



Gender equality plans (GEPs) as a framework to devise gender equality measures for disaster research

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ABSTRACT

Recently, disaster scholars have started to take a critical stance toward how disaster research is conducted and the extent to which disaster studies are inclusive toward research participants and researchers from diverse backgrounds. This article endorses an inward gaze to reflect on the dynamics playing out within the disaster research in terms of gender imbalances. Importantly, the article is not a review of the studies on gender issues in disaster contexts; rather it seeks to put forth a strategy to illuminate and redress the dynamics of inequality within the disaster research community, taking the gendered power relationships as a starting point. The article starts from the consideration that, despite an increased attention on the gendered dimensions of humanitarian crises, gendered aspects within the disaster research teams and organizations have been largely neglected. In particular, there is a lack of data pertaining to the gender presence and gender biases in the disaster research workforce and in the production of disaster-related knowledge. In order to fill this gap, a systematic plan to collect pertinent gender data and implement appropriate measures is needed. Here, we propose to adopt the framework of the gender equality plans (GEPs), an instrument promoted by the European Commission to advance gender equality in research performing organizations. The actions proposed in this paper seek to encourage reflections on the structural bases upon which disaster research is organized and to support the identification of the aspects we want to preserve and of those we need to change.

1. Introduction

Disaster studies have extensively analyzed mechanisms of social exclusion as drivers of vulnerability (e.g., Ref. [1]: [2,3]). Whilst great attention has been paid by the disaster scholarship on how societies and governments create disaster vulnerability and on the inclusion of vulnerable categories, such as disable people, women, children, elderly people and ethnic and linguistic minorities into disaster risk reduction strategies and policies (e.g., Refs. [4,5]; [6]; [7]), much less has been said on the internal dynamics of the disaster research. In recent times, some authors (e.g., [8] [9,10]; have started to take a critical stance toward how disaster research is conducted and the extent to which disaster studies are inclusive toward research participants and researchers from diverse backgrounds. Yet, these reflections are still in their infancy.

Traditional culture, seen as male-centred, defines particular ways of doing science and doing gender ([11]); for this reason, a research system should never be considered as gender neutral because it contributes to the reproduction of the traditional job-role division (e.g., men in powerful positions and women covering secretarial roles) [12]. As a

general aim, this article seeks to initiate a virtuous process that brings to light and redresses the dynamics of inequality within the disaster research community. Team diversity have shown to bring about several benefits in terms of greater creativity [13] and productivity ([14]), although evidences are not univocal and depend on the type of diversity considered (see, for example, [15]). Within the scholarship on team diversity, the dimension of gender has received much attention. From a gender perspective, team science studies advocate that greater diversity fosters radically innovative research outcomes (e.g., Refs. [16,17]). Publications authored by women pose different questions and engage in different research topics than men-authored studies [18] and are more likely to include sex- or gender-based analyses [19].

In a similar way, making disaster research more inclusive would mean to open it to different interpretations and inputs and extend its outreach while rendering the knowledge produced more aligned with the needs and values of the intended audience [20]. Knowledge that is generated only by men or by a privileged group of researchers in Western universities reflect the dominant male-centred cultural paradigms [21] and sideline other possible knowledge frames (e.g.,

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Ref. [22]. In opposition to this perspective, some disaster scholars (e.g. Refs. [23,8]), have contended that the involvement of diverse local researchers in disaster studies can bring in situated knowledge and an awareness of the context that “reveal unique lines of inquiry, encourage a reflexive discussion of fields of power, and ultimately create new paths to knowledge” [8]; p. 71).

In this paper, we take gender diversity as a starting point to enhance the field’s inclusiveness and openness to inclusion. We do so by borrowing the structure and the process of a Gender Equality Plan (GEP), a tool developed by the European Commission to tackle gender inequality in research organizations. A GEP offers a conceptual and methodological framework to guide the formulation of an action plan and the use of gender-sensitive data and indicators to design and monitor the implementation of the gender equality measures. Whilst a GEP usually targets organisational settings with a formal power hierarchy, some of its components may be adapted to the needs and peculiarities of a discipline. Thus, this paper seeks to propose an adaptation of the conceptual and methodological framework of the GEP to the specific needs and dynamics of the disaster research, guided by the following questions: how can the process suggested by the GEP be used to advance gender equality in disaster research? What steps need to be made in terms of data collection and planning of concrete measures?

The relevance of the topic for the disaster scholarship stems from the consideration that, despite an increased attention by disaster researchers, since the mid-90s, on the gendered dimensions of humanitarian crises and on the social, cultural and political underpinnings of the women’s vulnerability in disaster contexts [24–26], studies on gendered aspects within disaster research remain largely absent. Gender diverse teams prioritize different problems and utilize different methods to solve them with possible implications also in terms of diversification of the research agenda [19] and this argument evidently holds true also for disaster research.

