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Vulnerability mapping: A conceptual framework towards a context-based approach to women’s empowerment

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1. Introduction

The fact that women’s empowerment (WE) is vital to a better world is well-documented and founded upon immense achievements made by international women’s movements over the last seven decades (International Women’s Health Coalition, n.d.; Inter-Parliamentary Union 2019; UN Women 2018; UNESCO, 2014; United Nations, n.d.; Women Deliver, n.d.; World Bank Group, n.d.; World Economic Forum 2020; World Health Organization. n.d.). The global demand for effective interventions in support of WE is evident in the United Nations (UN) 2030 sustainable development agenda, which lists “achieving gender equality and empowering all women and girls” as the fifth of its 17 Sustainable Development Goals (SDGs) — as well as treating gender equality as a cross-cutting issue within all of the SDGs (United Nations, n.d.). This demand is also reflected by the number of organizations and projects dedicated to WE. A simple Google search by the authors of this paper revealed over 60 international bodies and countless domestic organizations that deliver programs working on WE issues since the 1970s. Despite all the efforts devoted to WE, statistics show that globally, women still experience disrespect, disempowerment, and discrimination across all lines of race, religion, ethnicity, socioeconomic status, and ability (EM2030, n.d.; International Institute for Sustainable Development n.d.). One cannot help but to pose the troubling question of why these countless efforts and projects on WE do not appear to have lasting impacts on the various challenges that women face, nor in eradicating gender inequalities.

While acknowledging the controversial nature of this question and the likely absence of a single, agreed-upon answer, we start this paper with a proposition that the fundamental issues underlying persistent barriers to WE lay in existing intervention recommendations that, while well-intentioned, are too often unidimensional. That is, they fail to completely consider the complexities of their target populations’ situation, resulting in only short-term success, failed efforts, and unintended consequences. India is an important example of this phenomenon, in that there has been a monumental investment in gender equality programs over the past two decades (Ministry of Finance, 2019) but, in general, unacceptably low returns on investment. In 2005, the Indian government instituted a requirement that a substantial portion of the national budget is earmarked as “gender budgeting” to promote gender equality and improve services for women, especially the very poor. In its first year, this amounted to approximately INR 143 billion (US$ 2 billion). By 2018, the Gender Budget accounted for nearly 5% of the national budget, or over INR 1.2 trillion (US$ 17.4 billion). (ibid). However, India’s gender equality score from the WEF Gender Gap Index has only marginally improved, with India receiving a 61.5% gender equality score and ranking 114th out of 134 countries in 2009, while in 2018 only receiving a 66.8% score and ranking a dismal 112th (out of 153 countries) (WEF, 2019). India’s limited progress in WE has also been noted by international organizations, including the UN University World Institute for Development Economics Research (UNU-WIDER) and UN Women (Grown, Addison, and Tarp 2016; UN Women, UN DESA 2019). This is not meant to discount all of the effort made towards WE in India, but rather to suggest that there is certainly room for improvement.

We propose in this paper that barriers to WE persist either because the theoretical frameworks and means of tackling such barriers are sometimes unsuited to the context in which they are applied, or because critical factors are missing in the conception, design, measurement, or best practices of WE interventions. We explore this proposition through a review of WE history, theory, and methodology of implementation. Our goal in reexamining WE in practice is to identify key areas within the field that can be improved upon through the introduction of several conceptual and theoretical constructs from the literature of vulnerability mapping (VM) and assessment as articulated through the climate change and disaster reduction and response fields. We do not expect the reader to accept our proposal as final. Instead, we invite them to explore its plausibility with us, as well as investigate the possible implications for extending dialogues and debates in the WE literature.

We have organized this paper to mirror the logic we used in debating and pursuing our inquiry. We first present evidence – both from...
the literature and humanitarian realms – that signify the importance of WE and how it has become a trending item on respective agendas worldwide. We then revisit the history of WE and present the findings of a systematic review of the WE literature. Building on this background, we identify those elements that have either been widely called upon throughout WE literature as necessary for improving WE, or those elements that are absent from the existing approaches to present the primary gaps in current efforts. From there, we briefly review VM and assessment literature to outline how these methods can fill those gaps. We then present a conceptual framework, including definitions and a theoretical model, that blends these two fields to provide an improved approach to future WE endeavors.

2. Background

2.1. Significance of women’s empowerment

Many of the indicators that comprise gender equality as the fifth SDG are to ensure equal treatment, opportunity to thrive, and the safety and security of women. The UN states: “Providing women and girls with equal access to education, health care, decent work, and representation in political and economic decision-making processes will fuel sustainable economies and benefit societies and humanity at large” (UN, 2017). The role and specific needs of women are also featured in SDGs 1-4, 6 and 14. Furthermore, the UN highlights ending all forms of discrimination against women as a basic human right, as well as a powerful enabler of development as a part of their SDGs, highlighting the need for gender equality to be reached on a global scale.

Despite the immense amount of effort and research that has already gone into projects that contain WE components, evidence shows there remain unacceptable social, political, economic, and physical conditions that affect women excessively. For instance, women and girls, especially in rural areas, are often disproportionately affected by various circumstances that limit or restrict their access to education, decent work, and essential services and resources, as well as inhibit their participation in community involvement and decision making (Malhotra and Mather, 1997; UN, 2017). The factors contributing to such circumstances are diverse, often location-specific, and hinging upon local cultural norms, socioeconomic aspects, political and legal structures, and geographical constraints – among other influences. In India alone, there is a dire need to address the inequalities and disadvantages that women face daily. According to the most recent Indian census, women comprise 48% of India’s population, and yet partake in only a fraction of the overall resources and opportunities (Government of India, 2011). Despite fulfilling traditional roles as primary caregivers to their families—to men, children, elderly, and disabled—women continue to remain the most vulnerable and marginalized population in society. Furthermore, women are not simply a subgroup of disempowered people—women are a “cross-cutting category of individuals” who are members of all disempowered sections of society (Malhotra and Schuler, 2002).

The vulnerability of women stems from various issues—many of which affect women on a global scale—including malnutrition, low education levels, early mortality, female feticide, income disparity, and family violence (UN, 2017). The 2011 Indian census also reported that only 17% of women in rural India were engaged in gainful employment, and only 50% of Indian women were literate (Government of India, 2011). Data collected from India’s National Family Health Surveys (2015–16) have shown a relationship between a woman’s level of education and higher rates of poverty, domestic violence and infant mortality (International Institute for Sciences, 2016). Additionally, approximately 87% of pregnant, rural women in India suffer from iron-related anemia, to which 20–40% of maternal deaths are attributed. (ibid). Further, women continue to have no assured rights regarding inheritance of property, and it is estimated that one in three has no rights over household decisions on spending. (ibid). The above is just a brief overview of the issues that women face daily in India, and which prevents many of them from emerging out of generations of poverty. The global picture is much larger and more complex.

