

# WIA-EUROPE WHITE PAPER

# VISIBILITY OF FEMALE STEM EXPERTS

Working with Media and Conference Organisers

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# WOMEN IN AEROSPACE EUROPE

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## **WIA-EUROPE WORKING GROUPS & WHITE PAPERS**

Looking into the future, in Europe seven million job openings are forecast for the entire STEM field by 2025 as well as an exponential growth for the aerospace industry in the decades to come. Despite the abundant career opportunities, the aerospace sector is currently facing a significant occupation shortage, which calls for a comprehensive set of actions on the part of the different actors involved.

As a strategic sector, to safeguard future economic and social wellbeing, our industry needs to invest in their human resources at all career levels: from expanding the potential talent pool and attracting new early career talent to retaining the existing workforce and increasing the number of highly skilled women in the C-Suite, not just as a diversity initiative, but as a strategic priority to improve business performance.

Since its foundation in 2009, Women in Aerospace Europe (WIA-Europe) has been committed to tackling these challenges by fostering inclusive representation for women across the European aerospace sector, giving visibility to outstanding women, motivating girls to get interested in science, and communicating the key role that space plays in our daily lives.

For more than a decade now we have been organising events, trainings, grants and awards, bringing together individuals and organisations from across our industry to network and share experiences through our local groups. WIA-Europe has gained high-level support from its corporate members and a growing individual membership base fully devoted to spreading such values as equality and inclusion, with no distinction of race, religion, gender, background or culture.

Adding to our range of initiatives, in 2021 we have launched the WIA-Europe Working Groups, consisting of individual members and representatives of corporate members and partners, in order to work on key topics related to the objectives of our association and to give recommendations on effective actions. Their findings are published as White Paper series available to WIA-Europe members and general audience.

The Working Groups have evaluated the current landscape and collected insights and strategies, based on the review of existing reports and research studies. This research was supplemented by personal experiences and recommendations of WIA-Europe members at all career levels, which have been recorded through surveys and personal interviews.

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surveys and personal interviews.

Following the publication of the White Papers, WIA-Europe reviews the recommendations and together with the Working Group assesses their implementation within the current scope of WIA-Europe activities. We would like to acknowledge the excellent work done by the members of each Working Group, and say a very big thank you to all the members of our network who have contributed their with time and expertise by participating in surveys and interviews.

Thanks to your contribution, we are able to share tools to progress on these acute challenges.

Luisella GIULICCHI President WIA-Europe

#### **Diana PUEYO**

Director of Regional Development Coordinator WIA-Europe Working Groups

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## EXECUTIVE SUMMARY

For centuries, women have been excluded from the scientific and engineering spheres which were dominated exclusively by men. Nowadays, female scientists are an integral part of the scientific community. However, the scientific public scenery remains mostly male, regardless of the increase of women in these professions.

Our paper analyses the remaining barriers faced both by women in science and engineering, particularly in aerospace, and by the stakeholders offering them direct visibility: the media, the conference organisers and the company board members. This paper also considers the views of male aerospace professionals with respect to the topic of visibility of their female colleagues.

In this study, our focus will be on the women in aerospace as subject matter experts. It includes a multivariate analysis of various identified stakeholders: the media and conference organisers who call upon experts, and the companies (or academia) who provide the experts and the aerospace experts themselves (both male and female).

Our research has shown that even though many good practices have been formulated over the past decades, they have not yet been broadly implemented and in many cases not even reached their target audiences. While there is a stronger growing focus on increasing the numbers of female STEM experts in public debates, individual experiences often still confirm gender stereotypical expectations. This study wants to close this gap by providing female STEM experts with insights into potential barriers and existing good practices on the side of media and conference organisers. By doing so, we are aiming to equip them with a set of proactive tools that they can use to accelerate their implementation.

In order to identify the different components limiting the visibility of female experts in aerospace, we collected testimonies from the different stakeholders by means of a survey of 200 professionals in and around the aerospace sector. The contributors to this paper, female experts in the field of aerospace, added their own experiences and recommendations to the findings of the survey.

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## **1. INTRODUCTION**

Much work has been done to increase gender equality in many facets of life, women still face low representation in aerospace at all levels of the pipeline. Women in general face slower promotions with only 86 women promoted for every 100 men, and this becomes even more pronounced in technical fields, with only 52 women promoted for every 100 (Gascoigne et al., 2022). EngineeringUK (2020) found that women make up only 12% at the undergraduate level (2015/16 academic year) and 18% for postgraduate level (Desai, 2020).

Some researchers argue that this is one of the factors leading to lack of representation of women as subject matter experts in the media and specialised conferences. The question of career progression may provide an answer, but research around the rise, or lack, of women in STEM points to several factors around the challenges faced by women.

The discussions first around the representation of women in media first appeared in the 1970s with leading news outlets today recognizing the persistent inequality of women underrepresented as news subjects and experts (Saga, 2017; Shine, 2021). Much of the existing research has either focused on women as experts irrespective of field, or women in sciences through very macro concepts analysed through different country contexts. Existing research has largely been quantitative with limited scope within a specific field (Dhoest et al., 2020;

Howell & Singer, 2017; Niemi & Pitkänen, 2017).

In this study, our focus will be on the women in aerospace as subject matter experts. It includes a multivariate analysis of various identified stakeholders: the media and conference organisers who call upon experts, and the companies (or academia) who provide the experts and the aerospace experts themselves (both male and female).

Our research has shown that even though good practices have manv been formulated over the past decades, things have been changing rather slowly. The principal interest of this study is to identify concrete ways to accelerate the impact of defined measures by identifying missing links and possible steps to be taken by female experts and their male colleagues to actively stimulate change. Fundamentally, the principal interest of this study is to identify concrete ways to increase the visibility of women in the European aerospace sector.

We first review international literature on the representation of women in conferences and media, leaning heavily on European contexts. The second part presents the methodology used along with the results from a qualitative survey adapted to each of the targeted stakeholders: conference organisers and media, companies, and subject matter experts primarily operating in aerospace and STEM. The results are supplemented

by targeted in-depth interviews with industry experts based on qualitative inquiry methodology. The final section offers a series of recommendations and best practices specific to each stakeholder applicable beyond the European context as it seeks to increase the representation of women across many fields.

## 2. CURRENT SITUATION

## 2.1 WHERE ARE WE?

Inequalities related to gender are a complex phenomenon to which much research has sought to provide insight. In the following section, we review the literature within three critical areas:

(1) the specific challenges faced by women;

(2) the context surrounding media and conference organisers;

(3) the role of government at the national and European levels through policy reforms (law). First, we review specific challenges and the inherent barriers faced by women in general through history on the issue of gender equality. We evaluate how this may explain and affect the number of women shown in the media as subject matter experts. We then assess the way in which the media showcases subject matter experts, where they find experts, and how they are presented.

There also exists the question whether there is a connection between the specific context of Europe's multicultural framework and the way women are portrayed in media and at conferences, and whether this multicultural framework serves as the basis from which policy is created. Regardless of a country's perceived advancements in gender equality, the combination of media portrayal of subject matter experts combined with the barriers faced by women cause there to be persistent hurdles to increased visibility of women (Dhoest et al., 2020; Howell & Singer, 2017; Niemi & Pitkänen, 2017; Shine, 2021).



Figure 1: Structural Components Affecting Women's Visibility in Aeorospace

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The three pillars described in Fig. 1 all exert influence on the visibility of women as subject matter experts. We aim for the qualitative results from this study to provide further understanding as to how these three pillars weigh on boosting women's visibility. Our overarching goal is furthering a new norm, an established culture of women visibility as subject matter experts.

### 2.2. BARRIERS EXPERIENCED BY WOMEN

The presence of women is relatively recent in the media. Though the presence of women has increased in all fields, society still holds women's contribution to a lesser value than those of men (Laursen & Austin, 2014; Shine, 2021), and true gender equality is still elusive. Despite this, a UK study found that women are considered suitable and credible voices to present the news in mainstream TV (Howell & Singer, 2017). Women experts have an increased presence in all fields and some have attained parity in certain disciplines. typically those which are viewed as 'women's work', for example, midwifery, palliative care, nursing, and social sciences. However, many other fields lag behind. A measure of this disparity can be demonstrated through the number of authorships in academia by gender. A longitudinal study over 100 countries in 2017, assessed the ratio of female authorship of academic papers by academic discipline as a measure of knowledge dissemination. Authorship is a knowledge dissemination factor from which it could be lead to the hypothesis that if more women are publishing, more opportunities for female experts would be created (Holman et al., 2018). However, aside from the hypothesis of increased opportunities for visibility, the projections in Figure 2 demonstrate that gender equality will continue to elude some fields for many years if further action is not taken.