The paper starts with a review of the articles taking a critical stance towards commonly accepted practices in disaster research and toward the lack of inclusiveness in the disaster research workforce. It then touches upon studies related to gender biases as they manifest in disaster contexts and disaster management organizations, illuminating the lack of analysis of the mechanisms that reinforce women’s vulnerability within the disaster research teams and institutions. Finally, the authors put forth a plan with a set of measures to shed light on and try to rebalance gendered power dynamics within the disaster research field.

The overall discourse of the paper is framed within the critique to the neoliberal practices that have gained traction in academia in the last decade at the expense of women and less privileged social groups [27]; [28]. Given the widespread adoption of these practices also within the disaster research discipline (e.g. Refs. [9,10]), this paper insists on the need for the disaster research community to review, reflect on and reform its own work practices and ethics in order to reap the benefits of gender diversity.

2. Critical perspectives into disaster scholarship: an inward gaze

In recent years, several scholars have raised criticisms regarding how disaster research is conducted (i.e., the methodology for data collection) and how disaster researchers operate toward research participants. For example, Le Dè, Gaillard and Friesen [29] have noted a general naïve assumption among disaster researchers that the adoption of participatory approaches and the inclusion of local communities and disadvantaged groups in the data collection efforts would result in their empowerment. The idea is that, by participating in the framing of the problem, local actors may become more aware of the underlying power dynamics and consequently more able to redress them. In reality, disaster research works in an extractive and sometimes “predatory” way: local communities are taken as case studies to explore research questions or hypotheses pre-determined by external research groups [29]. After having secured research funding, these groups arrive in the disaster zone

oftentimes soon after that the disaster has hit. This disaster gold rush [30] implies that researchers have very limited time to gather contextual information and get familiar with local cultural and linguistic habits. The lack of acknowledgement of local dynamics results in a distorted and inaccurate picture of the social phenomena under analysis and in the failure to deliver on the commitment for inclusiveness [31,32]; [33]). Indeed, participatory approaches rarely go beyond a mere consultation of local communities and groups about issues framed by “outsiders”. This represents a neocolonial research practice whereby research priorities and theoretical frames and solutions are imposed by external and privileged actors who claim themselves as technical experts [9,31,34]. This imposition encompasses not only how data are collected, but also how they are framed and presented to the scientific community [22,8]. To respond to these challenges, Gaillard and Peek [35] have urged for the establishment of a research code of conduct for disaster researchers to address power imbalances between researchers and participants.

These power imbalances are reproduced, however, also within the disaster research teams and in the products of disaster research.

In terms of the former, there is a general lack of information about the composition of the disaster research workforce [36]. The difficulty of gathering this data derives from the high fluidity of the disaster research workforce which is composed of a limited number of core disaster researchers and many periodical and situational researchers, who, often trained in other areas of specialty, move continuously inside and outside the field in the pursuit of their own theoretical interests. In 2006, the Committee on Disaster Research in the Social Sciences [36] noted that some imbalances existed within the disaster research workforce (e.g., regarding the presence of ethnic minorities) but that for some cases, such as the gender disparities, they were on the track to be filled. Yet, the authors of the report admitted that no data existed to prove the existence of these disparities and to monitor progress toward equality. In recent years, an initiative named “Converge” (<https://converge.colorado.edu/about>) funded by the National Science Foundation and led by the Natural Hazards Center in Colorado, called for the creation of a database of disaster researchers from various disciplines and backgrounds in the attempt of building up a first census of disaster researchers and to diversify the disaster workforce by promoting the involvement of students, early career faculty and emerging scholars from historically underrepresented groups in disaster research teams [37]. Likewise, the William Averette Anderson Fund in the US aims to “expand the number of historically underrepresented professionals in the field of disaster and hazard research and practice so that the diversity of the hazard and disaster field be reflective of American society” in the recognition that “minorities currently represent a relatively untapped resource in these fields” (Bill Anderson Fund website).

The lack of diversity within the disaster research teams extends also to their research products. For example, publications about hurricane Katrina were largely driven by researchers located outside the impacted area [8]. Gaillard [9] reported that a review of articles published in the journal *Disasters* since 1977 revealed that 84% of the publications on the field are authored by researchers based in OECD countries while 93% of the deaths for disasters occur in non-OECD nations. This indicates that those who bear the risk the most are excluded or at least marginalized in the production of disaster-related knowledge. Even though this is indeed a paradox, it is not surprising: those hit by disasters or living in developing or underdevelopment countries have less resources to apply to research grants and be competitive in the disaster research landscape [32]. Noteworthy, in the last few years, some spotty initiatives have emerged to try to redress these imbalances. For example, JC Gaillard and other researchers have launched, in 2019, an online petition titled “Power, Prestige & Forgotten Values: A Disaster Studies Manifesto” that has made the case for the inclusion of and the development of partnerships with local researchers who should drive the studies and take ownership of the issues that concern them the most. Along this line, in September 2020, *Disaster Prevention and Management* launched a call for

papers open to early career scholars on “Emerging voices and pathways to inclusive disaster studies”. Even more recently, the Natural Hazards Center offered, for the first time, an award to researchers with disabilities as well as to those who care for, study, or advocate on behalf of those with disabilities to attend the Natural Hazards Workshop and the Researchers Meeting in Colorado.

