Gender and Disaster: Foundations and New Directions for Research and Practice

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Gender is a key element of human experience which shapes identity, intimate relationships, household routines, legal standing, access to resources, cultural norms, institutional practices, and all other aspects of social life. It follows that gender also bears on capacities, decisions, and outcomes throughout the disaster lifecycle. Importantly, while research shows that gender inequalities and differences contribute substantially to disaster vulnerabilities, gender also shapes how agency and resilience are realized in crises. Gender further influences how disaster risk is created and the practice of disaster management itself.

Since the publication of our earlier review in the *Handbook of Disaster Research*, gender and disaster research has grown substantially in scope and influence. In this update, we again concentrate on peer-reviewed materials available in the English language,[1] and on natural, technological, and intentional hazards and disasters. After offering a brief overview of diverse theoretical strands of analysis and research, we synthesize key findings about mortality, health, and well-being; gender-based violence; family and work; and grassroots change. We then highlight three critical new lines of inquiry regarding sexual minorities, masculinities, and climate change. We conclude with observations about future research and how the field might better utilize the expanding knowledge base on gender and disaster to reduce hazards risk.

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[1]Space limitations precluded inclusion of reports and studies from non-governmental organizations; with few exceptions, we omitted these as well as completed academic theses and dissertations. Readers are advised to visit the Gender and Disaster Network website for access to many of these influential publications and resources. We also recommend recent overviews of the field, including Laska, Morrow, Willinger, & Mock, (2008); Enarson (2012); Tobin-Gurley & Enarson (2013); and Seager (2014).

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11.1 Expanding Theoretical Foundations

A notably broader theoretical landscape now guides research in disaster studies. Current scholars write from (and across) multiple disciplines, yet gender and disaster scholarship is still unified by the foundation of a social ecology approach, which examines how social actors are embedded in complex, multi-level social systems shaped by dynamic and historical processes that result in differential access to resources (Peacock, Gladwin, & Morrow 1997). In more affluent countries, liberal feminist thought emphasizing the gendered division of labor and equal opportunity complements this (for instance, see the U. S. studies reviewed by Enarson, 2012). In contrast, studies in lower- and middle-income countries are grounded in the nexus of development and gender equality, inviting more attention to a global political economy shaped by gender, race, and class, and the implications for people's agency and rights (e.g., Bradshaw, 2013). The decade also brought increased focus on the cross-currents of race, class, sexuality, and gender, specifically including more feminist theorizing highlighting cross-cutting racial and sexual orientation privilege as social forces in disasters (e.g., Luft, 2016).

Feminists grounded in philosophy and environmental studies, in turn, challenged embedded assumptions about gender, power, and the natural world (Arora-Jonsson, 2011; Banford & Froude, 2015; Cuomo, 2011). Feminist political ecologists introduced a focus on the nexus of gender, disaster, and climate change (e.g., Alston & Whittenbury, 2012; Buechler & Hanson, 2015). A gendered lens on human security was also used to illuminate gendered risk factors in disasters (Dankelman, 2010; Enarson, 2014; Ray-Bennett, 2016). As in disaster studies generally, the dominant social vulnerability lens of the past was questioned, often replaced by a gender justice lens (e.g. Enarson, 2009; Fordham, 2011). This work was complimented by an emerging resilience framework highlighting the agency and capacities of people in disasters. Recent examples include findings from the Christchurch, New Zealand earthquakes (MacManus, 2015); comparative studies of women's long-term recovery (Drolet et al., 2015); strength-based analysis of tsunami widows in India (Jude & Miriam, 2013); and research on early warning systems reflecting women's social networks in Indonesia (Mulyasari & Shaw, 2013).

Taken as a whole, these theoretical and analytical shifts imply a continuing trend toward:

- a more nuanced and situational understanding of gender;
- intersectional analyses of race, class, gender, and sexuality;
- examination of male as well as female experience;
- identifying institutionalized practices maintaining gender domination;
- a focus on self-determination and self-organization;
- studies of new and shifting hazards arising from climate change and conflict;
- illumination of the connection between gender equality and disaster prevention;
- exploration of gender and social justice from a rights-based perspective.

New thinking was also apparent in research design, including much-needed shifts toward more geographically diverse research sites; quantitative and secondary data collection and analysis; population-based representative studies; longitudinal, comparative analyses; and policy analysis. Community-led research assumed an even more central role. Responding to urgent knowledge gaps, researchers and activists in Haiti, for instance, saw glaring gaps in the "official" post-earthquake story on women and compiled an alternative "shadow" post-disaster needs assessment (Horton, 2012). Other research collectives emerged after Hurricane Katrina in 2005 (Weber & Peek, 2012), New Zealand's 2010 and 2011 earthquakes (Du Plessis, Sutherland, Gordon, & Gibson 2015), and in Japan after the 2011 earthquake, tsunami, and nuclear disaster (Steele & Osawa, 2013). While not always leading to peer-reviewed publications, these

initiatives were consequential in the evolution toward more participatory disaster research.

