 centres. Monitoring data has to be provided by the centres on a yearly basis and personnel statistics have to be disaggregated by sex and for publications the names and the sex of authors has to be reported. Furthermore in all evaluations (ex-ante, mid-term and ex-post) specific questions on the implementation of strategies and activities promoting gender equality are included. The monitoring data is used to assess the attainment of target values. In the context of gender equality a target value is defined for the participation of women. This is measured as the share of female researchers among all researchers at the centres. Specific guidelines for the monitoring and evaluation procedures are available which define the main impact indicators but this table of indicators does not include any indicator on gender equality.
- Furthermore two interim impact analysis studies have been commissioned by the programme management. These studies try to assess the results (output, outcomes and impacts) of the programme as a whole. In the first impact analysis gender equality or the participation of women was not considered at all (although it was an explicit objective of the programme at that time). The second study takes gender equality into account but does not make a linkage to other RTDI impacts or results. Following questions were asked in a beneficiary survey:
 - Will the funding contribute to an increase of the share of female researchers in R&D companies?
 - Has the funding contributed to an increase of the share of female researchers in my own centre?

Furthermore in semi-structured interviews with managers of the centres also the following topics have been discussed:

- Policies to promote paternity leave and usage of paternity leave
- Active promotion of female researchers to climb the career ladder
- Flexible working conditions, their usage and effects
- Additionally since 2016 the funding programme publishes a monitoring report on a yearly basis. This report presents data for some of the indicators defined in the monitoring and evaluation concept. The data on gender equality is very limited as only the number and share of female researchers differentiated by head counts and full time equivalents and the number and share of female authors of academic works are reported.

11.3 Composition and integration

Definition of targets regarding gender balance in decision-making positions

CASE STUDY NUMBER	CS_18
SCOPE	National
MAIN OBJECTIVE	To provide opportunities for women's leadership qualification by co-financing mobility grants for women in research fields of strategic importance
TARGETED SECTOR	BES & HES
ERA PRIORITY	More women in RTDI More women in leadership Integrating the gender dimension
TYPE OF INTERVENTION	Definition of targets regarding gender balance in decision-making positions
TARGET GROUP	Women researchers

Concept/ Design Analysis

Objective

- The intervention provided opportunities for women's leadership qualification by co-financing mobility grants. The aim was to increase national (through e.g. university-private sector research collaboration) and international mobility for women in research fields of strategic importance, mainly in the STEM fields.

Activities

- Mobility of funded researchers between own and collaborating research environments in or outside the country as well as between academia and industry. The intervention only funds mobility related expenses and not research expenses. The intervention aims to facilitate women researchers to move abroad or foreign researchers to visit the country for a period of time. Mobility to and from collaborating research institutions has been flexible and could be divided in terms of time-periods according to researchers' own preferences.

Strengths

- Contextual factors have facilitated the implementation of the intervention in the country. The problem of female researchers' underrepresentation in top research positions is well-acknowledged by the national government and promoting gender equality is thus a high priority goal. Moreover, the attention and priority given to researcher mobility by the European Commission has probably contributed to the awareness and willingness to initiate interventions in this area.

Weaknesses

- The successor intervention, Mobility for Growth has the same purpose regarding leadership training through research mobility, but targets now both genders. The interview material suggests that this change has constituted an obstacle to the implementation of the intervention, making it less attractive, and the change is judged to give the intervention a less clear strategic goal, which made the branding of the intervention more difficult and resulted in a decrease in the number of applicants in general.

Expected outputs

- The intervention targets gender balance in decision-making positions by increasing the availability of funding for research mobility, which explicitly targets women. The expected output is thus a significant number of female researchers receiving a mobility grant.

Expected outcomes

- Female researchers' strengthened perception of their own chances of progressing in their research careers, including occupying leadership positions, due to better opportunities of qualification through experiences and collaboration potentials in research mobility. Research stays abroad are expected to benefit both home and host research institution by ensuring collaboration, knowledge transfer and knowledge sharing. More specifically, outcomes of research stays ideally include concrete publications, networking, participation in conferences, as well as strengthened leadership capabilities, which are assumed to promote women's qualification routes whereby research career progression is fostered.

Expected impact

- The intervention's long-term impact resides in the presence of significantly more qualified individuals who can become future leaders of research producing organisations, thereby resolving the "generational changes in research". Subsequently, increasing the representation of women in leadership is likely to improve research performance through, among other things, enhanced problem-solving, employee wellbeing, and innovation capabilities.

Implementation Analysis

Facilitators

- The national context has facilitated the implementation of the intervention. The problem of female researchers' underrepresentation in top research positions is well-acknowledged by the national government and equalising this through gender mainstreaming has been part of national GE strategies for a long time. Promoting gender equality is thus a high national priority goal. Moreover, the attention and priority given to researcher mobility by the European

Commission has probably contributed to the awareness and willingness to plan and implement an intervention in this area as well (European Commission, 2008).

Obstacles

- The intervention funding was supported by the Marie Curie programme from 2009 onwards, and had finally in 2012 to meet requirements from the European Commission to open up the intervention to both genders in order to continue this support. Therefore the intervention specifically targeting women ended in 2014 and was succeeded by the intervention Mobility for Growth targeting both genders and it has been judged less attractive from a GE perspective by key informants.

Impact Assessment

GE Outputs

- As expected the output of the intervention was an increase in women researchers receiving a mobility grant. In total 151 researchers received a grant in the frame of the intervention. Some went abroad to foreign research institutions, some came from abroad to national research institutions and some were mobile between industry and scientific organisations. Information from interviewees revealed different patterns, increased flexibility and career enhancing output already during the intervention period.

GE Outcomes

- As expected the outcome of the intervention in terms of GE is the strengthening of female researchers' research and leadership competences, international or national networking and provision of opportunities for collaboration for women researchers. All these aspects are assumed to promote the careers of female researchers.

GE Impacts

- The expected impact of the intervention in terms of GE is more women in research leadership position, more female role models and thus more women in research. The intervention has not been formally evaluated, which makes it difficult to exhaustively assess the impacts of the intervention. However, the analysis of the intervention including the analysis of the interviews that have been carried out indicate that the intervention did promote the careers of female researchers and resulted in more female research leaders.

RTDI Outputs

- The output of the intervention is expectedly career progress and academic promotion due to the mobility intervention participation. In total 151 researchers received the mobility grants; 91 researchers went abroad, 60 researchers were mobile in a national context. Whether they improved their academic career, i.e. obtained RTDI output, is not easy to attribute to the intervention. However, solely calculating academic titles indicates fulfilment of expected career progress.

RTDI Outcomes

- Long international research stays abroad are expected to benefit both home and host research institution by ensuring collaboration, knowledge transfer and knowledge sharing, i.e. outcomes of research stays ideally include concrete publications, networking, participation

in conferences, as well as strengthened leadership capabilities, which are assumed to promote women's qualification routes whereby research career progression is fostered. These expectations are to a wide extent fulfilled and is also the observable outcome of the intervention according to all interviewees.

RTDI Impacts

- In terms of RTDI impact, an increase in the presence of significantly more qualified women researchers is expected. Hereby they can fulfil a need for qualified future leaders of research producing organisations in the country. Moreover, increasing the representation of women in leadership is likely to improve research performance through, among other things, enhanced problem-solving, employee wellbeing, and innovation capabilities. Despite the fact that a systematic evaluation of the entirety of the intervention is not present, there are clear indications of increases in academic positions and in leadership positions among the women participating in the intervention.

Evaluation

- The present evaluation of the intervention draws upon qualitative and quantitative sources, e.g. articles, online documentation and reports, as well as interview based contributions from policy makers, programme manager and beneficiaries of the intervention. The evaluation concludes, that the intervention has been successful in increasing the number of women available for and already in research and managerial leadership positions, thereby improving the visibility of women with leadership potential, increasing academic leaders' awareness as to gender equality, establishing research networks and collaborations, and contributing to sustainable cultural change at a national level.

CASE STUDY NUMBER	CS_19
SCOPE	Institutional
MAIN OBJECTIVE	To establish opportunities for women to develop leadership skills through training courses and to motivate these women to run as candidates in the elections for the dean and vice-dean positions.
TARGETED SECTOR	HES
ERA PRIORITY	More women in leadership positions
TYPE OF INTERVENTION	Definition of targets regarding gender balance in decision-making positions
TARGET GROUP	Women researchers

Concept/ Design Analysis

Objective

- The short-term objectives of the intervention were to establish opportunities for women to develop leadership skills through training courses and knowledge sharing and to motivate these women to run as candidates in the elections for the dean and vice-dean positions, i.e. leadership positions. The long-term aim was to break with the male-domination of decision-making positions at the university.

Activities

- Initially, the intervention consisted of meetings with presentations on topics such as organisational structures and processes of universities, academic, strategic and personal leadership, and issues focusing on gender and academia, which participants subsequently reflected upon and discussed. In later rounds of the intervention, more professional components were introduced, such as seminars taught by acclaimed researchers in the fields of gender studies, organisation, leadership, etc., as well as group project work allowing participants to learn more about their own faculties. As such, the participants were divided into faculty groups which, for instance, had the opportunity to interview faculty deans and department managers about their views on leadership. Furthermore, the participants were granted access to faculty meetings and other relevant meetings at faculty level.

Strengths

- This has been a very well developed intervention which has also proven to be very successful in increasing the number of women in leadership positions at the university.

Weaknesses

- An intervention like this cannot stand alone. Improving women's participation in decision-making positions will inevitably be strongly linked with improving women's participation within top research positions, i.e. associate and full professors and hence it is not enough to focus on increasing the number of women in leadership positions only for a short period of time. Persistent efforts are required.

Expected outputs

- The expected output of the intervention is women researchers participating and completing the leadership training intervention.

Expected outcomes

- The expected outcome of the intervention is development of leadership skills and competences among participants, increased motivation among participants to run for leadership positions at the university as well as increased confidence in own leadership abilities. Moreover, the expected outcome of the intervention is increased visibility and awareness of gender and gender leadership issues in academia among participants in the intervention and beyond.

Expected impacts

- The expected impact is more female researchers in leadership positions at the university, diversity in leadership as well as in leadership styles, increased awareness of gender issues at the leadership and organizational level and more female role models. The intervention is also expected to lead to improved quality of research and research leadership as well as research productivity. Finally, the above mentioned outcomes and impacts are expected to spread in the national research system through mobility of participating researchers.

Implementation Analysis

Facilitators

- The national context is characterised by an approach to gender equality which exceeds the requirements of European legislation, and which goes beyond what is practiced among other international gender equality leaders. This may be due to the fact that in this country, gender equality is in general recognized as an important value and aim in itself, and as a consequence gender equality interventions do not need to be legitimized as a means to achieve other outcomes as is the case in other countries. Gender equality in higher education, research and innovation has thus also been on the political agenda since the beginning of the 1990s and the problem of female researchers' underrepresentation in top research positions is well-acknowledged by the government and the political parties, where the main strategy for GE change has always been gender mainstreaming. All together, these contextual factors have facilitated the initiation as well as implementation of the intervention.

Obstacles

- The implementation and survival of the intervention has been hindered by other factors. When changes in the staff group administering and steering the intervention occurred, the intervention was abolished and another intervention was instead initiated that had a broader focus on promoting diversity instead of focusing on gender equality. This indicates that the success of the intervention was dependent on dedicated programme managers and policy makers as well as positive support from the top management.

Impact Assessment

GE Outputs

- The expected output of the intervention was women researchers and teaching staff participating in a leadership training intervention. In total, 150 participants (113 women and in the later rounds 37 men) were involved in the intervention during the years it ran.

GE Outcomes

- The impact of the intervention can be expected to be more women in leadership positions at the university as well as more female role models. When the intervention finished the university had five female deans out of eight, three of whom had participated in the intervention at some point in time. Furthermore, among vice-deans and department heads, men and women who had participated in the intervention now outnumbered leaders who had not. Moreover, approximately half of the previous participants now held leading positions within the university. Not only had the intervention succeeded in increasing the representation of women in decision-making positions, but also in raising the interest for these positions among the female researchers and lecturers. Finally, the intervention improved the visibility of women with leadership potential, increased leaders' awareness of equality, and established networks with the objective of ensuring sustainable change with respect to gendered structures and norms at the university.

GE Impacts

- It is difficult to determine the precise impact of the intervention (both in terms of GE and RTDI) since the impacts have not been systematically evaluated by the university and data is

not available that would enable us to exhaustively evaluate the impacts of the intervention. Several women researchers have participated in the intervention which, as the numbers mentioned above and the interviews reveal, we assume will lead to more female researchers pursuing an academic leadership career as well as more female role models and more awareness about gender issues within the university.

RTDI Outputs

- As expected the output of the intervention was researchers and teaching staff participating and completing the leadership training intervention thereby improving their research leadership skills.

RTDI Outcomes

- In terms of RTDI the expected and observed outcomes of the intervention are boosting the skills and knowledge of participants, increasing their confidence and their willingness to speak up and work to improve the organization of the university – thereby contributing to better conditions for research.

RTDI Impacts

- The intervention has diversified the population of leaders and increased the awareness of gender issues at the university, which is expected to lead to improved quality of leadership, improved quality of research and improved research productivity.

Evaluation

- The evaluation takes the form of a meta-evaluation, drawing upon both qualitative and quantitative sources such as reports from each intervention round, feedback evaluations conducted after each intervention round, surveys to participants regarding professional assignments, previous and current position and responsibilities, an external evaluation conducted by experts from another university, and an external international evaluation employing participant observations. Furthermore, the evaluation draws upon the experience of policy makers, programme manager and beneficiaries of the intervention, who have contributed through interviews. The evaluation concludes, that the intervention has been successful in increasing the number of women in higher positions at the university, improving the visibility of women with leadership potential, increasing the number of women taking up leadership responsibilities, improving academic leaders' awareness as to gender equality, and establishing new networks and collaborations, as well as sustainable cultural changes.

11.4 Advancement

Mentoring programmes

CASE STUDY NUMBER	CS_11
SCOPE	Institutional
MAIN OBJECTIVE	To overcome the problem of the leaky pipeline by empowering young female scholars and promoting the academic careers.
TARGETED SECTOR	HES
ERA PRIORITY	More women in RTDI More women in leadership
TYPE OF INTERVENTION	Mentoring
TARGET GROUP	Women researchers at post-doc level

Concept/ Design Analysis

Objective

- To overcome the problem of the leaky pipeline by empowering young female scholars and promoting academic careers. In terms of RTDI, the aim of the intervention was high productivity and high quality research.

Activities

- Mentees are matched with mentors, which are associate or full professors from the university. The mentoring intervention consists of meetings between mentors and mentees to support career development. The mentor-mentee pairs on average have five meetings during the year lasting one-two hours each. Topics discussed include e.g. career opportunities, publication strategies, networking, prioritising tasks (research, teaching, general workload and work-life balance), as well as project applications and guidance to navigate in the research environment.

Strengths

- Support from the management level, an institutional strategy-based intervention.

Weaknesses

- Although generally satisfied with the intervention, some mentees express that they experience a lack of clear goals and procedures. It is primarily the individual mentee's responsibility to manage the work process in the intervention (chose the topic for discussion, arrange meetings etc.). This is potentially problematic, because it can be difficult for mentees who sign up for the intervention, as they are uncertain about their career paths, do not have a clear idea of what the intervention should include nor how it should be managed. Moreover, the intervention has been criticised for adopting a "fix the women" approach as opposed to "fixing the organisation"

Expected outputs

- Promotion of early career scholars (post doc and assistant professors) participating and completing the mentoring intervention, to acquire enhanced skills to continue a university career. For the mentors the intervention generates better understanding and thus increasing awareness of gender issues.

Expected outcomes

- The intervention's short-term outcome is expected to be the fostering of confidence, well-being and job satisfaction of mentees as well as improved knowledge and understanding of advancement prerequisites and career strategies and clarification of career prospects and wishes. Increased intrinsic motivation and satisfaction of mentors to 'do something good' for a young researcher may be considered a positive outcome of mentoring. The interventions' outcomes may also include attraction and, retention of competent researchers, as mentors teach mentees about career "paths, shortcuts and minefields" within research environments. Effects may also reside in the mentees' improved efficiency when mentors give advice on time management and prioritising work assignments. Mentees may also feel more confident and goal focused when mentors help clarify competences and strengths and identify learning potential. Finally, mentees benefit from the mentoring relationship by gaining access to the professional network of the mentor.

Expected impacts GE

- The intervention is expected to lead to more women in research as well as more women as research leaders by increasing the knowledge of young scholars about the pathways and requirements for tenured positions as well as increasing the support system and network of young scholars. Moreover, the intervention is expected to promote awareness on gender structures in the organisation. Furthermore, when senior mentors learn about the (gendered) struggles of young researchers, this may contribute to increased awareness at the organisational level about gender issues and change organisational structures and culture in the long run and attain a better integration of women in the research environment.

Expected impact RTDI

- The intervention is expected to improve the quality of research by increasing collegial support, knowledge-sharing, network facilitation and collaboration across seniority ranks.

Implementation Analysis

Facilitators

- A low budget with support from the management level in an institutional strategy-based intervention that fulfils young researchers' need for mentoring.

Obstacles

- A large share of the post docs and assistant professors at the university are not aware of the mentoring intervention. Recruiting mentors can be difficult as there is no compensation for this effort. The lack of clearly established goals, the lack of guidelines for interaction and challenges of mobilising men to mentor women can hinder the implementation of the intervention.

Impact Assessment

There is relevant data on the evaluation of the initiative.

GE Outputs

- Around 120 early career scholars and considerable fewer mentors have been through the mentoring intervention.

GE Outcomes

- As expected, the analysis indicates that the outcome of the intervention is mentees obtaining clarification about their career paths. Moreover, the intervention is expected to increase the social relation competences among mentees as well as the awareness of gender issues among mentors.

GE Impacts

- It is difficult to determine the impact of the intervention (both in terms of GE and RTDI) since the impacts have not been systematically evaluated by the university and data is not available that would enable us to exhaustively evaluate the impacts of the intervention. Several women researchers have participated in the intervention which - also based on the interviews - we assume will lead to more female researchers pursuing an academic career as well as more female role models and more awareness about gender issues within the university.

RTDI Outputs

- As expected around 120 early career scholars have been through the mentoring intervention. This is expected to support women in pursuing a research career.

RTDI Outcomes

- In terms of RTDI, the outcome is expected to be an increase in collegial support, an increase in knowledge sharing, networking and collaboration across seniority ranks. The interviews indicate that this is also the actual outcome.

RTDI Impacts

- In terms of RTDI, the intervention is expected to increase the quality of research by increasing collegial support, knowledge sharing, networking, attaining of research funding and through collaboration across seniority ranks, which is anticipated to produce more and higher quality research. The interview material indicates that the intervention had an impact outside of the university since other universities have contacted the programme manager and inquired into the intervention in order to launch similar interventions.

Evaluation

- The programme managers monitor and carry out very “simple” evaluations of the intervention asking all participants about their degree of satisfaction with the intervention participation. However, one meta-evaluation draws upon several sources, i.e. own interviews and surveys conducted by the HR unit at the university in order to assess the approval of the intervention and what could be made to improve it. This evaluation also shows a beneficial outcome for the participants, which in the long run is expected to lead to higher quality of research and more women in decision making.

Introduction of chairs and positions reserved for women

**CASE STUDY
NUMBER** CS_3

SCOPE	National level
MAIN OBJECTIVE	Provide greater visibility for excellent women and their work, to create female role models for future (male/ female) researchers, to prepare/train women for/in management/ Leadership
TARGETED SECTOR	BES & HES
ERA PRIORITY	More women in RTDI More women in leadership positions
TYPE OF INTERVENTION	Introduction of chairs and positions reserved for women
TARGET GROUP	Women scientists/ researchers, R&D companies, non-university research institutions, non-university research institutes; universities; research policy community

Concept/ Design Analysis

Objective

- Provide greater visibility for excellent women and their work, to create female role models for future (male/ female) researchers, to prepare/train women for/in management/ leadership.

Activities

- Call for proposal to encourage women to apply with their own project idea (i.e. research programme) for head of centre. The research programme (or: plan, idea) typically builds on the person's career/work. Selection process including 'future potential analysis'. Awarding of funding and implementation of work outlined in research application. Centre head responsible for implementation activities. Supporting activities included: training and competence workshops (centre management, leadership and career, environment/ eco-system management and future orientation); Peer-group coaching. Indicator-based monitoring process and evaluation carried out.

Strengths

- Future potential analysis' – the selection process aimed at assessing the 'future potential of people'. The programme has three main strands scientific excellence, management and careers. Whilst the programme promotes gender equality this is firmly embedded within a discourse that is implicitly interlinked with RTDI impacts, i.e. regarding excellence, management and careers.

Weaknesses

Expected outputs RTDI

- Scientific output (e.g. publications in relevant journals, presentation, etc.); number of patents and licenses; number of interdisciplinary and transdisciplinary projects, number of different scientific fields in cooperation, use of research results in industry, number of team members, research foci and experience, advantage of team member composition for the research programme, Human resources, number of PhDs and Diploma & Master Theses.