The trends expressed in Figure 2 are reflective of the trends in the aerospace industry as a whole and the various disciplines that comprise this industry. Though growth is estimated in most countries, not all come from the same level at present, as demonstrated by the left side of Figure 2 where all countries figuring in the study are ranked based on parity and academic publications by men and women. Some countries are deemed high achievers but the bulk of them remain between 25% and 40% in representation. The current and projected trends in STEM do not support gender equality representation in many fields in the

foreseeable future.

Many researchers have sought to identify the specific barriers that may be affecting women in particular. Recurring themes in research are **confidence**, **caution** and **time commitments**, all cited frequently regardless of the researched country (Dhoest et al., 2020; Howell & Singer, 2017; Juvé, 2020; Shine, 2021). To understand how cultural beliefs about gender differences are deeply rooted within our societies we have to begin by studying the **language** used.

#### 2.2.1. LANGUAGE

The language used about women who are visible in the media and at conferences offers a first indication of the barriers affecting women visibility as experts. It starts with basic semantics, for example where the visibility of women needs to challenge the need to specify 'women expert' or 'female expert' as opposed to use 'expert' per se. Cognitive biases have demonstrated that the latter designation 'expert' will cause many to picture a man by default hence the importance of understanding gender neutral and subsequent codification. Language clearly plays a role as one of the barriers facing female experts.

> "Don't feel obliged to answer any question that is not related to the purpose of the encounter, it distracts from showing expertise (e.g. how is it working a woman in space/esa, do you have children, how many women are there on your team)." (Survey participant 66)

"We should gender-neutral names for profession first. In English, it is a doctor, engineer or teacher. But these words are same for female or male. But in European languages, we always have different words for female and male professionals. Generally, males are more so the masculine version of professional is used as a common noun. It itself hides the female contribution." (107)

Specific to the field of media, research conducted by Dhoest et al. (2020) has demonstrated that women are not only associated with more feminine topics, but are also addressed more informally than their male counterparts. This study further demonstrated that within the Belgian Flemish public media, women were given less speaking time. Having only a single woman on a panel further filled with men showed this phenomenon clearly (Dhoest et al., 2020). The combination of less speaking time, informal approaches to women on the panel, and having to specify gender may all be exacerbating factors to keep women out of panels and media. These language factors stem from a cultural/societal view of women within our society. Women who are experts within their fields, who take opportunities to offer advice and air their views, and who have been given time to speak, have provided evidence in our survey regarding additional factors that affect visibility.

As demonstrated in one study, while women do bring a different perspective to conferences thev can also create participative environments where more exchanges can occur (Walters et al., 2020). In fact, a study led by Gaucher et al (2011) demonstrates how the use of certain words can also project more masculine or feminine oriented messages potentially affecting who shows up at the conference. However, women express apprehensiveness in engaging with media, and conferences by extension, as women worry about their performance level.

As Shine (2021) found: "Nearly four in five [women] reported a lack of confidence and many were worried about appearing unprepared and unqualified." Confidence is also a recurring theme as barriers affecting women.

### 2.2.2. CONFIDENCE

As gender parity remains elusive, the status of women remains behind that of men in many aspects. Based on the gender equality index published by the European Commission, which takes into account a variety of intersecting factors such as age, disability, and level of education, progress remains an uphill battle with an overall index within the EU at 68 (out of 100) for 2021 (Scheele, 2021). Women's is a reflection of this confidence unbalance, especially when women are invited to speak as experts. Our survey shows that imposter syndrome and feelings of inadequacy affect confidence and the willingness of women to accept invitations to conference and media engagements.

> "The lack of confidence is the biggest barrier for most of the women I know, including me firstly. I suggest to work more on that and this can help women to empower themselves and gain the stage." (145)

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Social identity threat theory provides a framework for understanding how the environment, combined with personal traits and behaviours, may explain weaker confidence levels observed in women (Casad et al., 2019; Litzler et al., 2014; Steele et al., 2002). Not only are women facing a real societal difference in judgements vis a vis their level of expertise, studies have also found that women tend to underestimate their abilities and compare themselves negatively to men in STEM fields. However, studies have shown that a perception of masculine superiority within the environment continues to affect confidence levels of women within STEM fields.Unfortunately, there still are relatively few studies looking at the rate of and visibility of presence underrepresented groups such as women in specific STEM fields such as aerospace to further understand the environment affecting women and minority groups (Liberatore & Wagner, 2020; Litzler et al., 2014; Samuel, 2020).

As a measure to curtail the effect of the imposter syndrome, many countries have implemented databases aimed at readily identifying women as subject matter experts, examples of which are the Brussel Binder, Expertes France, and Gage. Improving the use of databases with women experts will be further explored in the recommendations section.

#### 2.2.3. CAUTION

Confidence also takes a direct hit as women experts tend to be more exposed to criticism not only on content that they share, but also on their looks and perceived mode of presentation. Women are much more judged on these 'soft' factors than men. As a consequence, women tend to be more cautious than men to expose themselves to public Additionally. studies have scrutiny. demonstrated that the level of abuse that might follow on a presentation leads many women to hesitate over accepting invitations to speak (Dhoest et al., 2020; 2021). As women's scientific Shine. contributions are devalued compared to those of men the level of caution is compounded further (Laursen & Austin, 2014). Although studies have demonstrated the importance of visibility for women in building their careers, women continue to face challenges where the environment in many of these specialised fields are qualified as 'chilly climates'. A 'chill climate' created by exactly the lack of women in that field, is adding to that continuing sense of caution when choosing to expose oneself to a speaking engagement (Walters et al., 2020).

Moreover, microaggressions and implicit biases act as barriers to women. An Oliver Wyman study (2022) points to the general

"With visibility we do not just represent ourselves or our organisation, we are assumed by many observers to represent ALL women in the field/role; any mistake, any stumble, any perceived over-assertiveness, or lack of confidence is seen as weakness in all women in the field/role." (66)

demoralisation, even exhaustion, over time in dealing with commonplace biases and microaggressions, even if unintentional. The perceived, and real, drain on an individual's energy tends to be adapting and self-editing for women when invited to speak (Stone et al., 2021). Indeed, as a study which appeared in the Harvard Business Review explains, many women cite that they personally experienced or witnessed situations where women who acted assertivelv were penalised (Ballakrishnen et al., 2019).

The factors of **language**, **confidence** and **caution** speak to the environment of conferences and media equally, where in both areas women must navigate the chilly climates that can be promulgated and compounded by these factors. However, women must also contend with another environmental factor outside their working environment, where time commitments, and the subsequent impact of COVID-19, add to the barriers affecting women specifically (Dhoest et al., 2020; Niemi & Pitkänen, 2017; Shine, 2021; Walters et al., 2020).

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#### 2.2.4. TIME COMMITTMENTS

The nature of unpaid work carried by women has been the subject of much research in understanding gender equality. According to the Gender Equality Index published in 2019 by the European Institute for Gender Equality, the largest gap in employment rates occurs within couples with children. Childcare is an important component to the ability for full time employment (FTE), where only 62% of women compared to 89% access FTE. This ratio drops further if considering socio economic background of a woman's parents or if women are foreign born. According to many studies, even in dual income families, women still provide childcare and do more housework as part of the unpaid work in a family unit. One study shows that institutional policy also affects the persistent division of unpaid labour between men and women.

In society, structures which are geared to women and not geared to the family unit persist in placing the onus of childcare on women with a direct diminished ability to build social capital to the same degree as men. Additionally, a study by Fielding-Singh et al. (2018) found that many women feared difficulties they could potentially face with their partners if they persisted in valuing an ambitious career. At the core, what appears to affect women predominantly is ensuring family stability. This is deemed difficult to ensure with dual careers at play in a family unit (Fielding-Singh et al., 2018). Furthermore, when access to affordable care for children or family are restricted, childcare, or in the

care of elder family members or family members with disabilities (International Labour Office, 2018; Kan et al., 2011).