11.2 Key Empirical Findings

In this section, we present key empirical findings in four areas of ongoing concern in the area of gender and disasters. These areas, identified based on our survey of the literature, are: mortality, health, and well-being; gender violence; family and work; and grassroots change. We synthesize important work to further understanding of these topical areas, to elucidate patterns across disasters and global regions, and to help identify where more research is needed.

11.2.1 Mortality, Health, and Well-Being

Disaster morbidity and mortality are influenced by gender norms, the gendered division of labor at home and work, and gendered social structural and demographic patterns, among other factors, thus positioning women and men, and boys and girls, in different spaces when disasters unfold (Alexander & Magni, 2013; Haynes, Handmer, McAneney, Tibbits, & Coates, 2010; Wood & Bourque, in this volume). The 2004 tsunami, in which three times more women than men died in some Sri Lankan villages, remains an especially vivid example of how women's everyday lives may lead to deadly outcomes (Hyndman, 2008). Specifically, women suffered higher mortality rates due gendered skill sets and consequent gendered division of labor in local economies, physical location at the time of the tsunami, caregiving roles, and traditional dress that limited mobility.

Disaster-related suicide rates may be higher among men, as was the case among middle-aged males in a longitudinal study of Japan's 1995 Kobe earthquake (Nishio et al., 2009). High male out-migration and increased suicide were reported among male farmers in drought-stricken parts of Australia as well (Alston & Kent, 2008). Although all genders may experience emotional turmoil after disaster, this can be expressed very differently (see Dell'Osso et al., 2011, for the case of youth affected by the 2009 L'Aquila, Italy, earthquake). For example, when women express more post-disaster emotional stress, researchers acknowledge it may reflect individual coping and post-disaster conditions as well as the gendered order of their world, as Parida (2015) reports in a large-scale study of Himalayan flooding. In a meta-analysis of 17 studies, African American women affected by Hurricane Katrina were found to be profoundly affected physically and emotionally despite strong faith and high levels of cultural support (Laditka, Murray, & Laditka, 2010).

De Alwis (2016) used psychoanalytic theory and ethnographic methods to challenge stereotypes of male alcoholism after the 2004 Indian Ocean tsunami, examining how Sri Lankan widowers coped with their grief in a recovery period complicated by armed conflict. A U.S. study of police who responded to the 9/11 attacks found that female emergency responders expressed nearly double the rates of probable post-traumatic stress disorder as their male counterparts (Bowler et al., 2010). Men also may be more protected by occupational subcultures than their female peers, as reported in a study of resilience and protective mental health among a sample of Italian emergency responders (Pietrantoni & Prati, 2008). In the U.S. after Hurricane Sandy, women reported more fear of future events than men did, but there were no apparent gender differences in sources of support (Hamama-Raz et al., 2015). A study on the experiences of Australian men still in distress five years after the 2009 bushfires found that men frequently spoke of their fear and anxiety, and the barriers they felt to reporting these emotions (Parkinson & Zara, 2016).

Gendered studies of post-disaster health highlight negative health consequences for women in particular (Richter, 2011). In Iran, women's health declined after disasters due to exposure to environmental hazards, lack of safe water, unhealthy living conditions, and a myriad of other factors; many developed chronic diseases and had unwanted pregnancies

(Sohrabizadeh Tourani, & Khankeh, 2016; and see Urrutia et al., 2012, on Haitian women's post-quake health). Reproductive health care is frequently a subject of concern on the ground and in gendered disaster health research, including negative maternal outcomes when infants are exposed to disaster trauma in utero (Maslow, Li, Stellman, & Brackbill, 2016) and lack of access to birth control and maternal care through the emergency period. After Hurricane Ike, African American women in particular had trouble accessing birth control (Leyser-Whalen, Rahman, & Berenson, 2011).

11.2.2 Gender Violence

Since the first edition of the *Handbook of Disaster Research* was published in 2006, evidence has accumulated about increases in violence following disaster (see Phillips & Jenkins, 2016, for an international review). Recent work includes Nasreen's (2010) finding of increased violence in a study involving 600 women from three flood-affected regions of Bangladesh. Chan and Zhang (2011) reported on both physical abuse and "psychological aggression" against women after the 2008 Sichuan earthquake. In Haiti, girls and women endured high levels of sexual violence long before the 2010 earthquake, including deeply embedded structural violence (Schuller, 2015). Once displaced into survivor camps, however, their temporary homes lacked doors that locked or adequate lighting outside, sometimes leading to multiple rapes; others were reportedly forced into sexual negotiations to secure food (Horton, 2012). Lack of employment and diminished social support networks after the earthquake, along with men's controlling behaviors, also help explain increased reports of gender violence against Haitian women and girls (Weitzman & Behrman, 2016). Further, growing evidence suggests that women and girls, and sometimes boys, are at extreme risk of sex trafficking and sexual exploitation in disaster aftermaths (Standing, Parker, & Bista, 2016).