Across the globe, women of all walks of life face discrimination and challenges. Despite the legal, educational, and economic rights that women in developed nations tend to enjoy more compared to developing nations, they too still experience discrimination, lack of adequate political representation, and high rates of domestic violence, rape, and sexual assault. The gender pay gap remains unacceptable in most developed nations, with South Korea in the lead with a pay gap of 37% (World Economic Forum, 2018). The United States ranks 79th in terms of adequate female representation in politics (Inter-Parliamentary Union 2019). Australia and the United States report more than 55% of women have experienced physical or sexual violence from a non-intimate partner (UN, 2011), and Australia, Great Britain and the United States report more than 25% of women have experienced physical or sexual violence from an intimate partner. (ibid). Women in the US have high rates of chronic disease, emotional distress, and breast cancer (Commonwealth Fund, 2018). The 2019 World Happiness Report shows a significant decrease in overall happiness in the US over the last several decades, which is theorized to be linked to feelings of social isolation due to social media usage (Helliwell et al., 2019). A long-term study of middle-aged women from the US found correlations between higher rates of women’s suicide and feelings of social isolation (Tsai et al., 2015). The issue of social isolation has many more facets that have been investigated in terms of physical health and well-being, but the topic merits more attention in a WE context as well.

Achieving a global society in which women are empowered delivers both an improved sense of well-being within women themselves and better global development. Women comprise approximately fifty percent of the world’s population and ensuring that half of the human race has access to basic human rights, decent work, and improved physical and mental well-being not only works towards the UN’s SDG realization, but also potentially decreases the likelihood of international conflict, civil unrest, and political displacement or refuge seeking (UN Women, 2018). It is from this perspective that we discuss below the history and literature of the WE movement to set the stage for introducing a revised theoretical framework.

2.2. A brief history of the Women’s empowerment movement

Modern WE as a concept and movement began in the 1970s, with a grassroots approach that focused on WE as a shift in unjust and unequal power relations between men and women. This original movement focused on raising women’s consciousness and awareness of their rights and humanity (Cornwall, 2016). Since the 1990s, however, WE has become a buzzword concept that governments, non-profit organizations, researchers, development agencies, donor organizations, banks and philanthropists have adopted as a mechanism for development and as an indicator of progress (Batiwala, 2010).

At its inception, WE focused on three main themes: (1) acknowledging that empowerment requires a shift in power relations built on critical consciousness, (2) empowerment as relational – in that women are part of a larger social context, and that any experience of empowerment or disempowerment is relational to her social context, and (3) empowerment as a dynamic process as opposed to a static end state (Batiwala, 2010; Cornwall, 2016; Rowlands, 1995). Another important point brought to the forefront of the early empowerment programs is acknowledging that empowerment is not universal to all women in all circumstances, and that empowerment in one area of a woman’s life does not equate to empowerment in all areas (ibid).

In later iterations, the WE movement shifted towards a development objective, resting upon the premise that WE signifies improved development. This shift in the fundamental understanding of the issue is reflected by a change in approach, away from grassroots transfers in power relations towards a method that emphasizes empowerment in
one or two key areas disseminating to empowerment in all areas of a woman’s life (Batiwala, 2010). An apt example of this is the emphasis placed on an economic empowerment objective, with a focus on interventions such as microcredit loans, women’s self-help groups, the reintroduction of cottage industries, agricultural subsidies, innovations and management schemes, and employment opportunities (Addae, 2015; Malhotra and Schuler, 2002; Raj, 2017). While these interventions have demonstrated increased access to decent work and increased economic rights and proven that these are undeniably important for women; economic empowerment does not necessarily equate to empowerment in other areas of life. This focus on economic empowerment as a “magic-bullet” concept indicates a lack of consideration for a woman’s wider context and can have unintended negative consequences (Batiwala and Dhanraj, 2004). While economic empowerment has received a great deal of attention, it is not the only area that has been targeted by this “magic-bullet” idea. Legal empowerment, specialized educational interventions, and sex workers and contraceptives are a few of the other specialized areas that have also been addressed (Jana et al., 2004).

Recent trends in WE initiatives are still developmentally oriented, but this is shifting incrementally. Experts in the field, such as Naila Kabeer, Deepa Narayan and Srilatha Batiwala, are pushing empowerment workers towards a more holistic and contextualized understanding of how to engage women in empowering themselves. Deepa Narayan’s most recent work, Chup (Narayan-Parker, 2018) reflects upon India’s cultural systems that are barriers to true empowerment, even within India’s middle and upper classes. Chup reveals that even when women are educated, economically secure, and aware of their legal rights, they are still subject to powerful cultural oppression. Likewise, while Narayan’s work focuses on India’s women, she notes that the similarities to developed western countries are difficult to dismiss. There is a need for empowerment initiatives that engage women in personal transformation in addition to economic, educational, legal and other developmental empowerment approaches. Joy Deshmukh-Ranadive has termed this type of empowerment an expansion in “mental space,” and argues that it is the most crucial component of empowerment, as it allows women to move away from constraints (both internal and external) and towards affirmative action (Deshmukh-Ranadive 2006).

3. A systematic review of literature

3.1. Women’s empowerment definitions, theory, and methods

How WE has been approached since its inception in the 1970s is reflected in how it is defined, as well as in some of the most prevalent theories that have been presented in the literature. Various definitions have been proposed, emphasizing different aspects of the empowerment process. These definitions lay the foundation for respective approaches to propose how empowerment is measured and what indicators are used.

In terms of the theoretical approach, empowerment studies often focus on concepts such as agency—which can be understood as the capacity to act in areas of their personal lives and health, their family life, as well as access to resources and achievements or results (Batiwala, 2007, 2010; Batiwala and Dhanraj, 2004; Cornell, 2016; Cornell and Edwards, 2010; Beteta et al., 2006; Kabeer 1999, 2001, 2005; Kabeer et al., 1999; Mason, 2005; Sen, 1992). The relationship between agency, resources, and achievements forms the foundation of most definitions of empowerment, although there are many variations on the understanding of each of these three concepts.

Naila Kabeer focuses on a woman’s choice-making ability, stating that empowerment is: “The expansion in people’s ability to make strategic life choices in a context where this ability was previously denied to them” (Kabeer, 2001). Deepa Narayan notes that empowerment, in its broadest context, is “…the expansion of freedom of choice and action to shape one’s life. It implies control over resources and decisions” (Narayan, 2005). She comments on the fact that empowerment is limited in impoverished populations due to their inherent powerlessness when relating to formal and informal institutions, and that this powerlessness is a culturally systemic inequality. Narayan’s exact definition of empowerment is “…the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives. This definition can be applied to understand and track changes in the unequal relationships between poor people and the state, markets, or civil society, as well as gender inequalities, even within the household” (Narayan, 2005).

Shireen Jejebewo uses the terms autonomy and empowerment interchangeably, focusing on control and access to resources. She defines autonomy as “…the control women have over their own lives – the extent to which they have an equal voice with their husbands in matters affecting themselves and their families, control over material and other resources, access to knowledge and information, the authority to make independent decisions, freedom from constraints on physical mobility, and the ability to forge equitable power relationships within families” (Jejebewo and Sathar, 2001). However, other authors make the argument that autonomy is not equivalent to empowerment, stressing that autonomy implies independence whereas empowerment may well be achieved through interdependence (Govindasamy, 2012; Malhotra and Mather, 1997).

Still more authors include concepts such as amount of influence or external actions that matter to their welfare (Batiwala and Dhanraj, 2004), altering relations of power that constrain women’s options, autonomy, and which adversely affect health and wellbeing (Sen, 1993), and “…a process whereby women become able to organize themselves to increase their own self-reliance, to assert their independent right to make choices and to control resources which will assist in challenging and eliminating their own subordination” (Reller and Mbewe, 1991).