Consistent with well-known disaster mechanisms, the Covid-19 pandemic has reinforced many of the pre-existing inequality trends. This is true especially for women and for the youngest scholars who struggle with precarious contracts and who, as highlighted by some studies on gender issues during the pandemic, have suffered a drop in publication rates and in perceived productivity [38,39]. To avoid the perpetuation of power inequalities, there is the urgent need for disaster research to move away from neoliberal practices, based on the exploitation of the most vulnerable among research participants and researchers. A non-exhaustive list of these practices may include: privileging works published in English, using unpaid or underpaid students or interns as ghost writers, the systematic use of staff with short-term or hourly-paid contracts to perform time-consuming activities (preparation of teaching material and exams marking, undertake fieldworks for an extended timeframe, etc.), the usage of bibliometric indicators to assess the value of the research and the pressures to prioritize work commitments over personal life [10].

Promoting gender equality in disaster research is a first step toward achieving inclusiveness and walking away from exploitative work practices. In the next section, we discuss the gendered issues in disaster contexts as well as within the disaster research and management organizations. This illuminates how information about gendered power relations within the disaster research teams are in very short supply.

3. Gender equality dimensions in disaster studies

Gender disparities reflect the distribution of power within societies and manifest themselves in all the societal sectors and domains. These aspects are strictly related to the different expectations that the society holds in terms of gender roles, which are based on the conceptualisation of the man as the *breadwinner* of the family and of the woman as the *caretaker*. These expectations can affect career and personal choices as well as the ability of a person to go through difficult life events [40].

The disaster research community became aware of the potential implications of the gendered roles in disastrous events thanks to the effort of eminent scholars such as Elaine Enarson (e.g. Ref. [25], Maureen Fordham (e.g. Ref. [41], and Alice Fothergill (e.g., Ref. [24]. These and other authors have showed that women are disproportionately affected by disasters, in terms of both higher chances to die or remain injured [42,43] and greater suffering from the disaster impacts (e.g., loss of livelihoods, longer recovery time, having to bear the burden of the recovery efforts and of family responsibilities (e.g., Ref. [44]. The explanation of gender biases in disaster impacts is to be found in how socio-economic conditions, cultural beliefs and power hierarchies shape the role of women and men and the power distribution in the society [45,46]; [47] [42]; these elements are at the basis of the greater exposure and vulnerability of women to hazardous events. Recently, literature on gender and disasters has insisted on the importance to adopt an intersectionality lens to understand how gender vulnerabilities intersect with economic, racial and other inequalities, creating the ground for hazardous social conditions [48,49] and to move beyond the traditional differentiation of gender as a binary female-male variable, thus accounting for the needs and potentialities of other sexual and gender minorities in development and DRR strategies ([50]; [51–54]. The attention of researchers (e.g. Refs. [26]44,55,56), and of existing initiatives (e.g., the Women’s Resilience to Disasters Knowledge Hub and the Women’s International Network for Disaster Risk Reduction (WIN DRR)) have also been geared toward recognizing women’s rights and promoting their leadership in disaster risk management activities and plans. Since 1997, the *Gender and Disaster Network* have been active in

enhancing networking opportunities for its members, promoting women and gender issues as a legitimate research topic and young women professional development. Whilst the Sendai Framework for Disaster Risk Reduction has made some steps forward, much is still to be done to include gender equality in national and international DRR policy frameworks and practices [54], especially if we are to realize a transformative vision [56].

The effects of the gendered roles within the society appear evident also in disaster management organizations which are mostly male-dominated and inspired by masculine values [25]: [57,58]. In particular, it has been noted that, in disaster contexts, women are excluded by formal response agencies [25,57] and that their role is framed along the lines of the traditional gendered labor division: women “assist” men in the relief and recovery efforts, “look after” their family members and the disaster victims and “take care” of the emotional and mental health aspects while men assume leadership and decision-making roles [41, 59]. Furthermore, women are praised if they assume traditionally women-coded tasks during response and questioned whenever they do not adhere to this norm [59]. Even when women subdue to masculine standards, their childcare and housekeeping activities that allow men to devote time to relief activities, remain mostly invisible and unnoticed [59]. Over 20 years ago, Enarson [48] urged to understand better “how and with what effect disaster organizations are gendered” (p.162). Two decades on, the issue seems to have remained largely overlooked [57, 59]. Parkinson et al. [60] examined the barriers for women to access to executive roles in fire and emergency services in Australia finding that sexism, career penalties due to family responsibilities and masculine traits (e.g., being aggressive, competitive, and dominant) being more frequently valued prevented women from taking on leadership functions. In recent years, some professional organizations with different degrees of formality have been created to support the work of women in the field of business continuity and crisis management (e.g., the Women in Homeland Security professional organization and the DRI Foundation’s Women in Business Continuity Management (WBCM)). In particular, WBCM provides mentorship, scholarships and knowledge exchange opportunities for female workers in the sector.