Research has documented that post-disaster gender-based violence also occurs in affluent parts of the world such as the U.S., Japan, Australia, and New Zealand (see Houghton, 2009; Parkinson & Zara, 2016; Saito, 2012, respectively) and among more affluent populations; following Katrina, increasing numbers of mothers and professional women sought help after experiencing violence (Jenkins & Phillips, 2008). Anastario, Shehab, & Lawry (2009) reported that one in five women in their study after Hurricane Katrina were victims of post-disaster sexual violence, a finding consistent with earlier studies of displaced Katrina survivors in trailer parks. New Orleans seemed a city "raining men" as male-dominated response and reconstruction intensified and families in many neighborhoods were forced to leave (Hartman, Dudas, & Day-Sully, 2016); this created an environment some women experienced as threatening (Schippers, 2015). Spikes in domestic violence were recorded following the BP oil spill on the U.S. Gulf Coast, particularly affecting single women living in poverty, unemployed women, those without health insurance and directly affected by the spill, and women whose abusers were unemployed due to the oil spill (Lauve-Moon & Ferreiral, 2015).

Violence may well occur in a climate of psychological distress, anger, and substance abuse, but domestic violence research has consistently shown that these are not the direct causes of violence. Rather, strongly felt values and gender ideologies supporting the notion of men controlling women (and non-conforming men) are at the core of the violence (Sety, James, & Breckenridge, 2014). Those on the front lines of disaster response often are aware of post-disaster domestic violence and the need for services. Research has documented that, even when shelters operate under serious constraints, antiviolence activists are resourceful and innovative in their contributions. For instance, after Hurricane Katrina, a New Orleans-based battered women's shelter continued offering services after having to completely restructure and recover after the flooding and a fire destroyed their building (Brown, 2012; Brown, Jenkins, & Wachtendorf, 2010). Domestic violence advocates in this shelter put their losses aside and

shared resources to protect women in the shelter while keeping staff employed.

While researchers generally have not yet sought information about disaster-related gender violence against men or boys, Fothergill and Peek (2015) found that some boys displaced to new and unfamiliar communities after Katrina dealt with physical bullying in schools and some girls and boys dealt with verbal abuse at the hands of their peers. Bergin (2008) found that men of color were more likely to face violence at the hands of law enforcement and from fellow armed citizens following Katrina.

11.2.3 Family and Work

The expansion of women's labor after disasters has been well-documented. Paradoxically, post-disaster recovery initiatives specifically geared to women may further tax women's time and energy with counter-productive effects on gender relations and their economic recovery (see Bradshaw, 2009, on the "feminization of responsibility" after Hurricane Mitch in Nicaragua). Similar concern has been voiced around climate adaptation efforts specifically geared toward women (Cuomo, 2011; MacGregor, 2014). Recent research suggests that disaster-related family responsibilities increase among youth as well, generally in accordance with traditional gender norms (Tobin-Gurley et al., 2016).

Household conflict is not uncommon after disaster. In drought-striken Australia, rural women's increased financial responsibility contributed to marital breakdown (Whittenbury, 2013). Parenting norms across generations may also diverge, as was the case for displaced mothers caring for children and elderly parents in the Katrina diaspora (Reid, 2011). After Japan's 2011 "triple disaster," Morioka (2016) found that the pull of employment and financial stability on fathers surpassed their concerns about children's exposure to radiation, creating familial conflict about relocation. A similar disparity was found in a quantitative Indian study in which men were found to be less aware of hazards and less engaged in disaster reduction practices relative to women (Roy, Pal, & Pradhan, 2014).

Findings vary on gender and risk perception (Becker, 2011). Attitudes about emergency preparedness may depend on risk awareness and tolerance, prevailing gender norms, hazard type, and other factors (Kano, Wood, Bourque, & Mileti, 2011). McCright (2010) noted U.S. women's higher levels of climate hazard awareness, while a study from Atlantic Canada found men more proactive in reducing risk of climate-driven flooding and storms (Vasseur, Thornbush, & Plante, 2015).

Gender-focused research on post-disaster displacement often yields findings that converge with those from gender and climate research. For instance, female climate migrants who leave home due to environmental degradation, as well as women forced out of their communities due to sudden-onset disaster, are both vulnerable to violence. A growing body of research demonstrates that climate migration is a gendered adaptation strategy, more often available to men than women and with diverse effects. While climate-driven migration is generally found to undermine women's economic security and increase their family responsibilities when men leave (Detraz & Windsor, 2014), Branco (2009) reported that rural women in Brazil from drought-stricken villages felt empowered by the new lives and livelihoods they built when migrating to nearby cities.