Empowerment can be considered a universal process with several universal components; it must also be recognized that gender inequality or disempowerment, like poverty, is not one dimensional, and can be expressed or experienced in many different forms. Naila Kabeer reflects in her analysis of the UN’s gender equality goals,

“Gender relations, like all social relations, are multi-stranded: they embody ideas, values, and identities...they determine the distribution of resources; and they assign authority, agency, and decision-making power. This means that gender inequalities are multi-dimensional and cannot be reduced to some simple and universally agreed set of priorities,” (Kabeer, 2005).

Kabeer goes on to argue that effective empowerment measures require contextual, participatory approaches. Women must be engaged in identifying what they experience as inequality, and interventions must be contextualized to those specific women’s circumstances (ibid.). Cornwall also identified the need to address context as important to successful WE interventions when evaluating current approaches to WE (Cornwall, 2016). By identifying the context-relevant vulnerabilities that women face throughout their lives, contextualized, optimized interventions can be proposed and implemented to empower rural women in India.

Each of these definitions reflect the various interpretations that authors and authorities in the field have proposed in terms of agency, access and resources. Depending upon the method of implementation, methodology, or approach, the variations in these concepts have an impact on an empowerment intervention. For example, if empowerment is seen as primarily a lack of resources or access to education, an intervention may be designed that provides micro-credit loans and scholarships for girls to attend school. Will these interventions also be able to tackle the cultural, political, or personal factors that inhibit empowerment in a given context? Will it be able to provide the same level of success in other contexts or times? As will be seen in the next
section, there are further challenges involved in empowerment methodologies because it is such a vast and, essentially, ephemeral concept that is tied as much to local culture, contexts and conditions as it is to global or national development measures.

### 3.2. Methods to assess women’s empowerment

While the theory of empowerment has a strong and well-explored foundation that includes several suggestions for measurement methods (Narayan, 2005), the application of practical interventions or programs is inconsistent in approach, quite difficult to replicate, and harder still to measure. As the examples we provide below show, empowerment approaches to implementation and methods for measurement often lack the adaptability required for broad application among varied groups. This makes it challenging to produce, replicate, or scale effective programs beyond their initial implementation.

Empowerment is not a static outcome. Rather, it is a dynamic means of achieving a state of balance and harmony between the genders, and as such, it is often difficult to measure the what and the how of WE due to the inherent complexity of the empowerment process (Malhotra and Schuler 2002). To mitigate over-complexity, measurement indicators tend to focus on one aspect of empowerment at a time. For example, some frameworks evaluate achievements on a national scale, such as political participation, literacy rates, or decreasing maternal death rates (CARE USA, 2014). Other frameworks will look at women’s community participation, and yet others will look at the amount of influence she wields within the household and family units (Alkire et al., 2013; Roy et al., 2018). While this might make practical sense, the results are unable to reflect some of the relational aspects of empowerment across different areas of life or dimensions.

Malhotra and Schuler’s analysis of WE programs reveals six dimensions of empowerment that are commonly assessed at the different levels: economic, socio-cultural, familial/interpersonal, legal, political, and psychological (2002). This conception is similar to Deshmukh-Ranadive’s theory of empowerment spaces, where she argues that empowerment can occur in mental, social-cultural, physical, political, and economic spaces of an individual’s life (2006). The intersection of these six dimensions (or five spaces) with the three contexts or scales (i.e., national, community, or household) typically assessed through empowerment frameworks produces a great deal of latitude in approach and variation in measurement indicators.

In terms of indicators or assessments of empowerment, most conceptual frameworks rely on the three main components mentioned previously: resources, agency, and achievements. This basic model is adapted from Kabeer’s (1999) description of the empowerment process. Resources refer to the pre-conditions present, or natural, social and institutional resources available to women (Kabeer, 1999). Agency refers to an expansion in mental space, and the ability to identify goals and act towards realizing them (Deshmukh-Ranadive, 2006; Kabeer et al., 1999; Mosedale, 2005). Achievements are the outcomes of resources and agency—the realization of goals set, and actions taken (Kabeer, 1999; Malhotra and Schuler, 2002).

Identifying indicators to measure each of these components that can also reflect the various dimensions and their contexts is a challenging task, as there are no single or collection of indicators that definitively state if a woman is empowered at a given point in time. Furthermore, given that variables are context-sensitive, what can measure empowerment indicators in geographic setting “A,” may be quite different than the set of variables used to measure empowerment in geographic setting “B.” Likewise, within the same geographic setting, the variables used to measure empowerment may vary by additional distinctions, such as caste, religion, class, socio-economic status, etc.

As previously mentioned, empowerment is a dynamic, relational process rather than a fixed or static outcome. Due to its dynamic nature, it becomes more practical for scholars to evaluate the various components rather than empowerment as a whole. Mason (2005) outlines four options for measurement as well as critiques on their limitations:

1. Measuring factors that are hypothesized to empower women; for example: paid employment, control of birth control and family planning, higher education, etc. This method is not entirely viable, as factors that may empower some women can also disempower others or the same women under different circumstances.
2. Measuring outcomes, such as fewer child marriages, increased girl education rates, increased access to decent healthcare, etc. While positive outcomes are ideal, it is challenging to demonstrate causation and isolate the specific factors yielding the expected empowerment outcome(s).
3. Observational studies to showcase changes in a woman’s interactions and role within the household. It is argued that this type of measurement may bear the most accurate results, but it is also time-consuming, difficult to capture adequately, and in circumstances where women are most oppressed (i.e., restricted in speech, movement, etc.), may not reveal much of anything due to the nature of their role within the household.
4. Measurement through self-reporting and sample surveys allows for larger quantities of data to be collected but poses problems in reporting distortion due to issues in question framing, privacy concerns, and validation difficulties, to name a few. (Ibid.).

When empowerment initiatives do not take into consideration the complexities of context or disregard the importance of women’s participation in identifying both issues and solutions, WE programs may yield unintended negative consequences for the participants. In a comparison of economic empowerment initiatives across Asia, correlations have been drawn between women’s increased earning power and increased domestic violence in Pakistan, India and Bangladesh, although these findings have not been consistent with other Asian countries (Mason, 2005). Victims of domestic violence can also redirect this type of behavior at other women and children within the household, thus perpetuating the cycle of violence throughout generations (Deshmukh-Ranadive, 2006). Furthermore, the implementation of microfinance loans and self-help groups has, in some contexts, shown a trend of increasing emotional stress in the women who report an increase in contributions to household income (Van Kempen, 2009). This type of negative effect is by no means universal but indicates that further thought needs to be given to how empowerment is approached to include assessments of local cultural contexts that can inform how an intervention could be received.