The invisible nature of time commitments necessary to meet family obligations are a barrier to the needed time to adequately media/conference prepare for а appearance. The accumulation of unpaid work and familial obligations afford many women very little flexibility within their available time, a factor that guickly becomes incompatible with media expectations in delivering expert opinions in a short time frame. This again contributes to ongoing barriers in visibility for women (Shine, 2021).

Based on survey results: of the 146 participants who provided detailed feedback, 35% identified childcare and limited time to adequately prepare when invited as an expert.

#### 2.2.5. IMPACT OF COVID-19

Though the true impact of the pandemic, two years after its arrival, has not been fully assessed, the weight of extra time commitments shouldered by women has been clear. Family obligations and the invisible work have been primarily born by women, notably around home schooling and household related activities (Górska et al., 2021). This added workload has also resulted in a drop in visibility of women in the media in general. In 2020, Jones "I'm mostly afraid of the online harassment that a lot of women (in general journalists, candidates of tv shows etc) are facing these recent years, just by saying/standing one statement loud and publicly. I'm already outspoken by nature so I face comments quite regularly but I'm definitely not ready for facing (and not sure the resources are available to face) that kind of big troubles." (186)

demonstrated how the visibility of women in general significantly dropped in the media, pointing out that for every one time a female expert was used by the media, 19 male experts were utilised. On the other hand, women made up for over half the mentions when it came to topics of childcare (53%) and domestic violence (70%), clearly reflecting a persistent role and topic associated with women as discussed earlier (Jones, 2020).

Before the measured impact of COVID-19, studies demonstrated how the exclusion of women from presenting or being invited be experts during conferences to negatively impacted their career outcomes. During the pandemic, women took on more work, invariably affecting research activity, and adversely altering development of expertise the and reputation. Speaking at conferences is critical to career outcomes, but to be invited, an expertise needs to be built through research activity, a component

the pandemic. It has been proven that the pandemic enabled high productivity for men with or without children, further widening the gender equality gap. The pandemic impacts on opportunities for developing and existing female experts will be felt not just today but in the longer term (Górska et al., 2021; Jones, 2020; Walters et al., 2020). The pandemic's consequences on heightening barriers to women is undeniable and will continue to have impacts on their career paths should measures not be systematically integrated to mitigate its effects.

# 2.2.6. SUMMARY OF BARRIERS EXPERIENCED BY FEMALE EXPERTS

In this first section of our study, the focus was placed on the individual, women in STEM, to define barriers identified through various studies. The barriers explored were language, confidence as a subject matter expert, caution in taking a public speaking engagement, time commitments in managing both paid and unpaid duties, and the impact of COVID-19 on the development of expertise and reputation. These were evaluated in our survey and the results and recommendations for reducing their impact are in the following sections. Framing the individual is the start in understanding how organisers and media can reframe organisations that can increase the presence of women as subject matter experts. The next section will explore the role of media, conference organisers, industry and national/European policy organisational as structures influencing barriers to women.

## 2.3 THE ROLE OF MEDIA AND CONFERENCE ORGANISERS

27 years ago, in 1995, the Beijing Declaration and Platform for Action was adopted at the UN's Fourth World Conference on Women in Beijing in 1995. One of the 12 specific aims of the Beijing Platform for Action was to increase women's participation in news media organisations and to promote a genderbalanced portrayal of women in news media across the globe. As an organisation, the media, in broad terms, has undergone changes reflective of society especially over the last 50 years (Franks & Howell, 2019; United Nations, 1995).

In recognizing the critical role it plays in representing society, many mainstream media have made efforts to change representation and integrate more gender equality. The presence of women is a rather new phenomenon overall as witnessed with the first appearance of women as journalists in mainstream news chains around the 1970s. The first elements of discrimination were and continue to be based on physical attributes (look), and perception of competence as a second. As an example of language, it was not until the 1970s that women were deemed "adequate" to present mainstream news. Unfortunately, a recurring theme in large parts of societies is how women are portrayed to which media is a vehicle reflecting what is going on at a given time in period (Franks & Howell, 2019; Ross, 2020; Shine, 2021). The following section focuses on how the culture of media as an

institution is shaped by its own organisational culture and how this exacts pressure on establishing a culture of visibility for women.

Though the media has made tremendous strides over the last century, gender balance still remains unattainable as subject matter experts to be interviewed or topics to be covered. It is considerably worse than in other western countries like the US. New Zealand. Canada. and Israel. leading the study to focus on Europe to deepen understanding within this context. The Global Media Monitoring Project (GMMP) report undeniably highlighted that near gender parity in newsrooms (as in South Africa, the UK and the US) is better balanced but this has not resulted in gender-balanced coverage by extension. In addition, having a third of women in executive or governance positions, such is the case in South Africa, the US and Kenya, has not provided the 'critical mass' previously thought necessary to improve women's visibility in the news. Though considerable efforts have been made within the "media organisation", the culture has not shifted to allow for more female representation in media. In sum. the relationship between the number of journalists/leaders women in news organisations, and news coverage which features women as experts in newsgathering and protagonists is not linear (Ross, 2020; Saga, 2017; Shine, 2021).

According to the GMMP, of the 114 countries observed, 54% consider it a problem in how women are presented inmedia, but again with responses being highly heterogeneous across countries. As a matter of example, the weight of the issue spans from scores of 71% in France and 70% in Sweden to 22% in Latvia and Furthermore. Bulgaria. the GMMP reported that women only make up 21% of news subjects. Essentially, large gaps in gender representation demonstrate the environment in which organisers and media representatives operate within. It helps demonstrate also to the organisational culture which may influence how they are approaching individuals and organisations. Though the media has hired more women at all levels of the organisation from journalists to executives, efforts from the media are still lagging when addressing women in the media.

Core to the issue is the perception of where women's expertise lie supported by the dominant organisational culture of media. Globally, in 2015, 19% of experts or commentators were women. The use of women as news sources overall has marginally decreased from 2010 (20% vs. expertise is heavily 19%). Women's skewed towards lower profile news specialities and geared towards the sphere of the private, emotional and subjective versus that of the public, rational and objective. Studies within the media continue to showcase a large breadth of male experts, in part based on societal expectations of authoritative figures being predominantly male. The simple definition of authoritative under a gendered lens can lean into further descriptors such as "pushy" or "uppity". Dhoest et al. (2020) offers an explanation of three levels: the position of women in society, journalistic habits and ways of working, and the

attitudes of female guests and experts (Dhoest et al., 2020; Franks & Howell, 2019; Ross, 2020). The first two levels can be linked to organisational culture.

Given the complexity surrounding organisational culture, turning to research conducted in academic conferences may provide a lens with which to further understand how to address cultural behaviours. Aufenvenne et al. (2021) studied academic conferences through the dissociation of the individual from the organisation in order to study the forms of participation: passive vs active conference members regardless of position during the conference. This longitudinal study conducted in Germany over 20 years tracking progress and accounting for type of participation at conferences revealed the importance of behaviour even though gender parity in Academe has significantly increased. The study concluded that language patterns appeared to have more impact than a position held by women even when factoring the increase in gender equality in academics. Essentially, and as observed in the media, merely achieving gender equality in staffing at all positions is not sufficient in increasing women's visibility in the media. Real change can only occur in behavioural and organisational culture change (Aufenvenne et al., 2021; Howell & Singer, 2017; Shine, 2021).

Organisational culture and changing behaviours allows for targeted efforts that can shift both dimensions within media. Some media outlets have focused on media training, educating staff and creating to the awareness as

consequences of their own behaviours. Some dominant news chains such as the BBC have also launched training programs such as "Expert Women" days as a way to encourage and mentor women who consider themselves experts in different fields. Though the program has met mixed results, it allows the organisation to reflect on its own culture while seeking ways to shift behaviours through mentorship programs (Franks & Howell, 2019; Howell & Singer, 2017; Shine, 2021).