In the U.S. after Katrina, single mothers displaced from their former support networks became solely responsible for negotiating the safety, nutrition, and educational circumstances of their children in unfamiliar neighborhoods and school systems (Tobin-Gurley et al., 2010). Displacement was difficult, especially for older women whose sense of place was shattered (Roberto, Henderson, Kamo, & McCann, 2010). Low-income African American women struggled for housing and employment in the Katrina diaspora (Pardee, 2014), sometimes finding that state policies worked against the cooperation and sharing relied upon by their complex families and households (Fussell, 2012; Sterett, 2012). Yet, women also

found that family ties and shared culture sustained them (Browne, 2015) along with shared resources, food, and money (Litt, 2012).

Gender influences local and global economies differently in times of stability and instability, as international data have long indicated. For women, home-based work, the burdens of seeking relief resources, extended family care, gender bias in reconstruction work, and structural unemployment due to cutbacks in heavily female sectors all reduce income and expand unpaid labor. The dependence of many rural women on sustainable natural resources also carries special weight. In climate-stressed communities, everyone struggles but not equally or in identical ways; for instance, gender-typed responsibilities especially burden women who care for those suffering from vector-borne epidemics (but see Kuriansky, 2016, on young men's need for support on Ebola burial teams).

Disaster reconstruction efforts generally neglect women's call for income support (Bhatt, 2016) and the particular demands upon them. After Hurricanes Katrina and Rita in 2005, for instance, single mothers missed more work days than men, likely due to limited social support in the household, resulting in much higher rates of productivity loss (Zahran, Peek, Snodgrass, Weiler, & Hempel, 2011). Economic recovery programs generally fail to address emotional needs specific to men and boys in a time of econonic retrenchment. But, because male identities and livelihoods are so tightly interwoven, livelihood loss often diminishes men's sense of self. Ritchie's (2012) interviews in fishing communities in Alaska hit by the Exxon Valdez spill revealed the high emotional toll men paid as a consequence of economic, environmental, and cultural loss. Research after Katrina demonstrated how the same disaster may affect groups of men and women differently, based on class, race, and other social and economic factors. For instance, incomes rose after the storm for men, mostly white, in sales and professional office positions (Willinger & Knight, 2012), while undocumented Hispanic male workers were subject to exploitation and abuse (Donato, Trujillo, Trujillo-Pagan, Bankston, & Singer, 2007) and many thousands of African American women teachers and others were laid off (Fothergill & Peek, 2015).

Researchers offered yet more evidence of the elasticity of gender relations post-disaster, in the home and beyond. With more longitudinal data now available, long-lasting shifts in power after disaster are found to be very rare, especially when stereotypic disaster relief and recovery projects reinforce rather than challenge structural gender privileges. Revisiting an earlier study focused on women, Bradshaw (2016) offered a trenchant analysis of rural Nicaraguan men responding to potential gender shifts. Putting men's voices forward yielded a more complex narrative of why and how men may accept or resist the vaunted post-disaster "window of opportunity" for more egalitarian relationships and structures. Clearly, a deterministic one-dimensional lens fails us in understanding the complexity of relationships between women and men in periods of crisis (Cupples, 2007).

11.2.4 Grassroots Organizing

Diversity in women's disaster-relevant organizing was evident in research from around the globe. Ikeda (2009), for instance, pointed to women's traditional community leadership in Bangladesh to explain their crucial role in community-based disaster risk reduction. Broad-based community development projects were enhanced by engaging young women in risk reduction, as Fordham (2009a) wrote of a PLAN project in El Salvador. Most grassroots activism, however, arose after the fact in response to gender violence, economic exploitation, lack of affordable and safe housing, inattention to women's maternal and personal health needs, gender bias in financial compensation policies, and exclusionary practices in recovery programs (Goldenberg, 2010; Pyles & Lewis, 2010).

Local efforts most often emerged through pre-existing women's activist groups, and at times powerful governmental or nongovernmental partners supported them. Fisher's (2009)

study of grassroots organizing around domestic violence in post-tsunami Sri Lanka is one of many examples. The case of Haiti also demonstrated the significance of strong pre-existing anti-violence networks when activists responded to the 2010 earthquake (see Schuller, 2015, on the work of the Commission of Women Victims for Victims). Building on their legacy as health care providers, Japanese women emerged as health activists after the Fukushima disaster who organized meetings, gathered information about radiation, submitted petitions, and used the Internet as a tool to amplify their message (Novikova, 2016). The post-disaster Japanese Women's Network for Disaster Risk Reduction united numerous women's groups in a coalition of response to gender inequalities, including for LBGTQ communities, migrants, and foreign brides.

In some cases, grassroots organizing was broad-based and rights-focused. In the U.S. following Hurricanes Katrina and Rita, numerous grassroots initiatives for recovery more sensitive to women's needs and interests emerged. These organizers included Vietnamese women of different generations, indigenous women in the bayous around New Orleans, social justice activists, African American women preserving historic space and memory, elite women, and others (David, 2017; and, for case studies, see David & Enarson, 2012). In indigenous communities where the environmental, economic, and cultural futures of men and women alike are in imminent jeopardy, the local leadership of women has been critical (Vinyeta, Whyte, & Lynn, 2016; Whyte, 2014).