Another method of assessment are the multiple indices that have been developed to measure gendered empowerment. Some of them, such as the Social Institutions and Gender Index, the Gender Inequality Index, the Gender Gap Index, and the Gender Development Index, aggregate data across several domains, but do not directly measure individual empowerment or disempowerment, and (as are many such scales) are often unable to adequately represent the complex and nuanced situation of a population (Alkire et al., 2013). The Women’s Empowerment in Agriculture Index (WEAI) (Gupta et al., 2019) attempts to address this by measuring at the individual level across five domains relevant to the agricultural sector. The Hunger Project further developed this into a non-sectoral index, the Women’s Empowerment Index (WEI) (Nkwake et al., 2017). These both identify indicators at an individual or household level for empowerment and attempt to capture a wider range of indicators of WE. Although widely celebrated as a more successful means of assessing WE, there are limitations to this approach that should be highlighted. Gupta et al (2019) conducted a study wherein the WEAI scale was adapted to the Indian context. While the researchers found the tool to be useful and adequate for broader domains, they also were forced to heavily adapt and supplement the survey in order to make it relevant to their particular context. Similarly, the WEI scale has been touted as an effective tool for measuring certain aspects of WE but failing to capture more nuanced experiences of
disempowerment that point to root-causes. Some researchers have found that only by heavily supplementing this and similar scales with qualitative assessments have they been able to utilize the tool effectively (Nkwake et al., 2017). This aptly leads to the next point: in another review of empowerment indices, it is noted that a significant problem with this approach to measurement is that, being primarily survey-driven, a respondent may be “boxed in” to a certain selection of responses that may not necessarily reflect their actual experience. This can lead to a sort of deconstruction of complex information, which can result in loss of nuance and deeper understanding (Nkwake et al., 2017). Such studies have recommended qualitative measures to fill in these gaps, but there is a general lack of systematized tools that can account for both the global empowerment indicators and contextualized experiences of empowerment.

3.3. Limitations of current women’s empowerment approaches

Although the global trajectory of improving women’s lives is on an upward swing, this review of literature has revealed several limitations to the theory and methodology involved in both the evaluation of WE and the design and implementation of interventions. The following elements we have identified contain four (the first three) limitations that are inextricably interrelated. However, we list them individually because we believe that each one needs to be examined in isolation in order to understand their impacts upon future WE works.

1. Disregard of context.
   a. This is not a new critique and has been an oft-repeated call for both theory and fieldwork to appreciate local contexts, from the early reforms of sociology and anthropology. Despite the long history of demanding greater sensitivity to context, there is still evidence that many programs or frameworks do not adequately address context. This includes defining WE from within local culture, values, goals, environment, and time. It also includes a broadening of perspective so that all contexts can be appreciated.
   b. In order to address the context-based limitations mentioned in point A, a systematic and holistic framework is needed to approach the many contexts of a woman’s life.
   c. Furthermore, a time-based aspect is needed in terms of the initial evaluation, implementation, and measurement of empowerment interventions, so that empowerment can be addressed as a developmental process for women as well as their families and communities.

2. Inadequate measurement tools to effectively address the complexities reflected in points 1a, 1b, and 1c (above).
   a. Address the inherent measurement issues that are presented by complex relationships between the distinct contexts, dimensions, scales, and indicators that can be evaluated in the context of empowerment over time.
   b. This may seem to imply an inherent deficit on the part of women, the term ‘vulnerability’ in this context refers to the myriad cultural, social, economic, health-related, education-related, environmental, physical and subtle factors that contribute to the WE process or, conversely, a state of disempowerment. The contributions of these factors can refer to either positive support or negative hindrances. It is not the intention of this paper to imply that we are seeking solutions to ‘fix’ women or their problems. Rather, since each woman lives within a unique context, the goal is to better understand the complex factors of a woman’s vulnerability and then leverage that understanding to augment her strengths and provide additional skills and solutions in those areas where she faces the greatest challenges.

3. Overly siloed approaches to implementation.
   a. Many interventions are unidimensional in approach, targeting specific development markers to “activate” empowerment throughout other aspects of a woman’s life.
   b. Interventions are not designed to engage with factors outside of their immediate sphere of influence to identify and mitigate potential unintended consequences that can occur within a particular location’s society, culture, economy, environment, traditions, etc., as well as monitor the effects of an intervention over time.

4. Missing sustainability as an integral part of WE.
   a. Many interventions do not adequately ensure their sustainability over time, in terms of long-term success, adaptability, and replicability.
   b. Likewise, interventions do not always adequately ensure sustainability in terms of effects on the environment and future generations.

By addressing these primary limitations, WE initiatives can work towards encompassing both the critical consciousness-raising elements identified by Batliwala (2010) as integral to sustainable personal empowerment, as well as the development objectives that have focused on driving the economic advancement of women that, as mentioned, can have mixed results in terms of empowerment.

Ultimately, the goal of WE is to bring about positive change in the lives of women, their families and their communities on a global scale while respecting the cultural norms, the values and the integrity of diverse populations. The complication with this lies in that exact point—women are a part of geographically, socially, culturally, politically and economically distinct communities. What may work in one location with one collection of factors may not work in another. This is compounded by vague frameworks, imprecise indicators, and difficulty taking measurements.

4. A potential solution: vulnerability mapping

4.1. Vulnerability and women’s empowerment

To address the aforementioned fundamental challenges, we propose that it will be beneficial to examine the problems and the solutions from another angle. Instead of only identifying an empowerment objective (financial, legal, etc.) to apply to a specific community, one could identify the unique elements that hinder women’s engagement in active participation in that element, as well. This is changing the narrative: What is affecting women negatively—and how can these women move towards an improved state within the context of their own unique circumstances? This approach would allow for context-specific evaluation of factors that contribute to a woman’s vulnerability—or vulnerability mapping. If done properly, such a map would be able to capture both the indicators as well as the inherent challenges in the process of empowerment.

It is important to note here that although the term ‘vulnerability’ may seem to imply an inherent deficit on the part of women, the term ‘vulnerability’ in this context refers to the myriad cultural, social, economic, health-related, education-related, environmental, physical and subtle factors that contribute to the WE process or, conversely, a state of disempowerment. The contributions of these factors can refer to either positive support or negative hindrances. It is not the intention of this proposal to imply that we are seeking solutions to ‘fix’ women or their problems. Rather, since each woman lives within a unique context, the goal is to better understand the complex factors of a woman’s vulnerability and then leverage that understanding to augment her strengths and provide additional skills and solutions in those areas where she faces the greatest challenges.

Another important point to emphasize is that, although this paper refers to empowerment as an instrument of development, it is more about developmental change in the context of social transformation in order to improve women’s lives, and less about reaching development markers for the sake of reaching them. As authors, like Chant (2016) have emphasized, instrumentalizing women to alleviate poverty in many ways goes against the very principles of WE. Furthermore, it is a crucial value of the authors of this paper that women’s opinions, happiness, and contextualized perspectives are incorporated into the empowerment process, and their voices heard and respected.

In order to evaluate the complexity of WE, it is necessary to comprehensively evaluate the many variables which systematically affect it—particularly in order to capture the relationships that each variable has with one another at different contexts. This paper argues that the use of VM and assessment can leverage this type of multivariable, multi-relational evaluation to gain a holistic understanding of the contextualized factors that either hinder or support the empowerment process, and ultimately optimize empowerment interventions based on that information.
4.2. A brief overview of vulnerability mapping and assessment

In order to comprehend how VM can be used in the context of WE, it is important to understand the origins of vulnerability assessment and vulnerability studies. The field is vast and has had varied applications in almost every discipline. However, for our purposes we draw the concept of vulnerability from disaster risk reduction and climate change adaptation frameworks (Bankoff, 2013; Birkmann et al., 2013; Birkmann and Wisner, 2006; Cardona, 2003; Cutter et al., 2008; Hufschmidt, 2011; UNISDR, 2009, 2015; Wisner 2016; Wisner et al., 2004). The disaster management and climate change fields have been developing vulnerability assessment methods for more than eighty years. Their works have provided the base from which many NGOs, government agencies, and philanthropic organizations take inspiration in the wake of natural disasters, industrial catastrophes, and in dealing with the ever-increasing effects of climate change on both developed and developing nations.