Returning to the lens of academic conferences, as a source of academic expertise, Corona-Sobrino et al. (2020) also conducted an in-depth study to review the dimensions of female representation in conference through a series of indicators further detailing the notion of active and passive participation found in Aufenvenne et al.'s 2021 study. Corona-Sobrino et al. (2020) suggest a participation review of conference through four dimensions to which a series of indicators should be tracked: (1) female participation presence; (2) leadership; (3) organisational culture; and (4) research context. The use of these types of tables and indicators allows for more evidencebased recommendations to make intentional changes to boost participation of women both as passive and active members of a conference and this at all levels. In reality, what this study sought to demonstrate is that simple representation was not sufficient in ensuring visibility, engaging with women at all levels from passive to active members is need to effect real change in countering the barriers for women identified previously (Aufenvenne et al., 2021; Corona-Sobrino

et al., 2020; Franks & Howell, 2019; Ross, 2020).

The first section reflected on women and the barriers they face, this second section reviewed how the media's organisational culture is difficult to change unless addressing behaviours. Part of changing the behaviours can also greatly be supported by how policy and reforms initiated by government and European Union organisations can also influence changing behaviours in establishing a culture of women visibility. Changing the narrative has also been a reflection of society through political will. The third section will briefly cover what states and governments have implemented as changes in policy to support establishing a culture of women visibility.

## **2.4 EUROPEAN POLICIES**

Even though progress has been made in gender equality over the past two decades due to EU equal treatment legislation, gender policies, and other measures for the advancement of women, gender in media has for a long time not received prioritised attention. The European Commission's gender Equality Strategy for 2016-2019, EU Council pact for equality between women and men 2011-2020 [XP1], and the European Commission's Gender Equality Strategy 2020-2025 have formulated suggestions of possible strategies and policies to achieve gender equality goals in the media. Policies regulating women's legal rights and protection in the media sector remain a matter of national legislation or

professional unions, resulting in very mixed results across European states.

## 2.5. CASE STUDY: IMPACT OF MENTORING FOR RAL SPACE EMPLOYEES

A good case study for how the representation of women has changed is through monitoring the gender of speakers at the UK's range of national space sector conferences. We collected data on representation of women by looking at the programmes and websites of conferences to identify the speakers at each event. Gender was determined by looking at the biography and profile of each speaker. We used the conference website to identify the pronoun used for each and identified those using 'she/her' pronouns. If we could not determine the gender from the conference website, we used Google to search for the speaker to find their place of work. We used their work biography to identify the pronouns they used to describe themselves.

There are a few caveats to this data collection method. First, we recognise that this is not a perfect method and we recognise the issues with assuming gender (especially for non-western names or for non-binary people) and using publicly available pronouns (which may not truly describe someone's gender, or may have changed in the 15 years of data collection). If we could not determine someone's gender, we removed them from the sample to avoid misgendering anyone. The second caveat is that data was collected only for the UK, so will not represent the entire EU-27. The third caveat is that the data stretches back over 17 years and some data may be missing. Early data should be used with caution.

The table of data below shows the percentage of women speakers at the main national space conferences in the UK: the UK Space Conference (UKSC), National Student Space Conference (NSSC), RISpace (since it moved from the US to the UK in 2015), SpaceUp (a series of novel un-conferences), Careers Launch (a series of careers conferences for young people run by UKSEDS), and Space-Comm Expo (new for 2021).

The data shows that there has been a slow increase in the number of women speaking at space industry conferences since 2006, although this increase is sporadic. The increase in the representation of women has been primarily driven by students and early careers professionals.

Year	Av.	NSSC	UKSC	Careers Launch	SpaceUp	RISpace	Space-Co mm Expo
2022	48%	48%	-	-	-	-	-
2021	34%	49%	26%	38%	46%	24%	20%
202	37%	52%	-	59%	19%	17%	-
2019	30%	45%	32%	27%	36%	11%	-
2018	27%	39%	-	33%	-	10%	-
2017	30%	45%	14%	30%	50%	8%	-
2016	32%	38%	-	50%	-	8%	-
2015	29%	27%	27%	50%	-	11%	-
2014	20%	15%	-	33%	12%	-	-
2013	9%	6%	12%	-	-	-	-
2012	9%	9%	-	-	-	-	-
2011	18%	31%	5%	-	-	-	-
2010	7%	0%	13%	-	-	-	-
2009	8%	9%	6%	-	-	-	-
2008	6%	13%	0%	-	-	-	-
2007	21%	-	21%	-	-	-	-
2006	3%	0%	6%	-	-	-	-

Table 1: The percentage of women speaking at space conferences in the UK 2006-2022.

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Based on the data collected for this case study, student-organised events appear to be the only conferences with a consistent good representation of women. NSSC and Careers Launch, both organised by UKSEDS, the UK's national student space society. UKSEDS aims for 50% of speakers to be women at their annual NSSC conference.

By contrast, industry conferences are slowing progress, with an average of 20% of speakers being women. The 2020 Space Census identified that women make up 29% of the UK space sector in 2020, so it is disappointing to see that major industry conferences such as the UK Space Conference and Space-Comm Expo in 2021 are falling behind on the representation of women at their conferences.

## 3. WOMEN IN THE AEROSPACE INDUSTRY: CURRENT SITUATION & SURVEY RESULTS

In order to understand the barriers still standing in the way of an increased presence of female experts in media and conferences, we surveyed the European aerospace sector with the support of the WIA- Europe and social media to encourage participation that would provide insight, best practices and support proposed structural components introduced in section 2.





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## **3.1 METHODOLOGY**

An inductive approach was used to identify themes and how to best structure the survey. The survey was addressed to four groups of stakeholders deemed critical to providing knowledge on the topic. The stakeholders identified were experts in the field of aerospace, conference organisers and media personalities, and industry representatives (specifically targeting board members on aerospace related companies). The survey aimed to understand barriers while identifying tools and best practices regarding women visibility as subject matter experts in the field of aerospace. The survey was built with both qualitative and quantitative measures adapted to each group of stakeholders identified.

The survey was available online between February 2022 to March 2022, and was shared through the Women In Aerospace -Europe mailing list, company mailing lists, and social media. It consisted of both quantitative and qualitative data points with open ended questions to further explore best practices and insights from participants that would support the main structural components introduced to either confirm or identify new components in establishing a culture of women visibility.

The survey gathered 200 respondents with additional 11 qualitative in-depth interviews focused on the aerospace industry to garner further insight for media and conference organisers considered core to ensuring the presence of women as subject matter experts.

The majority of respondents were women (90%), with 84.5% identifying as aerospace professionals. Though these first two characteristics were dominant, career level and age distribution were more evenly distributed providing valuable insight into the survey results produced. The following figures represent career level, selfproclaimed, and age distribution of respondents (Figure 4).



Figure 4: Breakdown of respondents in Aerospace by Age Distribution and Career Stage

## **3.2 RESULTS**

#### **3.2.1 CONFERENCE ORGANISERS**

#### 3.2.1.1 Respondents

The survey was answered by 11 conference organisers who also completed semi-structured in-depth qualitative interviews to further expand on certain topics surrounding their expertise as conference organisers. We contacted them using an internal list of conferences taking place across Europe on an annual or biannual basis.

#### **3.2.1.2 Women-friendly policy**

The majority of organisers (91%) said that they consider diversity early on in the process of planning a conference by appointing a diverse board (54%), agreeing on a minimum number of female experts per panel (45%), publicly disclosing their female expert-friendly policy (36%), compiling or using female experts database (54%) or personal individual network to find female experts (9%) and in a single case, by agreeing on quotas.

However, no respondents used established best practices or family-friendly measures to increase diversity at their conference.

#### **3.2.1.3 Looking for female experts**

We asked whether conference organisers found it easy to find female experts. 81% of conference organisers noted that the search for female experts is a challenge. The majority think there are not enough female experts while 27% said they were unaware of female experts in the field.



