



Novel indicators for identifying critical
INFRAstructure at RISK from Natural Hazards

Deliverable D1.1

Gender Survey



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Executive Summary

The concept of incorporating Gender issues into research has been in existence since the establishment of the European Economic Community in 1958 and during FP7, it was decided that the integration of the gender dimension and gender equality should be addressed in all areas of research.

This report describes the results of a survey carried out within the consortium to ascertain the level of participation of women and their roles within the INFRARISK project, providing an insight into gender balance issues within the consortium.

From the results of the survey conducted it is evident that the percentage of female's participating in INFRARISK is comparable to the average EU figures for female participation in the science and technology fields.

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1.0 INTRODUCTION

The concept of incorporating Gender issues into research has been in existence since the establishment of the European Economic Community in 1958. However, despite efforts to promote gender in research, assessments undertaken of the FP5 and FP6 indicated that the issue of gender has not widely been addressed in research projects (European Commission, 2011). Consequently, during FP7, it was decided that the integration of the gender dimension and gender equality will be addressed in all areas of research (European Commission, 2006).

FP7 seeks to support gender equality by;

1. Actively promoting the role of women in science. In this respect a target of 40% women participation at all levels has been set.
2. Equally addressing women's and men's realities as an integral part of the research to ensure the highest level of scientific quality.

This report describes the results of a survey carried out within the consortium to ascertain the level of participation of women and their roles within the INFRARISK project. While it is acknowledged that the modes of transport considered in this project (road and rail) may ultimately have a gender related aspect, particularly in respect of mobility behaviour and trends (M. Bianco and C. Lawson, 1996), the stress test methodologies to be developed are primarily concerned with the impacts of natural hazards on the elements of infrastructure or infrastructure network. While the societal impact is indirectly addressed, it is not the primary focus of the research and in such cases any impact on the citizen or population is considered gender neutral. However, the tools developed and dissemination activities will be structured to ensure outputs are not gender biased.

2.0 INFRARISK GENDER SURVEY

2.1 The Project

Extreme natural hazard events such as earthquakes, landslides, tsunamis, river floods, winter storms and coastal phenomena, have threatened and damaged many different regions across Europe and worldwide. These events, whilst being extremely rare, can have a devastating impact on critical infrastructure systems.

The research focus of INFRARISK is centered around developing reliable stress tests on European critical infrastructure using integrated modelling tools for decision-support to establish the resilience of critical European infrastructures to rare low frequency extreme events and to aid decision making in the long term regarding robust infrastructure development and protection of existing infrastructure.

An operational framework with cascading hazards, impacts and dependent geospatial vulnerabilities will be developed. This framework will be a central driver to practical software tools and guidelines that provide greater support to the next generation of European infrastructure managers to analyse and handle scenarios of extreme events. The minimisation of the impact of such events by the supporting tools shall establish optimum mitigation measures and rapid response.

While the research focus is aligned to transport infrastructure, it is envisaged the framework developed will be transferrable to any critical infrastructure system or systems of systems for interdependent networks.

2.2 The Survey

The survey was structured in such a way as to not only determine the number of males and females participating in the project and their respective roles, but it also served as a means of obtaining an overall picture of the INFRARISK team structure and composition. The questionnaire, included in Appendix A, was completed by each partner in the consortium.

The results of the survey can be used to define future recruitment strategies for the project if deemed necessary and to review recruitment procedures for future projects in which the INFRARISK partners are involved.

2.2.1 The Questionnaire

The questionnaire consisted of thirteen questions, eleven of which required each partner to respond by indicating the number of males and females participating in INFRARISK under various headings. The final two questions are more specifically focused at confirming employees adopt policies to avoid gender bias in the workplace and in recruitment activities.

The questions posed in the survey were as follows;

Qs. 1: How many employees in your organisation are working on INFRARISK?

Qs. 2: How many INFRARISK employees are PhD qualified?

Qs. 3: If not PhD qualified, what other third level qualifications do they have?

Qs. 4: How many INFRARISK employees are EU nationals?