Establishing a common definition for the term vulnerability is a challenging task, as vulnerability, like WE, is in an ever-evolving state. Over the past decade, various fields have developed their own working definitions relevant to the context and scope of their work. The natural sciences approach to vulnerability has dealt primarily with the concept that events such as volcanic eruptions, earthquakes, etc., are natural phenomena that humans have no control over. It is also concerned with the geographical components that influence the impact of natural hazards. Thus, to the natural sciences, vulnerability is closely connected with the calculation of probability of such an event happening in a given time period or geographic area and the factors (e.g., soil stability, rate of erosion, climate change, etc.) that will either mitigate or augment disastrous impacts (Cardona, 2003).

The applied sciences understand vulnerability in terms of physical structures and infrastructures (e.g., waterproofing of building foundations, strength of utility lines, construction materials, etc.). This classically scientific discipline considers the fragility of such elements when exposed to a natural disaster, and the approach relies upon quantifiable data, probabilistic modeling, and data estimates to determine vulnerability. As such, it is frequently relied upon by engineering measures, insurance companies, and governments in policy evaluation decision-making processes (Cardona, 2003).

As a related but distinct approach, the social sciences recognize vulnerability as a state that exceeds physical damage in the event of a hazard. The concept of vulnerability must also encompass the population’s ability to cope, respond and recover effectively to a hazard (Cardona, 2003). This understanding of vulnerability recognizes that social, political, and economic conditions of a population (or subsets of populations) determine the extent of their vulnerability in the event of a hazard, and that hazards may affect various locations differently due to discrepancies in these conditions. Furthermore, the social sciences have posited that due to these conditions, many people are pushed into more vulnerable positions because of their marginalized standing—whether social, political, economic, or other. This would indicate that a natural hazard would much more negatively affect those populations (Wisner et al., 2004).

Vulnerability studies focus on day-to-day elements in a community that put it at greatest risk in a disaster event—either primary or secondary impacts, or slow-moving events such as soil erosion or water stress. Vulnerability studies take place in both developing and developed nations, rural and urban communities, and have a wide range of applications. Vulnerability assessment and mapping focus on identifying the location and geographic distribution of such elements and their impacts. The overall goal of a vulnerability map is to evaluate a community’s major resources and infrastructures and how these resources are distributed. It also deals with understanding what underlying factors are at play. These factors include (but are not limited to): structural factors (race, religion, caste, etc.); life-cycle factors (age, disability, transitions in life such as marriage, motherhood, or adolescence, etc.); conflict and violence factors (personal security, war, criminal activities, etc.); infrastructural factors (government, transportation, corruption, etc.); economic factors (unemployment, non-traditional economies, single-income homes, etc.); and environmental factors (climate change, proximity to water, proximity to disaster prone-areas, etc.) (Mileti, 1999; Rashed, 2005).

Traditional methods for assessing vulnerability are typically participatory in nature and require collaborative efforts between subject matter experts and local stakeholders to ensure both local priorities and universal standards are taken into account. In rural areas in developing nations, a technique called Vulnerability Capacity Assessment (VCA) is used by governments, NGOs and development agencies. Some of the most well-known examples of VCA include Red Cross/Red Crescent, GIZ, Oxfam, and among others (GIZ, 2007; Moret, 2014; Palestine Red Crescent Societies, 2006; Turnbull and Turvill, 2012; Ulrichs et al., 2015). VCA activities draw upon local indigenous knowledge holders, expert analysis, and incorporating local stakeholders’ priorities in the disaster mitigation and response process. In developed urban areas vulnerability assessment uses expert analysis, augmented by the use of technology resources such as geographic information systems and input from local first response agencies, and disaster management agencies (Porter et al., 2017; Rashed and Weeks, 2003). The subsequent development of mitigation and response plans are thus based on an informed and contextualized basis of knowledge. These can take different forms depending on the requirements of the location and priorities of the community, but often have elements of both applied and social science approaches.

The United Nations Office for Disaster Risk Reduction addresses all three of these components in their definition of vulnerability: “The conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards.” (UNISDR, 2015). For the purposes of this paper, this is the base definition of vulnerability from which we build our theoretical framework, as it acknowledges all of the disparate components that contribute to vulnerability, including the root causes of vulnerability as identified by several scholars (Porter et al., 2017; Rashed & Weeks, 2003; J. Ribot, 2011; J.C. Ribot & Peluso, 2009) These root causes of vulnerability (social and cultural disparities, lack of access to institutional support or opportunities, and human-constructed inequalities, etc.), also contribute to the time-based component of vulnerability that was described in earlier sections on existing limitations on empowerment theories. To address these diverse and dynamic issues, we will incorporate in our framework a more holistic list of dimensions, a more nuanced operational definition of “hazard” from different contexts (especially cultural components), as well as a temporal consideration. We feel that the cultural and time-based components of vulnerability have been under-appreciated in existing approaches to WE. Time does not just imply preparation for future events or adaptation over time, but an acknowledgment of the importance of time in a more mundane sense, i.e. the effect of seasonal weather, migration patterns, regular cultural events, etc.

As we have shown how VM has demonstrated its utility for several fields, we propose in this paper that VM can also directly be utilized to address the limitations identified in WE approaches previously described in this paper. Table 1 below summarizes both the limitations and how VM can be used to address them. The table underpins the conceptual framework that we will detail later.

5. Adapting vulnerability mapping and assessment to evaluate women’s empowerment

In order to translate a system or approach from one field to another, some adaptations must be made. While disaster relief and climate change focus on the effects of a hazard or stressor impact, in the context of WE there is often no single stressor, but rather a multitude of stressors and circumstances that coalesce into hindrances to WE. To start
adapting the VM approach to apply it to the assessment of WE it is necessary to establish a system of definitions which clarifies the connection between women’s vulnerability and the empowerment process and elements of empowerment that VM must address. Presented below are a set of definitions identified and reworked for the purposes of the proposed approach to incorporate the concept of vulnerability into WE. We have drawn on accepted terms and concepts in both the existing vulnerability literature and WE theory to drive these definitions. Fig. 1 is a visual representation of the following concepts and definitions. (Rashed et al., 2018).

This paper defines Women’s Empowerment as “the process of increasing women’s choices and capacity to make discerning decisions towards sustainability and resilience.” This definition of empowerment rests upon the definitions provided by such authors as Nairn Kabeer, Deepa Narayan, Shireen Jeejeebhoy, Anju Malhotra, Srilatha Bhatiwal, Cornwall; Cueva Beteta, and Amarta Sen, drawing upon concepts from each of them, and incorporating a few new complementary components from VM and assessment. An in-depth explanation of the key components (underlined in the above definition) is presented below.