Expected outputs GE

- To make female research work visible: Number of publications involving female staff, presentations, participation etc. Adequate representation of female participation in research work from publications to public relations work

Expected outcome RTDI

- Achieving the goal (objective set out in the research programme, i.e. a certain product or process. In terms of excellence, advances in the respective area of research and the scientific quality of research performance. The benefits of the research results for industry and international recognition.

Expected outcome GE

- Everybody reaches personal goal through distinct paths/ possibilities. Number of career advances in and through the centre, successful career after employment at the centre.

Expected impact RTDI

- Other expected impacts include: expanding research beyond current limits, research transfer and more projects.

Expected impact GE

- Programme should serve as 'role model' programme supporting i) the development of transparent and traceable selection and evaluation procedures to ensure equal opportunities for women and men and ii) the development of gender competence for funding management. The programme aims to point out (the potential of) alternative selection processes ("future potential analysis") and hopes for learning effects of host-institutions or other relevant selection processes. It aims to foster a contemporary, gender sensitive research culture at the interface of science/industry that benefits both women and men. To create positive role models.

Implementation Analysis

Facilitators

- At the programme level: Extensive preparation phase and successful lobbying by official council. Founded on a selection process that goes beyond the excellence criteria - "future potential analysis". Committed and devoted individuals in the ministry as well as the political will for it to happen. Complements other national initiatives, i.e. impact orientated budgeting and other requirements. At the centre level: highly motivated young determined scientists

as heads, competence workshops, available budget, long term funding periods, team composition, no thematic restrictions, that is not marketed as a women's promotion programme, supportive programme management and peers.

Obstacles

- Structural barriers still being encountered, e.g. glass ceiling, male alliance structures, less opportunity to network with industry. Selection process resource intensive for both applicants and evaluation body. Staff turnover, as well as the high administrative burden of tight monitoring. Availability of female candidates– for a gender balance in the research team in certain fields of research. Lack of experience of management for heads of the centres – this was expected and was why training was built into the programme.

Impact Assessment

GE Outputs

- The following outputs are articulated in terms of 'Career' not gender equality: Number of employees and qualification/duration, Change in salary and position from entry to departure, Career activities, Career processes / advances in and through the participating centres, scientific career, Number of post-graduate degrees (... in process), Contacts and personnel exchange with other institutions, Proportion of female researchers in the team, during the lifespan of a funded centre, etc., Effect of the number of female researchers on the atmosphere in the research team, Effect on the work of the research team

RTDI Outputs

- Scientific output: several publications, conference papers, projects; almost 80 % of the staff and managers agree that excellent research is carried out. Human Resources: Background and development of research staff, including e.g. dissertations, theses; Research projects, their nature (e.g. interdisciplinary) and their design; research partners state that interdisciplinarity is part of daily business in the centres; Some patents, licenses.

GE Outcomes

- Personal development of the centre head- gaining management and leadership skills contract negotiations, leadership skills and personal development. Heads also gained understanding that supporting women's careers can work in different ways – i.e. by supporting paternity leaves. Unintended outcome was high pressure on head of the centres. New career options were developed for three-quarters of the staff working for the centres. Staff also gained a wide range of competencies.

RTDI Outcomes

- Ability to push new topics, benefits for industry – most research partners indicated that the research content motivated them to participate. Increased recognition at the international level.

GE Impacts

- Programme role model – experiences have partly been incorporated into other programmes. It has subtly changed the RTDI and GE landscape –by linking gender equality to research excellence and developing innovative mechanisms like 'future potential analysis' – i.e. more

gender fair selection and evaluation processes. Other programmes can build on this. It has provided evidence that women can lead successful research centres. For the centre heads, status within the university has increased (not for all) and increased international visibility.

RTDI Impacts

- Advances in the specific research field; start-up activities; more projects and finance. Changed the way research is done – more professionalisation of managing the centres. Former staff members got high profile positions and international reputations.

Evaluation

- A comprehensive, indicator-based set of monitoring processes and reporting was set up and accompanied by an evaluation. The eight centres over 7 years produced 230 publications, 21 dissertations, 41 bachelor's and master's theses, two patents and two licenses. Some 90 researchers, in addition to the eight directors, were active at the centres. Figures for the second funding-period are not available.

CASE STUDY NUMBER	CS_7
SCOPE	National
MAIN OBJECTIVE	To increase the number of women professors through means of transparency, accountability and awareness of gender issues in recruitment and career advancement by monitoring developments in the staff composition at the faculties.
TARGETED SECTOR	HES
ERA PRIORITY	More women in RTDI More women in leadership
TYPE OF INTERVENTION	Introduction of chairs and positions reserved for women
TARGET GROUP	Public and private universities

Concept/ Design Analysis

Objective

- The initiative aims to increase the number of women professors through means of transparency, accountability and awareness of gender issues in recruitment and career advancement by monitoring developments in the staff composition at the faculties.

Activities

- The programme grants funding to universities for initial appointments of women to tenured professorships at the rank of a full professor. Submitting a promising and tailored gender equality plan (in later stages, providing evidence for its successful implementation) is the prerequisite to receive funding.
- The programme operates on two levels: the structural impact to be achieved through gender equality concepts and their critical reflection, and increasing the number of women professors.

Strengths

- The programme combines an individual with a structural approach. The envisaged funding - a rather substantial amount - has built strong incentives for the HEI rectors to engage in GE activities, the participation in the programme became a matter of reputation. Regarding the structural effects to be achieved by the GEPs, it was important that the HEIs develop and establish specific measures which adequately address their specific needs. It was also important for the HEI to enter into an intensive debate on where it stands and what approaches to action should result from this meaning that also the top decision-makers are actively involved.
- A further success criteria for the acceptance and high reputation of the programme is the fact that the women professors were only appointed after having succeeded in a regular appointment process: there were no special conditions for the women who apply, but they are subject to the procedures customary at the universities. This characteristic avoided allegations of discrimination as well as the impression of "second-class professorships".

Weaknesses

- The expected results only refer to gender equality with two main strands: the individual achievement of women in form of high-level positions and structural outcomes through improved GEPs and GE measures. R&I effects are not foreseen, even if the topic of gender in research content has been discussed in the responsible GWK working groups.

Expected outputs

- Two core outputs are expected: (1) an increase in the number of women professors and (2) to further strengthen structural equality impacts, especially regarding the recruitment and integration of junior scientists. The measure should above all increase the proportion of women in professorships in X and professionalise and disseminate gender equality at universities.

Expected outcomes

- The main expected outcomes are to support equality between men and women in higher education institutions, to improve the representation of women at all qualification levels within the science system and to increase the number of female scientists in top positions within science. The tasks for HEIs that had already participated in one of the previous stages are to define a gender equality future concept which analyses the goal attainment, documents the implementation of the GEP, describe any successes and failures and defines how the existing or newly defined measures will help to attain the defined goals. Furthermore, the HEIs have to describe a system how to measure the impact of their GEPs.

Expected impacts

- In the long run, the programme owners expect a significant structural change in the national science system. The measure aims to initiate a reflection on and discussion of gender equality, and - from the point of view of one interviewee - a great deal has been achieved in this respect; a momentum of its own has developed, through the strategic development and assessment of gender equality plans. There is now a broad perception and acceptance of GE, to which the programme has contributed a great deal. A decisive factor for the programme is the structural anchoring of GE in the universities, including the continuation of the measures after the end of the programme. Therefore, in the later phases, the universities are asked to evaluate what has been achieved in the previous phases and subsequently adapt

their measures. Raising awareness of the top-level decision-makers at the participating HEIs also plays an important role here.

Implementation Analysis

Facilitators

- Facilitating factors in the organizational context are a strong position of the equality officer in the decision-making bodies of the HEIs, their budget, their independence and whether they work full-time or part-time. The extent of previous experience with gender mainstreaming or gender equality does also have a positive impact.
- Regular appointment procedures for the women professors are also important, i.e. appointments are carried out following the usual procedures which helps to avoid the perception as "second class professorship".
- It is also important that the HEIs design and implement innovative and tailor-made measures.

Obstacles

- One of the most important barriers is the varying financial capacity for the involved regional government.
- Above all, the role of the regional government in co-financing is perceived by the majority of the interview partners to be critical, as some of them lack the financial capacity to support their HEIs in a sufficient way.
- Both evaluations also stress that the first come, first served method could favour, in practice, large universities. During the first two phases primarily (big) universities participated successfully, the smaller universities of applied sciences with lacking administrative resources were often not in a position to submit a convincing gender equality plans.
- At the organisational level, the high degree of autonomy for HEIs can act as a barrier as despite an overall commitment to GE, there are no legally binding measures and the policy-makers can primarily operate via positive incentives (weak governance).

Impact Assessment

GE Outcomes

- Outcomes are defined as the appointment of professors and the implementation of gender equality measures. Evaluations could show that "new" women (in terms of their initial appointment) could be hired for a professorship: 106 professorships were setup in the anticipatory variant, 154 as regular professorship. The proportion of women professors has risen, and at universities which participated in the programme it has also risen faster than at others. The increased implementation of measures to promote gender equality at universities is besides that seen as one of the most important direct effect of the intervention.
- Accordingly, the most common explicit result of the intervention is the implementation of equality measures. This positive effect is evident both for universities that implement equality-promoting measures for the first time, as well as for those that are already involved in a further development. In accordance with the objectives of the CS_7 Programme and the requirements for gender equality concepts and documentation, measures which are most frequently taken are in the field of action for the promotion of young female scientists. Com-

pared to the first phase, the universities are meanwhile focusing more strongly on this. Personnel development also has high priority, such as mentoring or career development offers, as well as family friendliness.

- Regarding awareness raising, the evaluators found that the preparation of the equality concepts promotes the internal communication within the university about gender equality policy. Reflection on the subject of equality is identified by universities as one of the most frequent changes; this sensitisation is explicitly attributed to the intervention. As several interviewees for the case studies pointed out, one of the most important outcomes was the inner-organisational reflection of GE among the top-levels of the HEIs, including the senate.

GE Impacts

- In terms of general GE effects it has been stated that the programme leads to a higher acceptance of the topic of equality and a higher reputation of people who deal with the topic of equality at universities. In addition there are general reputation gains for the university through participation in the programme, but less often concrete competitive advantages or the combination of gender and excellence recognized. With regard to the establishment of equality structures, the authors conclude that the programme strengthens the establishment of equality as a management task and the assignment of the topic 'equality' to a member of the university management. In addition, institutions in the field of 'Equality' have been established. Half of the universities evaluate the establishment of gender equality structures at the central level as a positive change. However, there is room for improvement at the level of faculties, where only 20 percent of universities see positive changes. An important impact of the programme is that the recruitment processes have changed insofar that suitable women scientists are specifically approached, even before through state programmes, but now there was the opportunity to also use federal funds. Women have therefore been addressed directly, sometimes because they have hoped that this will also lead to innovations in the specialist areas, for example in information technology, that there will be different content and priorities. The professionalisation of the appointment procedures, including the consciousness for gender bias, was also promoted by general shifts in the internal governance structures, assigning the heads of the HEI, i.e. the rectors and or presidents, a more influential role.

RTDI Impacts

- Assumptions of a higher inclination to engage in education, societal relevance and social responsibility of research, public engagement and science communication was mentioned. Furthermore the fact that women also engage in unusual topics was highlighted. The rates for women at professorship level are still far behind, thus no clear relation between the programme and science and education effects can be established.
- Despite its considerable budget, funds not more than three women professorships per HEI. Given the size of the most successful HEIs, this number is not expected to exert a significant shift in research orientation or output of the HEI.

Evaluation

- The CS_7 programme has been evaluated twice, the first one focussing on phase I, the second one looking at both phases finished so far. Both evaluations were not impact analyses in a narrow sense but looked at general changes attributable to the intervention. Both evaluations used a mixed-method approach which included document analysis, analysis of monitoring data, online surveys, expert interviews and case studies.

Support to career development

**CASE STUDY
NUMBER** CS_1

SCOPE	National level funding programme
MAIN OBJECTIVE	Structural change in R&D companies and non-university research institutions
TARGETED SECTOR	BES
ERA PRIORITY	More women in R&D More women in leadership positions
TYPE OF INTERVENTION	Support to career development
TARGET GROUP	R&D companies Non-university research institutions (fields of natural science and engineering)

Concept/ Design Analysis

Objective

- Strives to achieve fair working conditions for men and women in R&D companies, the improvement of career expectations for women in research and the increase of the proportion of women in all levels. Therefore it aims for a structural change in R&D companies and non-university research institutions by financially supporting structural and sustainable measures aiming for gender equality.

Activities

- The idea of the funding programme is that each company can design its individual change project that takes into account the level of development of GE in the company. Two mandatory modules: building of gender competence in the company and a solid project management and various elective and diverse modules (e.g. affirmative action plans, flexible working time schemes, coaching, mentoring, training).

Strengths

- Flexible /tailored – to enable best fit to various company structures – yet structured enough for sustainable results (BMVIT and FFG, 2017, p10).
- Combining of different measures – more sophisticated analysis. Regarding the quality of the funded projects an improvement could be observed over the years. In the beginning many submitting companies focused more on general issues related to working conditions, such as flexible hours. Nowadays projects concentrate more on career development and to implement mentoring and coaching. Also the projects are more specifically tailored to the needs of the company. A very promising mix of measures addressing recruiting, job entry phase and company structures to pursue a more targeted career development for women.

Weaknesses

- Wrong target group – the program is designed like research funding but addresses not researchers but HR managers. HR managers do not have the know-how and skills to write a research proposal and unlike researchers HR managers are not expected to raise funds.
- Mainly attracts already sensitized companies.

- Due to an often male dominated culture in BES sector it is very difficult to find companies to submit proposals.

Expected outputs

- Number of applicant companies per year; number of accepted proposals; level of awareness in the target group; satisfaction of participants.

Expected outcome

- Improvement of executive leaders' gender competences, a higher visibility of women's performance in RTDI and leading positions, a more targeted career development for women, an integration of equality in processes and strategies, a cooperation of departments and senior management, sustainable solutions, and the provision of exemplary projects as guidance. The outcome described in programme documents refers strongly to structural improvements.

Expected impact

- Increase in the proportion of women in recruitments and leading positions, as well as an improvement regarding work-life balance, the implementation of gender equality in the company culture, the increase in gender sensitivity and finally, the structural/ organisational change regarding women's promotion in the organisation concerned.
- Positive effects on innovation are expected only indirectly not explicitly – in so far that the intervention contributes to raise the share of female researchers in companies and mixed teams are expected to be more innovative. This effect is not monitored and measured by the programme management and has not been an issue in evaluations so far.

Implementation Analysis

Facilitators

- Agenda setting of the EU – addressing HR in RTDI – important.
- Support (Competence Centre – PR and provision of support) – when shut down – number of proposals decreased.
- Gender competence in designing an organisational change project.
- Clear political will to foster gender equality in R&D companies.
- Adequate financial and personnel resources and publicity.
- Participatory approach – created high degree of identification with the project and prevented resistance.
- Top-commitment buy in: inclusion of the CEO who was also responsible for HR and always emphasised gender balance in the teams.
- Open minded culture.
- Diversity of employees.

Obstacles

- No political will to foster gender equality by implementing binding legislation for companies that would force them to implement GE.

- Increased funding > higher requirements to get funding > overstrained HR managers > low submission numbers.
- Shut down of support infrastructure.
- Lack of take-up.

Impact Assessment

- At the project level – organizational change towards more gender fairness in recruiting, job entry and training can be achieved with the funding.

GE Outputs

- Expected output – number of applicants and funded projects. Target achieved 2005-2010 – but only three times from 2010-2017 due to lack of support. **Indicators:** number of trained and number of hired women, number of people who increased their gender knowledge, training programme for job starters, tool for individual analysis of skills and defined career paths within the company.

GE Outcomes

- Structural improvements, systematic personal development in the funded companies, an improvement in flexible working hours and reconciliation, a more systematic and targeted recruitment and moderate organisational changes regarding women's promotion – but little changes in the proportion of women in leading positions.
- On a project level several structural changes can be identified that may lead to an improved possibility of career development like implementation of target agreements with newcomers, transparency of functions, salaries and hierarchies in the company, development of job descriptions, definition of career paths, focus on performance reviews and feedback etc.

GE Impacts

- Strives to achieve fair working conditions for men and women in R&D companies, the improvement of career expectations for women in research and the increase of the proportion of women at all levels. The programme is expected to lead to an increase in the proportion of women in recruitments and leading positions as well as an improvement regarding work-life balance, the implementation of gender equality in the company culture, the increase of gender sensitivity and finally the structural/ organisational change regarding women's promotion in the organisation concerned.

RTDI Impacts (unintended)

- Project Level: Increased the heterogeneity of the team –which was experienced as an advantage for proposal writing due to multiple perspectives. The company also expects the two women who were hired as a result of the project to bring innovative ideas. The interviews and processes conducted in the project also helped to identify general training needs. Being more gender- fair makes the company more attractive for international specialists. Programme level: Better ability to meet gender criteria in other funding programmes and the higher possibility of companies applying for FEMTECH research projects after conducting a project in this program.

Evaluation

- The general monitoring of the program is very basic – proposals and funded companies per year and the amount of financial support granted per project, size of the company, measures implemented and the type of organisation is collected.
- An evaluation of the programme conducted in 2014 shows changes regarding awareness and an increase of women in funded companies caused by a change in recruitment procedures, visibility of women and the companies' public image. In funded companies more women had been promoted and involved in management trainings. On a project level an increased awareness of work-life balance issues and a professionalization of job enrollment was reported.
- The following elements were evaluated in funded companies and in control groups:
 - Conditions for the reconciliation of work and private life improved.
 - Sensitivity of managers on gender equality has increased.
 - Idea of equal opportunities more firmly anchored in the organisational culture.
 - Conditions for female researchers and technicians improved overall.
 - Women's share of new hires in the research technology sector has risen.
 - Structural/ organizational changes made to promote women more effectively.
 - Proportion of women researchers in management positions has risen.

CASE STUDY NUMBER	CS_15
SCOPE	Company-wide
MAIN OBJECTIVE	To foster the professional development of women employees in order to attract, grow, inspire and retain female talent throughout the company and to increase the company's female population in critical roles.
TARGETED SECTOR	BES
ERA PRIORITY	More women in RTDI More women in leadership
TYPE OF INTERVENTION	Support to career development
TARGET GROUP	Women employees

Concept/ Design Analysis

Objective

- The CS_15 Women's Network was formed to foster the professional development of women employees in order to attract, grow, inspire and retain female talent throughout the company and to increase the company's female population in critical roles. The Women's Network aims at engaging and developing its membership in areas such as technology, operations and commercial roles.

Activities

- Mentoring, coaching and networking; regular trainings; opportunities that allow for interaction between the network group members and senior executives; engagement events; presence at job fairs; external relationships with institutions and organisations outside of the company; professional support to civil organisations.

Strengths

- The vast majority of the events organized by the network are open to anyone who works for the company. The operation of the network has a voluntary, bottom-up character.

Weaknesses

- Fundamental changes in the organisational culture presumably require a long time. Due to the extensive and general character of the measure it cannot really be considered a tailored one.

Expected outputs

- The short-term output of the measure is the introduction of career development activities such as advising, counselling, coaching, mentoring and training programs, which seek to address individuals' wellness, personal growth, and career development through various interventions and strategies. Career strategies and tools include facilitating networking events, providing self-assessment tools and one-on-one career counselling relationship.

Expected outcomes

- The intervention's expected outcome is to contribute to the attraction and retention of talented and competent females in science and in leadership positions. Career development programs prepare individuals for the changing workplace of the 21st century. Career support activities, especially mentoring, can teach mentees about career 'paths, shortcuts and minefields' within research environments. By equipping talented female researchers with the confidence they need to thrive in their careers, counselling also makes women more visible in STEM and helps them up the ladder of success.

Expected impact

- The measure's long-term expected impact aims at promoting a fair and appropriate status of female workforce. Furthermore, the counsellors and the managers of career development programs may learn about the struggles of female researchers and about the gender challenges they have to face in the workplace. This feedback mechanism can be very beneficial, not only to the women who participate in the programs, but also to the organization, since it can bring about substantial changes in the organisational culture.

Implementation Analysis

Facilitators

- The network enjoys regular and fruitful contact with senior leaders, follows the general directions set by the top management and fits the overall strategies of the company.

- There is a constant endeavour to find new and efficient ways to reach potential new members. Digitalisation and the development of digital skills might contribute not only to the success of this endeavour, but also to the company's global competitiveness.
- High-potential female executives are identified and often tapped to manage the Women's Network hubs and regions worldwide, giving these women valuable, enterprise-wide executive experiences and developmental opportunities.
- Support from the top management, which includes both financial and moral support, encouragement and empowerment.
- The operation of the CS_15 Women's Network is not overregulated although it stays within a well-defined frame. The guidelines and recommendations made by the global leadership provide flexibility to the network, which guarantees its efficiency.
- The most valuable resource of the CS_15 Women's Network is definitely the talent and enthusiasm of its members. The active membership of this country specific hub fluctuates between 100 and 130.
- The role of the company's HR professionals in recruiting, activating and supporting the membership of the Women's Network must be emphasised. Chief HR officers are usually very active and keep regular contact with the leaders of the Women's Network on every site. Male supporters of the network should be mentioned, too.