- Qs. 5:** How many INFRARISK employees are from outside the EU?
- Qs. 6:** How many INFRARISK employees were in your employment before INFRARISK came about?
- Qs. 7:** How many INFRARISK employees were recruited specifically for INFRARISK?
- Qs. 8:** List the job titles/roles of the INFRARISK employees recruited specifically for INFRARISK
- Qs. 9:** How many INFRARISK employees are at Management level within your organisation?
- Qs. 10:** How many INFRARISK employees do you think will remain in employment with your organisation once INFRARISK has completed?
- Qs. 11:** Briefly outline the INFRARISK team structure and titles for the project. List the job titles/roles according to seniority/level of responsibility, starting with the most senior role at the top. Please also indicate the number of each role?
- Qs. 12:** If hiring staff for INFRARISK detail the steps being taken to avoid gender bias?
- Qs. 13:** Do working conditions allow all members of staff to combine work and family life in a satisfactory manner?

2.3 Survey Results and Analysis

The following results are presented for the consortium as a whole. The individual responses from each partner are not provided. Furthermore, only one person from each partner completed the questionnaire.

The results of the survey are compared against the SHE Figures publication of 2012 (European Commission 2012). This publication contains the most recent available data on the involvement of women from tertiary education to employment and their work-life outlook, in the 27 EU Member States and in the Associated Countries.

Qs. 1: How many employees in your organisation are working on INFRARISK?

This question seeks to ascertain the percentage split between males and females participating in INFRARISK. In total there are thirty seven people working on the project across the eleven participating organisations. As illustrated in Figure 1, the consortium as a whole consists of approximately 65% males and 35% females (twenty four and thirteen respectively).

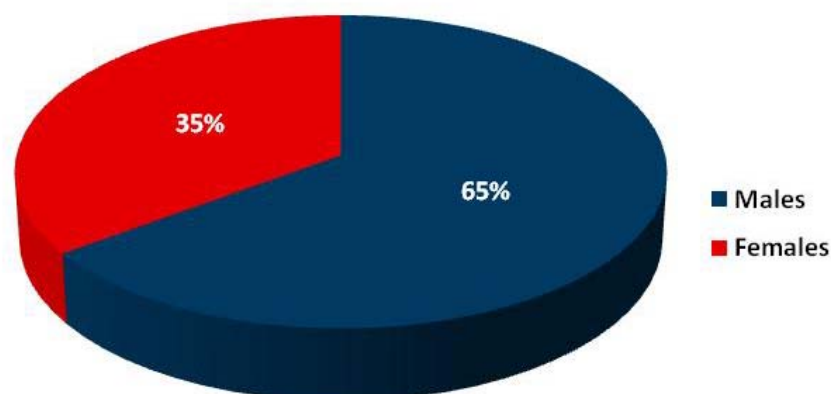


Figure 1: % Male and Female employees in INFRARISK (Total No. = 37)

While female participation of approximately 35% falls short of the EU target of 40%, the figure is above the average percentage of women in scientific employment, particularly involved in research, which stands at 33%, and for all employed scientists and engineers which stands at 32%, as per SHE Figures 2012.

Qs. 2: How many INFRARISK employees are PhD qualified?

In total, twenty two of the employees are PhD qualified, Figure 2, out of which approximately 68% are males and 32% are females who are PhD qualified (fifteen and seven respectively).

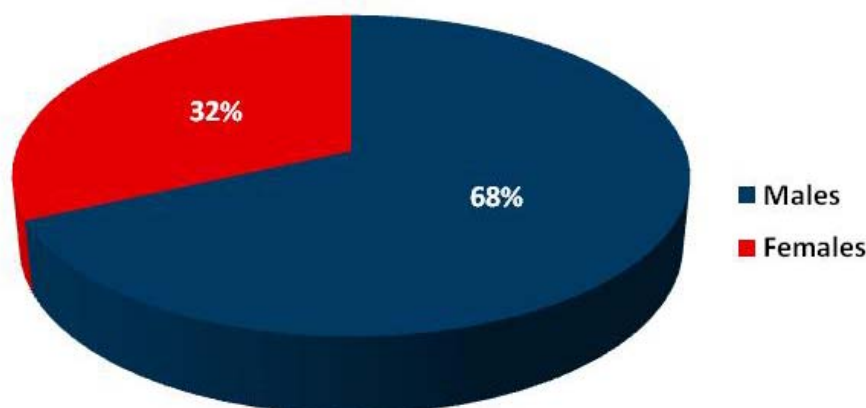


Figure 2: Male and Female employees with PhD Qualification (Total No. = 22)