As mentioned elsewhere in this article, empowerment is not a static outcome, but a process which emphasizes the holistic nature of empowerment rather than focusing on a final destination. The static outcome perspective can neither account for the temporal component, nor the nuances that can be found in the intricacies inherent in the study of empowerment. These intricacies encompass the understanding that women must find and build the inner resources in order to engage with

### Table 1
Summary of Women’s Empowerment Limitations and how they are addressed by Vulnerability Mapping.

| #  | Women’s Empowerment Limitations                                                                 | Vulnerability Mapping Solutions                      |
|----|-------------------------------------------------------------------------------------------------|------------------------------------------------------|
| 1  | Disregard of Context                                                                            | 1a) VM is fundamentally contextual and geographically based, with a focus on understanding impact factors – both positive and negative. In this regard, VM provides a foundation for evaluating factors that inhibit or support WE in a given location, and for suggesting context-sensitive interventions accordingly instead of a “one-size fits all” solution based on theory. |
|    | 1a) Many programs or frameworks do not adequately address context, including defining WE from within local culture, values, goals, environment, and time. | 1a) VM provides geospatial containment of WE factors in a given location. This builds upon both physical and non-physical contexts, capturing a wide range of variables across each of the areas impacted by or impacting WE. Moreover, the mapping process itself generates spatially explicit measures (e.g., distance proximity, spatial connectivity, geographic association, etc.) that are important to the understanding of WE and otherwise difficult to generate by other approaches. |
|    | 1b) Development of a systematic and holistic approach that can account for the many contexts of society along with the various aspects or dimensions of empowerment that impact a woman. | 1b) VM is a direct application of systems thinking. While VM does focus on a community as a whole, it gives equal attention to its constituent parts and views the community as a hierarchy of nested systems that influence each other (i.e., households made of individuals, communities made of households, etc.). As such, a VM approach can be adapted to the need for a holistic approach to evaluating WE, and further highlights the contextualized approach needed to effectively evaluate and improve WE circumstances. |
|    | 1c) Incorporating a time-based aspect into the initial evaluation, implementation, and measurement of empowerment interventions | 1c) Vulnerability assessments address the time-based component of an impact or stressor, which can be adapted to understand the changes that take place in the empowerment process over time. In fact, as the paper shows below, changes in WE status are defined by the direction of change in the vulnerability status over time (whether they are positive changes or negative changes). |
| 2  | Inadequate measurement tools                                                                     | 2a) Existing tools are not sensitive to the complex relationships between the distinct contexts, dimensions, scales and indicators of empowerment; |
|    | 2a) VM provides geospatial containment of WE factors in a given location. This builds upon both physical and non-physical contexts, capturing a wide range of variables across each of the areas impacted by or impacting WE. Moreover, the mapping process itself generates spatially explicit measures (e.g., distance proximity, spatial connectivity, geographic association, etc.) that are important to the understanding of WE and otherwise difficult to generate by other approaches. |
| 3  | Overly siloed approaches to implementation                                                          | 3a) Many interventions are unidimensional in approach. |
|    | 3a) As an extension of the systems thinking approach, VM provides a thorough assessment of the relationships (i.e., feedback) between variables, which makes it possible to understand the interdependencies of variables. | 3b) Interventions are susceptible to causing potential unintended consequences. |
|    | 3b) By recognizing the complex relationships and interactions between variables, researchers can more easily identify and avoid unintended consequences in intervention practice; for example, the resistance of men to WE due to disruptions in household power dynamics without adequate support. |
| 4  | Missing sustainability as an integral part of WE                                                    | 4a) Many interventions do not adequately ensure their sustainability over time. |
|    | 4a) Many VM methods originated from the sustainable hazard mitigation paradigm, which rests upon the following six pillars of sustainability: | 4b) Nor sustainability in terms of effects on the environment and future generations. |
|    | • Environmental quality – implies that human activities in a particular locale should not reduce the carrying capacity of the ecosystem for any of its inhabitants. |
|    | • Quality of life – entails many issues such as income, education, health care, employment, legal rights, and other standards that local communities should define. |
|    | • Plan for disaster resiliency – a locale is able to withstand any extreme event without suffering devastating losses. |
|    | • Economic vitality – recognizing that vital local economies are essential to tolerating damage and disaster losses. |
|    | • Inter- and intra-generational quality – not precluding a future generation’s opportunity for satisfying lives by exhausting resources in the present generation, destroying necessary natural systems, or passing along unnecessary hazards. |
|    | • Participatory process – adopting a consensus-building approach among all the people who have a stake in the outcome of the decision being pondered (Rashed, 2005). |
the empowerment process. Choice becomes a medium through which women have the ability to actualize these inner resources externally. Furthermore, the inclusion of increasing a woman’s choices speaks to the fact that many women, due to a variety of reasons, do not have options to choose from. This is sometimes because of social, cultural, or legal restrictions, but also reflects the reality that women who live at or below the poverty line have limited options to make decisions outside of those which support meeting basic needs such as food, shelter and clothing. In reality, this increase in choice not only represents a wider range of options, but also the discernment or capacity to choose what might be best for their own situation and aspirations.

In this definition, capacity reflects the ability to translate the inner engagement with empowerment into action. This can be reflected through making choices, voicing opinions in the household, and community engagement, among many other avenues. In other words, capacity is the leveraging of skills and confidence into actions that are seen as beneficial to themselves and their communities. Decision making is often considered the crux of WE (Narayan, 2005). It is often referred to as meaningful decisions, or decisions that affect the state of their lives (Kabeer, 1999). This definition includes both of these components and expands upon them to include the need to equip women with sufficient education and information to make decisions based on knowledge rather than relying solely upon traditions or the influence of others—thus the ability to discern throughout the decision-making process becomes crucial.

The UN's SDGs have become a de facto guide for approaching development work, especially in contexts like India. Sustainability, as such, is a theme that recurs throughout the history of WE, but not consistently and often leading to disagreements between researchers of different fields (Chant, 2016). The introduction of the SDGs and the inclusion of WE as a cross-cutting theme did much to cement the role of WE in all levels of sustainable development. We would like to reiterate this, and argue that it is impossible to separate sustainability from WE. Fundamentally, it is impossible to attain WE without attaining sustainability along with it, and vice versa, as the two are intrinsically interlinked. Likewise, women are also the most vulnerable to the consequences of poor sustainability, with studies clearly demonstrating how gender is a primary mediator for how demographic, socioeconomic and agro-ecological contexts are experienced—with women bearing the brunt of devastation due to climate change (Arora-Jonsson, 2011; Rao et al., 2019).

There are two considerations for the central role of WE in sustainable development: 1) It has been documented that WE leads to the realization of the UN’s Sustainable Development Goals (Quisumbing, 2013; Taulobong et al., 2016). 2) A large percentage of the world’s female population are caretakers of society: especially the natural environment, in addition to playing the role of mother, role-model, primary caregiver to the elderly and infirm, and teacher to future generations (Rao et al., 2019). In these two roles, empowered women are able to steward sustainable practices as well as ensure the values of sustainability are passed onto future generations. At a more philosophical level, WE is the pathway to gender equality, or a state of sustainable balance and harmony between the genders, which is a human rights goal in and of itself.

The last concept in the definition is resilience, which reflects a woman’s ability to recover efficiently from negative impacts or stressors that occur in her life, thus improving both her life and the lives of her family and community, as well as working towards the sustainability and resilience of future generations. Resilience is a term that carries with it all of the complexities of society in general (Folke, 2006; Timmerman, 1981). Within the concept of resilience is the individual and collective ability to withstand and recover from destructive events or processes. In some ways, resilience implies self-reliance in that a ‘resilient individual’ has a greater ability to navigate through negative occurrences. This approach to resilience comes from heavily critiqued positions on sustainable development that shift the responsibility for social justice and protection from state governments to the individuals themselves (Comfort et al., 2010). In another sense, resilience also requires strong networks and structures that can distribute the cost of destructive events or systems so that the collective can more easily recover (Folke, 2006). This more communal approach accounts for the wider social systems in the measurement of resilience, as they all play a role. It is this latter sense of resilience that most accurately reflects our proposed framework.