Obstacles

- A growing level of passiveness, especially among the younger generations of the workforce.
- Drastic declines in the company or specifically the WN population at a given site always causes difficulties in the operation of the network. At harder times the HR department takes a bigger role in maintaining the community than usual.
- Currently, one of the greatest challenges for the local Women's Network is to strengthen the collaboration among sub-hubs, sites and countries of the region.
- Support from the middle management is less apparent.
- Factors that hinder the impacts include the 'Old boy network', the voluntary characteristic of the initiative, limited resources and the current financial difficulties of the company.
- The pool of talented women who have the ambition to become leaders in the technological field is too small to start with. Despite the equal opportunities rule that is in place at the company, it is hard to find a satisfactory number of women who are willing to and capable of becoming leaders.

Impact Assessment

GE Outputs

- In accordance with the expected outputs, observed outputs of the measure are constituted by an incredible variety of activities; hundreds of events reaching out to thousands of colleagues, both males and females. These programs include networking and information sharing events, career path workshops, interactions with senior executives, training programs, mentoring sessions, coaching activities, media trainings, public speaking courses, engagement events, services such as babysitting arrangements at events, etc. (The Power of Me/We)

GE Outcomes

- At the individual level, the main observed outcome of the intervention might be the professional development and the career advancement of women employees who take part in the network. In a few cases participation in the network even directly resulted in promotions, but it generally has a much more indirect positive effect on the members' career. The network gives the opportunity for female employees to get in touch with colleagues from other departments or units, whom they would possibly never meet if the Women's Network didn't exist. The Women's Network enhances the visibility of female workers within the company. Meetings and mentoring sessions with senior executives ensure that the skills and achievements of women are noticed by the management. Besides, contact with colleagues and leaders help female employees to gain an insight into the operation of the company and a better understanding of its strategies. The Women's Network creates a self-organized, self-dependent and supportive community for female workers without excluding male employees. It increases the members' sense of belonging and importance, thus boosting their engagement with the company.

GE Impacts

- The measure's long-term expected impact aims at promoting a fair and appropriate status of female workforce. Furthermore, the counsellors and the managers of career development programs may learn about the struggles of female researchers and about the gender challenges they have to face in the workplace. This feedback mechanism can be very beneficial, not only to the women who participate in the programs, but also to the organisation, since it can bring about substantial changes in the organisational culture. The Women's Network does not have a say in hiring and promotion decisions, but on the long run it helps to build a bigger pipeline. Moreover, the network contributes to a more colourful and diverse community within GE. The CS_15 Women's Network may also set a good example for other companies in the private sector through its best practices.

RTDI Outcomes

- RTDI outcomes and impacts of the intervention are not empirically measured. The major RTDI-related outcome of the measure may be the increase in the number of women in decision-making and leadership positions at a company that operates in STEM fields, which is likely to boost the scientific performance of the given company. The participation in the Network increases the members' sense of belonging and importance, thus boosting their engagement with the company.

RTDI Impacts

- Potential impacts of the measure that are linked to RTDI might include a more sustainable and socially relevant research activity carried out by the company, an enhanced innovation driven by the diversity of the company and the increased scientific and economic competitiveness of the company in the long run.

Evaluation

- At the beginning of each year the local groups of the Women's Network set up a list of all events planned for the year and their estimated costs. The representatives of the network then discuss this operating plan with the site leaders, who endorse the budget for the activities. Site leaders and WN leaders keep regular contact throughout the year in order to monitor the spendings, and the completion of the programs. In the Central and Eastern European

regional hub this process is facilitated by charts that are created of all events organised by the local Women's Network. Reporting on the successfully completed programs is required not only at the regional, but also at the global level.

- Another way of testing the implementation of the initiative is to examine how successful the activities of the Women's Network are. The success rate of the network's programs is measured by the total attendance of the events and by satisfaction survey questionnaires that are filled in by the participants.
- The positive effects of the intervention can be measured indirectly by the increase in the number and share of female employees and leaders, and by the change in the organisational culture of the company. Another indicator of the initiative's success may be the growing job satisfaction of women employees.

Empowerment schemes

CASE STUDY NUMBER	CS_9
SCOPE	National
MAIN OBJECTIVE	Strengthening talent exploitation in research by increasing the number of female research leaders and improving the gender balance in research environments
TARGETED SECTOR	HES
ERA PRIORITY	More women in R&D More women in leadership position
TYPE OF INTERVENTION	Support to career development
TARGET GROUP	Women researchers

Concept/ Design Analysis

Objective

- Strengthening talent exploitation in research by increasing the number of female research leaders and improving the gender balance in research environments. An empowerment scheme that supports career development in leadership positions at a university or similar research institution. through funding of 15-20 women senior researchers for four years to build up research group.

Activities

- Funding women researchers' research activities, i.e. research collaboration, mobility, publications etc.

Strengths

- Schemes specifically targeting women researchers attract more applicants and mobilise the target group to a much higher degree than ordinary schemes.

Weaknesses

- The main objective to strengthen talent development through funding cannot stand alone or be an isolated one-shot action. Stand alone initiatives are less likely to positively impact gender equality in the long run. Hence, in order for funding agencies and organisations to see an improvement in gender equality, initiatives must be strongly anchored within long-term, strategic and value based implementation and management.

Expected outputs

- Women beneficiaries obtain funding of research for four years, higher prestige and recognition, and increased confidence of chances of being awarded funding, and thus a strengthened perception of their own chances of progressing in their research careers.

Expected outcomes

- Mobilisation of female researchers – more women applied for research funding, more research leaders, more role models.

Expected impacts

- For non-funded applicants – higher re-application rate for succeeding research programmes at the research council. Individual universities followed up, developing gender equality strategies and engaging in concrete actions.

Implementation

Facilitators

- The fact that it administratively looks and works like other research council programmes for young research leaders, highly facilitates the implementation of the intervention. The academic environment met the recipients with encouragement and praise due to recognition of the fierce competition involved.

Obstacles

- Contextual factors such as general societal assumptions of academic objectivity and meritocracy, i.e. that objective assessment and individual merit are believed already to ensure fair funding allocation. Hence, strong opposition to the intervention due to societal assumptions that meritocracy works, may discourage policymakers and funding agencies from employing funding initiatives and interventions like this initiative. Further, the intervention was forced through the Parliament against the will of the government. This caused outrage and controversy in the public debate with strong resistance and backlash. There was legislative obstacles as the intervention favours women and was perceived as discriminating against men, which is against the legislation. A dispensation was necessary in order to implement the intervention. Finally, grant takers risk facing backlash in the research environment (stigmatization), i.e. comments or allusions e.g. that the recipients were awarded the funding on unfair terms, one gender being excluded from consideration, thereby stating that these female researchers would not have been successful in 'ordinary' funding calls. This was not the case here as the success rate was only 3%, much lower than the success rate in the annual applications, which was 16%.

Impact Assessment

GE Outputs

- number of funded women researchers that received research funding. Outputs can be measured in numbers, funding amounts, scientific disciplines, institutional affiliation, geographical location, academic title etc.

GE Outcomes

- Mobilisation of female researchers – successfully managed to encourage more women to apply for research funding. Higher participation of female researchers in the following application rounds. More research leaders obtained.

GE Impacts

- High prestige and recognition. Increased confidence in their chances of being awarded funding and thus a strengthened perception of their own chances of progressing in their research careers. Role models that can inspire other women. Individual universities followed up developing gender equality strategies and engaging in concrete gender equality actions.

RTDI Outputs

- High numbers of applicants which ensured highly qualified grant takers.

RTDI Outcomes

- High quality of research leaders, competition within the frame of affirmative action calls may be more accurately viewed as strengthened rather than distorted.

RTDI Impacts

- Long term – high quality of research and high publication rates, integration of the gender dimension in research.

Recommendations

- To achieve sustainable results and impact on R&I, the intervention needs a more strategic, long-term approach. The intervention may successfully support the careers of those specific individual researchers who were awarded grants, however its contribution to achieving the intended impact (strengthening of talent exploitation in research by improving the gender balance in research environments) is likely limited as the problems causing the imbalance remain. Strong opposition due to societal assumptions that meritocracy works may discourage policymakers and funding agencies from implementing a intervention like this. Taking into consideration such contextual factors, policymakers have to better prepare the ground using long-term strategic approaches in order for these types of interventions to achieve set objectives.

11.5 Monitoring

Monitoring appointments, promotions, or attributions of tasks

CASE STUDY NUMBER	CS_8
SCOPE	National
MAIN OBJECTIVE	Strengthen the competitiveness of the national research system. Regarding gender equality, the programme owners demand an increase of the share of women in the respective organisation according to the cascade principle.
TARGETED SECTOR	HES
ERA PRIORITY	More women in RTDI More women in leadership
TYPE OF INTERVENTION	Monitoring appointments, promotions, or attributions of tasks
TARGET GROUP	Non-university research institutions and research funding organization

Concept/ Design Analysis

Objective

- The overall goal is to strengthen the competitiveness of the national research system. Regarding gender equality, the programme owners demand an increase of the share of women in the respective organisation according to the cascade principle

Activities

- CS_8 offers financial planning certainty with the promise to increase the annual financial allocations by 3 % per year (phase 1 and 3) respectively 5% (phase 2), it ensures improved framework conditions through autonomy and flexibility in budgeting and human resources, as well as in construction, awarding of contracts and right of participation, and it established a comprehensive monitoring system with annual reports about the progress made in the different target areas.
- The RPOs themselves established a broad variety of instruments which specifically address the individual challenges the RPO is faced with. The numerous instruments refer to the following fields of activity: 1) Recruiting and promotion of careers like special recruitment initiatives, networking, mentoring, career building programmes etc., 2) family-friendliness through flexible working-time, home office, care facilities, dual career offer, 3) qualification and training including awareness raising for unconscious bias, 4) guidelines for recruiting, scientific careers and gender-sensitive languages, 5) specific programme to promote women in science like promoting women professors, women in expert panels etc.

Strengths

- According to the programme owners, the intervention works above all due to the transparency and publicity of the overall objectives, i.e. that they are formulated publicly. The RPOs report about increased budgets for gender equality and diversity activities; the establishment of a continuous monitoring system, including active communication on goal attainment; target quotas in accordance with the cascade model; programme evaluations; the promotion of

Internal and external dialogues; employee surveys to measure change, diversity criteria as part of the variable income parts (heads of institutes).

Weaknesses

- The monitoring does not in itself imply a significant change to existing organizational settings.

Expected outputs

- First and foremost it is expected that the number of women in research teams and at decision-making positions increase, according to the cascade principle.

Expected outcome

- Structural change within the RPOs is expected as a direct effect of the CS_8, not the focus on single measures to promote women in science.

Expected impact

- The main impact are improved GE structures and a better representation of women at all career levels through a comprehensive cultural change of the RPOs. Cultural change includes a better acceptance of GE among all relevant stakeholders but particularly among the head of RPOs.

Implementation Analysis

Facilitators

- At the government level, one crucial success factor is seen to keep the GE topic always on the agenda, to keep up the importance of this topic.
- RPO commitment towards GE.
- Further success factors are that realistic and achievable targets are set and that the assessment made by the funding organisation is transparent, in other words that it is comprehensive to the institution.
- At the level of the RPOs, interviewees mention the awareness of senior managers as of crucial importance.
- The visibility of performance differences delivered by the continuous monitoring system is also decisive, as is increased visibility of GE topics in general.
- The fact that a substantial budget increase is associated with CS_8 is a promotional factor too.

Obstacles

- The heterogeneity of the RPOs regards their sub-units is a challenge. An important success or hindering factor relates to the size of the RPO-institutes: "the smaller such a single institution, the more difficult it is for them to comprehensively implement GE. Smaller institutions that- only have a very small number of appointments makes it difficult to visibly increase a quota of women. In order to maintain family-friendly structures and processes, you also need a certain critical mass in order to make this possible.

- Another aspect relates to the available number of high-level decision-making positions: due to the international nature of the workforce when two or three candidates leave it has an enormous effect on the percentages.
- Another argument, which is formulated by several interviewees, is that in many subjects the number of female students is still rather low. Even if the proportion of women is gradually increasing, which means that the average pool of women eligible for employment is growing, but younger on average.
- Also hindering are the still existing leadership cultures: family-friendly structures and processes, although defined as policy goals, are less pronounced at the top of the hierarchy: there are actually no institute directors, at none of the RPOs, who practice job sharing or work part-time.

Impact Assessment

GE Outputs

- The indicators collected in the tentative evaluation framework (see Kalpazidou Schmidt, E. 2018) and comprised in the impact stories were very useful for the case study work. Overall, the main outputs, beside an increase in the number of women in research and at top-positions, refer to remote GE challenges and barriers, organisational/cultural change, preferential treatment and funding for structural transformation.

GE Outcomes

- Again, the majority of outcomes mentioned in the impact story could be confirmed especially as regards the GE indicators. especially the increased number of women in academic and other RTDI positions; an increased number of women in decision-making positions, an improvement of network building and use; increased gender awareness; a decrease of GE barriers and finally organisational/cultural change with regard to GE.

GE Impacts

- Regarding the impacts, only a few have been confirmed by the case study, due to a lack of evidence. None of the RPOs under investigation collects gender-specific data on RRI outputs, outcomes and impacts. The summary of the interviews is that GE was becoming part of the overall human resources strategies are one of the most important impacts. Also changed attitudes and behaviour as regards appointment processes of the head of institutes are reported too as an important impact of the intervention.

RTDI Impacts

- Especially impacts on (R)RI could only seldom be confirmed by the interviewees, due to a lack of systematic data and evidence collected by the own organisation. Sometimes, however, anecdotal evidence has been reported as regards (1) different publication behaviour, (2) different networks and mobility, (3) different engagement in science education and science communication.

Evaluation

- The main challenge of the impact analysis is to reflect the variety of levels where effects may occur: First, we investigated the overall results of the CS_8. Second, we analysed the concrete

implementation of GE strategies and measures within three of the four existing RPOs. A further unit of analysis would theoretically be the single institutes or centres of the RPOs but given the sheer size of the RPOs this was not object of the case study. These difficulties, however, mirror the challenges linked to the application of the EFFORTI evaluation model.

- For example, one interviewee stressed the need to distinguish between direct goals - and reflected that they are formulated in relatively general terms - and what may be secondary effects, but which are left to the organisations to define. When they see that they have a gender pay gap, then they define it as their goal to eliminate the gender pay gap. That is not the aim of the intervention.

**CASE STUDY
NUMBER** **CE_10**

SCOPE	Institutional
MAIN OBJECTIVE	Increase the number of women professors through means of transparency, accountability and awareness of gender issues in recruitment and career advancement by monitoring developments in the staff composition at the faculties
TARGETED SECTOR	HES
ERA PRIORITY	More women in RTDI More women in leadership Integrating the gender dimension
TYPE OF INTERVENTION	Monitoring appointments, promotions, or attributions of tasks
TARGET GROUP	Women researchers

Concept/ Design Analysis

Objective

- The initiative aims to increase the number of women professors through means of transparency, accountability and awareness of gender issues in recruitment and career advancement by monitoring developments in the staff composition at the faculties.

Activities

- The intervention launched a monitoring intervention of appointments and promotions. The faculties at the university were required to report gender development in the staff composition. The intervention was launched together with a series of economic incentives to hire female professors and the interventions were all part of a larger coherent action plan.

Strengths

- The overall action plan included promotion and revision of internal policies regarding staff appointments. The monitoring intervention supported the implementation of the financial incentives and increased transparency, awareness and accountability in relation to gender equality issues in recruitment and promotion. This combination of financial incentives with monitoring constituted a comprehensive intervention, which in many aspects resulted in the desired outcome.

Weaknesses

- The monitoring does not in itself imply a significant change to existing structural settings.

Expected outputs

- Immediate technical output of the monitoring scheme included the establishment of the central GE committee, which was responsible for monitoring progress at faculty level in accordance to targets and objectives of the gender equality action plans. At faculty level, outputs included gathering gender segregated data on recruitment and promotions, as well as developing and submitting written reports. Output of the financial incentives initiatives involves the establishment of a central pool, from which funding for additional professorships and bonuses is rewarded to the faculties.

Expected outcome

- The intervention is expected to increase the number of women professors through means of transparency, accountability and awareness of gender issues in recruitment and career advancement by monitoring developments in the staff composition at the faculties. The intervention is also expected to show that financial incentives support increasing GE more rapidly.

Expected impact

- The impact of the intervention is expected to be more female professors and more women in research leadership. This is expected to lead to more female role models and hence also more women in research in general. The intervention is also expected to positively impact research and education, because diverse norms, preferences and competences are able to challenge taken-for-granted and self-evident assumptions and lead to synergies which may result in new discoveries.

Implementation Analysis

Facilitators

- Support from the leadership and management of the university clearly facilitated the implementation and underlined the importance of the associated targets. The transparency of the responsibility of improving the representation of women to the individual faculties also facilitated the success. The annual reports easily highlighted which departments and faculties fulfilled their obligations, i.e. an increasing decentralised accountability.

Obstacles

- The general perception is that the country has overall achieved gender equality and, that women and men are equal and have equal opportunities. Affirmative action interventions are hence often subject to discussion and resistance. Moreover, the legislative context makes affirmative action initiatives difficult. The financial incentives provided to encourage the recruitment and promotion of female professors were also subject to discussion and resistance.

Impact Assessment

- There is relevant data on the impact assessment of the initiative. The combination of financial incentives with monitoring constituted a comprehensive intervention, which in many aspects

also resulted in the desired outcome. The results are context-dependent. The intervention of this case study was subject to discussion, resistance and complaints but was also acknowledged and supported from the university top management.

GE Outputs

- As expected, the output of the monitoring scheme included the establishment of the central GE committee responsible for monitoring fulfilment of targets and objectives of the gender equality action plans. Outputs included gathering gender-segregated data on recruitment and promotions, developing and submitting written reports, and establishment of a central pool, from which funding for additional professorships and bonuses are rewarded.

GE Outcomes

- As expected, the intervention increased transparency, awareness and accountability of gender issues in recruitment and career advancement by monitoring the developments in the staff composition and making these numbers public.

GE Impacts

- The impact of the intervention was expected to be more female professors and women in research leadership, and lead to more female role models and women in research in general. The analysis shows that the intervention successfully contributed to an increase in the share of women professors from 15.3 per cent to 20.6 per cent over five years, i.e. a one in five representation. Likewise, interviewed policy makers and programme managers behind the intervention express the view that the intervention has increased awareness and also contributed to a change of culture regarding gender equality at the university.

RTDI Outputs

- Some key revisions regarding promotion and revision of internal policies regarding staff appointments that are expected to lead to better quality of recruitments and thus in the long run to higher research quality have been made. An increased numbers of women in RTDI positions and RTDI decision-making positions have been observed in all faculties. This may lead to changes in the composition of research teams and thus greater diversity. Improved transparency of advancement is a direct output.

RTDI Outcomes

- Expected outcome involves the attraction and retention of competent researchers, which will lead to increased diversity in research and research leadership. Outcomes of the financial incentives structure in combination with consistently monitoring progress involve faculty managements' retained commitment to working towards increasing the number of female professors.

RTDI Impacts

- The intervention is expected to positively impact research and education, through norms, preferences and competences that challenge taken-for-granted and self-evident assumptions and lead to synergies which may result in new discoveries. In turn, increasing the number of female professors will improve diversity in positions of decision-making authority as well as professional seniority, which will balance out research team composition, and increase the likelihood that gender analysis may be included in research projects and in the content of research. Finally, diversity is likely to attract talent, and contribute to the creation

of a better working environment that both women and men will find attractive which, in turn, will increase employee satisfaction and professional development and thus in the long run increase productivity. Hence, the growth in the share of women professors would be expected to lead to increased diversity in research leadership and thereby high quality research and more societal relevant research.

Evaluation

- The analysis of this case takes the form of a meta-evaluation based on reports from the university and other sources. Furthermore, the evaluation draws upon the experience of policy makers, programme manager and beneficiaries of the intervention, which have been examined through interviews.
- The indicators used for the evaluation are (with reference to the EFFORTI numbering):
 - Increased number of women in academic and other RTDI positions; 1.1.2 Increased number of women in decision-making positions; 3.2.2 Improvement of network building and use; 3.3.1 Gender awareness has increased; 4.1.1 Decrease of GE barriers; 4.2.1 Organisational/cultural change with regard to GE; 5.3.2 Research quality: A gender dimension/perspective in research and content, in research projects, patents, agreements is integrated; 5.3.3 Contributions to strengthening that gender sensitive research is made.
- The evaluation concludes that the intervention has been successful in increasing the share of female professors and in increasing awareness, transparency and accountability in relation to gender equality issues in recruitment and promotion (outcome) as well as gender equality and diversity in research. The intervention has overall contributed to cultural changes.