Figure 5: Responses from Conference Organisers on Ways to Identify Female Experts in Aerospace

Amongst these identified tools, the participants in our survey pointed out a series of issues:

- Entries in the existing lists or databases are often not up-to-date
- There are too many databases not representative of all STEM fields
- People do not look for lists or databases and instead use their own connections for the sake of simplicity
- Existing tools are not promoted widely enough

Their suggestions to improve the situation included:

- A dedicated network for female aerospace professionals
- Count and use metrics for companies, professional societies, conferences, etc. to call out those who are not working towards diversity

#### 3.2.1.4 The way forward

We asked conference organisers what the benefits of a diverse panel are and whether they felt that their conferences provided a good level of representation. 45% of the conference organisers interviewed were satisfied with the representation of women at their conferences. They identified that more diverse panels lead to more lively and interesting discussions, creative debates bringing up more diverse arguments and new voices, but also more listening in the better representation discussions. а diminishing the impact of the boys club networks, inspiring confidence in other women, and spurring on change.

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We provided a suggestion to improve the diversity in their future conferences and the views of conference gauged organisers. Our idea was to train panel moderators on unconscious biases in debates. A moderator would take into account the tendency of men to interrupt women and to repeat their ideas, ensure that questions to the panel come from men and women, and encourage women to speak up. Only 2 respondents said that they train their moderators, but almost all of those who do not said they will think about this in the future.

We also asked the surveyed conference organisers if they were monitoring diversity. We found that less than a third of conference organisers count and analyse their own performance towards diversity.

### 3.2.2 MEDIA

#### 3.2.2.1 Respondents

The survey was answered by 11 media representatives, journalists from Germany, Austria, Poland, Spain, US and working online outside of a particular national context. The survey answers were given either in written form or in a semistructured qualitative interview. Journalists who answered the survey are active in print/online, TV and radio formats, all working with aerospace-related content.

#### 3.2.2.2 Relevance of gender diversity

None of the respondents consider the current proportion of female STEM experts in their geographic area as acceptable. All Europe-based respondents evaluate the presence of female STEM experts in the media to be as low as 0-20%. US-based respondents give a higher estimate of 20-40%. The difference confirms recent findings that show Europe to be behind in media representation of female STEM experts compared to other Western countries as the US, Canada, New Zealand or Israel (GMMP report). The majority of respondents indicated they put high value on a balanced gender representation. This especially true for young media is professionals, who said to actively pursue female experts when researching a news story. Two senior professionals said that gender considerations were less important to them in their subject research. Slightly more than half of the respondents felt they were actively encouraged by their media channel and/or expectations of their audience to apply existing best practices in order to increase female representation.

# 3.2.2.3 Obstacles identifying female STEM experts

"Forget about the imposter syndrome. The media wants female experts: qualified, sharp, self-aware and most of all - not afraid of making a statement. But as long as women are afraid of who they can be, nothing will change." Survey participant

The majority of respondents cited limited availability on the side of female STEM experts as the main limiting factor in attracting their expertise. Lack of visibility of female STEM experts was the other factor that was said to play a considerable role. Respondents also named lack of interest and lack of media experience as obstacles for a collaboration. Several media respondents felt that it was difficult to overcome the reluctance on the side of female STEM experts to act as experts on public channels or have their name quoted.

### 3.2.2.4 Tools an<mark>d good practices</mark>

Survey participants were equally divided regarding the best practices they use when researching for female STEM experts. Half of the respondents were rather relying on their own experience and personal networks, while the other half were actively referring to existing best practices & available tools like external expert databases and social media groups. The main channel to source female experts was

considered to be the professional lists and network available at their organisation or through their colleagues. However, external lists, social media, internet and personal networks are also actively used. None of the respondents were fully satisfied with the available research tools or accessibility of female STEM experts.

#### **Comments and Recommendations**

The main comment section has collected actionable suggestions to female experts, all of which were inviting female experts to take a more active role in approaching the media by proactively approaching and networking with media representatives, joining expert lists, visibly promoting their expertise online and in person, using keywords that would make finding them easier, and to enter a dialogue with media channels and representatives about the support they would need in order to increase the chance of their participation.

Specific recommendations included:

- Always keep promoting your services
- Own website/ social media presence with point on tags and keywords; take every opportunity to be on media, don't recommend a (male) colleague when you are the recipient of interview request
- Encourage colleagues in your own company to recommend female STEM experts, encourage female STEM experts to join networks
- Join several (female) expert databases to increase visibility of your expertise
- Be outspoken about the barriers you experience with media representatives and conference organisers

#### **3.2.3 COMPANY REPRESENTATIVES**

The survey was answered by 11 company representatives from aerospace or aerospace-related organisations, from Luxembourg, France, Mexico, the UK, and Belgium. Thev Germany were contacted personal via our and professional networks.

Most company representatives do not have a policy for the representation and visibility of women. The only two that answered positively were located in Belgium and France. One of these policies concerns conferences only whereas the other one encompasses both conferences and media. They are taking the following steps to implement their policies: keeping records of employees who are experts on particular subjects, tracking who is representing their company, organising workshops, focus groups, interviews and asking employees for feedback. None of these two companies offer media training to their younger employees. They monitor the effects of their policy by recording diversity data on people who represent the company (between 1 and 6 senior employees from these companies are talking to the media on a regular basis). It is worth noting that one of these two companies works to promote inclusion and gender equality in organisations, so it is likely not representative of all aerospace companies.

9 companies said that they do not have a policy for the visibility of female experts. Of these, two thirds said that having such a policy could prove useful. 3 companies said that they are currently working on a policy for visibility of female experts, and 4

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companies said that they instead use existing best practices. The majority of companies said that they do not track the demographics of their speakers.

Over half of the companies survey say that media requests would often be directed at the same people. When asked how companies would organise stand-ins, the two most popular options were to contact other people from a list and to ask the person who was originally requested to suggest a replacement.

The majority of companies said that they keep a roster of 1-3 people who speak to the media on a regular basis, and no company has more than 10 people speaking to the media. Only half of companies send junior employees along on media appearances as a learning/training experience, and only two companies provide media or communications training.

#### **3.2.4 AEROSPACE PROFESSIONALS**

#### Respondents

169 aerospace professionals answered our survey with good representation across a range of different career stages. 18% of respondents came from an academic background.

When asked about the percentage of women working in their company, male respondents are more likely than female respondents to give a higher percentage of women. This could be due to selection bias though – male respondents who took the time to fill in our survey may be more likely to work for female-friendly companies.



Figure 6: Opportunities to participate as an expert based on survey responses

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Visibility of Female Experts

Most (75%) of the respondents said that they have had the opportunity to participate as a STEM expert in a conference, most commonly as an invited speaker or as part of a professional panel or round table (see Figure above). The more senior a person, the more likely people were to have been invited. More people had participated via online media than in print media, on radio or on TV - it would be interesting to see whether this is because, as some participants noted, it is easier to get involved in online media, or because online media is becoming more popular.

Most (79%) people who had participated as a STEM expert felt that they were given the floor to speak, although some female respondents noted that they tend to be asked more about being a woman in STEM rather than about their field of expertise. Just under half of these female respondents feel that they had been invited to create gender balance, whilst no male respondents feel this way.

#### Barriers

Literature indicates that the first barrier affecting female visibility is language, as mentioned in section 2.2, however from the survey, only 12% gave language as an inhibiting factor.

The most common reason given for people not wanting to participate as a STEM expert is that they did not feel they had enough expertise in their field. Other common reasons include lack of preparation time, fear of negative feedback and lack of confidence. This low confidence may be related to insufficient training, with 60% of respondents reporting having never received or been offered any media training. Very few respondents reported being offered help to overcome these barriers, with just 14% of people saying they have received assistance.

Although lists of female experts exist to help event organisers, almost half of respondents report that they are not aware of these lists. Additionally, of those respondents who do know about the lists, only half report being on a list. An interesting follow-up question for future studies would be why experts choose not to be on these lists.

## 4. RECOMMENDATIONS AND BEST PRACTICES

Many best practices and recommendations were identified through this study, both in surrounding literature women's the visibility in conferences and media and in the survey results. A larger study on the role of academic conferences posited that the theory around gendered organisations may provide a broader explanation as to why the persistence of low visibility of women remains. The theory on gendered organisations explains that these types of organisations facilitated the success of the ideal worker who matched many of the social privileges of middle-to-upper class white men. The theory posited that the low participation of women was not to be attributed to a women's missocialization or a man's direct sexism, but more how the

organisation is structured for success. The premise in presenting this theory allows this study to focus on two areas around the individual and the structure of the organisations that support the individual (Pawley, 2019; Walters et al., 2021).