Beyond an explanation of each key concept, it is possible to map the concepts to the adaptation process that is detailed further below. The process of empowerment takes place in various contexts and dimensions. Choice, decision making, and capacity are products of empowerment domains. Sustainability and resilience both inform and are produced by the interaction between empowerment contexts, domains and dimensions.

VM allows the dynamic process of WE to be evaluated holistically by capturing the state of WE at the point of time at which it is mapped, and from there evaluate changes at different points in time. The definition of WE provides the reference point from which the progression of WE over time can be measured through the changing states in the concepts of choice, capacity and decisions that women are able to engage in. It is important to note here that the change may reflect either an increase or a decrease in empowerment. While it may appear to be disheartening to recognize a decrease in empowerment, it is actually vitally important information, as it illuminates the true nature of the factors that inhibit empowerment. The value that comes out of this mapping is in understanding the relationships between the various factors, constraints, indicators, intervention impacts, domains, contexts and dimensions. Fig. 1 below conceptualizes the relationship between these terms. The definition of each term is outlined below.

These concepts are explored further in the modified definition of vulnerability proposed by this paper in the context of WE, which defines Women’s Vulnerability as “a state of women’s empowerment at a given point of time, determined as the net product of interactions between multiple factors, constraints, and intervention impacts shaping women’s choices and capacity to make discerning decisions across all the domains and contexts of women’s empowerment.” These multiple factors, constraints, and impacts are explained in much more detail in the following sections.

5.1. Framework components: Definitions and explanations

**Dimensions**: A WE dimension represents an area or aspect of life in which a woman is more empowered or more vulnerable, or any combination of both. This paper suggests six dimensions: (1) Environmental Quality; (2) Economic Vitality; (3) Education & Skill Development; (4) Health; (5) Social, Political, Cultural Environments; and (6) Safety & Security. The six dimensions have been identified from both the VM field and WE theory and are intended to encompass all circumstances of a woman’s life. These six dimensions are deeply interconnected and affect one another in complex ways. There are also layers of sub-dimensions contained within each, that further affect other dimensions and sub-dimensions.

**Domains**: Beyond these six dimensions, four domains of empowerment have been recognized as integral to the empowerment process. Each of the four domains is a collection of elements that influence, support or infringe upon empowerment. These four domains are also complexly interrelated, and changes in one domain may changes in other domains. Furthermore, each of these domains is context specific. They may have different meanings at different levels of society, leading to different decisions being taken and different understandings of a situation. These domains are:

* Access Domain: The range of elements (including the right or privilege) impacting one’s, group’s or community’s ability to obtain or make use of opportunities related to women empowerment.
tandem in order to gain a holistic perspective of a woman relationship between measurement and context be considered in context require that both individual levels of context as well as the level at which WE can be observed or measured.

The inherent dynamics that occur specifi
cally at that context. It is important to note that the ‘smaller’ the context is the more frequently it is a component of a ‘larger’ context, and therefore is influenced by the impacts of an event or decision or norm that takes place at a ‘larger’ context. For example, an individual woman’s opinions on educating her daughter would be considered “individual context”, but when taken in tandem with her household context, is only one part of the equation, and the larger household context will most likely be more influential in the decision-making process. Similarly, community norms, an even larger context, will help to form household opinions and norms. This is one of the reasons that measurement of WE is so difficult, and why WE is so often measured only at one level of context.

Factors: These are elements or processes that leverage WE at a given context to achieve potentials (or higher levels of empowerment). There are two primary types of factors: resistance and resilience factors. Resistance factors increase a woman’s ability to maintain psychological, financial, social, health and welfare balance and to make informed decisions when faced with external shock or stressors. Resilience factors increase women’s speed of recovery from stressors and difficult circumstances. Both of these factors operate and exist within and between the four empowerment domains detailed above.

Constraints: These are elements or processes that restrict women from achieving their potential (or higher level of empowerment) at a given context. Similar to factors, constraints are both resistance and resilience related, playing the same roles in her ability to make decisions and recover in the face of hardships. Again, they also exist and operate within the four empowerment domains.

**Interventions:** They refer to elements, events, processes, and/or actions resulting in a change within the empowerment domains and their interrelations. Interventions in this sense refer to external forces, not necessarily intentionally designed activities facilitated by an NGO or government agency, but any type of decisions, actions, or life changes that affect a woman’s empowerment domains within a certain context. The response to the intervention is the resulting impact or feedback.

**Impact or Feedback:** It refers to the changes that occur within and between empowerment domains due to an intervention. Impacts and feedback can have negative or positive results, which can be immediate or delayed. This type of impact or feedback can lead to either an increase or decrease of the overall status of WE within a given context. **Indicators:** These are the criteria used to measure factors, constraints, and impacts within or between empowerment domains at a given context.

### 5.2. Considerations for implementation

Given the immense complexity of women’s empowerment as a general field, any program of implementation will require a rigorous and thorough approach. This paper identifies the following core values

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**Fig. 1. Conceptual model of women’s vulnerability.**

- **Opportunities Domain**: The range of resources or assets (material, financial, human, social, political, etc.) that are available to empower individuals, groups, or communities.
- **Awareness Domain**: The range of elements that reflect one’s, group’s or community’s consciousness, knowledge and understanding of factors, constraints, and processes surrounding WE.
- **Mental Space Domain**: The range of beliefs, norms, or values held by individuals (e.g., cognitive model) or groups or entire society (e.g., culture or tradition), which affect attitude and behavior typically at the subconscious level towards elements or processes influencing women empowerment. This domain concept is drawn from Joy Deshmukh-Ranadive’s empowerment framework (Deshmukh-Ranadive, 2006). Mental space can be considered the most important domain, as it is only when there is an increase in the mental space domain that the other three domains can be leveraged effectively. Deshmukh-Ranadive explains it:

  “Mental space consists of the feeling of freedom that allows a person to think and act. An expansion of this space implies a change in perceptions, leading to a feeling of strength. Mentally there is a movement away from restriction and constraints, which facilitates action in a positive direction. Mental space facilitates “power within.” The most important condition for empowerment to take place is an expansion of this space implies a change in perception, knowledge and understanding of factors, constraints, and processes surrounding WE. These are elements or processes that restrict women from achieving their potential (or higher level of empowerment) at a given context. Similar to factors, constraints are both resistance and resilience related, playing the same roles in her ability to make decisions and recover in the face of hardships. Again, they also exist and operate within the four empowerment domains. Interventions in this sense refer to external forces, not necessarily intentionally designed activities facilitated by an NGO or government agency, but any type of decisions, actions, or life changes that affect a woman’s empowerment domains within a certain context. The response to the intervention is the resulting impact or feedback. Impact or Feedback: It refers to the changes that occur within and between empowerment domains due to an intervention. Impacts and feedback can have negative or positive results, which can be immediate or delayed. This type of impact or feedback can lead to either an increase or decrease of the overall status of WE within a given context. Indicators: These are the criteria used to measure factors, constraints, and impacts within or between empowerment domains at a given context.

5.2. Considerations for implementation

Given the immense complexity of women’s empowerment as a general field, any program of implementation will require a rigorous and thorough approach. This paper identifies the following core values
as guiding principles and enduring beliefs for the successful implementation of any action or effort aiming at improving the status of WE.

