

### **Famine in Tharparkar: An Examination of Risk, Vulnerabilities and Social Crisis**

**Dr. Siddique Akbar**

[ms\\_akbar41@yahoo.com](mailto:ms_akbar41@yahoo.com)

Department of Sociology, Institute of Social and Cultural Studies, University of the Punjab, Lahore-Pakistan

**Dr. Bushra Yasmeen**

[bushrayasmeen@gmail.com](mailto:bushrayasmeen@gmail.com)

Department of Sociology, Lahore Leads University, Lahore-Pakistan

#### **ABSTRACT**

Pakistan has been facing diverse kind of environmental challenges. These challenges mainly include recurring droughts, floods, dengue, coastal erosion and desertification. Drought has been a recurrent phenomenon in the sandy district of Tharparkar of Sind province. Recently this spell of drought that started in 2013 turned into deadly famine that invoked a grave humanitarian crisis for the local communities. With the help of intensive literature review, the present study examines the underlying social, economic, political and infrastructural vulnerabilities that interact with a natural phenomenon like drought and transform into human catastrophe. Policy options are given at the end of the paper.

**Keywords:** Drought; natural disaster; infrastructural vulnerabilities; Man-made disasters; Risk drivers

#### **INTRODUCTION**

In the Tharparkar district of Sindh Province, a drought induced famine is playing havoc with the life of its inhabitants since the inception of year 2013. About 175,000 families have been affected by this environmental crisis. More than 300 malnourished children died and a vast majority of the Thari families along with their livestock and other necessary household accessories had to migrate to barrage area so that they could get water to sustain their life. The famine caused not only the death and morbidity of human beings but also caused the perishing of livestock and wild life of the famine hit area. Livestock is the major source of livelihood for Thari families. The drought led to death of a large number of sheep, cows, goats, camels due to non-availability of water and fodder. Scores of peafowl were condemned to death due to shortage of water and related diseases. While I am writing this paper, a large number of children are drifting towards unnatural death due to malnutrition and famine related morbidities. Due to hard pressed socioeconomic conditions forty two people have been reported to commit suicide this year which is biggest suicide rate committed in one year.

Tharparkar is one of the highly susceptible drought prone areas of Sindh province (Herani, 2009; Sindhu, 2014). This is a desert type rural area stretching over more 19,000 square kilometers. Only nine villages of this district are located in the command of barrage areas whereas the rest 166 villages are dependent upon the rain water to grow the food and fodder for their livestock (Murtaza, 2014). Drought is recurrent phenomenon in this area and it is facing this situation since 2013 receives minimum rain. After every two or three year a drought like situation emerges that leads to acute shortage of water and food.

However the worse situation of breakdown of livelihood sustenance observed this time was never seen before (Sindhu, 2014). The vulnerable section of the population is seriously affected by such situation. Particularly, pregnant women and children are mostly affected (Dawn, 2014). Previously, in 2001-2004, this district suffered from worst from of drought.

Drought is a creeping disaster and silent killer (Anjum, 2012). It is a complex natural phenomenon has no definite end and starting point that may hit the human settlements slowly and in unnoticeable way (Ahmad et al., 2004). Ultimately this disaster converts into a social catastrophe. Persistent drought like situation since last three years has eked out a famine like situation due to shortage of the rainfall. Nonetheless, a huge amount of scientific literature suggests that the conversion of a drought into famine is not an act of nature but a socially induced phenomenon. It is not the drought which is responsible for human misery and sufferings but the famine that has assumed the form of social crisis. Meteorological drought is a climatic phenomenon. It ushers in a substantive reduction in rainfall. However it is not a hazard per se. This drought converts into hazard when it translates into agriculture and hydrological drought. It is invisible risk that significantly impacts the rural livelihoods, agricultural production and overall economy of the nations (UNISDR, 2012).

Researchers contend that natural hazards interact with the underlying risk drivers to transform into a disaster (Wisner, 2003). There are many demographic, geophysical, social and apolitical factors that interact to create a disaster like situation. So the disasters arise due to vulnerabilities inherent in human societies and not solely and act of God or nature. Although scientists divide disaster into natural and anthropogenic, yet this division is vanishing with the advancement of scientific literature on disaster studies. Looking at the disaster through natural and man-made lenses is becoming outdated. A natural disaster may interact with societal factor to cause a technological or man-made disaster. So the disasters have become now a “cascading” event (May, 2007). A natural phenomenon may cause the technological failure while human activities may cause the damage to natural environment that can make them more vulnerable to environmental risks.

As compared to other disasters, risks associated with the drought are poorly managed and badly understood (UNISDR, 2011). Unveiling the underlying risk drivers that transformed the drought into famine is the Tharparkar district of Sindh province is of important policy implication. This article rests on the thesis that famine in

this district was due to societal failure and socially created phenomenon and not the act of nature or God. These underlying societal factors are responsible for such catastrophe. The drought has transformed into famine because the root causes of the risk and social crisis went unnoticed.