11.6 Funding

Targeted funding to improve the integration of gender dimension in research

CASE STUDY NUMBER	CS_2
SCOPE	National level funding programme
MAIN OBJECTIVE	Increase innovation capability, create new markets and expand existing markets.
TARGETED SECTOR	BES & HES
ERA PRIORITY	Integrating the gender dimension
TYPE OF INTERVENTION	Targeted funding to improve the integration of the gender dimension in research
TARGET GROUP	R&D companies, non-university research institutes, universities

Concept/ Design Analysis

Objective

- The overall goal is to increase innovation capability at the national level, to create new markets and expand already existing markets. This is planned to be achieved by increasing the

quality and acceptance of innovations through the implementation of gender in the user involvement process. Also, it was designed to encourage researchers' interest and acceptance of gender in research content. In the long term the program aims to produce an impact on researchers and research (programmes) which currently do not consider gender as a relevant factor and therefore broadening the gender research community.

Activities

- The main activity is providing money to enable gender-sensitive research projects in various research areas. Funding is solely granted to projects which can demonstrate credible gender relevance and expertise in their proposal. Funded projects must implement gender in various stages of the research design, beginning with the research question, through data collection, data analysis to the documentation (e.g. gender neutral language). The gender dimension must be a key issue in the development of the research question and the research design from the outset. Project proposals in which gender is integrated only superficially, stereotypically or not at all are hence excluded from the call.

Strengths

- The funding program initiates projects in research, technology and innovation with gender-relevant content; it contributes to future-relevant research fields and products with a concrete gender dimension; it contributes to increasing acceptance and interest in gender in research projects among scientists and in some funded projects tailor-made, innovative solutions are developed.

Weaknesses

- Expectations too high given the low level of invested funds. In the analysed projects, gender was considered throughout the whole research process but only one project took other diversity dimensions into account. The other two did not due to limited resources although the consideration of age and/or immigrant background might have had an added value. The amount of funding is too low.

Expected outputs

- RTDI projects with gender-relevant content are to be initiated. The program aims to get 20-30 proposals per call and wants to fund 10-12 projects.

Expected outcomes

- It is expected that research, technology and innovation and the developed products and services will be more user-oriented and better adjusted to the requirements of different user groups. New research tools, methods, technologies, products, solutions that consider gender are expected as the outcome of the funded projects which means an economic competitive advantage.

Expected impacts

- The programme is expected to lead to an anchoring of gender in application-oriented research, a higher awareness in research institutions and a contribution to quality assurance of the research process and its results. Another intended impact of the projects is the creation of new markets and expanding of already existing markets.

Implementation

Facilitators

- The extent of the person's gender competence and how he/her asserts power determine the quality of the implementation. Network meetings to get other researchers interested. Project level success depends on the teamwork of the partners who should have a well-balanced distribution of competences and complement each other.

Obstacles

- Due to a weak political will, the budget for the program is very small. The funding program is lacking support from decision makers in the ministry. They question the relevance of the gender topic and therefore the existence of a gender specific funding scheme which leads to insecure perspectives regarding re-tendering. Moreover, therefore, an increase in funding is unlikely. This would, however, raise the output, outcome and impact of the funding scheme. Research results from projects involving business partners are often not published in order not to lose the resulting competitive advantage. To get other researchers interested in integrating the gender dimension in their research, however, the publication of project results would be important.

Impact

GE Outputs

- Review of a product or service from a gender perspective, tutorials, didactic concepts,/ training concepts or manuals.

GE Outcomes

- Increased gender competence of researchers – write better research proposals, teachings, trainings and other research projects.

GE Impacts

- High proportion of women as project leaders. (Numbers of projects led by women” 5.4.1 (EFFORTI 1.0).

RTDI Outputs

- Presentation of results, open access results, scientific publications and other dissemination activities.

RTDI Outcomes

- Increased number of proposals, improved quality of proposals.,

RTDI Impacts

- Catalyst to apply to other funding schemes

Evaluation

- Monitoring of the programme is very basic – number of proposals and funded projects per year and the amount of financial support per project. Previous evaluations have focused on evaluating the concept and implementation. For the impact assessment the EFFORTI team conducted a content analysis of project descriptions and qualitative interviews with representatives of three funded projects.
- Possible Outcome Indicators: Number of researchers gained gender competence (maybe equivalent to “researchers trained” in 5.1.3)/ Number of conducted projects that consider gender (as a reference for further applications)/ Increased quality of the gender part of research proposals in other funding schemes/ Usage of gained gender knowledge in teaching, training or other research projects/ Sensitization of researchers regarding interdisciplinary research/ Sensitization of researchers regarding participative research methods (equivalent to “People/employees feel empowered making research more participatory, creative and inclusive” (5.4.3 EFFORTI 1.0).
- The growing acceptance and interest in the gender dimension in research was measured in the case study with a social network analysis that showed that the group of beneficiaries expanded from call to call. Also the growing number of proposals is an indication of increasing interest. Helpful indicators for this measurement could be: Number of organisations involved in gender sensitive research projects/ Number of organisations involved in gender sensitive research proposals.

Targeted funding practices to encourage research organisations to promote gender equality measures

CASE STUDY NUMBER	CS_14
SCOPE	National
MAIN OBJECTIVE	consolidate the scientific capabilities of research centres and units to reinforce their leadership in their research fields. The programme includes the elaboration of a gender action plan to overcome gender inequalities within the accredited centres but the Call does not identify any concrete target goal in this field.
TARGETED SECTOR	HES
ERA PRIORITY	More women in RTDI More women in leadership
TYPE OF INTERVENTION	Targeting funding practices to encourage research organisations to promote gender equality measures
TARGET GROUP	Cutting edge RPO centres and units

Concept/ Design Analysis

Objectives

- to consolidate the scientific capabilities of research centres and units and to reinforce their leadership in their research fields through the elaboration of a strategic plan. In terms of gender related targets, the programme includes the elaboration of a gender action plan to

overcome gender inequalities within the accredited centres but the Call does not identify any concrete target goal in this field.

Activities

- The Agency provides funding to the accredited RPO in order to develop their Strategic Plan that includes gender equality actions to overcome inequalities in terms of recruitment and labour conditions of academic and non-academic staff. Each research centre has to define their own milestones in their Strategic Plan. However, these milestones have to be measurable. The Agency counts on a monitoring process. In this monitoring process the accredited centres have to deliver a mid-term report and a final report where they have to include the level of development of their Strategic Plans. These reports are evaluated by an external Scientific Committee. One of the dimensions to be evaluated in the mid-term evaluation consists of following-up the proposed milestones that have to be reached at the end of the funded period.

Strengths

- The milestones defined by the accredited centres have to be measurable and they have to be achieved at the end of the funded period. As the accredited centres have to define realistic milestones to be achieved in the Strategic Plan that have to be implemented during the period of the grant, the centres are committed to fulfilling the fixed milestones.

Weaknesses

- The programme does not contain concrete measurable gender and RTDI targets because each research centre has to define their own milestones in their Strategic Plan. As the programme does not contain global indicators, they can not disseminate the results in terms of achievement of RTDI and gender equality related targets.

Expected outputs

- To design and implement a gender action plan to overcome gender inequalities in terms of Human Resources. Each centre designs the specific measures and its milestones to be achieved.

Expected outcomes

- Increasing of awareness in terms of the existing gender inequalities within their organisations. Each centre has to provide data on how many men and women are in the staff and who are the beneficiaries of the training actions organised by the centres.

Expected impacts

- The recognition and the development of strategic plans will allow them to “continue competing at the highest level”. One interviewee considers that these research centres and units “act as driving agents among the National System for Science, Technology and Innovation”. In terms of gender equality, through the action plan they expect to overcome gender inequalities in terms of recruitment and labour conditions but they are not explicit about any other impact related to this or an impact in terms of the RTDI system.

Implementation Analysis

Facilitators

- All of the centres have to pass the mid-term evaluation in which the accredited centres have to send a report that explains how the actions of the Strategic Plan have been implemented until this period and the follow-up of the milestones. The Scientific Committee gives feedback and proposes improvements to be implemented in order to accomplish the designed Strategic Plan. As one part of the Strategic Plan this report also includes actions and milestones on gender equality. The Scientific Committee has received instructions to pay attention to the gender action plan when they elaborate the feedback for the mid-term and the final evaluation.

Obstacles

- As the gender equality actions are not specifically scored in the evaluation criteria, there are a great diversity of centres in terms of gender equality measures implemented. There are some centres that make very innovative measures and there are others that do not introduce any relevant change. This could be a barrier because if a centre does not develop any relevant action in terms of gender inequality, there are no sanctions.

Impact Assessment

GE Outputs

- Creation of Gender Equality Commission composed by the Management, the Human Resources Department and researchers.
- The creation of new units and professional profiles that are in charge of introducing gender equality measures as part of career development of the staff.
- Every recruitment process is open, efficient, transparent, supportive and internationally comparable, as well as tailored to the type of positions advertised.
- An equal opportunity employer committed to diversity and inclusion.

GE Outcomes

- The main outcome of implementing the gender equality actions is related to the strategic view of the centre in terms of cultural change based on a process of reflection. They have revised their own recruitment processes in order to avoid gender bias. The creation of the Gender Equality Commission in the centres composed by the Management, the Human Resources Department and researchers, implies that the measures designed respond to the women researchers' needs such as a financial support for women researchers (3.4) to attend Conferences. The outcome of the gender equality measures also affects equality in professional achievement in terms of avoiding the obstacles that women face in accessing leadership positions after post-doc grants.

GE Impacts

- The centres explain that the impact of the measures is difficult to be measured because the changes produced by the actions related to the programme are mid/long-term ones.

- The most important expected and perceived impact that they identify is related to the organisation/cultural change (4.2) in terms of more awareness and commitment to gender equality (3.3) such as attitudes, opinions and the actions linked with this change.
- The achievement of women candidates to cover a job positions (1.1) is another direct impact of the measures implemented by the programme. One example of this is a centre which has the rule that if there is no women finalist in a job position, they have to open the Call again.

RTDI Outputs

- Developing an IT application to monitor where and how many women apply for the different Calls offered by the centre with the goal of improving the dissemination of them to reach more women.
- Developing an IT tool to register the steps of the career of the PhD graduate in the centre from a gender perspective.
- Using IT tools to measure to what extent women are involved in research projects and scientific publications.
- Elaboration of a job satisfaction questionnaire from a gender perspective.

RTDI Outcomes

- The expected and observed outcomes with regard to the cultural and organisational change are linked to the RTDI system. The new practices on recruitment and promotion to avoid gender bias allow the retention of the best talent without an exclusion of candidates for gender reasons. The hypothesis behind is that this leads to a better research performance and scientific results.

RTDI Impacts

- The centres explain that the impact of the measures is difficult to measure because the changes produced by the actions related to the programme are mid/long-term ones. The expected and observed impacts with regard to the cultural and organisational change are linked to the RTDI system. The hypothesis that are behind this is that when research centres have a more gender-sensitive perspective, they achieve better research performance and scientific results.

Evaluation

- The Agency has two ways to monitor the implementation of the actions:
 1. Annual monitoring process: The accredited centres receive monitoring visits in order to show and explain the implemented actions of the Strategic Plan.
 2. Mid-term evaluation in which the accredited centres have to send a report that explains the actions of the Strategic Plan implemented until this period and the follow-up of the milestones. The Scientific Committee gives feed-back and proposes improvements to be implemented in order to fulfil the designed Strategic Plan. As one part of the Strategic Plan this report also includes actions and milestones on gender equality.
- The Agency does not have numerical monitoring indicators of the implemented measures. Each research centre and unit has to define their own milestones in their Strategic Plan. The results of these monitoring indicators are detailed in the Mid-term evaluation. One of the dimensions to be evaluated in the mid-term evaluation consists of following-up the proposed milestones that have to be reached at the end of the funded period.

- However, the Agency does not have aggregated data that measures the outputs, outcomes and impacts of the programme. We have addressed these issues by the qualitative fieldwork through semi-structures interviews with accredited centres and coordinators of the programme. The coordinators of the programme are willing to introduce evaluation systems to measure the impact of the intervention but they have not developed any systematic evaluation action until now.

11.7 Knowledge

Dissemination of information material

Revision of teaching material and texts

Provision of gender and women studies or modules

Integrating the gender dimension in tertiary education

CASE STUDY NUMBER	CS_5
SCOPE	National
MAIN OBJECTIVE	Integrating the gender dimension in university teaching is one objective of the performance agreements.
TARGETED SECTOR	HES
ERA PRIORITY	Integrating the gender dimension
TYPE OF INTERVENTION	Gender dimension in tertiary education
TARGET GROUP	Public universities

Concept/ Design Analysis

Objective

- Integrating the gender dimension in university teaching is one objective of the performance agreements. This is assessed on the following targets:
 - Implementing a networking platform between researchers and practitioners in order to exchange up-to-date gender-specific research findings and possibilities of their application
 - Awards in the field of gender research
 - Integration of gender content into projects in the field of RTI and curricula

Activities

- Performance agreements are negotiated between the Federal Ministry of Education, Science and Research and each individual public university and define development targets in the areas of research, teaching as well as further societal targets according to the concept of “third mission” for a three years period. For the performance agreement period 2016-2018 for the first time a three-piece approach to anchor gender content at universities’ activities was applied. The third pillar foresaw the consideration of the gender dimension in research and teaching. The formulation of a specific requirement by the government to emphasise

gender content in university teaching is an attempt to scale-up respective activities that already take place at some universities to the whole university sector. According to a survey in 2017, 19 out of 22 universities reported explicitly addressing gender issues in any kind of their teaching activities, ranging from mandatory modules to optional activities. 12 out of 22 universities report mandatory modules in at least one of their curricula and also 12 report to have at least one professor's position with gender issues in their portfolio. Activities to promote gender in teaching can be classified according to the following dimensions:

- The provision of courses, programmes and modules
- The appointment of respective professorships
- The promotion of respective research activities that serve as the basis for the principle of "research-led" education

Strengths

- Consolidating the acceptance of gender related education.

Weaknesses

- The initiative of the government helped to increase commitment of university leadership but at the same time, since no specific funding is available, the ambition for new activities is limited. Since the universities according to the University Act 2002 have the status of legal independent entities and performance agreements do not have the status of legal contracts but as "agreements", progress according to the targets – is monitored but room for sanctions is limited. The instrument of performance agreements was first deployed in 2007 and there have been no financial cut backs occurring to individual universities resulting from not achieving its targets. Finally, university funding that is tied to the performance agreements still has the character of lump-sum grants and hence, the internal distribution of funds is out of government's sphere of influence.

Expected outputs

- Increase the number of universities that provide gender specific education.
- Promote the inclusion of gender specific aspects in study programmes.

Expected outcomes

- The initiative to promote gender related teaching should foster
 - Institutional Change:
 - Contribute to gender specific research
 - Increase awareness of gender aspects at all levels of universities' hierarchies by creation and spread of expertise
 - Contribute to non-gender specific research by new models, methods and paradigms
 - Contribute to innovation by use-inspired, gender-sensitive paradigms in the development process
 - Cultural Change:
 - Understanding of cultural developments
 - "Sensor" for gender related inequalities

Expected impact

- The inclusion of gender aspects in tertiary education should contribute to the social dimension of higher education and research in order to actively target and mitigate social and sexual discrimination and inequality.

Implementation Analysis

Facilitators

- Resources combined with institutional commitment at the level of the rectorate.

Obstacles

- Gender is not a regular subject according to ISCED classification of study fields which first limits its visibility, second discriminates the subject in the allocation of resources since it has to be typically anchored at regular subject/institute and third limits the visibility of outcomes and impacts by typically being attributed to the parent institute/faculty.
- As indicated in the former bullet point, competition for resources serves as another potential barrier. This comprises on the one hand the internal allocation of institutional resources. Mid-term security in resource planning is ultimately important for the continuity and quality of programs.
- The limited availability of competitive funding - that may have a leveraging effect on respective research projects and hence an increased knowledge base for teaching activities – has to date not acted as an incentive for respective initiatives. An expansion of respective competitive funding possibilities would also be an important signal for the relevance of the subject.

Impact Assessment

GE Outcomes

- increased awareness of gender aspects at all levels of university's hierarchies ranging from explicit non-discrimination policies, support for female students etc. The same holds true for the private sector, which may absorb respectively skilled people. The basic motivation to foster gender in teaching is that every student should get in touch with basic principles of gender and diversity issues at the very beginning of their academic career which on the one hand should raise sensitivity for respective issues in research work, but also provides the skills-base for their work career. The early confrontation with this topic may then also be a motivation to dive deeper into the subject by attending further courses and specializations.

RTDI Outputs

- the inclusion of gender content in curricula and the set-up of respective study programs at all levels of tertiary education (bachelor, master, PhD). This might go hand in hand with the implementation of respective organisational entities at higher education institutions (institute, department etc.) and the appointment of professorships and teaching staff. The relevant output dimension that provides the basis for further outcomes and potential impact is the number of courses, ECTS points taught and students educated. Output indicators:
 - Number of dedicated professorships
 - Number of programs
 - Number of students educated

RTDI Outcomes

- Regarding RTDI effects measurable outcomes can occur in terms of greater inter-disciplinarity in research projects, especially when gender topics are taught on interdisciplinary courses, as well as by the promotion of gender sensitive, use-inspired R&D-projects and innovations. Indicators for this type of outcomes might be:
 - Consideration of gender aspects in university document/strategies/milestones etc.;
 - Amount of inter-disciplinary research projects;
 - Anticipation of Gender Aspects in R&I-projects and education;
 - Research quality: integration of a gender dimension/perspective in research and content, in research projects, patents, and agreements;

RTDI Impacts

- The assessment of impacts so far can only take place in a theoretical way, as to date there has been no surveys or any kind of 'beyond short-term output'-monitoring system in place. In general, primary impacts are expected to occur from a broader consideration of gender-sensitive paradigms in RTDI-processes based on 1) the sensitization of students from the early stage of their academic and/or professional careers and 2) the potential increased awareness and acknowledgement based on visible outcomes such as projects and high-quality research, improved institutional quality etc. within institutions and by institutional leaders.

Evaluation

- Gender related research and teaching content is not manifested within standard classifications of fields of science and education (ISCED, Frascati Manual) but is partially distributed among various study fields and sciences. Hence, with some exceptions (e.g. Institute for Legal Gender Studies at JKU) (scientific) outcome of gender related courses (research thesis, graduates) are hard to measure, since mostly these courses are part of curricula in social sciences and outcomes are dedicated to respective curricula topics e.g. history or political sciences. Societal impacts of gender studies would also require extra surveying which is not yet done systematically. This limits visibility which may result in a limited commitment by institutional leaders regarding the allocation of scarce resources.
- The achievement of the targets is monitored in 'performance dialogues' between the ministry and each individual university. These take place frequently throughout the funding period. The procedures and steps that need to be undertaken in cases where targets are not met are also laid down in the performance agreements.
- University monitoring according to their legal duties and targets set in the performance agreements takes place on annual basis within the so called "Knowledge Accounts" (Wissensbilanzen). They comprise a set of indicators for various areas of universities' performance:
 - Tertiary education and education output (courses, student numbers, success);
 - Research output (third party funding, commercialisation activities etc.);
 - Development of personnel;
 - Societal targets ("third mission" outreach of the university).
- Beside quantitative figures, each university provides a narrative part in their individual "Knowledge Account", where it reports specific development, priority areas etc.

- Regarding the gender dimension in university teaching no standardized monitoring has been implemented so far through the “knowledge accounts”. This is mainly due to the great heterogeneity in the way respective activities are implemented. Based on a specific survey the university report 2017 dedicates for the first time a specific chapter to the current status of gender in teaching at public universities. It reports quantities in terms of the numbers of universities with dedicated study programmes, courses and modules – (optional or mandatory), professorships and specific prizes or scholarships. It says nothing though about the quality and intensity of this engagements. Also specific outcomes, such as the number of supervised masters or PhD-theses arising from these programs could not be monitored on an aggregated level. This is mainly because gender is a cross-disciplinary subject where respective outcomes tend to be ascribed to the respective standard main discipline.

CASE STUDY NUMBER	CS_12
SCOPE	Institutional
MAIN OBJECTIVE	to promote a gender perspective in teaching and research content
TARGETED SECTOR	HES
ERA PRIORITY	Integrate the gender dimension
TYPE OF INTERVENTION	Gender dimension in tertiary education
TARGET GROUP	The academic community specifically including researchers, teachers and students
REASON FOR SELECTION	One of the first universities at the national level to introduce the gender perspective in education and research through the implementation of various GEPs

Concept/ Design Analysis

Objective

- to promote a gender perspective in teaching and research content.