The disaster work taken up by India's Self-Employed Women's Network, a union of women in India's dominant informal sector, illustrated how women's economic need prompts social action (Lund & Vaux, 2009). Writing from the Caribbean, Soares and Mullings (2009) traced the multifaceted efforts of *Women on the Move*, a labor-based network seeking fair economic recovery following a volcanic eruption in Montserrat. Other efforts focused on the convergence of disaster and armed conflict, for example in Sri Lanka when women's lives were upended by both civil war and the 2004 tsunami and relief efforts failed to respond to both (Hyndman, 2008).

New ways of thinking about "man-made" disasters and men's pro-feminist responses to these events suggested the potential power of alternative, progressive masculinities to help reduce disaster and climate risk (Pease, 2016). Men's grassroots activism around gender and disaster risk reduction was noted by Genade (2016) in her examination of men's groups long active against gender violence. In the Australian state of Victoria, in the aftermath of the devastating bushfires of 2009 and informed by research on men's losses and responses, an innovative Gender and Disaster Task Force arose. Through this task force, women health activists and men in fire service roles collaborated to produce gender-responsive policy guidelines and disaster management, laying the groundwork for further steps toward gender equality and disaster risk reduction (Parkinson & Zara, 2016).

11.3 New Lines of Inquiry

As this review indicates, gender and disaster researchers over the past decade took up such long-standing concerns of disaster studies as risk perception, social vulnerability, intimate relationships, and self-organization. They also brought new perspectives and new questions to the field around the topics of queer studies, critical men's studies, and climate science, each introduced briefly below.

11.3.1 Sexual Minorities

Over the past decade, overt bias as well as social justice concerns inspired new research with lesbian, gay, bisexual, transgender, queer or genderqueer, intersex (LGBTQ), or third gender communities and among those not claiming gender. Examining male risk and exposure to urban flooding, for instance, Gorman-Murray, McKinnon, & Dominey-Howes (2016)

documented exclusionary practices in disaster response experienced by a small sample of lesbian, gay, and transgender populations in Brisbane, Australia. Similarly, Dunn (2016) highlighted the vulnerability to floods and hurricanes of gay men in New Kingston, Jamaica. These "Gully Queens," long forced into unsafe living conditions on the banks of a gully and in storm drains, were subject to violence, stigma, and discrimination at the hands of government authorities. Research from India found that the highly stigmatized *aravani* population—individuals who do not see themselves as men or women but who also do not use the term third gender—were excluded from relief systems after the 2004 Indian Ocean tsunami (Pincha & Krishna, 2009). They did not receive aid although they sustained injuries, and their families were not provided financial relief in the event of their death. In Haiti, the 2010 earthquake destroyed LGBTQ safe spaces, leaving nonconforming women subject to violence and "corrective rape" (Dominey-Howes, Gorman-Murray, & McKinnon, 2014).

In addition to underscoring amplified vulnerability, a queer studies lens also revealed a strong degree of solidarity, self-protection, and creative resilience. In the U.S., Stukes (2014) found that racial minorities, elderly, young, and the homeless within the LGBTQ community lagged in recovery after Katrina, but they also created capacity-building support networks through their faith community. Overton (2014) studied LGBTQ adolescent girls and young women in a New Orleans performance troupe who engaged in gender performances, such as putting on drag shows after Katrina. This afforded them opportunities to positively express their sexual identities even in the difficult post-disaster climate.

Following the 2010 Mt. Merapi volcano eruption in Indonesia, most *warias* (a term that comes from two words meaning woman and man) faced hostility in recovery yet were determined to help, drawing on their work in hair salons to provide haircuts and make-up services to over 200 men, women, and children (Balgos, Gaillard, & Sanz, 2013). In this same vein, Gaillard, Sanz, Balgos, and Toelupe (2016) wrote about agency and capacity among gender minorities in Indonesia, the Philippines, and Samoa. When Cyclone Evan hit Samoa, for example, the *fa'afafine* were able to switch from male to female tasks, using their multiple skills from both genders in the disaster aftermath. In turn, *bakla* youth (a gender minority in the Philippines) became valuable participants in hazard mapping projects, allowing the community to acknowledge their capacities and needs while potentially promoting inclusive development to reduce disaster risk (McSherry, Manalastas, & Gallard, 2015).

Importantly, researchers and others calling for a queer-positive lens in disaster research and practice understand the methodological challenges arising when people's identity may be illegal, misunderstood, or in flux (Rumbach & Knight, 2014). A turn toward new terminology may follow as researchers and advocates push back against binary male/female language that reinforces ways of thinking about gender that obscure critical differences.