- **Societal Good**: The ultimate goal of WE is to bring about a fundamental shift in society for the good of all — men, women, society and the environment. This is the number one consideration that must be taken into account when approaching WE through research and implementation. No woman lives in isolation – she is always in connection to others.

- **Sustainable**: In a similar manner, it is important to consider sustainability when considering decision making, designing interventions, producing goods, or even researching WE. As mentioned in the definition of WE, WE can be a powerful path toward attaining global sustainability and development, but at a personal level sustainability leads towards self-reliance in women. Sustainability also leads towards increased development, gender equality, social change, and environmental considerations.

- **Systems-Oriented**: Systems-orientation, in this context, refers to using a systems-thinking approach to evaluate the complex dynamics of WE holistically. As mentioned previously, one of the primary issues that WE evaluation faces is the use of proxy indicators or a prescriptive method simply because WE is such a difficult, complex and nebulous concept to measure. Systems thinking by design deals with complexity and can be employed to capture the vast components and their relationships to generate the holistic understanding needed of existing vulnerabilities and strengths, as well as the impacts of any interventions or solutions.

- **Participatory and Inclusive**: It is important to remember that the empowerment process is about women engaging and participating in their life situations in a more dynamic manner. This requires that any approach incorporate women’s opinions and ideas into the process. And while WE ostensibly focuses on women, it is impossible to exclude the men in their lives, their children, and the communities they live in. All must be taken into account in order to succeed. This is inherently linked to the previous point of being systems oriented.

- **Transparent and Authentic**: Given that WE is a universal issue it is of no benefit to anyone if successful measures towards empowerment are not made public and available in a transparent manner. Furthermore, it is vital to the success of any endeavor to establish a level of trust — both with the women being worked with and the world at large. This level of trust should take into account respect for all opinions: those of individual women, their communities, as well as in reporting results to the public and academic communities.

- **Accountable**: Those undertaking a WE endeavor need to maintain a level of accountability. Similar to the previous values of transparency and authenticity, this includes being accountable to the women, their families, and their communities, as well as to the information being shared through publications and studies. Accountability becomes crucial when considering the sensitive nature of the empowerment process within social and cultural norms across all geographic contexts.

- **Innovative**: Innovation in WE refers to using science and technology to better capture, understand and model the problems and issues (factors, constraints, intervention and their impacts). Innovation also means identifying effective ways to equip women and communities with relevant, contextual knowledge on WE issues, and designing and delivering programs that keep all members of the community engaged, productive and creative in the way they approach WE challenges.

6. Discussion and conclusion

The authors started this paper with a question: Given the tremendous efforts towards women’s empowerment and gender equality, why do there appear to be few lasting impacts on the various challenges that women face? The paper offers a discussion on the possible answers through an exploration of the history, definitions, theory and methodologies that WE literature and evidence may provide. The discussion highlights a number of important structural issues that are currently not addressed by WE in mainstream development efforts. These include disregard for context; inadequate measurement tools; overly siloed approaches to implementation; and a disregard of sustainability as an integral part of WE.

We believe that answer to the question posed above can be found in fundamentally shifting the approach to WE through some key considerations: approaching the topic from a holistic, contextual perspective; identifying those factors which inhibit a woman’s empowerment as well as areas of strength, and optimizing the design and implementation of future WE interventions. This is not a new proposition, and is one that has been argued now for decades; however, when one examines WE interventions in practice, it becomes clear that far more contextual sensitivity is required. The disaster management and climate change fields have been working with multivariable problems for decades and have developed methods and solutions that are able to encompass social and cultural human factors which exacerbate natural disasters through VM. The use of VM for WE can provide a path forward by aiding in capturing more details of the various contexts, domains, and dimensions that a woman experiences daily, as well as the relationships between them, ultimately revealing the complex system that a woman exists within and areas that require attention, and through this address the four main limitations listed above. This paper is a first attempt to discover how improvements may be made by proposing a conceptual method for adapting vulnerability mapping and assessment to the unique nature of WE, including proposed definitions that integrate the two fields and some general considerations for implementation.

This foundation is built on the field experience of the authors, a study of existing approaches, and the expertise of leaders in disaster management. The definitions presented express WE in terms of change in the status in women’s vulnerability over time in addition to spatial context. The change can be both positive (implying decreased vulnerability or empowerment) or negative (implying increased vulnerability or disempowerment) at a given point of time. To capture the change and its trajectory, one needs to simultaneously address multiple dimensions of empowerment: health; economic vitality; environmental quality; culture, society and politics; safety and security; and education and skill development. These dimensions represent the mediums through which vulnerability is manifested and can be mapped and measured in a given context and a given point of time. The process of empowerment itself (that is, a change in women’s vulnerability status over time) takes place in the four domains of empowerment: access, awareness, opportunities, and mental space. It is the place in which those who seek improvement in WE should focus their solutions. Finally, the paper introduced the concept of WE contexts (individual, household, community, etc.). Contexts represent the level or “scale” at which WE is observed. WE domains and dimensions are context-dependent, which means the factors that influence change in WE and the way they are manifested will change by the changing level of observations.

In an initial attempt to articulate the interplay of the contexts, dimensions and domains and to explain how the adapted system works together, the paper presented an explanation of the mechanisms of WE. These include the concepts of impacts and feedback, factors, constraints, and interventions. A systematic approach to evaluating empowerment will require a thorough understanding of these mechanisms over time. Likewise, any attempt to map women’s vulnerability in a given point of time will need to look at these elements as a means of measuring vulnerability. All of these components together comprise the Advancing Women’s Empowerment through Systems Oriented Model Expansion (AWESOME) framework.

Given that the AWESOME framework offers a proposed
methodology to the study and measurement of WE, the next logical action calls for empirical testing to validate the approach in various contexts. The framework’s definitions and conceptualizations of the relationships between WE and VM require further testing and translation into replicable and reliable methodology to demonstrate usability across contexts. The research lab that the authors are associated with is currently in the process of further empirical testing, although due to Covid-19 restrictions, progress has been greatly slowed. Nevertheless, the conceptual framework indicates the potential to successfully engage women in ways that will honor their voices and contexts, prioritize their well-being, and ensure the sustainability of both their physical environments and within their own empowerment processes. Gaining an understanding of the factors that inhibit or support a woman’s state of empowerment may enable interventions to be optimized, so as to better avoid the types of short- or long-term, negative repercussions. As this is currently a conceptual framework, the empirical limitations of this proposed approach are unknown. It is clear, even from this point, that it is a process-intensive approach, requiring longitudinal monitoring and detailed data collection. This may be prohibitive to some organizations. However, the authors see great promise in the potential it offers and hope to advance knowledge in this area to improve intervention design and policy development.

CRediT authorship contribution statement

Christie M. Gressel: Conceptualization, Investigation, Methodology, Writing - original draft, Writing - review & editing. Tarek Rashed: Methodology, Writing - original draft, Writing - review & editing. Laura Aswati Maciuika: Writing - original draft, Writing - review & editing. Srividhya Sheshadri: Conceptualization, Investigation, Writing - original draft, Writing - review & editing. Christopher Coley: Conceptualization, Investigation, Writing - original draft, Writing - review & editing. Sreeram Kongeseri: Conceptualization, Writing - review & editing. Rao R Bhavani: Conceptualization, Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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