The SHE Figures indicate that in 2010, female PhD graduates equalled or outnumbered men in all broad fields of study, except for science, mathematics and computing (40 %), as well as engineering, manufacturing and construction (26 %), the two fields with the highest overall number of PhD graduates. Exact comparison of the figures is difficult to make as the percentage of female employees in INFRARISK with a PhD qualification cover a range of fields across the science and engineering disciplines. However, comparison against an assumed average of 33% across these disciplines places results in a reasonable percentage of female participation in INFRARISK.

Qs. 3: If not PhD qualified, what other third level qualifications do they have?

From the thirty seven employees in the project, fifteen have qualifications other than a PhD. The ‘other’ qualifications have been separated into two groups, namely, the qualifications associated with the fields of Science, Technology, Engineering and Mathematics (STEM) and those not associated with STEM fields of study. 80% of the fifteen people have a STEM qualification and as illustrated in Figure 3, only 17% of these are female. All of those personnel with Non STEM qualifications are female. The 80% represents those employees who may hold a bachelors degree or Master or similar. While 17% appears low, it should be noted that a number of female employees are currently undertaking their PhD during INFRARISK.

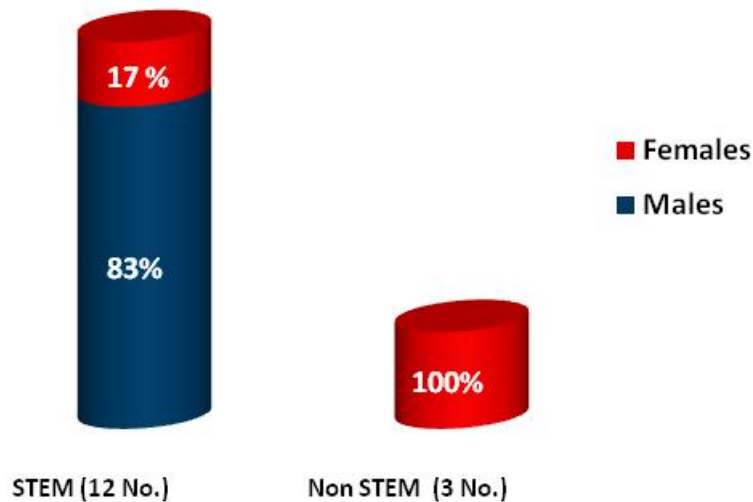


Figure 3: Male and Female employees with qualifications other than PhD (Total No. = 15)

Qs. 4: How many INFRARISK employees are EU nationals? and Qs. 5: How many INFRARISK employees are from outside the EU?

The combined responses to question 4 and question 5 are illustrated in Figure 4. Thirty four of the participants, or 92% of the total participants, are EU nationals with only three participants, or 8%, are from outside the EU. The percentage of male and female EU nationals is 68% and 32% respectively. Out of the non-EU participants, one third are male and two thirds are female.

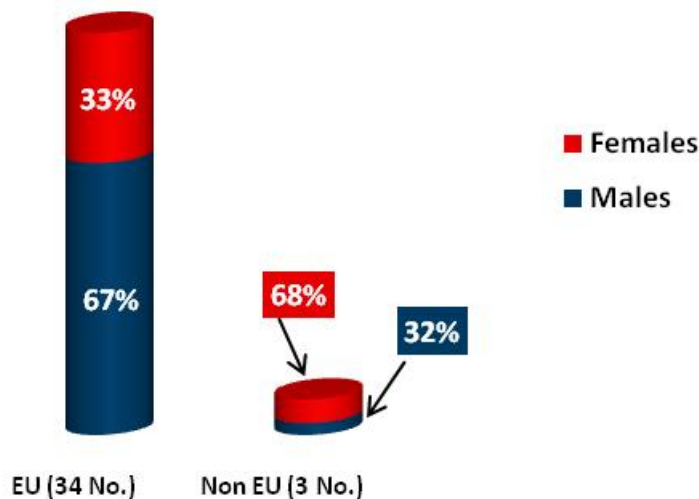


Figure 4: Male and Female employees from within/outside the EU (Total no. = 37)

Approximately 4% of the overall population of the EU 28 are from outside the EU. While comparison of the percentage of employees from both inside the EU and outside the EU is difficult to make, the average of 8% of non EU nationals is higher than the general average of 4%.