Returning to the larger study on academic conferences rests on recommendations that relate to addressing the individual while seeking ways of addressing the organisations. Some of the recommendations provided in this study lend themselves as a foundational piece that can be then adapted to each stakeholder group found in the following section. General recommendations will often include (1) providing an equality policy; (2) explicitly discussing the issue of equality during the conference; (3) remove common excuses such as described previously (not enough women in the pipeline, etc.; and (4) enlist the help of men (Walters et al., 2021). Some of these recommendations cited here directly impact barriers affecting women such as confidence and caution, but our study provides further elements meant to address both the individual and the organisation through the lens of the various stakeholders identified in this field.

## 4.1 CONFERENCE ORGANISERS

Through our survey and through the collaborations of the contributors to this paper, we have proposed a series of recommendations to the conference organisers, including the use of best practices, and quotas or a set minimum number of female experts per panel.

In addition, we also suggest recommendations towards more diverse conference boards, an increased visibility of any policy with respect to women experts, family-friendly measures and the use or compilation of databases of female experts.

Through our survey and interviews, conference organisers provided the following recommendations for other conference organisers to increase visibility of female experts:

- Be more aware of the participants, lecturers, panellists, hosts and experts
- Do not look just for the most famous speaker but also consider stories of all people, regardless of their age, gender, ethnicity, sexual orientiation, etc.
- Diverse panels are noticed and they will bring success to your conference; homogenous panels will bring negative publicity
- Promote conferences within female networks
- Grow your own network and do not rest on your limited circle of male professionals
- Offer moderators unconscious bias training
- Endorse an existing global conference planning guide

- Use STEM database to find experts
- Advocate for public-based metrics release
- Offer and normalise honoraria for speakers
- Target social media campaigns and website content
- Commit from the top and put in practice your policies
- Give as much importance to finding female experts that you put in finding the right venue and defining the perfect agenda
- Be specific on the topics/adjust topics to your female speaker
- Contact female experts personally

Finally, we also find recommendations towards conference organisers in the Brussels Binder and the University of Saint Andrews. These two reference works endorse several of our previously identified recommendations, such as the use and compilation of databases to find female experts, the need to track gender balance data, to diversify topics in conferences, to have diverse conference boards, a visible female expert-friendly policy and family-friendly measures.

In addition, the Brussels Binder's document provides the following recommendations to conference organisers to book speakers early and invite more women than men, to build the event around one woman keynote speaker and to plan for last minute changes securing your gender balance conference.

This document also underlines, as it has been done by our respondents, the fact that some conferences might be oriented in favour of men in their very essence (only CEO speakers, etc.) and they also remind that 'famous' speakers, or highranked speakers, are not always a gage of their expertise.

### 4.2 MEDIA

In 2013, the European Federation of Journalists published a "A Handbook on Gender Equality Best Practices in Journalists' European Unions" that highlights some examples of best practice initiatives devoted to developing gender equality policies across the European media landscape. Based on a survey of several national unions, the report concludes with a list of suggested structural and behavioural changes that would a) increase the participation of women to news production, and b) promote a balanced and non-stereotypical portrayal of women in the media, both as subjects and sources.

The document suggests a series of actionable steps that would lead to behavioural changes for reporters reaching out to female experts and reflects the general tenor of comparable documents that have been released over the past decade. Below you will find a short overview of the main points regularly included in journalistic good practices.

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### **Education & Awareness**

Sensitivity and awareness for existing gender-imbalance as well as the ability to counteract on certain discriminatory processes within media content creation need to be addressed as early as possible in media career development. Mandatory "gender and media" curricula and included gender perspective should be part of every journalist education, same as media literacy should be included in the curricula of other specialisations, thus providing young experts the opportunity to develop media skills and avoid typical pitfalls at a later stage in their career.

Gender-sensitivity training should also be offered to relevant stakeholders at the later stage to make sure that news producers and consumers remain aware of existing inequalities and stereotypes in gender representation.

Media trainings [e.g. Bloomberg's "New Voices" media training] for female experts are closing the list of necessary initiatives and remain top priority to ensure their active participation in "hard" media content.

#### Work Methods & Tools

An official gender ratio can and should be established by each media organisation and editorial office to cover for possibly lacking policy requirements on the side of the state. Monitoring tools and initiatives that would include daily statistics and discussions within editorial teams, have proven [Mannila, 2017] a highly efficient tool in increasing female participation in news content. Daily measuring creates an acute awareness and the necessity to plan ahead when thinking of possible experts to interview.

Mandatory requirements to increase female representation that are expressed in specific numbers will force reporters to actively communicate this to companies and organisations when requesting an expert, consider other sources than the male CEO and identify female experts before contacting their organisation.

Regional directories and specialist databases form another helpful tool in searching for female STEM experts. A collaboration with professional associations and networks like Women in Aerospace Europe offers another opportunity to create personal links.

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### **Rethinking expectations**

One crucial step to changing existing dynamics of gender inequality in the media is the adjustment of expectations towards and communication with female STEM experts. This includes that possible hesitations on the side of the female STEM experts need to be taken into account and respected. This includes the awareness of different standards that female experts are being held to, different motivation (impact more relevant than public profile), risk of being judged and harassed in social media channels. possible time challenges, and the lack of sufficient role models in public debates. To overcome women's reluctance to accept media interviews, media representatives need to stop measuring their response against stereotypically male behaviours.

## 4.3 COMPANIES

From the survey responses from aerospace professionals and company representatives, we suggest the following recommendations for aerospace companies:

 Provide training for all employees on public communications, networking and social media.

- Consider implementing a policy of refusing to send representatives to all-male appearances.
- Keep a record of who you are sending to represent your company, and what topics you're sending them to speak on. Are you allowing female employees to represent your company, and giving them a chance to talk about technical subjects?
- Review what support you provide for employees representing your company. Will they receive financial support or time off in lieu? Are you providing guidance on how to prepare?
- Start sending junior employees along with senior employees to media appearances and conference presentations.
- Encourage women in your company to be part of professional networks, both by promoting these networks and offering subsidised memberships.
- Nominate female employees for awards and celebrate their success!
- Raise awareness of mentorship schemes, both internal and external.
- Make your female employees aware of lists of female experts that are relevant for their area of expertise.

## **4.4 RECOMMENDATIONS FOR FEMALE PROFESSIONALS**

#### **Individual Visibility**

- Use outreach opportunities: talk to media representatives, and conference organisers, go to relevant networking events and mention your specific expertise in conversations
- Web and social media presence: Keep an up-to-date profile (e.g. LinkedIn) with relevant keywords, and a website (if applicable)
- Create a personal brand: Have your elevator pitch ready and be able to summarise your expertise in a few sentences. Don't forget your business card with relevant keywords.
- Use best practices in network building & increasing personal visibility.

#### Consider the value of your contribution

- Be a role model: support your peers and younger generations
- Share your individual expertise & experience: Contribute to illuminating a subject – your expertise is just as valid and relevant as any other!
- **Create normality:** The more public appearances we see from female STEM experts and professionals, the more common they will become.
- Help remove barriers: Help conference organisers & media representatives remove barriers in engaging female STEM experts

#### Networking

- Become a member of a professional community: Join WIA-Europe or another professional association
- **Contribute actively:** Go to networking events, participate in initiatives, add content to discussions. The more often people see you / read your name, the more likely they will think of you when your expertise might be needed.
- Remember: Best opportunities always come word-of-mouth!

#### Media & communication training

- Corporate: Approach your company/organisation / educational institution about a media training course for female experts
- Private: Invest in a media/presentation
  training
- Additional: Consider specific training to address particular barriers: impostor syndrome, structuring a presentation, stage fright, body language & voice training
- Mentoring: Use opportunities to ask questions & get advice. Join a colleague for a media appointment and take a (younger or less experienced) colleague to your media appointments to share experiences.