Activities

- The planned activities stipulated in the three GEPs represent an institutional progression of including the gender dimension in research content, teaching and the curricular. Activities include: training activities, creating a line of publications with the gender perspective, giving greater visibility to research findings with a gender dimension, organisation of a conference, creating system of indicators to evaluate research projects and teaching programmes from a gender perspective, gender proofing teaching content, creating a network of groups working with gender and women in science and dissemination activities.

Strengths

- The gender dimension axis of the plan is comprehensive.

Weaknesses

- Whilst the stated measures in the plan seem realistic – interviewees spoke of reducing the number of measures stated in the next plan – to ensure that is feasible.

Expected outputs

- Training sessions; Guidelines to introduce the gender perspective in teaching for teaching staff and deans and managers of departments and schools and the Office of the Vice Rector for Quality, Teaching and Employability; the Creation of a specific space in the web to disseminate gender research (including good practices). The publication of a review (Interdisciplinary Review on Gender Studies); Network; Conference on the state of research from a gender perspective; Promotion of teaching materials that take the gender perspective into account; Gender modules in graduate and post-graduate curriculum; Indicators to evaluate research projects and teaching programmes from a gender perspective

Expected outcomes

- Increased visibility of research that takes into consideration the gender dimension; Increased awareness of the importance of integrating the gender dimension into teaching and research content; Greater 'know-how' and competence in integrating the gender dimension in teaching and research content; Expected outcome linked to Guidelines to introduce the gender perspective in teaching is improved accreditation process from graduate and post-graduate studies to fulfil legal requirements.

Expected impacts

- Inclusive excellence: In the second GEP incorporating the gender perspective in research and teaching was articulated in relation to research contents – but in the third plan this is considered insufficient. Impacts are also related to including the discourse of equality and gender in scientific or academic activities for an 'inclusive excellence'. The majority of measures in this axis in the 2006 plan are classified in terms of policy type as 'stimulating change'. Change is therefore an expected impact although this is not further explored or detailed.

Implementation Analysis

Facilitators

- Legal Framework obliges universities to introduce this gender perspective and the implementation of the legal framework as a requirement for the accreditation of Degrees/ Masters/ PhDs. If an explanation of how the gender dimension in research content will be introduced in the next couple of years – is missing, the course will not be given accreditation.
- Political Will at Faculty Level
- The university community that participated in the phase of evaluating the gender policies of the university attributed a great importance to those actions that aim to introduce the gender perspective in teaching.
- The best way to integrate the gender perspective across the board is to integrate it into a basic university competence. Universities have some competencies that belong to the university. There are five in this case study university. A revision of these competencies was undertaken and a decision was made and that one of these should be to include the gender perspective. This means that all studies should incorporate it. Now they are working with this concrete proposal – about how they should include it and how we should evaluate it.

- In the framework of an H2020 project – they have been able to develop various measures – incorporating the gender perspective in teaching/ curricular and research. The economic resources and contacts that have come with this project are very useful, whilst the resources have finished the contacts are maintained.

Obstacles

- Lack of resources/ capacity. The third plan has many measures – and the lack of capacity to implement, develop and evaluate has been recognised. The idea is to redesign the plan so it can really be implemented during the next four years. It needs to be realistic. If the plan is over-ambitious it generates dissatisfaction. There are over 80 study plans – which will require a lot of resources to provide the support to integrate the gender dimension.
- No sanctions for non-compliance.
- The freedom of the professors – that each lecturer is free to decide what to teach and how to teach could be an obstacle. Some teachers are very receptive but others don't see it so clearly.
- Lack of visibility and support for research work into gender: In terms of research, researchers that participated in the working groups and discussion groups cited the persistence of the invisibility of their scientific production and a lack of support in their research work as a real obstacle.
- University processes and procedures are slow.

Impact Assessment

GE Outputs

- Training sessions are one of the main outputs. 12 training courses of a total of 178 hours were carried out in 2017 with the participation of 137 women and 41 men. Training has been carried out with students, administrative staff as well as academic (teaching and research) staff. Courses include: the gender perspective in research; the gender perspective in teaching; the gender perspective in communication and non-sexist language, sexual violence in the university etc.; Guidelines to introduce the gender perspective in teaching; Creation of a specific space in the web to disseminate gender research (including good practices); Publication of a Review (Interdisciplinary Review on Gender Studies); Network; Gender modules in graduate and post-graduate curriculum; As of 2017 there were four gender specific masters: In 2012 the Minor in Gender Studies has been launched, with two academic streams to choose from.

GE Outcomes

- The outcomes include increased gender sensitive teaching and research specifically strengthening teaching and research quality. Relevant indicators might be the appearance of gender in studies of any subject and the existence/ absence of knowledge on sex and gender in research fields. Contributions to strengthening gender-sensitive research are also made and the relevant indicator would be the increase of scientific knowledge about gender. An unintended outcome may be an increased awareness of gender aspects at all levels of the universities' hierarchy.

RTDI Outputs

- The main RTDI outputs include training sessions; guidelines to introduce the gender perspective in teaching; space on the website to disseminate gender research (including good practices); network of groups working with subjects of gender and women in science to promote their research; publication of a review; gender modules in graduate and post-graduate curriculum. Other teaching outputs might include revised textbooks, revised curricular including specific gender modules (compulsory/ not compulsory). In terms of research and innovation output these are also consistent with the impact story; research projects and programmes, reports, working papers, conference papers and published articles that have as its main focus developing gender knowledge or those which integrate the gender dimension into different disciplines.

RTDI Outcomes

- Better research is also expected as a result of mapping the existence/ absence of knowledge on sex and gender by field and so this validates EFFORTI GEP Impact Story 14: "as EIGE (2016) points out regarding the impacts of GEPs, "bringing a gender dimension in research and innovation content improves the overall quality of research design, hypotheses, protocols and outputs in an ample variety of fields". In this instance a key indicator is existence/ absence of knowledge on sex and gender in research field." Another key impact in terms of an RTDI outcome linked to Guidelines to introduce the gender perspective in teaching is improved accreditation process from graduate and post-graduate studies.

RTDI Impacts

- An expected impact of this case study is 'inclusive excellence'. In the second GEP incorporating the gender perspective in research and teaching was articulated in relation to research contents – but in the third plan this is considered insufficient. Impacts are also related to including the discourse of equality and gender in scientific and academic activities for an 'inclusive excellence'.

Evaluation

- The evaluation of the second plan focuses on monitoring the extent of the implementation of the measures and not impacts and outcomes. The first monitoring report contains a statistical description of the number of measures carried out, those pending and those currently being implemented. The evaluation of the second plan has extended this approach and has designed a group of indicators in order to develop knowledge about the level of implementation of each of the measures specified in the plan. This evaluation is the first phase of the process of developing the third GEP. It will serve as a starting point to determine what existing measures should be in/excluded from the new plan or whether some type of modification or the development of new measures is needed. In the evaluation of implementation report – the degree of implementation expressed as a percentage point and if available the designed indicator for the specific action/ measure is presented.
- Overall, the evaluation report found that 17% of the measures were fully implemented, 45% partially implemented, 10% had not been implemented at all, and for the remaining 27% there was no available data.

11.8 Visibility

Networking

CASE STUDY NUMBER	CS_6
SCOPE	Regional
MAIN OBJECTIVE	Increase the visibility of women STEM founders and promote networking among women STEM entrepreneurs themselves and with relevant institutions.
TARGETED SECTOR	BES
ERA PRIORITY	More women in RTDI More women in leadership
TYPE OF INTERVENTION	Networking
TARGET GROUP	Women entrepreneurs

Concept/ Design Analysis

Objective

- The general objectives of the programme are to (1) develop and promote women's entrepreneurial motivation and competence in the technology/knowledge-based sector, (2) enable access to specialist start-up knowledge in the STEM fields, (3) increase the visibility of women STEM founders and (4) promote networking among women STEM entrepreneurs themselves and with relevant institutions.

Activities

- Networking: Access to a pool of specialist advice with experts from selected STEM industries; Networking and information events for MINT founders and students: e.g. women entrepreneur congress; MINT network evening; Business start-up as career option in the STEM fields"; Activities to make women and their research visible: e.g., events where women entrepreneurs hold lectures and report their experience.

Strengths

- Counting all consultations regarding qualifications and networking CS_6 reaches on average 750 women annually. This intervention foresees a lasting impact through creating role models of successful women STEM entrepreneurs – the former beneficiaries of the current funding period. According to the interview partners, role models are expected to increase the visibility of start-ups by women in the STEM areas which will promote an increase in the motivation of other women to found their own businesses. Therefore, the STEM approach is hoped to act as a catalyst sparking unused potential to increase the number of start-ups. Secondly, the funding for the STEM approach is assumed to pay off because start-ups in STEM may be more profitable than businesses in other fields, especially 'typical' women businesses (Interview 2 & 3). Thirdly, the STEM approach is justified as an experimental investment.

Weaknesses

- The short, two-year-long funding periods of CS_6. The question of what is to remain after the single support measures of the STEM approach have finished becomes evident. While 25% of this case study's budget are used for the STEM programme, women STEM entrepreneurs make up roughly about 5% this case study's annual 400 beneficiaries. The target group of women STEM founders is resource intensive because of their need for a very specific support infrastructure and their more complex business models.
- As a 'cultural entrepreneur' the activities of this intervention aim to have an impact on a more ambitious level, i.e. to change the culture of the regional start-up ecosystem. However, the cultural change is expected, in the long run, to lead into a significant higher overall share of STEM start-ups initiated by women.

Expected outputs/outcomes/impact on GE

- A general increase in the number of women start-ups in STEM fields is expected. Beneficiaries should be strengthened in their leadership, business and self-promotion skills. Improved competencies and the experience of having peers and a comprehensive support infrastructure should lead to the participating women having greater confidence in their ability to successfully establish a STEM business. This empowering process in combination with targeted networking measures is thought to lead to increased collaborations among women entrepreneurs, with potential partners and with supporting institutions. With a more long-term orientation, CS_6 also hopes to be a driving force for a cultural change within the ecosystem for women STEM founders through its advocacy, e.g., by promoting tailor-made support interventions for their target group or tackling institutional bias of business partners, creditors or investors (Interview 2). In the end, the success of CS_6's STEM approach will be assessed by an increase in the number of women STEM start-ups in Lower Saxony that shall lead to a significant increase of the share of women start-ups in the STEM fields in the long run.

Expected outputs/outcomes/impact on RTDI

- On the side of the R&I system, an increase in the number of women start-ups in the STEM fields also results in an increase of the general number of STEM start-ups. Associated with this is an expected increase of start-ups in STEM fields that have a higher share of female graduates such as Life Science, Pharmacy or even Physical Science in contrast to Engineering, Manufacturing or Architecture (Bührer et al. 2018, 66, 76). In a similar manner more characteristics can be ascribed to (partly) 'feminine' start-ups: CS_6 voiced the expectation to increase the share of more sustainably managed start-ups, building on the assumption that women are more risk-averse than men, prefer to build-up step-by-step rather than a rapid capitalisation and, thus, have a stronger tendency to adopt more sustainable management styles (Interview 2). CS_6 stressed that in their experience women also tend to think more about the social relevance of their start-ups and more often combine technological with social innovations – in contrast to the stronger profit- and technology-orientation of men (ibid).

Implementation Analysis

Facilitators

- Whilst the funding programme for the promotion of women entrepreneurs offers a solid financial base in comparison with the support to women entrepreneurs in other states, its short-term funding periods demand continuous reporting.

- CS_6 has extensive experience in promoting start-ups by women. The project co-ordinator has built up far-reaching personal networks. The approach to implement the promotion of CS_6 services through its various regional networks facilitating a way to distribute information about its services thereby saving financial resources, but which also requires a lot of coordination efforts that requires lots of time.
- CS_6 is well-located and has good access to practical knowledge. It works in close cooperation with xx and can also offer services of xx to its clients.
- An important characteristic of the FIFA programme is that its funding is only available for women. Some of the interviewees described it as an advantage that the services of CS_6 are regularly open for women only. The female participants are supposed to be freer to talk about the topics of their interest (Interview 2).

Obstacles

- The focus of the intervention, i.e. funding for women is especially problematic in the context of the STEM fields in which nearly all founder teams are comprised of both women and men. In these teams men would have an important role in the process of supporting gender equality in business start-ups (Interview 2). In the male-dominated start-up culture it would be important to improve the communication between men and women.
- The administrative costs for the clients have risen dramatically. They have to fill out seven pages of monitoring sheets and two pages of consent. And this at every event. And when we then work in start-up tandems and the men do not have to, [...] this is simply an obstacle.

Impact Assessment

- Because of the case study's character as an ex ante evaluation, no data on effects of the intervention are available.

Evaluation

- CS_6 requires project reports to justify the funding of the project. The state ministry of economics, the state ministry of Social Affairs, Health and Equal Opportunities, the European Union and the city of Hannover are involved in funding the project. The bank strictly monitors the progress and fulfilment of the particular project targets. As the funding of CS_6 is precarious (each project needs side-funds; main funding is negotiated each two years) the Bank conducts a comprehensive monitoring. E.g., CS_6 has to hand in interim reports and describe deviations. From the interviews it appears that all reports are focused on output indicators. Social impacts seem to be not considered or, at least, CS_6 is not accountable for it.
- Activities to make women (and their research visible) (e.g. introduction of awards reserved for women)

CASE STUDY NUMBER	CS_16
SCOPE	National
MAIN OBJECTIVE	To encourage and recognise the contribution of women in science all over the world.
TARGETED SECTOR	HES
ERA PRIORITY	More women in RTDI More women in leadership
TYPE OF INTERVENTION	Introduction of awards reserved for women
TARGET GROUP	Women scientists/ researchers

Concept/ Design Analysis

Objective

- It aims to encourage and recognise the contribution of women in science all over the world. This unique program was entitled For Women in Science. The Women in Science International Awards program identifies and supports eminent women in science throughout the world.

Activities

- The measure has three pillars: the call for applications and the decision on the awardees; the solemn award ceremony, and publicity.

Strengths

- It operates quite extensively, with a thorough planning and implementation process. The circle of potential applicants is very wide and the tools used by the intervention are well chosen.

Weaknesses

- The intervention is not comprehensive in the sense that it focuses exclusively on one aspect of the gender issue within RTDI: visibility.

Expected outputs

- The measure's short-term output aims at the creation and implementation of actions that help to make women in STEM and their scientific results more noticeable, more valued and more available both to fellow researchers and to the public.

Expected outcomes

- Activities to make women and their research more visible give a sense of being appreciated and valued. This kind of recognition may strengthen the self-confidence of outstanding women in STEM and increase their job satisfaction (Gowaty 2015). In the medium term the measure can increase the profile of women in the scientific field and, in doing so, support

women already working in STEM. Thus it contributes to the recruitment and retention of women in science and to an increasing proportion of females in leadership positions.

Expected impacts

- In the long term, the measure can create new role models who will encourage more girls into STEM careers (Lockwood 2006). This has a positive effect on the recruitment and retention of women in the scientific field and leads to an increasing proportion of females in leadership positions. Therefore, the measure helps to address the leaky pipeline problem at more than one stage, thus contributing to an increased research performance and to the elimination of gender equality barriers in research organisations and in society (Blickenstaff 2005). Furthermore, the intervention raises awareness of gender issues at the organisational level, as well, which can cause a favourable change in organisational structures and culture in the long run. By reflecting a genuine commitment to gender equality activities to make women and their research more visible, it can also contribute to increased gender awareness in society as a whole.

Implementation Analysis

Facilitators

- The cooperation of various national level bodies and the most prestigious universities in the country;
- Media attention toward the program;
- The allocated financial and human resources;
- The dedication to the “good cause” on the part of every single actor involved in the measure;
- The success of the initiative in previous years;
- Its acceptance lies in its simplicity and sincerity. The implementation of the measure is quite unhampered and smooth.

Obstacles

- Financial resources are limited.
- Some members and groups of society oppose the intervention on the grounds that it is a form of positive discrimination in favour of women, which is against the principle of equality and excellence. Nevertheless, these opinions are quite rare compared to the overall positive reception of the measure.

Impact Assessment

GE Outputs

- In accordance with the expected outputs, at the global level the intervention has attained the following outputs each year: Over 9,500 applications; 275 talented young women scientists granted fellowships to pursue promising research projects, 48 programs covering 115 countries; 44 prestigious partners from the highest scientific authorities in the respective countries; and over 350 international scientists participating in selecting the national and regional fellows.

GE Outcomes

- The increased visibility and appreciation of female researchers boosts their career advancement, which has a special importance in the case of younger awardees. The award provides scientific recognition to the awardees internationally, as well, thus helping with forming meaningful professional relationships and scientific collaborations that further improve the career prospects of outstanding female researchers. This positive outcome can be observed both in the short and the long terms. A key aspect of the measure's outcomes is the creation of role models who can serve as positive examples for high school and university students and even for PhD aspirants and younger researchers. This aspect is enhanced by the "spin-off" programs linked to the intervention, which demonstrate successful female research careers in schools, e.g. through the visits of the awardees. In the case of senior awardees the intervention might positively, though indirectly affect their students and mentorees as well.

GE Impacts

- Shaping attitudes is an essential part of the program's mission. The measure intends to fight the prevailing social stereotypes regarding gender roles. It shows good examples of reaching a healthy balance between research careers and family obligations. The award allows female researchers to publish their research work and to play a more influential role within the scientific community, and thus it encourages future generations to embark on a scientific career. One of the most important, though indirect impacts of the intervention might be the increase in the number of young girls who choose STEM careers due to the inspirational role of the awardees. However, this impact cannot be measured and verified.

RTDI Outcomes

- Regular contacts and networking among fellow awardees and with other researchers are beneficial to the whole RTDI sector. Scientific cooperation may result in new and relevant research outcomes. More successful applications for prestigious calls for papers, new ideas, patents and knowledge transfer are all positive consequences of the measure. Moreover, the awarded women thrive in their careers and this contributes to the success of their research teams, as well.

RTDI Impacts

- By providing role models and encouraging both adult female researchers and young girls considering scientific careers, the measure is **expected to** help address the leaky pipeline problem at more than one stage, thus contributing to an increased research performance and to the elimination of gender equality barriers in research organisations and in the society (Blickenstaff 2005). Whilst the RTDI sector is normally not at the centre of societal attention the intense publicity that surrounds the program can raise public awareness regarding not only the issue of female researchers, but science in general.

Evaluation

- Specific monitoring activity is not carried out in the case of this initiative, and due to the ongoing character of the program ex post evaluation is currently not possible. The intervention sponsor places the focus on the implementation and the outputs of the measure and intends to continue the program until significant changes occur in the situation of women in science. The reason for this is that the founding company basically considers the initiative part of its corporate social responsibility (CSR) activities, therefore quantifiable 'return on investment' is neither expected, nor measured. However, the intervention has some easily measurable characteristics, which include the number of applications for the fellowship, the amount of donations and the quantity and quality of media coverage.

11.9 Care and Family Life

Schemes for women returning from career breaks

CASE STUDY NUMBER	CS_17
SCOPE	Institutional
MAIN OBJECTIVE	To improve the situation and to increase the number of female researchers at the national academy of science and its institutes
TARGETED SECTOR	HES
ERA PRIORITY	More women in RTDI More women in leadership
TYPE OF INTERVENTION	Schemes for women returning from career breaks
TARGET GROUP	Scientists in academic research institutions

Concept/ Design Analysis

Objective

- To improve the situation and to increase the number of female researchers at the most prominent institution in public research.

Activities

- The main activity of the program is the inclusion of an age-limit extension rule in the application package and the guidelines of the application process in case of all calls for proposals of the institution and its research institutes. This is complemented by the dissemination of information on the opportunity in the calls and internal newsletters.

Strengths

- It has a well-defined target group and its design is tailored to them.

Weaknesses

- The intervention is not comprehensive, since it focuses on a single element of the gender equality issue.

Expected outputs

- In the short term the measure aims to smooth the incompatible demands between work and family roles that make participation in both roles more difficult, thus helping women who are re-entering the labour market after having children (Ahmad 2008).

Expected outcomes

- By trying to minimise conflict between work and family responsibilities and to encourage the participation of people with children in the labour market without discouraging reproduction, the measure may contribute to female employees' feeling of contentment. A decreasing level of experienced work-family conflict results in an increased job satisfaction. An improved ability to reconcile work and family obligations leads to a more positive individual job rating, and the institutional support for women to progress their research careers may contribute to a strengthened confidence of female scientists.

Expected impacts

- The measure's long-term impact aims at an increase of the number of women in STEM. It also enables an easier career planning that takes into account major life events like childbirth, care work for relatives, etc. (Greenhaus and Beutell 1985). This in turn might prevent career interruptions and disruptions that occur because of family care responsibilities and obligations.

Implementation Analysis

Facilitators

- Consistency: the rule of the age limit extension is included in all calls for proposals.
- Lack of administrative burdens.
- Encouragement and positive attitude of leaders at universities and research institutes.
- Widespread information on the program.