Conversely, evidence about gender disparity and biases within the disaster research workforce is almost absent. Yet, as we shall discuss in section 3.4 other research disciplines have started to tackle the issue with the support of gender studies that show that women academics struggle with both access to and professional growth in academic careers, especially when it comes to certain research fields considered as more male-oriented (e.g., the STEM disciplines). The Covid-19 pandemic has even compounded these pre-existing challenges producing a negative impact on women that faced additional constraints as a result of school closures and the increase of domestic and care duties [61]. The impact has been felt in terms of productivity [62] and this has contributed to put women in a lower position when, for instance, it came to being featured in broadcasting media [63]. Given the lack of data on gender disparity and biases in the disaster research field [36], we made a preliminary attempt to collect data on the impact of the pandemic on gender disparity in publications related to disaster studies. Evidence is difficult to collect since papers that have appeared in disaster journals in 2020 may be the result of a collaboration and work conducted before the pandemic outbreak. To overcome this issue, we looked only at the publications related to Covid-19 and therefore evidently prepared after the first pandemic outbreak. The gender and academic rank of the first author was determined by searching manually on Google the name of the scholar and verifying the identity through a cross-check of the list of publications. A rapid review of the articles tackling Covid-19 topics and published in leading disaster related journals (Disasters, International Journal of Disaster Risk Reduction, Natural Hazards, International Journal of Disaster Risk Science, Journal of Mass Emergencies and Disasters, Natural Hazards Review, Disaster Prevention and Management, Natural Hazards and Earth System Sciences (NHES), Journal of Contingencies and Crisis Management) in the period May–December 2020

yielded the following results. Out of the 26 Covid-related articles published in these journals in the period under consideration, 11 have a woman as their first author. Among these, one is a Deputy Head of Department, two hold the role of Full Professor, 2 of Associate Professor, 3 are Assistant Professors, 1 is an independent researcher, 1 is a Postdoc Fellow and 1 a Master student. Two journals (Disasters, and Journal of Mass Emergencies and Disasters) showed no records of Covid-related articles within the considered timeframe.

These figures are certainly not sufficient to argue for a 'gender disparity issue' within the disaster research teams given that a much more systematic study on disaster-related publications should be performed to support this claim. However, these figures coupled with the tendency of the disaster research and the disaster management field to adhere to neoliberal working practices and masculine values, make it plausible to conclude that this issue not only exists but has been so far left out of the disaster research agenda. If this is true, there is the compelling need for disaster research to devise measures to bring to light and address internal gender imbalances and to challenge the gender status quo.

Here, we argue that disaster research may seek guidance from a field, within gender studies, that emerged in the last two decades and that focuses on the design of gender equality plans (GEPs) to redress gender disparity within research performing organizations. As explained in the next section, a GEP furnishes a framework to identify the professional figures, data and indicators needed for implementing measures aimed at advancing gender equality.

4. Devising gender equality measures in research

Within the research context and academia, the category of *gender* is strictly related to the category of *power* and the traditional job role division contributes to the reproduction of gender norms, attitudes and stereotypes that symbolise and validate gender inequality in the workplaces [12]. Gender discrimination manifests especially during the early-career stage when women face the 'leaky pipeline' phenomenon, which refers to the fact that women are hindered in achieving progression in academic and scientific careers, leading to their underrepresentation in some sectors and fields. This phenomenon is reinforced by other barriers and types of biases such as the matilda's effect (women scientists are less likely to see their achievements publicly recognized and praised) and the 'glass ceiling effect' (the achievement of executive roles is precluded to women due to the unconscious gender biases in hiring and evaluation processes). These biases are compounded by the neoliberalism paradigm that insists on individual responsibility rather than on social responsibilities and promotes a culture of *work hard and do well* that boosts competition and is highly gendered and discriminating against women and minorities [64]. Besides that, extensive literature explores structural institutional change in higher education, highlighting the increasing corporatisation and privatisation of the University and the takeover of higher education by a logic of the market [64]. Contrasting this paradigm, the decolonial pedagogy theory supports a fluid discourse based on the power of capitalism, suggesting its reconceptualization to build global solidarity based on non-dominant principles of coexistence and kindredness [65]. Decolonial pedagogy extends the argument of feminist pedagogy, which focuses mainly on gender, to the analysis of colonialism as deeply interlocked with gender and other social categories [66].