11.3.2 Masculinities

In our 2006 chapter, we noted that very few studies inquired into gender and disaster "through the eyes of men." Today, this is no longer true. As findings reported here have indicated, however, much of the emerging research on men, boys, and disaster continues to be conducted from a traditional social vulnerability perspective. This work tends to highlight men's socioemotional needs to the neglect of their gender-based social power and available resources in crises. Shedding light on male experiences is important, and so is interrogating their privilege. Scholars have begun to bring a more critical perspective to questions about how manliness is defined, realized, contested, and changed in disasters. This new line of analysis emphasizes that gender identities are not only cultural and experienced subjectively, but reflect gender regimes specific to time and place that are embedded institutionally, including in disaster management. Turning from gender role theory to

an analysis of gender as a dynamic social system invites more critical analysis of how and why men struggle to resist and transform masculinity in periods of crisis and beyond (Pease, 2016).

Rejecting a notion of monolithic or stable male identity or universal male gender power, researchers examined fraught relationships between and among different groups of men drawing on different narratives of masculinity in emergency services and why this matters for women (Eriksen, 2014; Pacholok, 2013). In Sweden, Ericson and Mellström (2016) highlighted male mastery over core technologies as a privileged platform for dominance, also finding that this dominance was challenged by the new skill sets called for in a profession shifting from fighting fire to preventing fire through community outreach and education.

Austin (2016), reflecting on data about increased gender violence in post-Katrina New Orleans, suggested that masculine privilege was aggressively asserted precisely because this event undermined the many institutional structures previously enabling male dominance. In a post-Katrina social justice movement in New Orleans, Luft (2016) found that diverse forms of male dominance were asserted and contested, with significant responses among women to this dominance. Recent work shows disaster landscapes to be symbolically governed by heteronormative images of powerful, independent, and resourceful men, for example in disaster education and disaster imagery (Preston, 2010; Ali, 2014). Landscapes may also be literally dominated by men, especially when response activities are highly militarized or when post-disaster reconstruction jobs are dominated by men (Tierney & Bevc, 2007).

New questions arise about how male bodies and masculine subjectivities are impacted in environmental crises, and how men in all sexual and racialized communities differently interpret, respond, and engage in disaster response and reconstruction (see Enarson, 2016, for an action research agenda). Reflecting on men and masculinities is already widening the community of practice, for example in social work (Pease, 2014) and disability studies (Sherry, 2016).

11.3.3 Climate Change

The subfield is further stretched by the exponential growth of gender-focused climate research, a field to which gender and disaster research has substantially contributed. Findings from gender and climate researchers parallel many in the gender and disaster canon, especially with respect to risk perception, family conflict, health concerns, shifts in gendered labor, the risk of gender violence, adaptation to change, and migration (for excellent entry points, see Alston & Whittenbury, 2012; Terry, 2009; Mercer, Hore, Kelman, & Gaillard, in this volume). Gendered studies of climate change have shown how the deeply embedded values and practices of dominant masculinities both undergird science policy and emerging technologies (Nagel, 2015), and carry forward a dominant set of philosophical assumptions about gender and the "natural" worlds we inhabit (Moosa & Tuana, 2014). Gender and climate researchers push back with empirical data on women as effective risk managers and responders, again echoing findings from gender and disaster research.

Adapting to new climate realities is a highly gendered and contested process, as challenging as reducing the risk of disasters generally. Importantly, gendered climate studies promote more integrated and holistic approaches to risk reduction on the ground, where the lines between climate and disaster are as blurred as those across genders and other divides. A broader approach may soon help both researchers and practitioners transcend the currently isolated "two solitudes" of climate or disaster research and action (Enarson, 2013).

11.4 Future Research Needs

Our chapter in the first edition of the *Handbook of Disaster Research* urged researchers to: (1) think more about bodies and sexuality; (2) focus on girls as well as women; (3) acknowledge capacities and strengths; (4) look inside the household to examine internal dynamics; (5) think globally about international

patterns; (6) engage gender politics; (7) explore difference using an intersectional lens; (8) study and work with men and boys; and (9) collaborate with women's groups to encourage more participatory and community-driven research (Enarson, Fothergill, & Peek, 2006). A decade later, progress has clearly been made in each of these areas, even as pressing questions remain.

We offer a new set of recommendations below, first regarding data and methodology and then regarding fruitful new topical areas for exploration. First, however, we note that some of the knowledge gaps we identify arise simply from lack of translation across the world's languages. We therefore call for crowdsourced collaboration or other sustained efforts to promote multi lingual cross-learning, and for increased effort to make new findings accessible to the widest possible audience. With respect to research design, we call for more studies using the following approaches:

- Move toward more theoretically informed, empirically rigorous research. Researchers should tap into large-scale data sets to inform their work and design studies allowing for multi-site and cross-cultural research.
- Collect data on gendered processes at multiple points in time. This will help address the limitations of the cross-sectional approach generally adopted.
- Conduct more evaluation research. Organizations active in disasters need evaluation research on gender risk reduction strategies and activities to ensure that interventions work as intended or can be refined to maximize benefit for all.
- Empirical national assessments across all domains of disaster management would identify areas for action and enhance gender-responsive risk reduction. Gender concerns should be integrated into all aspects of state, federal, and tribal disaster management policy.
- Pursue gender-focused citizen science studies. By examining how gender initiatives are created, take root, bloom, or die in various contexts, future generations can learn how organizing strategies may, or may not, affect change in diverse risk environments.