Qs. 6: How many INFRARISK employees were in your employment before INFRARISK came about?

As illustrated in Figure 5, of the thirty seven employees working on the project, thirty one, or 84%, were employed by the participating organisation prior to INFRARISK. Of these, 39% are female and 61% are male.

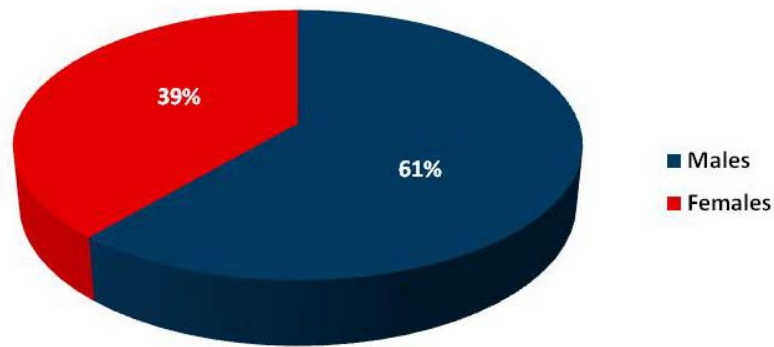


Figure 5: Male and Female employees prior to INFRARISK (Total no. = 31)

This indicates that the female employment at the participating organisations is in line with typical percentage participation by females in a STEM environment. In fact the percentage of existing employees is slightly higher than average figures.

Qs. 7: How many INFRARISK employees were recruited specifically for INFRARISK? and Qs. 8: List the job titles/roles of the INFRARISK employees recruited specifically for INFRARISK

The combined responses to question 7 and question 8 are illustrated in Figure 6. In total, six people were recruited for INFRARISK, four of which are as research/design engineers and two of which are PhD candidates. The research or design engineer category typically describes employees who have already achieved a PhD or master’s degree and are not involved in the project with the aim of furthering their post graduate qualifications. Of the personnel recruited for INFRARISK, two thirds are male and one third is female.

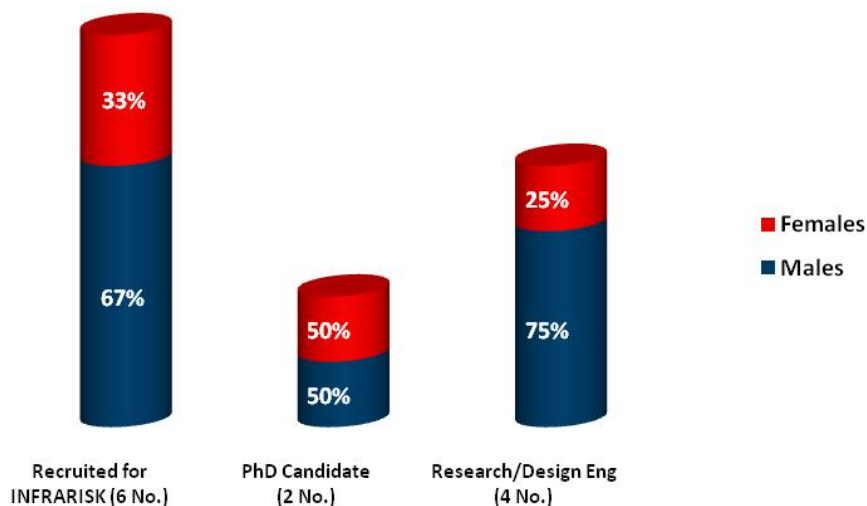


Figure 6: INFRARISK recruitment and roles (Total no. = 6)

The figures show that recruitment was typical in comparison to the percentage of females in STEM disciplines in accordance with the SHE Figures.

Qs. 9: How many INFRARISK employees are at Management level within your organisation?