The result of the biases and barriers described above is clearly highlighted by the European Commission's 'She Figures' report [67]: women researchers hold part-time positions (13%) more frequently than men (8%) and more women (8%) than men (5%) scholars work under contract considered "precarious" (e.g., fixed-term contracts). Furthermore, women are less represented as they move up in the academic ladder: 48% of the doctoral students and graduates' cohort is composed of women whereas the percentages drop to 46%, 40% and 24% as the women's presence in respectively post-doc, senior research and

professorship positions is considered ([67]). In the EU, women are also less represented in the production of scientific papers: for all fields of R&D only 32% of all publications have a woman as a corresponding author. In order to remove some of the above-mentioned barriers inhibiting access to and growth in scientific careers for women, several actions have been devised having either a formal and structured (e.g., GEPs) or informal nature (ad-hoc and sporadic events).

4.1. Gender equality plans (GEPs) in research institutions and discipline-level gender equality initiatives

In the last twenty years, the European Commission has endeavored to promote gender equality in research through various policy instruments and initiatives. The 'Science with and for Society' work program, following the three objectives of the European Research Area in terms of gender equality (gender equality in scientific careers, gender balance in decision making and integration of the gender dimension into the content of research and innovation), has funded projects specifically in support of the development of gender equality strategies. The definition of "Gender Equality Plan" (GEP) was established in the Research framework during 2012 to create a roadmap to remove barriers that generate discrimination against women in scientific careers and decision-making and integrate a gender dimension in research content. As a result of the strategy of the EC, several EU projects consisting of large research consortia have devoted time and resources to the analysis of how to best structure the process, define the guiding action plan document and use data and indicators to design and monitor the implementation of the gender equality measures.

The European Institute for Gender Equality (EIGE)'s definition of Gender Equality Plan states that the construction of a tailored GEP requires to define a process aimed at achieving gender equality by identifying specific organization's needs. In particular, it entails to follow a circular and iterative process consisting of five consecutive phases:

- Diagnosis (collection and analysis of sex-disaggregated data)
- Planning (definition of activities to achieve objectives and meet needs and concerns)
- Implementing (implementation of the defined activities)
- Monitoring (assessment of the progresses made toward the objectives)
- Evaluation (evaluation of the sustainability and impact of the implemented GEP and its refinement starting from the top, as a circular and iterative process).

GEPs usually encompass a monitoring system consisting of a set of quantitative and qualitative indicators aimed at measuring the impact of the actions taken to (i) increase females' access to certain positions, (ii) enhance work-life balance, (iii) enhance management related careers amongst females, (iv) train staff in gender equality issues and/or (v) integrate gender in curricula. In organizational settings, the diagnosis of the gender inequalities and biases (which represents the first step of a GEP) requires a systematic data collection demanding for additional resources that are usually not institutionalized. For this reason, current policy initiatives suggest to include, in the strategy, measures to collect gender-disaggregated data and to assign the lead of this effort to professional figures or committees created ad-hoc, such a Gender Equality Manager or Panel. In order to guarantee the sustainability of a Gender Equality Plan at organizational level is pivotal to secure the involvement of the top management bodies as well as to have a committed entity to sustain measures and actions in the long run. Furthermore, it is recommended to set out and to continue updating the gender equality monitoring system in order to keep track of the progress made. The ultimate purpose is to devise a strategy for a structural and long-lasting change that addresses interconnected layers of the gender inequality issue from an integrated perspective and through tailored actions.