Barriers experienced by media representatives/conference organisers	Possible actions by female STEM experts
Lack of visibility of female experts	<ul> <li>Increase individual visibility online, on social media, in networks and databases.</li> <li>Proactively approach media representatives</li> </ul>
Female professional doubts her expertise	<ul> <li>Let go of your imposter syndrome.</li> <li>Don't compare yourself to others / to men - your expertise is as valuable as any other.</li> <li>Ask specific questions about the details of the interview / expected contribution.</li> </ul>
Female professional not aware of female voices being underrepresented	Be aware that your visibility will counteract stereotypes around female professionals
Female experts worried about trolling online	<ul> <li>Inquire about comment policies of the media channels</li> </ul>
Female expert is time challenged	<ul> <li>Ask if you can bring your kids.</li> <li>Ask if your contribution can be recorded ahead of time.</li> <li>Ask whether you can contribute by phone/zoom/skype.</li> <li>Give suggestions regarding what kind of specific support would make your participation possible.</li> <li>If you really can't make it, recommend another female expert.</li> </ul>
Female expert is intimidated by the unfamiliar	<ul> <li>Ask specific questions to demystify the process.</li> <li>Ask to take a tour through the studio beforehand.</li> <li>Ask about the dress code, makeup designer on set, etc.</li> <li>Ask for professional interview tips.</li> </ul>

# Barriers experienced by media representatives/conference organisers

## Possible actions by female STEM experts

Female expert lacks media / presentation experience	<ul><li>Get media/presentation training.</li><li>Use mentoring opportunities.</li><li>Look for tips online.</li></ul>
Female expert needs to be convinced	• Make yourself available but don't be afraid to communicate your needs: When invited to present your expertise in media or in a conference, confirm your interest and willingness first, and then discuss the details and ask questions that will help you organise and prepare. If the terms are not convenient, you can still decline.

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## **5 CONCLUSIONS**

We can sum up the results of this survey with the following exhortations: For women: dare! For men: share!

The survey has shown that almost all of the female respondents, regardless of the stage in their career, or department or company they work for, face barriers to being the female voice of subject matter expertise. These barriers are internal, inter-company but also external.

The respondents of our survey were quite evenly distributed over age and career level in aerospace, which makes the survey relevant where proposed solutions are concerned. This survey has shown that almost all of the female respondents, regardless of the stage in their career or department or company they work for face barriers to being the female voice of subject matter expertise. It also showed that the barriers in showing them to the wider public are only very slowly disappearing.

The first hurdle that women face is the language that seemingly does not depict them as the word 'expert' conjures up the image of a male. Furthermore, women experts are addressed more informally than men, which certainly feels like they are not taken seriously.

Added to that is the lack of confidence

many women feel, which is compounded by the fact that women are being exposed publicly to microaggression and trolling when they are visible as subject women matter experts. Moreover. women have time commitments of unpaid work in and around the home and - extended family. Childcare is still for 2/3 the bailiwick of women. The Covid-19 pandemic has exacerbated this time problem due to the in-home education of children during lock-downs. As the expert reputation and career advancements are directly related to the amount of visibility as an expert, there is little doubt that the careers of women took a hit.

The Beijing Platform for Action of 1995 promoted a gender-balanced portrayal of women in news media across the globe. Although mainstream media has made efforts to integrate more gender equality, elements of discrimination of women experts continue to be based on physical attributes (look), and perception of competence. At the moment women only make the news in 21% of the news items. Next to that, portrayed women's expertise is heavily skewed towards lower profile news specialities and geared towards the sphere of the private, emotional and subjective versus that of the public, rational and objective for men experts.

The latter can be overcome by simple training or tagging along with a more experienced (female) speaker to an interview. None of the respondents were satisfied with the diverse tools they used to find women experts.

All but two aerospace companies reported that they do not have a policy for the representation and visibility of women. Two-thirds considered that having such a policy would be helpful.

At the moment, half of the media requests are directed at the same employees, and they keep a roster of 1-3 people to speak to the media on behalf of company projects. Media or communications training was given by 20% of the companies surveyed and half of them did send junior employees along to media appearances.

The overall conclusion vis a vis the Media is that female experts need to take a more active role in approaching the media themselves. also by proactively approaching and networking with media representatives, by joining expert lists, and by visibly promoting their expertise online and in person. The use of keywords that would make finding them easier is highly recommended. Additionally. women experts need to be vocal about the support they would need in order to increase the chance of their participation in the media.

As we stated at the start of this conclusion:

Women need to be proactive and step forward. Overcome their imposter syndrome and ignore the criticisms that have nothing to do with their expertise. They need to be open about what they need to appear in the media or to speak at conferences.

Men experts need to be more inclusive and demand women to be part of the panels to achieve a gender-balanced and more diverse conversation about the area of their expertise.

# 5.1 Recommendations for WIA-Europe possible follow up initiatives

- Mentoring initiatives to share media expertise among WIA-Europe members
- Media Trainings for WIA-Europe members
- Contact list of female STEM experts that can be passed on to media upon request
- Partnerships with journalist networks and associations and common networking events and other programme participation
- Support networking with media representatives during WIA-Europe live events (e.g. by inviting media representatives)

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# **7 APPENDICES**

Appendix A:	Existing tools
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TOOL	LINK
Prognosis, Gender Equality Tracker	https://www.prognosis.se/GE/
• WIN (Women in News) Gender Equality Tracker	<u>https://gendertracker.womeninnews.org/</u>
Gendermeme	https://www.gendermeme.org/
<ul> <li>Reflect Reality Sample Tracking Template</li> <li>European Institute for Gender Equality (EIGE)</li> </ul>	https://www.reflectreality.internews.org/reso urces
Gender mainstreaming methods and tools	<u>https://eige.europa.eu/gender-</u> <u>mainstreaming/methods-tools</u>



DATABASE	LINK
Women in STEM networks	<u>https://www.wisecampaign.org.uk/wise-network/women-</u> in-stem-networks/
Brussels Binder Gage: 500 women scientists	<u>https://brusselsbinder.org/find-an-expert-database/</u>
Women+	https://gage.500womenscientists.org/ https://womenplus.sourcelis <mark>t.org/</mark>
Australian women in STEM	<u>https://www.science.org.au/news-and-events/news-and- media-releases/new-database-boost-visibility-women- stem</u>
Polish foundation BalansPL	<u>https://ekspertki.org/</u>
AcademiaNet	https://www.academia-net.org/project/

# WOMEN IN AEROSPACE EUROPE

# Appendix C: Additional resources

RESOURCE	DESCRIPTION	LINK
Gender Equality in Academia and Research	A practice to award and ensure greater visibility for women researchers (RO)	<u>https://eige.europa.eu/about/</u> projects_
My Skills My Life	Matches young women with female role models	https://www.wisecampaign.or g.uk/how-to-get-involved/my- skills-my-life/
Informed Opinions	Canadian-based non-profit organisation Informed Opinions has trained and motivated more than 2,500 women across sectors and fields to share their experience and education-informed insights with reporters, producers, and editors.	https://informedopinions.org/_
50/50 by 2030	The 50 50 Foundation is a research and advocacy centre with a focus on achieving equal representation of women in leadership and key decision-making roles in all levels of government and public institutions around Australia.	https://www.5050foundation. edu.au/assets/reports/docum ents/gmmp-global-report- en.pdf
Women in News at WAN IFRA (World Association of News Publishers)	General project about women in news and media (all subjects, all perspectives)	<u>https://wan-</u> ifra.org/category/women-in- news/page/2/
Who Makes The News	Around the world women represent one of the largest groups left out of the news media. According to the <u>Global Media Monitoring Project</u> (GMMP), only 19% of experts cited in news stories globally are women. This devastating statistic has barely changed in decades.	https://whomakesthenews.org /wp- content/uploads/2021/07/Eu rope-RegionGMMP- report.pdf