Figure 7 (a) illustrates the percentage of male and female employees who are in a management level position at their respective organizations, or in effect, involved in decision making processes within both their organisation. The responses are indicative of the participant’s management

responsibilities in their organisation and not necessarily in INFRARISK alone. A figure of 24% is particularly high in the fields of science and engineering where females only make up approximately 8% of grade A academic staff in accordance with the SHE Figures.

In relation to INFRARISK in particular, Figure 7 (b) reflects the numbers of work packages which are led by males and females respectively. Of the nine work package leaders three are female. These figures compare well to the general percentage of female participation in the science and engineering discipline and are greater than the % of Grade A female academic staff.

(Note: Grade A staff - The single highest grade/post at which research activity is normally conducted)

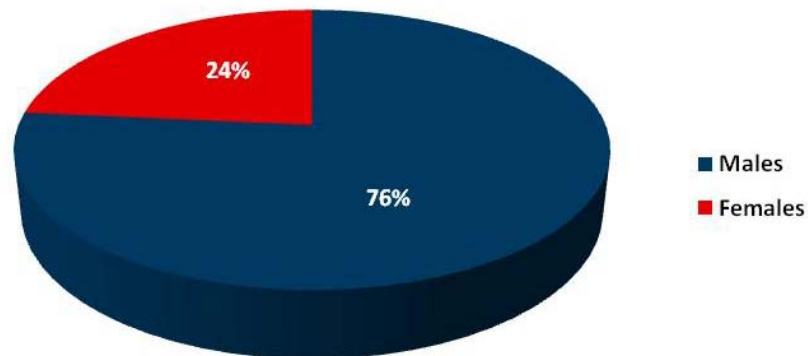


Figure 7 (a): Employees at Management Level (Total No. = 17)

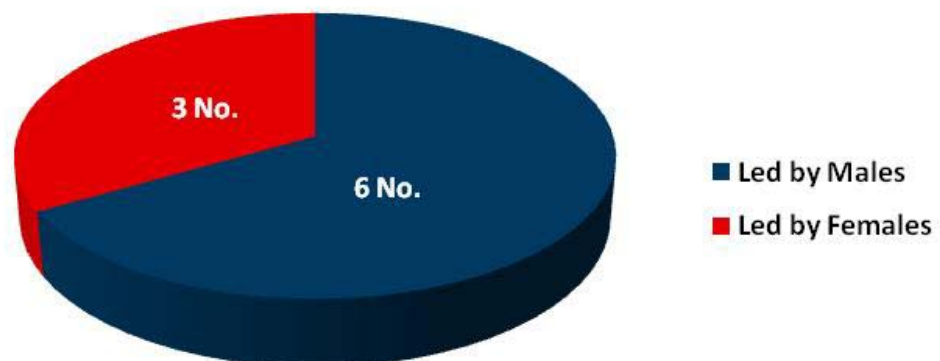


Figure 7 (b): WP Leaders (Total No. = 9)

Qs. 10: How many INFRARISK employees do you think will remain in employment with your organisation once INFRARISK has completed?

From the responses received, Figure 8, it is estimated that thirty two of the current total of thirty seven employees, or 87%, will remain in continuous employment with their respective employer post INFRARISK. Of these, 66% are male and 34% are female. This is a subjective question and it should be noted that these numbers are an estimate only and a post project evaluation would be required to determine their accuracy. However, the percentage of males and females expected to remain in employment appears consistent with the general percentage split between the males and females under various headings.

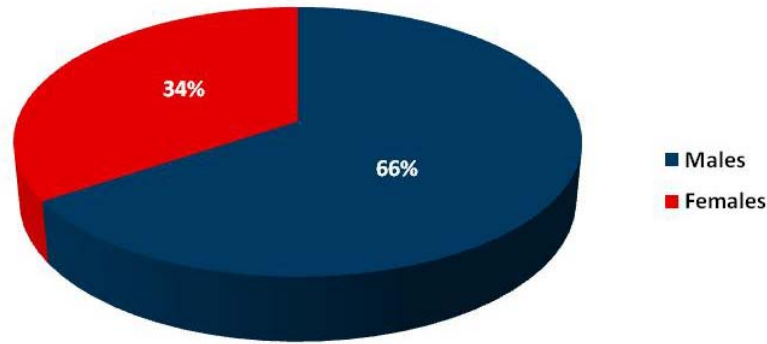


Figure 8: Continuous employment post INFRARISK (Total No. = 32)

Qs. 11: Briefly outline the INFRARISK team structure and titles for the project. List the job titles/roles according to seniority/level of responsibility, starting with the most senior role at the top. Please also indicate the number of each role?