Besides formal GEPs, it is useful to recall some initiatives undertaken

in the last years to enhance the role of women within specific sectors and/or fields of science. We can distinguish them into two macro categories: the international ones and the initiatives promoting gender equality within disciplines or communities of practice. The former group includes activities that take place regularly (mostly yearly) to raise awareness about specific topics related to gender equality. For instance, the International Day of Women and Girls in Science, promoted by UNESCO and UN Women, is celebrated every 11 February. The event aims to promote gender equality in science, technology, engineering and mathematics (STEM), to give visibility to women scientists who have made a difference in the STEM fields and to encourage young and emerging female scientists as well as girls in secondary schools to overcome gender stereotypes and embrace STEM careers. In addition, prizes or awards have been regularly offered to stimulate female engagement in STEM disciplines. The second category, namely the initiatives aiming at establishing a community of practice, are geared toward the consolidation of a network of scientists that operate in a specific field and share a *common identity*. One example of discipline-level initiative is the GENERA Network, a network aiming at promoting gender equality in physics research organizations in Europe and worldwide. The network, originated from the EU-funded GENERA project, provides a common framework for its participants for the collection of gender data in physics at the level of the single institutions, and for sharing the results between its members to enable comparative analyses. At the very beginning, the GENERA Network was founded by 5 members signing the MoU at the final event of the GENERA project (August 31, 2018). Currently, the GENERA Network consists of 35 members and 6 associated entities. IChemE, the leading professional body for chemical, biochemical and process engineers, has in place activities to promote women's presence in the sector, such as a dedicated LinkedIn group and a collection of webinars recorded by female IChemE members. IChemE provides connections to a network of over 33,000 members in more than 100 countries and offers a wide range of online training courses to support students and/or professionals in improving and learning new skills in chemical and engineering. These initiatives, although revolving around one main discipline or field of science, still operate at institutional or organizational level. The ACT project (<https://act-on-gender.eu/>) has proposed the establishment of intra- and inter-organisational communities of practice (CoP) to promote institutional change in the sense of greater gender equality. Scaled up at European level, this network of CoPs would allow to "generate insights that transcend these differing implementation realities across Europe and tie back into a synchronized effort across institutions, main stakeholder and agendas (vertical integration)" ([68], p.28).

5. A plan for gender equality measures for disaster research

The lack of gender-disaggregated data for disaster research signals scant attention to the matter and a possible neglect of the implications of gender disparity for the production of disaster-related knowledge. The organization-based approach is not viable for disaster research as disaster researchers are scattered across departments and research institutes which often do not have a specific focus on disaster science. Measures normally included in a GEP and aimed at producing sustainable changes in the recruitment and career mobility policies are of difficult application at sector or discipline level without formal structures to exert pressure upon and no funding formally allocated for this purpose. The plan described in the following section takes into consideration these limitations and proposes an adaptation of the original GEP that makes it more applicable to a such heterogenous and fluid discipline.

Similarly to a GEP, the proposed plan envisages a circular and iterative process of diagnosis - activity - evaluation, which brings awareness of the extent of the problem, put in place actions to reduce it and evaluate the effectiveness of these actions through diagnosis. In our proposal, the entire process should be led by an ad-hoc designated

Disaster Research Gender and Diversity (DRGD) Panel, consisting of field experts and junior disaster scholars from different cultural and social backgrounds as well as of people with other complementary competencies (e.g. data analysts, policy experts, gender counselors etc.) assigned with the responsibility to undertake diagnostic and practical measures to identify and redress barriers and biases preventing the participation of women in the discipline. This group of experts would convene on a voluntary basis and could, at least initially, rely on existing groups focusing on gender and disasters. The DRGD Panel will be formed by experts coming from both gender and disaster studies, already involved in research networks in their respective field. The vision of the DRGD Panel is to support, coordinate and improve diversity, equality, and inclusion in the disaster research communities worldwide. Furthermore, the DRGD Panel will provide a common framework for the collection of the gender data at the institutional level, and for sharing the results across the network and the scientific community in order to enable comparative analysis among collected data and enforced measures. A special emphasis will be devoted to scientific publications given that this aspect can be more easily addressed in discipline-specific actions. The DRGD Panel will also be in charge of awarding, in public events, disaster research organizations that stood out for the implementation of practices to improve gender equality, diversity and inclusion.

5.1. Diagnosis phase

In line with the first stage of a GEP (diagnosis), the DRGD Panel previously established should engage, every two years, in the collection of gender-disaggregated data about aspects of the research processes that have proven to be particularly affected by gender biases (e.g., evaluation procedures of job applicants, evaluation of academic performances to progress to higher academic ranks, first authorship in international publications etc.). The indicators listed below are just some examples but more should emerge out of a debate within the disaster research community.

Concerning the barriers to access the disaster research community and achieve career progression, the analysis can look at:

- *The linguistic aspects of the advertisements of disaster research-related job positions.* Indeed, Pietraszkiewicz et al. [69] noted that advertisements for jobs considered as more female-oriented contained more frequently communal terms (e.g., terms expressing values of commonality and caring) while those for male-dominated positions implicitly conveyed agentic values such as ambition, competition, competency etc. Such analysis on the communication style could be performed also on job advertisements related to disaster research. Also, it could be examined the extent to which job descriptions set standards that discourage candidates who experienced a career break. This would allow the disaster research community to initiate a reflection on the implicit criteria used for the assessment of the candidates' profiles and on how these criteria can prevent researchers from disadvantaged backgrounds from getting access to the disaster research field.
- *The disciplinary practices inhibiting career progression in terms of, for instance, cognitive errors in assessing merit, suitability for leadership, unconscious gender biases in assessing excellence etc.* This information can be collected through in-depth qualitative analyses (e.g. interviews and focus groups) aiming at exploring gender biases and hindering factors in career progression (e.g., old boys network, matilda's effect, etc.) with both junior and senior disaster scholars. The collection of qualitative insights makes it possible to explore junior and senior researchers' perceptions, prejudices and assumptions and surface the unsaid expectations regarding the work/life paths that a researcher should follow in order to professionally grow in this field.