Obstacles

- Although the possibility of the age limit extension is included in every call for proposals it is not advertised elsewhere, apart from some internal newsletters. Due to the lack of promotion there is some chance that the possibility is overlooked by researchers who are beyond the age limit, but would be entitled to the benefit of the extension.
- Total lack of statistics and other sorts of data on the success rates of the program and on the number, composition and satisfaction of beneficiaries.
- Lack of transparency regarding the correlations between being entitled to the age limit extension and successfully applying for a research grant.
- Lack of designated persons in charge of the implementation of the measure.
- Lack of official information on the program.
- Lack of monitoring.

Impact Assessment

GE Outputs

- The number of applicants who submit applications with the claim of the age limit extension.

GE Outcomes

- Since this intervention is a regulatory one, the majority of the outcomes that can be observed are indirect and hard to measure. The main outcome of the intervention is that researchers with children, who are slightly above the age limit can still apply for grants, therefore the time they had spent on parental leave does not hinder their career. The measure thus compensates for the time loss in the professional career of these researchers that stems from childcare responsibilities.

GE Impacts

- Data are not available on the impacts of the measure. An increase in the proportion of women researchers at the institution may verify the objectives of the intervention in the longer term.




RTDI Outcomes

- Obtaining grants that researchers with children wouldn't be entitled to apply for if the measure did not exist not only contributes to the professional advancement of these researchers, but as an indirect effect it also enhances both the career opportunities of their co-workers and the overall research performance of their teams.

Evaluation

- There is no official material on the initiative. The implementation is not monitored and the intervention is not evaluated. Data on the measurable characteristics on the measure are not available and there are no indicators used to measure them. Impacts are not identified.

23. Annex 12: Indicators distributed per category⁵ - yellow marks indicate those that were used in the case studies

C A T E G O R Y	<h1>1 PERSONNEL</h1> <p>in regard to research organisations, universities, ministries, companies</p>		
RESULTS/ POLICY MEASURE STRATEGIES	INDICATORS AT TEAM LEVEL 	INDICATORS AT ORGANISATIONAL LEVEL 	INDICATORS AT POLICY/ COUNTRY LEVEL 
1.1 GENDER EQUALITY DIMENSION: POSITION			
STRATEGY 1. More women in R&D STRATEGY 2. More women in leadership positions	<ul style="list-style-type: none"> Composition of academic positions per team (AKKA, LDW, LEAP, NL, Rice, Stanford) 	<ul style="list-style-type: none"> Horizontal/vertical segregation in positions (AU) 	<ul style="list-style-type: none"> Relative size of business enterprise in R&D sector (FI)




⁵ Descriptions of the programmes can be found in the following: Advance IT (Laursen et al. 2015), AKKA (Lövkrona & Widén 2012), Athena SWAN (Munir et al. 2014), AU (Cacace et al. 2015), FI (DFF – Det Frie Forskningsråd 2013a), ECNGD (Reidl et al. 2017b), ESWN (Archie & Laursen 2013; University of Colorado n.d.), Gender-NET (Gender-NET n.d.-b), GenPORT (GenPORT 2016), GPGSR (UAB & EGERA 2016), JR (FFG & BMWa 2008), LDW (Davidson 2013), INTEGER (INTEGER n.d.), LEAP (Hassi & Laursen 2008), Michigan (Stewart, La Vaquer-Manty & Malley 2004), MoRRI (MoRRI n.d.; Ravn et al. 2015a; 2015b), NL (Timmers et al. 2010), NZWIL (Harris & Leberman 2012), Rice (O’Brien et al. 2015), Stanford (Stanford University n.d.; Valentine et al. 2014), Toolkit (Frehill et al. 2015), Uppsala (Neu Morén 2012) YDUN (Damvad Analytics 2015).

1.1.1 Increased number of women in academic and other RTDI positions	<ul style="list-style-type: none"> • Number of tenured/tenure-track/non-tenured faculty (Toolkit) • Perception of hampering performance due to increased costs of coordination and negotiating between diverse members (ESWN, A4) • Gendered competency expectations (GenPORT) • Women's participation in paid work (MoRRI) 	<ul style="list-style-type: none"> • Relative probability between the ability of men and women to reach a top position (NL) • Period of time spent in academic positions (LEAP) • Cohort/event history analyses of tenure and promotion (Toolkit) • Proportion of doctorates becoming professors within a 12-year period (VINNMER) • Comparison between the proportion of female faculty during the most recent academic year to the proportion hired in the period of the past 3 years (Michigan) • Rate of change in composition of faculty (Stanford) • Number of newly appointed full professors (hired or promoted) (Stanford) • Encouragement to engage in decision-making (LDW) • Share of female heads of RPOs (MoRRI) • Citizen preferences for active participation in S&T decision-making (MoRRI) 	<ul style="list-style-type: none"> • Models of public involvement in S&T decision-making (MoRRI) • Horizontal/vertical gender segregation in occupations and in economic sectors (ECNGD, 53) • Distribution of grade A staff across age groups by sex (ECNGD, 64) • Distribution of staff across gender • Distribution of RFOs across gender • Success rates of men and women applicants to positions • Percentage of research evaluation panels in RFOs that included the target of at least 40 % of underrepresented sex in boards (ECNGD, 64) • Proportion of women in grade A positions (ECNGD, 63) • Proportion of women grade A staff by main field of science (ECNGD, 63) • Dissimilarity Index (MoRRI) • Glass Ceiling Index (MoRRI) • Gender wage gap (MoRRI) • Percentage of member state's funding programmes explicitly including gender requirements (MoRRI)
<i>STRATEGY 2. More women in leadership positions</i>	<ul style="list-style-type: none"> • Increase in leadership positions by women who participated in the programme (Uppsala, NZWIL) 	<ul style="list-style-type: none"> • Taken up leadership positions such as rector, associate professor, dean/as-sociate dean, centre 	<ul style="list-style-type: none"> • Measures addressing gender balance in decision-making (ECNGD, 41)

1.1.2 Increased number of women in decision-making positions	<ul style="list-style-type: none"> Experiences to be sought for leadership roles (NZWIL) 	<ul style="list-style-type: none"> director, head of department, leader of research (AKKA) Composition of boards or committees (AKKA, Athena SWAN, Toolkit) Percentage of professional staff at employment levels (NZWIL) Kinds of leadership roles engaged since the programme (NZWIL) Proportion of women on (company) boards, members and leaders (ECNGD, 64) Share of male and female members of boards in largest quoted companies, supervisory board or board of directors (ECNGD, 58) Percentage of women in advisory committees (MoRRI) Percentage of women in expert groups (MoRRI) Percentage of women in proposal evaluation panels (MoRRI) 	<ul style="list-style-type: none"> Proportion of women heads of institutions in the higher education sector (ECNGD, 64) Proportion of women in leadership positions (AU) Distribution of gender among rectors Distribution of gender among reviewers Distribution of gender among heads of review panels Distribution of gender in recruitment or promotion boards
1.2 GENDER EQUALITY DIMENSION: RECRUITMENT CAPACITY			
<i>STRATEGY 1. More women in R&D</i> <i>STRATEGY 2. More women in leadership positions</i>	<ul style="list-style-type: none"> Number of new hired faculty (Toolkit) Negotiation of job offers (concerning salary, workload, office space) (LEAP) 	<ul style="list-style-type: none"> Fairness of evaluation (Advance IT) Guidelines for recommendation letters (e.g. content; length; solid recommendation; professional portrayal) (Advance IT) 	<ul style="list-style-type: none"> Openness of labour market for researchers (ECNGD, 6) Degree of institutional autonomy (ECNGD, 6) Sex differences in international mobility of researchers during

1.2.1 Improved recruitment of talented women	<ul style="list-style-type: none"> • Reaction to female supporting treatment (Athena SWAN, ESWN) 	<ul style="list-style-type: none"> • Composition of search committees and applicant pool (Advance IT) • Facts about contracts of newly hired faculty (e.g. base salary, funding source, benefits, technical support) (Toolkit) • Relation between gender composition and success rate of the candidate pool (Stanford) • Share of gender-balanced recruitment committees at RPOs (MoRRI) 	PhD/in post-PhD careers (ECNGD, 63)
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2 WORKING CONDITIONS

RESULTS/ POLICY MEASURE STRATEGIES	INDICATORS AT TEAM LEVEL 	INDICATORS AT ORGANISATIONAL LEVEL 	INDICATORS AT POLICY/ COUNTRY LEVEL 
2.1 GENDER EQUALITY DIMENSION: WORK-LIFE BALANCE			
<p>STRATEGY 1. More women in R&D</p> <p>STRATEGY 2. More women in leadership positions</p> <p>2.1.1 Improved compatibility of family and career</p>	<ul style="list-style-type: none"> • Extent of experienced work-family conflict (Rice) • Perceived challenges in balancing private life and work (AKKA, Athena SWAN) • Satisfaction with current work-life balance (ESWN) • Perception of influence of career break on career progress (Athena SWAN) • Ability to balance work-life (LDW) • Who is entitled to take parental leave (ECNGD, 32) • Flexibility of parental leave arrangements (ECNGD, 33) 	<ul style="list-style-type: none"> • On-site child care is seen to reduce job stress (Rice) • Range of institutional support (childcare; partner/spousal hiring; health accommodations; career planning; etc.) (LEAP) • Work-life culture points enables work-life balance (family-friendly working conditions; flextime, work-family policies, etc.) (Athena SWAN) • Working time culture – average working time compared to contracts, all-inclusive contracts, working on weekends, during the night, etc. (JR) 	<ul style="list-style-type: none"> • Possible duration of maternity leave (ECNGD, 31) • Possibility of paternity leave (ECNGD, 31) • Possible duration of parental leave (ECNGD, 32) • Legal right to reduce working time on request (ECNGD, 35) • Compensation rate for wages for maternity/parental leave (ECNGD, 34) • Protection against dismissal (ECNGD, 35) • Additional paid leave for working parents (ECNGD, 34)

	<ul style="list-style-type: none"> • Average duration of parental leave periods by sex (ECNGD, 36) • Amount of professional high-quality time (FI) • Perceived interpersonal conflicts related to family obligations; “mothers leave earlier from work” (HM Government 2016) 	<ul style="list-style-type: none"> • Opportunity to bring family along during stay abroad (VINNMER) • Modified duties in response to personal needs (Advance IT) • Support for returners (Athena SWAN) • Possibility of paternity leave (ECNGD, 31) • Share of entitled men and women using parental leave (ECNGD, 35) • Regulations and initiatives supporting parents returning to work (ECNGD, 33) • Number of sick days (Eurofound 2010) • Fluctuation at the department/sex (Griffeth, Hom & Gaertner 2000) • Who is entitled to take parental leave (ECNGD, 32) • Flexibility of parental leave arrangements (ECNGD, 33) • Average duration of parental leave periods by sex (ECNGD, 36) • Culture and attitude towards parental leave (AU) • Employment by full-time and part-time status, sex (ECNGD, 49) • Administrative/organisational practices on space allocation (Toolkit) 	<ul style="list-style-type: none"> • Who is entitled to take parental leave (ECNGD, 32) • Flexibility of parental leave arrangements (ECNGD, 33) • Average duration of parental leave periods by sex (ECNGD, 36) • Employment rate by age of children and sex (ECNGD, 46)
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2.2 GENDER EQUALITY DIMENSION: JOB SATISFACTION

<p>STRATEGY 1. More women in R&D</p> <p>2.2.1 Appropriate respect/recognition for (academic/scientific/leadership) work</p>	<ul style="list-style-type: none"> • Range of respect by boss/colleagues/ students (ESWN) • Perception by others as a legitimate scholar (LEAP) • Changes in salary and position from entry to exit/current position (JR) • Transparent promotion system (van den Brink et al. 2010) • Salary compared to colleagues (ESWN) • Equality of attention (ESWN) • Experienced sex discrimination/ sexist remarks (ESWN) 	<ul style="list-style-type: none"> • Award or honour by institution (Toolkit) • Events to create visibility and credibility and specific types of recognition for women (Advance IT, AKKA) • Transparent promotion system (van den Brink et al. 2010) 	<ul style="list-style-type: none"> • General gender pay gap (ECNGD, 62) • Gender pay gap in RTDI (ECNGD, 62)
<p>STRATEGY 1. More women in R&D</p> <p>STRATEGY 2. More women in leadership positions</p> <p>2.2.2 Positive individual job rating</p>	<ul style="list-style-type: none"> • Satisfaction with career (ESWN) • Amount of social interaction in unit/team (ESWN) • Contribution to scientific field (ESWN) • Day-to-day intellectual stimulation (ESWN) • Level of funding (ESWN) • Involvement in unit/team decision-making (ESWN) 	<ul style="list-style-type: none"> • Sense of valuing scholars and colleagues (ESWN) • Perception of people working in the area of R&I in regard to gender equality, e.g. percentage of women in R&I who believe they have equal opportunities to pursue their careers in comparison to men (MoRRI) 	
<p>STRATEGY 1. More women in R&D</p>	<ul style="list-style-type: none"> • Perceptions of work climate (Athena SWAN) • Feelings of social isolation (ESWN) 	<ul style="list-style-type: none"> • Measures on work environment/work practices (LEAP) • Cultural/professional features of work environment (LEAP) 	

2.2.3 Overall work climate	<ul style="list-style-type: none"> • Sense of belonging to group (Athena SWAN, LDW) • Sense of community (ESWN) 		
<p><i>STRATEGY 1. More women in R&D</i></p> 2.2.4 Allocation of workload	<ul style="list-style-type: none"> • Composition of faculty workload (in terms of number of taught courses and supervised graduate students) (Toolkit) • Workload by gender (AU) • Main differences of working hours between men and women in full-time employment (ECNGD, 59) 	<ul style="list-style-type: none"> • Share of hours spent on research/teaching/other activities per sex (AU) • Measures led to renegotiation of workload (LDW) • Guidelines on how to argue a release from one kind of activity (for example teaching) to focus on research (LEAP) 	<ul style="list-style-type: none"> • Measures due to labour law (AU) • Time spent on unpaid work (ECNGD, 39) • Actual weekly working hours of full-time employed persons in academic/ scientific professions by gender and country (ECNGD, 60) • Actual weekly working hours of full-time employed persons in leadership positions by gender and country (ECNGD, 60)
2.3 GENDER EQUALITY DIMENSION: COMPETITIVENESS/PROMOTION AND CAREER			
<p><i>STRATEGY 1. More women in R&D</i> <i>STRATEGY 2. More women in leadership positions</i></p> 2.3.1 Transparent, non-biased and flexible promotion/tenure criteria	<ul style="list-style-type: none"> • Diversity in team structure concerning tenure (Toolkit) • Career opportunities (ECNGD, 61) 	<ul style="list-style-type: none"> • Contracts take major life events into account (e.g. child birth) (Advance IT, VINNMER) • Flexibility in promotion policy (Athena SWAN) • Assessment of number of submitted tenure applications and number of awarded tenures (Toolkit) • Assessment of number of promotion applications and number of admissions (Toolkit) • Assessment of fixed-term contracts vs. permanent positions/contracts (ECNGD, 61) 	

		<ul style="list-style-type: none"> • Transparent promotion system (van den Brink et al. 2010) 	
<p>STRATEGY 2. More women in leadership positions</p> <p>2.3.2 Strengthened confidence for promotion and responsible positions</p> <p>2.3.3 Improved support to advance research career</p>	<ul style="list-style-type: none"> • Knowledge of criteria for promotion (Athena SWAN) • Rating of obstacles to get promotion/responsible position (ESWN) • Rating of own contribution (ESWN) • Awareness of research opportunities (Athena SWAN) • Confidence in own ability (Athena SWAN) • Revisions of career plan (VINNMER, LDW) • Considerations about leaving current positions (Athena SWAN) • Number of participants promoted after the programme (NZWIL) • Change in motivation to invest more effort in scientific career (Uppsala) • Perception of own improvement of profession (Uppsala) • Description of academic future (Uppsala) • Perceived challenges to get a scientific position (Athena SWAN) • Possibility to approach senior staff for assistance and tips (measuring the confidence) (LDW) 	<ul style="list-style-type: none"> • Existence of rewards and incentives (Athena SWAN) • Received personal and professional support from institution (VINNMER) • Extent of support and encouragement from institution to adopt and enact the content of promotion programmes (Uppsala) • Implementation of new tasks/responsibilities (VINNMER, LDW) • Development of the number and proportion of women ISCED 5 graduates within a certain period of time (ECNGD, 44) • Development of the proportion of women ISCED 6 graduates (ECNGD, 44) • Development of the number and proportion of women ISCED 6 graduates differentiated by field of study (ECNGD, 44) • Development of the proportion of women ISCED 6 graduates differentiated by narrow fields of study (ECNGD, 45) • Employment rate by sex (ECNGD 46) • Distribution of researchers across economic activities (NACE Rev. 2) in 	<ul style="list-style-type: none"> • Awareness of gender-specific knowledge (AU) • Participation of women and men in RTDI (ECNGD, 50) • Gender-specific research funding programme in place (Gender-NET) • Proportion of scientists and engineers (ECNGD, 15) • Share of ISCED 6 STEM graduates in the whole population (ECNGD, 14) • Share of tertiary educated population among the group of 25 to 34 years old by sex (ECNGD, 18)

	<ul style="list-style-type: none"> • Acts of support through upper manager (NZWIL) • Received personal and professional support from unit/team (VINNMER) • Experienced extent of support and encouragement from unit/team to adopt and enact the content of promotion programmes (Uppsala) 	the business enterprise sector, by sex (ECNGD, 57)	
2.4 GENDER EQUALITY DIMENSION: WORKPLACE			
<p>STRATEGY 1. More women in R&D</p> <p>STRATEGY 2. More women in leadership positions</p> <p>2.4.1 Equal work-space/facilities allocation</p>	<ul style="list-style-type: none"> • Perceived space allocation of faculty (Toolkit) • Access to necessary facilities and work space (VINNMER) • Ranking of workplaces' quality (Toolkit) • Gender resource gap 	<ul style="list-style-type: none"> • Parking for pregnant women (AU) • Study of actual space allocation of faculty at organisational level (access to the lab, square footage, proximity to electrical power, years since last renovation, services) (Toolkit) • Study of perceived space allocation of faculty (Toolkit) 	

3 PROFESSIONAL CAPABILITIES

RESULTS/ POLICY MEASURE STRATEGIES	INDICATORS AT TEAM LEVEL 	INDICATORS AT ORGANISATIONAL LEVEL 	INDICATORS AT POLICY/ COUNTRY LEVEL 
3.1 GENDER EQUALITY DIMENSION: LEADERSHIP			
<p><i>STRATEGY 2. More women in leadership positions</i></p> <p>3.1.1 Increased confidence and ability of leadership roles</p>	<ul style="list-style-type: none"> • Ability to apply and exercise learned leadership skills (LDW, Uppsala) • Attractiveness and personal motives to take up leadership positions (AKKA) • Growth of knowledge about local leadership and organisation culture (LDW) • Perception of own role being a leader concerned with supporting women's opportunities (LDW) • Contribution to the participant's self-perception as a primary investigator/project leader (YDUN) 	<ul style="list-style-type: none"> • Implementation of leadership development programme (VINNMER) • Assessing deans/chairs/committee leaders by assessment criteria, professional requirements, stereotypes (Advance IT) • Organisational views of the advancement of women by structural features (Athena SWAN) • Mentoring system from the very beginning when one enters the organisation (NaTE) • Visibility of women at the university/ organisation (AKKA) • Share of projects directed by women (LDW) 	<ul style="list-style-type: none"> • Women with leadership positions (AU) • Visibility of women at national level (AU)

	<ul style="list-style-type: none"> • Tangible examples of leadership development skills in daily work (Uppsala) • Visibility in the unit/team (AKKA) • Strength of identification as a female leader (Uppsala) • Increased self-awareness (Uppsala) • Contributed to and/or leading meetings (LDW) • Initiation/involvement in projects (LDW) 		
3.2 GENDER EQUALITY DIMENSION: PROFESSIONAL ACHIEVEMENTS			
<p><i>STRATEGY 1. More women in R&D</i> <i>STRATEGY 2. More women in leadership positions</i></p> <p>3.2.1 Increased professional development of work skills (for career success)</p>	<ul style="list-style-type: none"> • Time management improvement (ESWN) • Building/extension of network and its usage to advance career (ESWN) • Development of long-term career plan (ESWN) • Improved ability to manage budgets (ESWN) • Deepening of knowledge of own discipline (ESWN) • Clarity about own value as a scientist (ESWN) • Encouragement to undertake further training and pursue personal development opportunities (Athena SWAN) • Knowledge about own career path and potential obstacles (ESWN) 	<ul style="list-style-type: none"> • Availability of positions in the organisation (AU) • Support and opportunities to publish (AU) • Availability of training and workshops (Advance IT) • Support to management of grant writing (Advance IT) 	<ul style="list-style-type: none"> • Availability of positions in the RTDI system (AU) • Availability of research grants (AU) • Availability of grants for staying abroad (AU) • Availability of publishing grants (AU)