We hope and expect that next generation gender and disaster scholars will strive for deeper knowledge in areas already well developed in the subfield. Based on our review of the literature over the past decade, we offer the following recommendations for further expanding the field theoretically and substantively:

- Bringing gender lenses to the study of climate change and disaster risk is an immediate need, as climate instability increases risk and vulnerability around the globe, entrenches existing power structures, and destabilizes gender relations in challenging ways.
- More explicitly, intersectional scholarship is essential to resist the characterization of gender groups as unitary populations with shared experience. Researchers should seek more specific knowledge about disaster in the lives of indigenous women and men, transgender populations, religious and cultural minorities, immigrants with different status, and those living with different (dis)abilities; seek age-disaggregated data in order to use gender analysis in their work with seniors and youth; and examine class and gender as these cut across race, racism, and racial privilege.
- Researchers should explore how women and men from a range of social locations strive for self-determination and equity in disaster contexts, examining both constraints and capacities, and the possible effects of their efforts on disaster risk at different levels.
- With respect to disasters and social change, more inquiry in more diverse contexts is needed to address such questions as: Are more gender equitable societies more resilient to hazards and disasters? Is it possible to sustain short-lived shifts toward women's empowerment in post-disaster contexts? If so, does this translate into broader societal benefits? How do people's vulnerabilities and experiences in disaster change, if at all, when more egalitarian gender relations prevail?

- More gender-specific studies are needed that move across micro, meso, and macro levels to understand the broader forces that so clearly shape diverse outcomes in hazards and disaster contexts. Theorizing these relationships at different levels of analysis is essential.
- Future research should explore the gendered dimensions of the phenomenon of "risk buildup," where risk is socially produced and amplified over time (Tierney, 2014). For example, how and under what conditions do culturally-specific gender identities and institutions influence disaster risk in diverse environments and hazard contexts? When gender relations in society are more equitable, how do indicators of disaster risk change, if at all?
- Examining disaster management practices and policies from a gender perspective is increasingly important as experience accumulates in this domain. What policies effectively support structural change toward more just and gender-responsive disaster management? How do these best address the challenges raised by race, ethnicity, age, sexualities, social class, and other structural differences? What barriers exist to women and to men, respectively, who seek or initiate change toward more inclusive and gender-just disaster management?
- More studies are needed to better understand how policies, law, and international treaties covertly or overtly privilege women, men, girls, and boys differently in different disaster contexts, and at different levels of analysis. Which international frameworks best promote risk reduction through increased gender equality and women's empowerment?
- Gaining gender-specific knowledge about how new technologies inform new disaster risk communication strategies is important, as is understanding how gendered risk messages covertly and overtly target and/or affect particular groups.
- More gender-focused work is essential on disaster prevention, mitigation, and preparedness as currently most of the findings in the subfield relate to response and recovery.

11.5 Using Knowledge to Change Practice

Academic meetings on gender and disaster topics are no longer uncommon, and practical guidance is readily available on relevant governmental and nongovernmental websites. When the Hyogo Framework for Action was revisited in 2015, regional networks of gender researchers, advocates, and activists drew on science-based knowledge as well as practical experience to advocate for focusing on women's capacities and leadership in the new Sendai Framework. Many in this far-flung community of practice now call for "smart" gender-inclusive responses (Ferris, 2013), which both protect human rights and advance shared objectives in order to reduce risk, as shown in a flood mitigation study from Sri Lanka (De Silva & Jayathilaka, 2014). In this same vein, researchers from Turkey (Özden et al., 2015) have called for a universal culture of disaster management prioritizing gender. Other positive examples abound, including a training course on emergency preparedness and reproductive health informed by research in this subfield (Zotti, Sascha, & Perez, 2016). While the ramifications of new knowledge are not always presented with the specificity needed to aid practitioners (Montano & Savitt, 2016), evidence-informed gender analysis has clearly been taken up to some degree across many domains.

As gender and disaster research is unabashedly practice-oriented (Phillips & Russo, 2012), such indicators of progress are heartening. Yet, studying disasters with a gender lens consistently reveals the negative consequences of ostensibly "gender neutral" disaster management approaches which, particularly for women and girls, effectively constitute a "double disaster" (Bradshaw & Fordham, 2014). International disaster case studies bring this to life concretely (among others, see Dasgupta, Şiriner, & De, 2010; Enarson & Chakrabarti, 2009; Phillips & Morrow, 2008; Racioppi & Rajagopalan, 2016). Clearly, disjunctures exist between gender analysis and progressive action on the ground, reading lists

and good practice guidelines notwithstanding (Berber & Dietz, 2015; Tierney, 2012). Pervasive male dominance persists in Japanese disaster management, for example, despite legal mandates calling for more female representation in core committees (Saito, 2014). In Iran, Sohrabizadeh (2016) found female pathways into lead roles in disaster management short-circuited despite women's demonstrated interest and capacity, including as economic actors in crises.