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Appendix C: Additional resources			
RESOURCE	DESCRIPTION	LINK	
GMMP – Global Media Monitoring Project	The GMMP is the largest and longest-running research and advocacy initiative for gender equality in and through the news media. In 1995, GMMP research in print and broadcast news media in 71 countries found that only 17% of news subjects — that is, people seen, heard or read about — were female. Twenty years later that figure showed little improvement, at only 24%.		
50:50 The Equality Project	The initiative, born in the BB London newsroom, uses methodology that is rooted in da creativity, practicality and passion fundamentally shift representati within the media.	C's <u>https://www.bbc.co.uk/5050</u> a ita, to on	
Appendix D: Survey questions			
General	• Gender	Woman <mark>; Man; Other</mark>	
	• Age	18-2 <mark>5; 26-35; 36-45; 46-55;</mark> 56- <mark>65; 65+</mark>	
	Career stage (aerospace)	Early-career; Mid-career; Senior professional; Retired	
	Category	Aerospace professional; Conference organiser; Company representative; Media	

Conference organiser	<ul> <li>In what country/region are you</li> </ul>	
	located?	
	• Do you consider diversity as a transversal topic early in the process of conference organisation?	Yes;No
	• How do you take diversity into account early on in the process of the conference organisation?	Established best practices; Diverse conference board; Include quotas; Minimum number of female experts per panel; Make your female expert-friendly policy visible; Family-friendly; Compile/Use a database of potential female experts; Other
	• Do you find it challenging to look for women experts?	Yes; No
	• What are the reasons finding female experts could be challenging?	Unaware of female experts in the field; Female experts decline invitation; Not enough female experts; other
	• How do you find female experts?	Use of existing lists or databases; Professional network; Personal network; Media (TV, radio,); Social media (Researchgate, LinkedIn, etc.); Search for articles on female experts; Other
	• What are the potential issues with the available tools for the search of female experts?	
	• What tools/networks would you like to see improved to assist you in your search for female experts?	
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	Empowering all W	/omen, in Space and on Earth

Aerospace professional	• What is your specific field of expertise/specialisation?	
	• Do you work in academia?	Yes; No
	• Could you give us an approximate percentage of women within your organisation vs men?	Less than 20%; 20-50%; 50%; more than 50%
	• Have you participated at least once as STEM expert	In professional panel/round table; In print media; On radio; On TV; Online media; As invited speaker; I have never been invited; I have been invited and refused; Other
	• During your appearance, do you feel you were given the floor to speak about your expertise?	Yes; No; Very limited; Other
	• If you declined to participate as a STEM expert, what were your reasons?	
	• Do you ever feel that you have been invited only to create gender balance?	Yes;No
	• Which of the following do you personally experience as the most inhibiting factor(s) when being invited as an expert?	Not enough expertise in my field; Not confident as public speaker; Not enough time to prepare; Not confident in regards to personal appearance; Not confident in public discussions; Not confident in contact with media/journalists; Not enough time to prepare;

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#### Aerospace professional

Appear too pushy/ not comfortable in the spotlight; Travel (if required); Childcare or other personal commitments; Fear of negative feedback regarding my physical appearance; Subject matter of requested speech unclear; Fear of negative feedback regarding my professional opinion/being questioned as respectable source (e.g. on social media); Lack of language proficiency (e.g. in English); Lack of support from colleagues; None of the above; Other

Yes; No

- Have you ever been offered anything to overcome the aforementioned barriers (e.g. free childcare/grants for travel/free or reduced registration, or training, flexible hours, etc)?
- If yes, could you shortly list what help you received?
- Did you have any media training?

Yes, it was part of my study curriculum/professional development programme; Yes, I arranged it myself; No, but I had the opportunity in my studies/professional development programme; No, the possibility has never been offered to me; Other

 What has enabled you to participate as a subject matter expert?

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Aerospace professional	• Are you aware of associations and lists that exist to highlight	Yes; No
	<ul><li>If yes, are you on any of these lists?</li></ul>	Yes; No
	• What recommendations would you suggest to increase female professional visibility? For example, do you take female colleagues or collaborators to conferences/media appearances to help them learn?	
	• What advice would you give to women to enhance their visibility as an expert?	
Company representatives	<ul> <li>In what country/region are you located?</li> </ul>	
	• Do you have a policy for visibility of female experts?	Yes; No
	• What steps are you taking to ensure that your policy has a positive effect?	Providing media training to all employees; Using lists of employees who are experts on particular subjects; Keeping records and statistics of all employees who represent the company; Asking media for feedback; Asking employees for feedback; Other
	• How do you monitor the effects of your policy?	Recording diversity data on people who represent the company; Asking media for feedback; Independent audit; Other

Company representatives	<ul> <li>Does it apply to people representing your company in conferences or only in the media?</li> </ul>	Media; Conferences; Both; Other
	• How many people from your organisation speak to the media on a regular basis?	1-3; 4-6; 7-9; 10–19; 20+
	<ul> <li>Do you send junior employees along to media appearances to learn?</li> </ul>	Yes; No
	<ul> <li>Does your organisation provide media/communications training?</li> </ul>	Yes; No
	<ul> <li>Have you had feedback from the media/other companies about your policy? If so, what has that feedback been?</li> </ul>	
	<ul> <li>If you do not have a policy for visibility of female experts; do you know if there is a reason why you do not have a policy?</li> </ul>	Currently working on a policy; Following best practices instead; Do not see the need for one; Other
	<ul> <li>Do you monitor the demographics of speakers?</li> </ul>	Yes; No
	<ul> <li>Do you think a policy would be helpful for you/your organisation?</li> </ul>	Yes; No
	<ul> <li>If you do not have an official policy paper on visibility, do you have best practices vis a vis female representation?</li> </ul>	Yes; No
	• Do you get comments from the media if you send the same person again?	
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Appendix D: Surve	ey questions	
Company representatives	• Do you get comments from the media if you send the same person again?	Yes; No
	<ul> <li>Inversely, does the media always request the same people?</li> </ul>	Yes; No
	<ul> <li>How do you organise stand-ins for conferences / media?</li> </ul>	Contact other people from a list; The person who was originally asked suggests a replacement; Other
Media	• What is the main geographic location of your media outlet?	
	• Which media outlet(s) are you mainly working for	Print; TV; Online; Radio
	• How do you perceive the presence of female STEM experts in the media in your geographic area?	0-20%; 20-40 <mark>%; 40-60%; 60-</mark> 80%; 80-100 <mark>%</mark>
	<ul> <li>In your opinion, is the proportion of female STEM experts in your geographic area acceptable?</li> </ul>	Yes; No
	• How relevant is (gender) diversity to you when looking for a STEM expert?	Yes; No

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#### Media

 If you do not have an official policy paper on visibility, do you have best practices vis a vis female representation?

• What are the obstacles you

female STEM experts?

encounter when identifying

I rarely think about it when researching a topic; It's relevant to me but other editorial constraints can outweigh a balanced representation;It's important to me and I actively try to establish a genderbalanced representation of sources/experts on a topic; I am committed to making female STEM experts visible and usually go the extra mile when searching for a female expert

I am mostly relying on my personal approach and network; I have some insights into recommended best practices and tools but not extensive overview; I am following best practices and using available tools suggested by relevant research/my organisation; I am actively shaping best practices and tools to increase gender balance for STEM experts in media

- Are you actively encouraged to refer to best practices / sources regarding gender balanced representation of STEM experts (by your media channel / expectations of your audience)?
- Has gender representation Yes; No been addressed during your university education?

Yes; No

Appendix D: Survey questions				
Media	• Which channels are you using when searching for female STEM experts?	External lists/networks; Personal lists/networks; Professional lists/networks; Internet/research; Social media; Other		
	• How helpful do you find the existing tools?			
	• What would you suggest to improve to help your search for female STEM experts?			
	• What are your recommendations for female STEM experts to help increase their visibility?			

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Conference organiser	• Do you have your own list of female experts?	Yes; No
	• Are you satisfied with the visibility of female experts in your conference?	Yes; No
	• Do you train your moderators to address unconscious biases in debates (e.g. tendency of men to interrupt women and to repeat their ideas, women asking fewer questions, encouraging women to speak up, etc.)?	Yes; No
	• If you do not consider diversity as a transversal topic early in the process of conference organisation, would you consider doing this in the future?	Yes; No
	• What benefits do you experience when you have a diverse panel?	
	• Do you compute statistics based on previously organised conferences and use it as a tool to monitor Inclusion, Diversity, Equity (IDE)?	Yes; No
	• What recommendations would you provide to increase women participation in conferences to a) conference organisers, b) women experts?	

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