	<ul style="list-style-type: none"> • Knowledge about leadership and university governance (AKKA) • Improved understanding of different departments'/sections' culture and procedures (AKKA) • Improved negotiation skills (ESWN) • Improved voicing of opinion/confidence to argue one's position (ESWN) • Confidence and preparedness in long-and short-term goals/path (ESWN) • Ability to identify and access mentors (ESWN) • Improved self-promotion skills (ESWN) • Supervising/mentoring others (ESWN) • Gaining a research or mission statement (ESWN) • Participation/strategic behaviour in committees (LDW) • Opportunities for publishing (VINNMER) • Number and level of career activities: participation in training, coaching, conferences, etc. (JR) • Quality of the activities for the support of a scientific career (JR) 		
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	<ul style="list-style-type: none"> Gender differences in research focus (FI) 		
<p>STRATEGY 1. More women in R&D</p> <p>STRATEGY 2. More women in leadership positions</p> <p>3.2.2 Improvement of network building and use</p>	<ul style="list-style-type: none"> Ability to create/enhance/sustain new networks/contacts/collaborations (AKKA, Athena SWAN, Uppsala) Use of mentoring (promoting of career, obtaining of resources, useful advices, etc.) (LEAP) Identification of useful local “allies” in encouraging GE (Michigan) Experienced value of the opportunity to network and discuss with peers (NZWIL) Value of having a mentor (male/female) (Rice) Benefits of coaching/mentoring (Uppsala) 	<ul style="list-style-type: none"> Support to create/sustain networks (AU) Implementation of mentoring/coaching programmes/sessions (Advance IT, Athena SWAN) Invitations of visiting scholars (Advance IT, Athena SWAN) Invitation of female speakers (AU) Invitation of female panelists (AU) Facilitation of informal get-together events (Advance IT, Athena SWAN) Existence of women-only groups/networks (AKKA, Athena SWAN) Share of women local researchers who are considered as mentors (LEAP) 	
3.3 GENDER EQUALITY DIMENSION: AWARENESS OF/COMMITMENT TO GENDER EQUALITY			
<p>STRATEGY 1. More women in R&D</p> <p>STRATEGY 2. More women in leadership positions</p> <p>STRATEGY 3. Gender dimension in research content and curricula</p>	<ul style="list-style-type: none"> Scale of personal commitment to gender diversity (LEAP) Scale of empathy (GenPORT) Concernment in terms of gender awareness/knowledge (Michigan) Motivation and confidence in actively promoting gender equality (Michigan) 	<ul style="list-style-type: none"> Scale of organisational commitment to gender diversity (measurement through regulations, contracts’ re-formulation, founding of new initiatives) (AU) Perceived commitment of the university/institution to promote equality and diversity (Athena SWAN) 	<ul style="list-style-type: none"> Content and manner of appropriate GE campaigns (AU) National R&I strategy/goals per country (ECNGD, 9) Equal opportunity/anti-discrimination legislation (ECNGD, 25) Overall strategic gender equality policies in RTDI in place (ECNGD, 39)

3.3.1 Increased gender awareness	<ul style="list-style-type: none"> Level of team deference (GenPORT, A23) 	<ul style="list-style-type: none"> Raised credibility to former and current GE work (Athena SWAN) Establishment of institutional data-gathering (Advance IT, AU) Effect of data collection on the application process (Athena SWAN) Perceived general gender egalitarian-ism (Rice) Inclusion of the gender dimension in teaching/curricula (ECNGD, 66) Institution's commitment to promote equality and diversity (Athena SWAN) Share of staff/researchers who have received training on IGAR (Gender-NET) Budget allocated to GE monitoring (NaTE) Dedicated person/department/team in charge of GE monitoring (NaTE) 	<ul style="list-style-type: none"> Measures addressing GE in scientific careers (ECNGD, 41) Measures addressing GE in leadership positions in RTDI (AU) Bodies responsible for GE monitoring (AU)
3.4 GENDER EQUALITY DIMENSION: FUNDING TO PROMOTE GE IN TERMS OF FEMALE CAREERS			
<p>STRATEGY 1. More women in R&D</p> <p>STRATEGY 2. More women in leadership positions</p> <p>STRATEGY 3. Gender dimension in research content and curricula</p>	<ul style="list-style-type: none"> Proportion of women receiving a grant (AKKA) Average size of grant distributed by gender (AU) Reasons for potential applicants not to apply/to apply for funding Offers of grants (AU) 	<ul style="list-style-type: none"> Grants for early career development (Advance IT) Support for career and life transitions (e.g. returners), fieldwork, conferences, professional development (Advance IT) Proportion of women receiving a grant (AKKA) 	<ul style="list-style-type: none"> Major funding agencies (national & regional) (ECNGD, 22) Promotion of gender equality as a funding requirement (AU) Existence of formal governance structures for RRI within research funding and performing organisations (MoRRI)

3.4.1 Increased funding to promote GE		<ul style="list-style-type: none"> • Offer of grants (AU) • Distribution of project funds among men and women (AU) • Research Funding Organisations Index (MoRRI) 	<ul style="list-style-type: none"> • Share of research funding and performing organisations promoting RRI (MoRRI) • Funder mandates (MoRRI) • Share of men and women among applicants (AU) • Share of men and women among successful applicants (AU)
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4 STRUCTURAL FEATURES




RESULTS/ POLICY MEASURE STRATEGIES	INDICATORS AT TEAM LEVEL 	INDICATORS AT ORGANISATIONAL LEVEL 	INDICATORS AT POLICY/ COUNTRY LEVEL 
4.1 GENDER EQUALITY DIMENSION: GENDER EQUALITY CHALLENGES/BARRIERS			
<p>STRATEGY 1. More women in R&D</p> <p>STRATEGY 2. More women in leadership positions</p> <p>4.1.1 Decrease of GE barriers</p>	<ul style="list-style-type: none"> • Perception of a gender-oriented receipt of attention (Athena SWAN) • Perception of working up effort with respect to gender (Athena SWAN) • Acknowledgement of gender issues in team (AKKA) • Acceptance of cultural change (Athena SWAN) • Value of gender-promoting measures (ESWN) • Experienced sex discrimination/sexist remarks (ESWN) • Gender bias in task allocation (Gender-NET) • Level of visibility (Rice) 	<ul style="list-style-type: none"> • Acknowledgement of gender issues (AKKA) • Acceptance of cultural change (Athena SWAN) • Engagement of decision-makers (INTEGER) • Gender monitoring/reporting in regular monitoring instruments (INTEGER) • Sustainability of gender equality initiatives (Athena SWAN, LDW) • GE-dedicated administrative staff (Athena SWAN) • Enacting of policy change (Advance IT) 	<ul style="list-style-type: none"> • Main challenges concerning GE in RTDI (ECNGD, 41) • Percentage of schools (primary and secondary) that have programmes promoting GE issues in regard to career choices (MoRRI) • Perception of gender roles in science amongst young people and their parents (MoRRI) • Percentage of parents who believe their children (daughters) will have equal opportunities to pursue a career in STEM (MoRRI) • Percentage of research institutions that document specific actions that minimise/reduce barriers in

		<ul style="list-style-type: none"> • Science communication culture (MoRRI) • Citizen science activities in RPOs (MoRRI) • RPO support structures for researchers as regards incentives and barriers for data sharing (MoRRI) • Integration of GE in key performance indicators (KPIs) (FI) • Percentage of women taking part in research mobility programmes (MoRRI) 	<p>work/environment that disadvantage one sex (e.g. flexibility of working hours) (MoRRI)</p> <ul style="list-style-type: none"> • Share of RPOs with gender in research content (MoRRI)
4.2 GENDER EQUALITY DIMENSION: ORGANISATIONAL/CULTURAL CHANGE			
<p><i>STRATEGY 1. More women in R&D</i> <i>STRATEGY 2. More women in leadership positions</i></p> <p>4.2.1. Organisational/cultural change with regard to GE</p>	<ul style="list-style-type: none"> • Perceived extent and pace of cultural change at team level (Athena SWAN) • Experience of a cultural shift during career (LDW) • Advices to a successful cultural/organisational change (Rice) • Rating of communication paths and processes (INTEGER) • Rating of transparency regarding decision-making bodies and criteria (Athena SWAN) 	<ul style="list-style-type: none"> • Establishment of gender equality structures and procedures (Gender-NET) • Perceived extent and pace of cultural change at organisational level (Athena SWAN) • Adaptations in guidelines, employee rights, spousal appointments (Rice) • Capacity building as to GE (e.g. career development centre) (AU) • General organisational consciousness and messages with symbolic value (Advance IT) • Assessment of the effectiveness of existing equal opportunity/anti-discrimination legislation/measures (ECNGD, 28) 	<ul style="list-style-type: none"> • Perceived extent and pace of cultural change at policy level (Athena SWAN) • Ministries responsible for R&I and GE (ECNGD, 21) • Structures for GE (ECNGD, 26) • Relevant policy initiatives to foster equality (ECNGD, 26) • Policy-oriented engagement with science and GE (MoRRI) • Percentage of RPOs that document specific actions aiming to change aspects of their organisational culture that reinforce gender bias (MoRRI)

		<ul style="list-style-type: none"> • Adoption of GE plans (ECNGD, 44) • Ethics at the level of universities/ RPOs (MoRRI) 	
4.3 GENDER EQUALITY DIMENSION: PREFERENTIAL TREATMENT			
<p>STRATEGY 1. More women in R&D</p> <p>STRATEGY 2. More women in leadership positions</p> <p>STRATEGY 3. Gender dimension in research content and curricula</p> <p>4.3.1 Equal treatment</p>	<ul style="list-style-type: none"> • Perception of preferential treatment such as advice, access to lab or equipment, resources, recruitment, pro-motion, attention to meetings (Athena SWAN, ESWN) • Perception of likelihood of male/female success in academia (Athena SWAN) • Amount of free time, i.e. high-quality time for the researcher to stimulate ideas, discussion, etc. (FI) 	<ul style="list-style-type: none"> • GE unit/committee in place (Gender-NET) • Gender in Research Content unit/committee in place (Gender-NET) • Facilitating mobility of female researchers (Gender-NET) 	<ul style="list-style-type: none"> • Legislation in place
4.4 GENDER EQUALITY DIMENSION: FUNDING FOR STRUCTURAL TRANSFORMATION			
<p>STRATEGY 1. More women in R&D</p> <p>STRATEGY 2. More women in leadership positions</p> <p>STRATEGY 3. Gender dimension in research content and curricula</p> <p>4.4.1 Increased funding to achieve structural transformation</p>	<ul style="list-style-type: none"> • Proportion of women receiving a grant (AKKA) • Average size of grant distributed by gender (AU) • Reasons for potential applicants not to apply/to apply for funding • Offers of grants (AU) 	<ul style="list-style-type: none"> • Budget spent on GE measures (INTEGER) • Grants for early career development (Advance IT) • Support for career and life transitions (e.g. returners), fieldwork, conferences, professional development (Advance IT) • Proportion of women receiving a grant (AKKA) • Composition of applicants and those who received funding (YDUN) • Offer of grants (AU) 	<ul style="list-style-type: none"> • Major funding agencies (national & regional) (ECNGD, 22) • Requirements for funding to promote GE (AU) • Existence of formal governance structures for RRI within research funding and performing organisations (MoRRI) • Share of research funding and performing organisations promoting RRI (MoRRI) • Funder mandates (MoRRI) • Share of men and women among applicants (AU)

		<ul style="list-style-type: none"> • Distribution of project funds among men and women (AU) • Research Funding Organisations Index (MoRRI) 	<ul style="list-style-type: none"> • Share of men and women among successful applicants (AU)
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5 RESEARCH & INNOVATION/RRI

RESULTS/ POLICY MEASURE STRATEGIES	INDICATORS AT TEAM LEVEL 	INDICATORS ORGANISATIONAL LEVEL 	INDICATORS AT POLICY/ COUNTRY LEVEL 
5.1: RESEARCH AND INNOVATION DIMENSION: RESEARCH OUTPUTS AND IMPACTS			
5.1.1 Scientific outputs	<ul style="list-style-type: none"> • H-index (Campbell et al. 2013, 2–3) • Number of presentations at conferences • New, altered or improved research tools and techniques, models and simulations (EC 2016) • New advanced capabilities, methods, systems, infrastructures and technologies (EC 2016) • Science prizes/rewards (WR) • Stipends/scholarships/grants (WR) • Consulting activities (WR) • Membership in editorial boards/editors (WR) 	<ul style="list-style-type: none"> • Percentage of publications from projects which are among the top 1 % highly cited (EC 2015b) • Number of publications in peer-reviewed high impact journals (EC 2015b) • Percentage of publications published in the top 10 % impact ranked journals (EC 2015b) • Publications' interdisciplinarity (FI) • Number of citations/field-specific citation rates (FI) • Percentage of women that are first authors of research papers (EC 2015a) 	<ul style="list-style-type: none"> • Publications' interdisciplinarity (FI) • Number of citations (FI) • Country's share of publications (ECNGD, 6) • Number and share of female authors (MoRRI) • Scientific breakthroughs spurring innovation across sectors (EC 2016) • Emergence of new technologies or fields of science in the EU (EC 2016) • EU world-class excellence in science (EC 2016)

	<ul style="list-style-type: none"> License income (patent, software, know-how, patents, trademarks) (WR) 	<ul style="list-style-type: none"> Conferences/workshops papers and proceedings (EC 2016) 	<ul style="list-style-type: none"> Number of scientific papers in relation to the population size (ECNGD, 17)
5.1.2 Networks	<ul style="list-style-type: none"> Scientific collaboration across disciplines on new, high-risk ideas (EC 2016) Cross-country (also beyond EU) and cross-disciplinary research and innovation networks (incl. SMEs) (EC 2016) 	<ul style="list-style-type: none"> Publication's international collaboration (FI) Number and percentage of joint public-private-publications out of all publications (EC 2015b) 	<ul style="list-style-type: none"> Publication's international collaboration (FI) Percentage of international scientific co-publications (ECNGD, 6) Public-private co-publications (ECNGD, 6) Stronger pan-European collaboration across disciplines, sectors, value chains and technology levels (EC 2016)
5.1.3 Training/ human capital		<ul style="list-style-type: none"> Researchers trained (inc. PhD, post-docs, gender-balanced) (EC 2016) 	<ul style="list-style-type: none"> Improved attractiveness of researchers' careers across the EU (EC 2016) Strengthened human potential in R&D in business and academia (incl. gender balance) across EU countries
5.1.4 Strengthened R&I capacities/excellence			<ul style="list-style-type: none"> Reputation and excellence of Europe in scientific and technological research (modernisation of research institutions, vitality of research environment, quality of research outputs in basic and applied research) (EC 2016)

5.1.5 Research priorities and outcomes in terms of GE	<ul style="list-style-type: none"> • Personal experience and interests (Stanford) • Beliefs and unconscious assumptions (Stanford) • Women's perception of their ability to be an entrepreneur and to hold themselves to a stricter standard of competence (FI, A29) • Women's perception to hold themselves to a stricter standard of competence (FI, A29) • Degree of fear of failure (FI, A28) 	<ul style="list-style-type: none"> • Professional career tracks and standards for promotion (Stanford) • Turnover at RPOs (FI, A7) • Composition of gendered product development (FI, A7) 	<ul style="list-style-type: none"> • Initiatives of public and private funders and other stakeholders (Stanford) • Industrial funding and lobbying (Stanford) • Military funding priorities and lobbying (Stanford) • Health funding priorities and lobbying (Stanford) • Regulatory environment (Stanford) • Market research on competitors or particular market segments (Stanford) • Configuration of academic disciplines (Stanford) • Political and cultural initiatives and movements (Stanford) • RTDI tax incentives (ECNGD, 9) • Expenditures on RTDI sector in comparison to remaining sectors by public sector/domestic business (ECNGD, 7) • Share of research projects with specific GE actions (MoRRI)
5.2 RESEARCH AND INNOVATION DIMENSION: INNOVATION OUTPUTS AND IMPACTS (INCL. TECHNOLOGICAL IMPACTS)			
5.2.1 Conventional innovation indicators	<ul style="list-style-type: none"> • Joint databases, platforms, testbeds (EC 2016) • New common methodologies (EC 2016) 	<ul style="list-style-type: none"> • Number of patent applications (EC 2015b) • Number of awarded patents (EC 2015b) 	<ul style="list-style-type: none"> • Women's representation among inventors in Europe (FI) • RTDI expenditures in the business sector (ECNGD, 6)

	<ul style="list-style-type: none"> • Technology roadmaps (EC 2016) • New or improved standards (EC 2016) • Proof of scientific and technological feasibility (EC 2016) • Awareness of market and end-user needs (EC 2016) • Demonstrators of innovative solutions • Business plans (EC 2016) • New context-adapted solutions (technological and non-technological, e.g financial, regulatory or business models) (EC 2016) • Innovative processes, products and service delivery systems (EC 2016) • Projects having sought additional or follow-up funding – private or public – incl. from regional/national schemes (EC 2016) 	<ul style="list-style-type: none"> • Number of patent applications by theme (EC 2015b) • Number of awarded patents by theme (EC 2015b) • New products, processes, and methods launched into the market (EC 2015b), according to societal challenges • Improved products, services, processes launched onto the market (EC 2015b) • Standardisation/norm-setting (Horvat 2011) • New instruments/demonstrators • Industrial spill-overs • Spin-offs (WR) • Set-up of knowledge and innovation communities gathering research, innovation and higher education (EC 2016) • Networks of developers, providers and users of solutions involved in co-creation (value chain) (EC 2016) • Private companies introducing innovations (self-reporting (yes/no) of participating firms, based on a common definition of “innovations new to the company or the market”) (EC 2015b) • Number and percentage of participating SMEs that have 	<ul style="list-style-type: none"> • Community designs (ECNGD, 6) • Community trademarks (ECNGD, 6) • Number of patents per inhabitant/citizen (ECNGD, 18) • Number and share of female inventors (MoRRI) • Better innovation capability of EU firms (EC 2016) • Number of young patenting firms per GDP
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		<p>introduced innovations to the company or the market (EC 2015b)</p> <ul style="list-style-type: none"> • New, altered or improved ideas, products, designs, processes, services and business models (EC 2016) • Turnover from innovation; sales of new to market and new to firm innovations (Fan) • License and patent revenues from abroad (Fan) 	
5.2.2 Diffusion of innovation in products, services, processes			<ul style="list-style-type: none"> • Portfolio of demonstrated replicable, up-scalable and “contextualisable” innovative solutions (EC 2016) • All forms of innovation that enable the transition to more sustainable economies fostered, incl. through digital systems (EC 2016) • Improved market uptake and replication of tested technologies (EC 2016) • Solutions brought closer to market (increase in technology readiness level) (EC 2016) • Improved cost-effectiveness and sustainability of solutions (EC 2016) • Improved manufacturing processes and equipment of EU industry (EC 2016)

			<ul style="list-style-type: none"> • Improved time-to-market for European manufacturers and service providers (EC 2016) • Improved sustainability across the entire product-service lifecycle (EC 2016) • Increased digitisation of industry and economy (EC 2016) • New and better product-service offerings addressing customer needs (EC 2016) • Creation of smart global value chains that enable value capture to Europe (EC 2016)
5.2.3 Incorporation of knowledge about sex and gender into engineering innovation processes			<ul style="list-style-type: none"> • Innovations and technologies serving certain groups of women or men more than others (Stanford) • Development of user-driven innovation/design innovation (JR, A33) • Degree of competition by image shaping by gendered productivity (JR, A33)
5.3 RESEARCH AND INNOVATION DIMENSION: ECONOMIC OUTPUTS AND IMPACTS (INCL. ENTREPRENEURSHIPS)			
5.3.1 Economic impacts		<ul style="list-style-type: none"> • Growth and job creation in participating SMEs (EC 2015b) • Turnover of company, number of employees (EC 2015b) 	<ul style="list-style-type: none"> • EU technological leadership & strengthened competitive position of European industry (incl. SMEs, start-ups) (EC 2016)

			<ul style="list-style-type: none"> • Diffusion of innovation in the economy (incl. in SMEs) generating jobs, growth and investments (EC 2016) • Share of enterprises cooperating with academia (e.g. patents filed by unis and public labs per GDP) (Fan)
5.3.2 Entrepreneurship		<ul style="list-style-type: none"> • Risk finance – total investments mobilised via debt financing and venture capital investments (EU 2015b) • Number of business ideas incubated (EU 2015b) 	<ul style="list-style-type: none"> • Share of women founding a company (FI) • Average number of full-time equivalents in women-owned businesses (FI) • Employment in fast-growing firms of innovative sectors (Fan) • Ease of entrepreneurship index (Fan) • Venture capital investments per GDP (Fan) • Innovative enterprises as percentage of total enterprises by size and type of innovation (Fan)
5.3.3 Strengthened framework conditions for R&I			<ul style="list-style-type: none"> • Leveraged private and public investment in R&I (EC 2016) • Leveraged demand for solutions for tackling societal challenges (EC 2016) • More innovation-conducive regulatory frameworks (EC 2016) • Innovative financing, business and governance models for innovative solutions adopting transdisciplinary and participatory approaches and