- *The inclusion practices of women in all promotional campaigns for disaster-related career and opportunities fairs.* This could help to detect, for example, biases in the type of pictures used in informational material (do they depict more frequently men than women undertaking disaster relief operations?) or in communication style (do language and terms refer more frequently to values of force and full commitment to the mission?). This would allow the identification of the barriers that may discourage candidates that do not perceive themselves as fitting the traditional image of disaster researchers from accessing the field.

In order to identify gender biases in the production of disaster-related knowledge, useful indicators might encompass:

- *The rate of women among papers' reviewers and journals' editorial boards.* This information could highlight potential biases in the peer review process, helping to diversify also the disaster journals' editorial priorities and interests [70].
- *The rate of f/m authors in selected disaster-related journals.* This indicator allows to diagnose the participation of male and female scholars in the production of scientific disaster-related knowledge. A further analysis could aim at identifying which topics, within the disaster scholarship, are addressed more frequently by male or by female authors and to implement measures targeted at making these themes more inclusive.
- *The rate of f/m among first authors in selected disaster-related journals, if it is feasible and if names are clearly identified by gender.* This indicator is to spot the possible implications of the Matilda's effect in terms of making the disaster research work led by men more visible and praised than that led by women.
- *The academic position held by and institution of affiliation of female first authors publishing in selected disaster journals.* This indicator seeks to capture patterns of exclusion deriving from the intersectionality of variables (being a woman *and* being an early career researcher *or* being affiliated with an institution based in a developing/underdeveloped country). This indicator would allow the disaster research community to identify mechanisms of exclusion that cannot be referred directly to the gender dimension but rather to an intersection of social and demographic factors.

Regarding networking opportunities, the DRGD Review Panel could analyze:

- *The number of research networks, associations, academic programmes etc. focusing specifically on gender and disaster issues,* also in a broader sense (e.g., gender and sustainable development). The identification of new networks, associations etc. can be done through a call for inputs or case studies as well as through a network analysis. This would allow to gain a comprehensive view of the progresses in terms of networking opportunities and working groups operating in the area of gender equality within the disaster research arena assuming that they can create a venue for new ideas and opportunities for female scholars approaching the field.

5.2. Gender actions for disaster research

As a second phase, the DRGD Panel, based on the results of this diagnosis, should design a set of measures to revert the patterns of exclusion that have been identified. We suggest here some possible measures that could be implemented at supra-institutional level.

Specifically, in order to enhance diversity and inclusion in disaster research, the DRGD Panel can encourage:

- *The institutionalization of prizes, awards and scholarships open to female disaster scholars.* Preference might be given to those who had a career break due to maternity leave, elderly care or illness, similarly to the

criteria envisaged for some Marie Skłodowska Curie fellowships. Although this solution carries several limitations, it represents a first step to overcome some of the barriers to access the field for young female scholars and people from disadvantaged backgrounds.

- *The promotion and provision of funding opportunities for research groups studying gender equality in disaster research and disaster management organizations.* Funding awarded to an overarching project might be assigned to smaller projects or research networks dedicated to the promotion of gender equality.
- *The awarding of project funding subject to the involvement of institutions and researchers from the case study area in the project and to the respect of gender balance within the project team.* This measure cannot be enacted directly by the DRGD Panel but a petition can be launched to invite funding bodies to incorporate criteria about the diversity of the proposed research teams in the proposals' evaluation.

Initiatives for raising awareness and empowering disaster researchers could include:

- *Routinely workshops to raise awareness about the relevance of gender equality for disaster research among the new generation of disaster researchers.* Workshops could invite, as representatives, also gender experts and female role models in disaster research. The DRGD Panel could lead these workshops by itself or involve some external experts if feasible in terms of availability of funding.
- *Training activities for disaster researchers and editors of disaster research journals on gender issues and biases in disaster studies.* This activity should be aimed at facilitating the gaining by disaster researchers and editors of specific skills to detect and correct unconscious biases. Training activities should be led exclusively by gender experts. The DRGD Panel could run these trainings by itself (if gender expert trainers are present) or involve external experts. From their side, journal editors should follow specific mandatory courses to recognize unconscious biases possibly affecting their evaluation on a paper's worth and appropriateness.
- *Mentoring activities for junior researchers.* Senior disaster scholars could also perform mentoring activities towards junior female disaster researchers. The mentoring is conceived as a one-to-one support and thus requires time and effort. Without funding to support this activity, it is advised that, at first, the mentoring includes few researchers coming from disadvantaged backgrounds and/or having experienced a career break due to parental leave, illness or disability. For these reasons, mentors should possess skills in gender equality as well as competencies in disaster management. The DRGD Panel could coordinate the organisation of these mentoring activities by itself or involve some external experts if feasible (availability of funding).