A frequent concern of the past decade was to better understand why and how disaster management organizations actually do change work cultures to promote gender and diversity in recruitment, training, and retention, as well as policy development, field practice, program monitoring, budgeting, and evaluation. Case studies highlighted numerous common failings (e.g., see Fordham, 2009b; Ginige, Amaratunga, & Haigh, 2009; and the powerful legal critique by Aolain, 2011). In addition to uncertain or contradictory goals, lack of political will, and insufficient resources, barriers to effectively bringing gender into the core of disaster management include heteronormative assumptions (Dominey-Howes et al., 2014), the exclusion of women (Mishra, 2009), and lack of attention to cultural gender norms (Castro Garcia & Zúñiga, 2009). Relief programs specifically targeting women may be resisted by women and men alike (Bradshaw, 2009); similarly, women's customary land rights may decline when these are formalized with the intention of protecting women (Veena & Kusakabe, 2015). Even when documenting failure, these findings offer essential guidance about how to advance more successful change strategies. The broad conditions and processes that normalize disaster injustice, including gender bias, must be recognized and challenged. This is essential social change work for the space and time between disasters (Bhatt, Pandya, & Delica-Willison, 2016).

What else can break the knowledge-to-practice logjam? In the academy, mentors skilled in gender analysis can help bring these findings to next-generation disaster scholars—and the inverse, for researchers can collaborate with gender scholars keen to explore issues around place, land, sustainability, climate, and risk. Dedicated scholarships to support early career gender and disaster researchers are needed, and support for climate and disaster researchers working with a gender lens. Workshops engaging gender scholars and those in disaster-related fields would be a positive step toward action undertaken by any university, department, or foundation. Experts can create training and postsecondary teaching modules around such cross-cutting themes as environmental issues, resilience, human rights, and disaster/climate risk. These issues can also be brought to the fore through social media and policy networks, testimony to elected bodies, think tanks, post-disaster investigative bodies, and other avenues in support of disaster risk reduction (Phillips, 2012). We stress the need for sustained funding, organizational infrastructure, and committed leadership to help apply gender and disaster knowledge to the challenges of our future.

11.6 Conclusion

The subfield of gender and disaster has experienced ongoing and meaningful growth over the past decade. This included stronger theoretical grounding and more diverse methodological contributions. The number of researchers using participatory methods that meaningfully engaged locally-affected women in the wake of disaster, and the emergence of more balanced investigation of the interplay of vulnerability and agency were noteworthy advancements.

Key empirical findings demonstrated that women's health and well-being as well as their lives are at elevated risk, and that negative health effects of disasters on boys and men can be anticipated, too. Exploitation and violence against women continue to be a threat in disaster situations. The findings reviewed also shed light on household dynamics, drew attention to disparate patterns of post-disaster work and community engagement, and highlighted gender patterns complicating recovery. Case studies of gender bias in disaster response systems accumulated, along with studies of women organizing

to push back against exclusion, gendered violence, and economic exploitation in disaster contexts. Our review also emphasized the new work that emerged around sexuality studies, critical masculinity studies, and climate science in the gender and disaster space. We drew the chapter to a close with methodological and theoretical recommendations for future researchers, and guidance for building a more gender-responsive academic and practice culture.

Gender and disaster scholarship continued over the past decade to both contribute to and challenge core ideas in disaster studies, including the concepts of disaster risk, social vulnerability, and resilience. It illuminated the gendered substructures of households, organizations, and communities that so strongly affect mitigation, preparedness, response, and recovery. Researchers enriched the cultural analysis of disasters by highlighting gender subjectivities and practices in everyday lives, and began to bridge gaps between climate and disaster research; they expanded our understanding of families and households in disasters; and also introduced gender as an important factor in the political economy of disasters. Concurrently, gender and disaster scholars offered new knowledge bearing on traditional concerns of the sociology of gender and allied fields, including agency and domination, gender relations and communities in crisis, gendered violence, the gendering of organizations and state practices, and environmental contexts and pressures as forces in social life.

Gender is now firmly on the agenda in disaster research, so we expect these synergies to continue. Yet, significant challenges remain. We must learn from, and share knowledge with, persons of all genders and backgrounds in those nations and neighborhoods most at risk. It is also imperative to more effectively integrate our new knowledge into practice in community organizing, development choices, preparedness guides, mitigation and adaptation budgets, emergency plans, risk maps, needs assessments, and outreach campaigns. We must strive to make gender and social justice the "new normal" in disaster risk management at all levels and across all domains. To get there, a change in leadership and ideology is necessary. The push (from academicians) toward gender-responsive disaster and climate work must be matched with pull (from government and institutional actors) to take the modest steps proposed. We leave readers with the certain knowledge that gender and disaster researchers will continue to seek partnership with practitioners and community members in the pursuit of knowledge that matters—and cautious optimism that this knowledge will be used in ways that matter.

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