This question seeks to ascertain an overall view of the percentage of males and females involved in the project with respect to their defined roles, Figure 9. The roles have been separated into five categories, namely, Research Engineers, Marketing personnel, technical/scientific project leaders, administrative/management project leaders and design engineers.

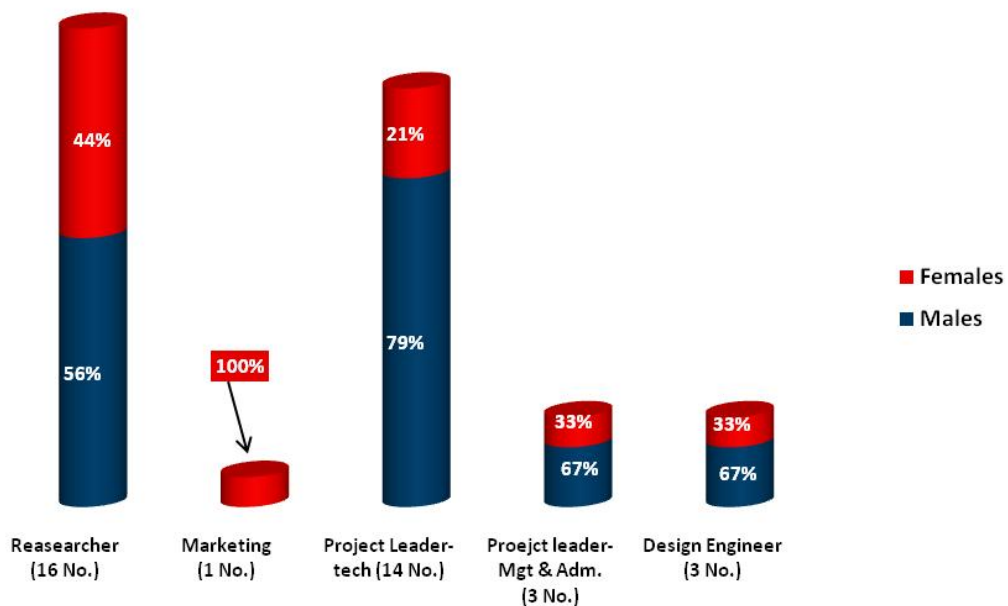


Figure 9: INFRARISK Team Structure and Roles (Total No. 37)

The responses provide a useful insight into the percentage males and female split between the various job roles within the consortium. The percentage split of male and female researchers is comparable to EU averages in the field of science and engineering where the proportion of women is approximately 31 % of the student population at the first level to 38 % of PhD students and 35 % of PhD graduates. The percentage split of males and females for other roles is similar to EU averages.

Qs. 12: If hiring staff for INFRARISK detail the steps being taken to avoid gender bias?

A response to this question was only received from those partners who recruited personnel for INFRARISK. Two of the partners noted that the work they conduct is highly specialized and recruit

based on applications received and through connections with leading universities. Most of the employees of these two organisations have PhD's or Masters Degrees and as such recruitment of staff is often driven by the available candidates, which are more likely to be male given the increased number of males studying in this field.

All partners who responded indicated that their organisation adheres to strict hiring procedures which are operated under employment legislation guidelines and directives at all times. Such policies confirm an organisation's compliance with equality legislation and diversity best practice and show an organisation's commitment to providing employment, training and career progression opportunities based on merit, and on fair assessment of skills, abilities, qualifications and performance.

Qs. 13: Do working conditions allow all members of staff to combine work and family life in a satisfactory manner?

All partners responded affirmatively to this question. The following are indicative of the responses received from individual partners.

"Yes, in order to retain the services of highly qualified staff in a competitive market we provide full support to allow flexible working conditions - typically we would recruit on the basis of the "Charter and code of conduct of the recruitment of researchers".