Some biases identified in the production of disaster-related knowledge can be addressed through:

- *An annual publication of a special issue* with papers authored by early career women researchers or women belonging to ethnic/linguistic minorities with mentoring from senior researchers. This is similar to what has been done in the aforementioned Special call by the Disaster Prevention and Management Journal. The call can be promoted by the DRGD Panel but should be launched by a leading journal in the disaster risk management field.

In addition to the above-mentioned activities, we advise to undertake an evaluation of the measures implemented every five years to identify best practices to build on and aspects to be improved.

The above-mentioned measures should generate at least three official documents:

- one report every two years summarizing the results of gender data collection based on the indicators mentioned above. This report should be produced by the DRGD Panel;
- one report every three years offering an overview of the status of the inclusiveness of the disaster research. This seeks to highlight not only aspects related to gender inequality but also to other forms of exclusion;
- one report every five years with the results of the evaluation of the measures adopted (summative and impact evaluation).

A final consideration pertains to the sustainability of the DRGD Panel's efforts and of the implemented measures over the time and to the challenges in the collection of gender data. Some sort of funding to cover the expenses of dedicated staff and/or of prizes, scholarships and mentoring activities should be secured and advocacy campaigns to raise awareness of the relevance of the DRGD Panel's work for the disaster research community should be organized. We expect that data collection efforts will be hampered by the fluidity of the disaster research field. Consensus should be reached beforehand in the disaster research community about the inclusion/exclusion criteria in the final figures regarding the disaster researchers and the disaster-related publications. Finally, some of the proposed indicators (e.g., those regarding the first authors of the publications) can hardly capture other facets of the gender dimension, such as the inclusion of people with non-traditional gender roles. .

6. Conclusion

In this paper, we advocated that a misalignment exists between the values that disaster researchers claim should be pursued to reduce disaster risk (e.g., combating inequality and human exploitation) and those expressed by their own working practices (e.g., the perpetuation of neoliberal working practices). Thus, we proposed to initiate a transformative process [56] by the implementation of a set of measures aimed at advancing gender equality within this field of research. Building on the theoretical and methodological framework offered by the GEPs, we affirmed that a first step should involve a review of the current practices and a reflection of their effects in terms of maintenance of the gendered power imbalances within the disaster research teams and products. In other words, the disaster research community should interrogate itself about who is accepted and who is excluded from this discipline, what are the implicit rules to which disaster scholars are requested to abide by in order to be part of the community and how exclusionary mechanisms can be corrected. The gender equality measures proposed above would contribute, if adequately implemented, monitored and refined, to bring greater inclusiveness in the disaster research discipline. However, we caution against transforming this reflection into a "ticking box" or rhetorical exercise nor one that places additional administrative burdens on some categories of academics (e.g., [71]). Confining the actions to collecting data or organising events would mean to fall, once again, into the trap of neoliberalism, that, as highlighted by many (e.g. Ref. [72]), has increasingly used the label of "gender equality" to pursue and bring forward its own interests and values. An agenda that is truly transformational does not exhaust itself with the application of a set of measures. If we want to reform disaster research, we need to start questioning the structural bases upon which it is organized and identify what aspects we want to preserve and what needs to be changed.

We acknowledge that this process of reform can be facilitated by starting to address some of the existing gaps. For example, more research is needed to unveil power dynamics currently affecting disaster research (e.g., by doing a comprehensive review of disaster-related publications across diverse journals in the last years and conducting qualitative analyses of existing biases with early career, female and ethnic minorities scholars). This would offer an overview of the most pressing issues to be addressed. Then, it is advisable to identify an entity willing to lead the process and/or an overarching initiative or project under which to

situate the proposed measures and that can offer funding schemes to carry out the correlated activities, hire ad hoc staff etc. Only in this way, it will be possible to create permanent changes that are sustainable in the long run. Also, for the measures to become sustainable, a cultural change needs to take place in the disaster research community leading to the appreciation of the value of diversity. The disaster research field is not necessarily resistant to innovation. Indeed, some major conceptual shifts have occurred in the recent years on the terminology used [73] and basic concepts (see the #nonaturaldisasters campaign (<https://www.nonaturaldisasters.com>)). Yet, major changes in whatsoever sector are slow to enforce and the disaster research discipline is no exception. If we want these changes to materialize, the measures proposed should be fully shared and discussed within the disaster research community to ensure that they align with its identified priorities and needs and incorporated into the discipline's strategic vision and agenda.

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