			<p>promoting citizens' engagement (co-creation processes) (EC 2016)</p> <ul style="list-style-type: none"> Increased availability of debt & equity finance for R&D and innovation-driven companies (EC 2016)
5.3.4 Jobs, growth & competitiveness of participants (incl. SMEs)			<ul style="list-style-type: none"> Enhanced innovation capability and competitiveness of European enterprises in global market for innovative solutions (esp. SMEs) (EC 2016) Jobs maintained and created in business and academia (EC 2016) New business entities created or improved performance of existing businesses (EC 2016) Opening up of new markets for participants (EC 2016) Growth & internationalisation of participating SMEs (EC 2016)
5.4 GENDER EQUALITY DIMENSION: GENDER-SENSITIVE RESEARCH			
<p><i>STRATEGY 1. More women in R&D</i> <i>STRATEGY 3. Gender dimension in research content and curricula</i></p> <p>5.3.1 Achieved gender equality</p>	<ul style="list-style-type: none"> Gender balance in research team/research team composition (GPGSR, 9) Number of projects lead by women (GPGSR, 9) 	<ul style="list-style-type: none"> Research includes or fosters participation of all agents in the process of investigation (GPGSR, 11) Equitably published results to ensure a balance of authorship in research (GPGSR, 12) Measures for research team-building and their regularity (JR) 	<ul style="list-style-type: none"> Awareness of and support to gender-sensitive research at system level (research councils, other RFOs) (AU)

in research process			
<p><i>STRATEGY 3. Gender dimension in research content and curricula</i></p> <p>5.3.2 Research quality: integration of the gender dimension/perspective in research and content, in research projects, patents, and agreements</p>	<ul style="list-style-type: none"> Research question has been delimited (Stanford) 	<ul style="list-style-type: none"> Percentage of research projects including gender analysis/gender dimensions in the content of research (MoRRI) Scientific production infused with power relations and based on hierarchical relationships between different fields of knowledge (GPGSR, 6) Gender, sexuality and the body are part of the processes of control in work organisations, especially of women (GPGSR, 6) Issues related to procreation and emotions are abandoned and excluded (GPGSR, 6) Reconsiderations of the significance of scientific validity in order to visibilise hidden hierarchy of organisations (GPGSR, 6) Importance in scientific analyses to attach to everything related to gender inequalities and power relationships (GPGSR, 6) Gender appears in studies of any subject (GPGSR, 6) 	<ul style="list-style-type: none"> Share of research projects with gender dimension in content (MoRRI) Share of RFOs promoting gender content in research (MoRRI) Share of gender-balanced research evaluation panels in RFOs (MoRRI) Percentage of research institutions that provide training/support for researchers in regard to the inclusion of gender dimension in the content of research (EC 2015a) Competitive advantage through increased usability of products (FI, A32) Measures addressing the integration of gender dimension in research (ECNGD, 42)

		<ul style="list-style-type: none"> • The project's title in terms of gender and gender equality to describe project (GPGSR, 9) • Existence/absence of knowledge on sex and gender in research field (GPGSR, 10) • Definition of research priorities considering who will benefit/be ignored by research projects (GPGSR, 10) • Sample composition by sex (GPGSR, 11) • Needs and expectations of research subjects as well as power relationships and gender assumptions (of researchers and research subjects) have been considered and included (GPGSR, 10) • Sex differences have been analysed (GPGSR, 11) • Other "biological and socio-cultural" differences have been taken into account (GPGSR, 11) • Analysis of gender has been set out and clearly explained in the dissemination of research results (GPGSR, 12) • Gender-neutral, non-sexist language is used (GPGSR, 12) 	
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		<ul style="list-style-type: none"> Active information search about controversial technology (Meijer et al. 2016) 	
<p><i>STRATEGY 3. Gender dimension in research content and curricula</i></p> <p>5.3.3 Making of contributions to strengthening gender-sensitive research</p>	<ul style="list-style-type: none"> People/employees feel empowered making research more participatory, creative and inclusive (GPGSR, 7) Perception of improvement of people's and social groups' lives (GPGSR, 7) Perception of rebalancing power especially in relation to women at team level (GPGSR, 7) 	<ul style="list-style-type: none"> Perception of rebalancing power, especially in relation to women at organisational level (GPGSR, 7) Level of scientific reflection of research projects (GPGSR, 7) Level of taking the role of the researchers and their relationship with their participants into account (GPGSR, 7) Research tools are adapted to the subject's language and worldview (GPGSR, 7) Legal concepts related to gender and analysis techniques about mainstreaming gender perspectives in public policies are included (GPGSR, 7) Senior managers are involved in the implementation of the policy that integrates gender analysis into research funding (Gender-NET) Number of calls that include dissemination materials and guidelines to support applicants in the integration of the gender analysis into research proposals (Gender-NET) 	<ul style="list-style-type: none"> Perception of rebalancing power, especially in relation to women at country level (GPGSR, 7) Increase of scientific knowledge about gender (GPGSR, 8) Policy requiring the integration of the gender analysis into research funding programmes in place (<u>Gender-NET</u>) Support to the inclusion of gender contents in research agendas by funders (ECNGD, 65) Inclusion of the gender dimension in research contents (ECNGD, 65) Relevance of national and regional levels in R&I policy and financing (ECNGD, 23) Number of programmes which include measures aimed at integrating the gender analysis (<u>Gender-NET</u>) Number of topics which are gender flagged/tagged (explicit cross-cutting gender analysis) (Gender-NET) Number of calls that include a mandatory requirement for applicants to indicate whether sex

		<ul style="list-style-type: none"> • Explicit integration of sex/gender analysis as one of the issues to be monitored in mid-term/final project reporting (Gender-NET) 	<p>and/or gender is relevant to their research proposal (Gender-NET)</p> <ul style="list-style-type: none"> • Number of calls that include a mandatory requirement for applicants who do not include sex and gender analysis to explain why not (Gender-NET) • Number and percentage of proposals submitted that have responded 'Yes' to the sex/gender relevance question (Gender-NET) • Number and percentage of 'Yes' respondents to the sex/gender relevance question that: Do not include explicit consideration to sex/gender in the content of the research approach/cycle; Provide inappropriate (inconsistent, apparent) explicit inclusion of sex/gender considerations in the research approach/cycle; Appropriately include sex/gender analysis across the research approach/cycle (Gender-NET) • Amount and percentage of the total call budget spent on projects which include sex/gender analysis (Gender-NET) • Amount and percentage of overall budget dedicated to enforcing the gender integration in research contents (e.g. gender training,
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			gender experts, gender eligible costs in calls, etc.) (Gender-NET)
5.5 GENDER EQUALITY DIMENSION: RESPONSIBLE RESEARCH AND INNOVATION (RRI)			
5.5.1 Gender equality	<ul style="list-style-type: none"> • Encouragement of gender-balanced teams in the work environment (MoRRI) • Active support of female colleagues within the teams (MoRRI) • Considering gender aspects in the research design (MoRRI) • Using a gender-sensitive language in publications (MoRRI) • Explicitly dealing with gender issues in research projects (MoRRI) • Percentage of women participants in [Horizon 2020] projects (EC 2015b) • Percentage of women project coordinators [in Horizon 2020] (EC 2015b) • Percentage of projects taking into account the gender dimension in research and innovation content (EC 2015b) 	<ul style="list-style-type: none"> • Percentage of member state's funding programmes explicitly including gender requirements (EC 2015a) • Percentage of research institutions (including universities) that (a) have gender equality plans and (b) provide documentation of their implementation (EC 2015a) • Percentage of research institutions that document specific actions that minimise/reduce barriers in work environment that disadvantage one sex (e.g. flexibility of working hours) (EC 2015a) • Percentage of research institutions that document specific actions aiming to change aspects of their organisational culture that reinforce gender bias (EC 2015a) • Percentage of research institutions that provide training/support for researchers in regard to the inclusion of gender dimension in the content of research (EC 2015a) 	<ul style="list-style-type: none"> • Share of female heads of RPOs (MoRRI) • Share of female researchers by sector (MoRRI) • Share of RFOs promoting gender content in research (MoRRI) • Dissimilarity Index (MoRRI) • Share of RPOs with gender in research content (MoRRI) • Glass Ceiling Index (MoRRI) • Gender wage gap (MoRRI) • Share of female heads of RPOs (MoRRI) • Share of gender-balanced recruitment committees at RPOs (MoRRI) • Number and share of female inventors and authors (MoRRI) • Percentage of women in [EC] advisory groups, expert groups, evaluation panels, individual experts, etc. (EC 2015b)

		<ul style="list-style-type: none"> • Percentage of schools (primary and secondary) that have programmes promoting gender equality issues in regard to career choices (EC 2015a) • Percentage of women on advisory committees (EC 2015a) • Percentage of women in expert groups (EC 2015a) • Percentage of women on proposal evaluation panels (EC 2015a) • Percentage of women in projects throughout the whole life cycle (in full-time equivalent) (EC 2015a) • Percentage of women that are principal investigators on a project (EC 2015a) • Percentage of research projects including gender analysis/gender dimensions in the content of research (EC 2015a) • Percentage of women taking part in research mobility programmes (EC 2015a) 	<ul style="list-style-type: none"> • Share of gender-balanced recruitment committees of RPOs (MoRRI) • Share of RPOs with GE plans (MoRRI) • Share of organisations with organisational structures for GE (MoRRI) • Share of RPOs with female recruitment and promotion policies (MoRRI) • Gender of individual participants with contact person roles in signed grant agreements (MoRRI) • Years to achieve gender equality in research participation (MoRRI) • Female graduates and academic staff by grade (MoRRI) • Development of number of researchers in the whole RTDI sector and its subsectors (ECNGD, 10)
5.5.2 Ethics	<ul style="list-style-type: none"> • Submission of projects to ethical reviews) (MoRRI) • Conduction of ethical reviews of projects (MoRRI) • Considering ethical issues when designing research (MoRRI) 	<ul style="list-style-type: none"> • Documented change in R&I priorities attributable to appraisal of ethical acceptability (EC 2015a) • Percentage of research proposals for which ethics review/institutional review board clearance process requires substantive changes in 	<ul style="list-style-type: none"> • New or improved ethical standards or guidelines (EC 2016) • Ethics at the level of universities (MoRRI) • National Ethics Committees Index (NEC index) (MoRRI)

	<ul style="list-style-type: none"> Contributing to the development of ethical standards (MoRRI) Contributing to training on ethical issues (MoRRI) 	grant application or second ethics assessment (EC 2015a)	<ul style="list-style-type: none"> Research Funding Organisations Index (MoRRI)
5.5.3 Public engagement	<p>1) Information for non-academics about research results through</p> <ul style="list-style-type: none"> Written outputs (popular science books, chapters, articles in newspapers/magazines/blogs) (MoRRI) public lectures (MoRRI) appearances on TV/radio (MoRRI) science cafés, science festivals, researchers' nights (MoRRI) <p>2) Involvement of citizens in the following phase(s) of the research by</p> <ul style="list-style-type: none"> determining what research should be performed (MoRRI) conducting the research (data collection, data analysis) (MoRRI) discussing the consequences of research/its application (including technology assessment) (MoRRI) communicating and disseminating the results of the project (MoRRI) commercialising/exploiting results (MoRRI) 	<ul style="list-style-type: none"> Public engagement funding percentage from R&I (EC 2015a) Public influence on research agendas (EC 2015a) Share of PE in R&I projects based on consultation, deliberation or collaboration (EC 2015a) Media coverage (EC 2015a) Social media/Web 2.0 attention (EC 2015a) Museum visits and impacts (on visitors, stakeholders, local communities) (EC 2015a) Civil society organisation activities and impacts (EC 2015a) Training of communicators (EC 2015a) Training of scientists/engineers (EC 2015a) PR staffing (EC 2015a) Social scientists' collaboration (EC 2015a) In-house/outourced consultancies (EC 2015a) The stat of science journalism (EC 2015a) 	<ul style="list-style-type: none"> Models of public involvement in S&T decision-making (MoRRI) Policy-oriented engagement with science (MoRRI) Citizen preferences for active participation in S&T decision-making (MoRRI) Active information search about controversial technology (MoRRI) Public engagement performance mechanisms at the level of research institutions (MoRRI) Dedicated resources for PE (MoRRI) Embedment of PE activities in the funding structure of key public research funding agencies (MoRRI) PE elements as evaluative criteria in research proposal evaluations (MoRRI) R&I democratisation index (MoRRI) National infrastructure for involvement of citizens and societal actors in research and innovation (MoRRI)

	<p>3) Active consideration of how research and innovation results will be perceived and used (MoRRI)</p> <p>4) Collaborating with people who specialise in dialogue with citizens and civil society (e.g. professional mediator, communication company, science museums) (MoRRI)</p>		
5.5.4 Science education	<ul style="list-style-type: none"> • Work with school pupils (e.g. open days, joint projects) (MoRRI) • Development of science education material (e.g. kits, websites, explanatory booklets, DVDs) (MoRRI) • Work in partnership with schools and/or teachers (MoRRI) 	<ul style="list-style-type: none"> • Education institutions/research disciplines: presence of RRI education/training (EC 2015a) • R&I project level: encouraging or requiring RRI education/training (e.g. in an integrated ethical, legal and social aspects model) (EC 2015a) • Percentage of research projects with at least one educational resource deliverable (EC 2015a) • Percentage of research projects involving STEM teachers or students (EC 2015a) • Number of projects registered (EC 2015a) 	<ul style="list-style-type: none"> • Textbook knowledge about science and technology (MoRRI) • Share of STEM graduates (MoRRI) • Science competence in secondary school pupils (PISA) (MoRRI) • School hours in STEM subjects in primary and secondary school (MoRRI) • Science communication culture (MoRRI) • Science communication budget (MoRRI) • Number of science museum visitors per million inhabitants of a country (MoRRI) • Strategic approach to citizen science (MoRRI) • Citizen science projects (MoRRI) • Importance of societal aspects of science in science curricula (MoRRI) • EU and national levels: presence of RRI descriptors in the qualification

			<p>frameworks for lower and higher education (EC 2015a)</p> <ul style="list-style-type: none"> Science and innovation awareness-raising activities (incl. science shops, science cafés, exhibitions) (EC 2016)
5.5.5 Open access	<ul style="list-style-type: none"> Use of open access publications (MoRRI) Publish open access (green or gold) (MoRRI) Use of publicly available data (MoRRI) Providing publicly available data (MoRRI) Implementing research data management plans (MoRRI) 	<ul style="list-style-type: none"> Percentage of research projects with a virtual environment that is updated and actively used with a threshold frequency (to be defined) (EC 2015a) Percentage of data repositories that include explanation and commentary to facilitate use (EC 2015a) Percentage of research projects with daily laboratory notebooks online (EC 2015a) Percentage of research projects that report real added value by an open science mechanism (for themselves and/or other actors) (EC 2015a) 	<ul style="list-style-type: none"> OAL (Open Access Literature) (MoRRI) Data publications and citations per country (MoRRI) Social media outreach/take up of OAL and open research data (MoRRI) Public perception of open access (MoRRI) Funder mandates for open access publishing (MoRRI) RPO support structures for researchers as regards incentives and barriers for data sharing (MoRRI) Number of OA journals/publications per country (MoRRI) Number of OA repositories (MoRRI) Open Data Barometer (ODB) (MoRRI)
5.5.6 RRI/ governance	<ul style="list-style-type: none"> Percentage of projects where citizens, civil society organisations and other societal actors contribute to the co-creation of scientific agendas and scientific contents (EC 2015b) 	<ul style="list-style-type: none"> Activities of funders to promote RRI (EC 2015a) Number of funding mechanisms to support RRI activities (EC 2015a) Amount of money invested in RRI projects (EC 2015a) 	<ul style="list-style-type: none"> Identification of formal and informal networks of R&I that promote RRI, at both the national and the EU level (EC 2015a)

		<ul style="list-style-type: none"> • Number of references in applications to RRI (EC 2015a) • Number of collaborative RRI projects (EC 2015a) • RRI-related training at RPOs (MoRRI) • Responsible R&I principles embedded in EU higher education (EC 2016) 	<ul style="list-style-type: none"> • Involvement of the wider public in RRI debates, measured e.g. through social media (EC 2015a) • Involvement of the wider public in RRI policy, the development of policy, protocols (EC 2015a) • RRI awareness and support to implementation at system level (AU) • Composite indicator of RRI governance (MoRRI) • Existence of formal governance structures for RRI within RFO and RPO (MoRRI) • Share of RFO and RPO promoting RRI (MoRRI)
5.6 RESEARCH AND INNOVATION DIMENSION: SOCIETAL CHALLENGES			
5.6.1 Research priorities & outcomes in terms of GE	<ul style="list-style-type: none"> • A desire to address societal problems (Stanford) 	<ul style="list-style-type: none"> • A desire to address societal problems (Stanford) 	<ul style="list-style-type: none"> • Composition of innovation policy putting more emphasis on social and service innovations (JR, A26)
5.6.2 R&I indicators		<ul style="list-style-type: none"> • Publications in peer-reviewed high impact journals in the area of the different societal challenges (EC 2015b) • Percentage of publications published in the top 10 % impact-ranked journals by subject category (EC 2015b) 	<ul style="list-style-type: none"> • Better contribution of R&I to tackling societal challenges (EC 2016) • Stronger global role of the EU, steering the international agenda to tackle global societal challenges (EC 2016)

		<ul style="list-style-type: none"> • Number of patent applications and patents awarded in the area of the different societal challenges, by theme (EC 2015b) • Number of prototypes, testing (feasibility/demo) activities, clinical trials (EC 2015b) • Societal challenges – number of joint public-private publications (EC 2015b) • Number of projects with new innovative products, processes and methods • New products, processes, and methods launched into the market (EC 2015b), according to SC 	
5.7 RESEARCH AND INNOVATION DIMENSION: SOCIETAL AND ENVIRONMENTAL IMPACTS			
5.7.1 Societal impacts		<ul style="list-style-type: none"> • Responsible R&I principles embedded in EU higher education (EC 2016) 	<ul style="list-style-type: none"> • Improvement of societal awareness, understanding and engagement to tackle societal challenges through R&I (EC 2016) • Better societal acceptance of innovative solutions (EC 2016) • Increased awareness of innovations among industry, research, user and policy communities (EC 2016) • Reinforced research integrity and ethics standards (EC 2016) • More effective promotion of gender equality and the gender dimension

			<p>in research and innovation content (EC 2016)</p> <ul style="list-style-type: none"> • Improved quality of life • Reduced direct and indirect costs linked to societal issues (EC 2016) • Improved research and innovation culture in EU (EC 2016)
5.7.2 Environmental impacts			<ul style="list-style-type: none"> • Improved environmental performance (climate change, biodiversity, sustainability) (EC 2016)

24. Annex 13: Indicators to include in framework

New Indicators

CS_1:

Number of funded companies per year (has to be integrated in EFFORTI 1.0 in 3.4.1 on national level)

Degree of utilization of the planned funding

Degree of goal achievement compared to the application

Holding of a gender workshop

Change in the ability to meet gender criteria in other funding programs

CS_2:

Number of research organisations conducting gendered research projects (on national level)

Variety of disciplines that consider gender (on national level)

Form of projects' results / type of project results (this indicator is somehow connected to the following indicators:

Type of dissemination of results

Type of further use of results

CS_3:

Degree of goal achievement compared to the application

CS_4:

(New) gender sensitive recruitment strategies to attract female applicants for open positions

Higher recruitment capacity: more women and men applying for vacancies

Difference between actual weekly working hours and desired weekly working hours

Share of women among newly hired research staff

CS_5:

Number of dedicated professorships

Number of programs regarding gender studies (mandatory courses for gender & diversity)

Number of students educated (very problematic to measure!)

Anticipation of Gender Aspects in R&I-projects and education;

Consideration of gender aspects in university document/strategies/milestones etc.;

Amount of inter-disciplinary research projects;

Number of publications produced within the study field Gender Studies

CS_12:

Number of gender related study programs

Number of gender related professorships

Proportion of graduate degrees/post-graduate degrees and Masters/ that incorporate a specific module on gender

Proportion of gender modules that are optional. Proportion of gender modules that are obligatory (graduate degrees/post-graduate degrees and Masters)

Number of/ proportion of students undertaken gender modules (Optional/ Obligatory: graduate/ post-graduate)

Number of / proportion of PhDs read that a) focus on gender b) have a gender dimension

Existence of annually up-dated resource bank/ awards scheme/ database on gender related courses

CS_13:

Number of established channels to inform about situations of sexual harassment

The sexual harassment protocol has been updated and disseminated in a clear and accessible manner

Existing social action programs for victims of gender violence have been further evaluated

Existing protocols for sexual harassment prevention are disseminated via the internet