"Yes, in order to retain the services of highly qualified staff in an competitive international market we provide full support to allow flexible working conditions.....this has thus far related to employees wishing to pursue advanced degrees. Two of the design engineer level staff working on Infrarisk are pursuing part-time PhD's as a result of financial support.....and allowance for flexible working time (they spend 20% of their time in University)"

"Yes. The company complies with established law and in addition provides internal regulation and facilities for work / family life combination (e.g. permits and leave for different types of reasons)"

"The work schedule is flexible during the week, helping the organization of working and personal activities."

"Working hours are flexible and working from home is allowed."

Qs. 12 and Qs. 13 sought to confirm that best efforts are being taken by the partners to ensure that there is no gender bias occurring within the consortium. The work-life issue remain a key element in achieving gender equality and current indicators only take part of this into account. The fact that researchers are more likely to have children than the working population in general underscores the centrality of work-life balance issues for women and men scientists. There is not just a 'glass ceiling' but also a 'maternal wall' hindering the career of female researchers. Although work-life and work-family balance, in principle, concern both female and male scientists and researchers, women are usually more affected given that they still carry the main burden of care and domestic work. Besides general policies affecting women's entry into the labour market and their employment conditions, policies specifically targeted at research organisations are needed to support women in their career advancement

3.0 CONCLUSION

This report details the results of an internal survey carried out within the INFRARISK consortium primarily with a view to determining the gender balance within the consortium. From the results of the survey conducted it is evident that the percentage of female's participating in INFRARISK is comparable to the average EU figures for female participation in the science and technology fields.

While the percentage of female participants' falls short of the EU recommended 40% figure, the difference is not considered too great to suggest there is a gender imbalance in the INFRARISK consortium. In fact the 40% recommended participation is considered only as an average across all sectors. In some case, particularly the more dominated males sectors, such as engineering and construction etc., attaining 40% female participation is difficult and will provide a stern challenge in the future.

The results of the survey could be used for future hiring requirements within the project if necessary and indicate that every effort should be made to recruit additional female staff in order to ensure that, at the very least, the gender balance remains at current EU levels.

It is also worth noting that the figures to which the results of the survey are compared are based on SHE figures 2012. These figures provide information on female involvement across third level education, the workforce etc. in terms of European average figures. The figures can vary greatly depending on the country. In this summary an analysis of the % split between males and females based on partner country location has not been conducted and the results are compared to an EU average alone. For example in accordance with WISE UK Statistics (Botcherby and Buckner 2012), only 13% of those working in the STEM occupations are female. 27% of science and engineering technicians and 5.5% of engineering professionals are female - these figures represent significantly lower percentages of female participation than those observed in INFRARISK.

4.0 REFERENCES

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APPENDIX A: Gender Survey Questionnaire

INFRARISK GENDER QUESTIONNAIRE:

Please answer each of the following questions based on the INFRARISK.

Completed by:

Organisation Name:

Date:

		Female	Male
1	How many employees in your organisation are working on INFRARISK?		
2	How many INFRARISK employees are PhD qualified?		
3	If not PhD qualified, what other third level qualifications do they have?	Provide details	Provide details
4	How many INFRARISK employees are EU nationals?		
5	How many INFRARISK employees are from outside the EU?		
6	How many INFRARISK employees were in your employment before INFRARISK came about?		
7	How many INFRARISK employees were recruited specifically for INFRARISK?		
8	List the job titles/roles of the INFRARISK employees recruited specifically for INFRARISK	List	List
9	How many INFRARISK employees are at Management level within your organisation?		

10	How many INFRARISK employees do you think will remain in employment with your organisation once INFRARISK has completed?		
11	Briefly outline the INFRARISK team structure and titles for the project. List the job titles/roles according to seniority/level of responsibility, starting with the most senior role at the top. Please also indicate the number of each role (see example)	List here e.g. 2 WP Leaders 2 Post Doc researchers 1 no. PhD researcher	List here
12	If hiring staff for INFRARISK detail the steps being taken to avoid gender bias	Provide details	
13	Do working conditions allow all members of staff to combine work and family life in a satisfactory manner	Provide details	

Thank you for taking the time to complete this questionnaire. All data will be compiled from all involved in INFRARISK to give an overall picture of INFRARISK and team structure and composition.