### RESEARCH METHODOLOGY

There has been an acute dearth of literature on underlying risk factors related to famine crisis. This paper singularly concentrates on the conditions of famine in the Tharparkar district of Sind province of Pakistan. An extensive literature review has been conducted to unearth the underlying risk drivers and unsafe social conditions that led the transformation of drought into a deadly famine.

Vulnerabilities are socially created. The risk of being susceptible to different vulnerabilities and disaster contains social, economic and political implications. The very social and economic position of individuals plays a critical role to extending their vulnerabilities (Irshad, 2013). Different social groups are affected disproportionately more by extreme event such as women, children, elderly, minorities, frail, refugees and people with disabilities (Wisner, 2003). Beck (1992) traces the unequal distribution of risk in the realm of modern development strategies. He argues that the social production of unequal development produces the new risk. The unequal wealth produced by the development also produces unequal risks. Some sections of the society will have to accept more risk as compared to others. Being social in nature, risk is not equally divided over all the members of the community, some people are more “at risk” as compared to others (Boyce, 2000). Vulnerabilities are socially constructed and cause to transform a hazard into disaster. Vulnerabilities are broadly categorized into economic, environmental, physical and social (Shreve and Kelman, 2014). Here in Tharparkar, people are more prone to risk because of underdevelopment strategies like dispossession, political neglect and social exclusion not because of unintended consequences unequal development. Existing gaps in development and growth population lead to construction of new risks United Nation International Strategy for Disaster Reduction (UNISDR, 2011).

Scientists have attributed the increase in weather related extreme events like floods and droughts to human induced (anthropogenic) global climate changes (Intergovernmental Panel on Climate Change (IPCC, 2007). Disasters are escalating in extremity and extensiveness through the combined effects of “social, economic, political, technological” (Wisner, 2003; Wong and Zhao, 2001) demographic, ideological and religious characteristics of the societies of the world. Dialectically, “disasters also modify the social, economic and political processes that make some people more vulnerable to extreme events in the future (Wisner, 2003) and lead to “disaster risk creation” (Lewis and Kelman, 2013). In modern world disasters are product of “commercialism” and “hegemonous globalisation” (Alexander, 2005). Human societies should be studied by keeping in view the local indigenous conditions and world system perspective. Famine is not an act of nature, but local and global political economy play pivotal part to turn the drought into famine

(Niaz, 2014). The problems faced by human social system have broader implications that transcend the international boundaries (Anonymus, 2014).

Disasters occur at the interplay of potential hazardous events and vulnerable human population. There will be no disaster if a natural hazard hits a “no man’s land”. In this context hazards are “naturally occurring phenomenon with potential to harm human population or social system” (Adler, 2008). Hazards are “geophysical” while disasters are “social” (Dynes, 2002). The preceding debate establishes that disasters are “mostly social in character” (Alexander, 2005). Underlying Political, economic and social factors have caused the transformation the drought into famine (Niaz, 2014). Following section of the paper examines the underlying risks and vulnerabilities inherent in the socio-political landscape of Pakistan that led to transformation of drought into famine like social crisis. The figure represents given below interplay of factors and the processes that led to transformation of drought like situation into famine disaster.

Risk perception People react to disasters according to how they perceive these phenomena, how they deal with risk, and how they perceive the opportunities that are available to them. Faced with hazard, they adapt their activities and lifestyles—always assuming that they perceive enough of the risks to adapt to them (Alexander, 2013). Pakistani government did not declare it as disaster neither it has developed any institutional arrangement to tackle it. Pakistan ranks 4<sup>th</sup> on the absolute exposure to drought and more than 10 million people face the drought risk every year (Global Assessment Report on Disaster, 2009). The actions taken by the governments and other social activists depend upon their perceptions about the catastrophe. The Chief Minister of Sindh province has termed drought in Tharparkar as natural phenomenon (Pakistan Press International (PPI, 2014) that connotes the meaning that such environmental conditions are beyond the human control. Such an attitude absolves them of their responsibility to take the preventive actions so that a drought does not transform into human catastrophe. As Tharparkar has been historically most disaster prone region of the province and this drought converted into famine into many time, the governments have not taken serious steps to take the preventive measures and adopt the sustainable drought prevention programs. The governments have always taken momentary steps by dividing wheat and other eatable items. World disaster report 2014 has emphasized on the role of cultural beliefs and attitudes to understand the people’s perceptions and values regarding disaster risk and risk reduction process (International Federation of Red Cross and Red Crescent Societies (IFRC, 2014).

Political factors Historical and socio-political processes interact to create and maintain the vulnerabilities (Weichselgartner and Kelman, 2014). Sustained political instability has weakened the institutional set up of the country. Absence of local governments has created a huge gap between people and political institutions. Since a long time, the policy of adhocism has been prevailing in every section of the society. Although this district is highly vulnerable to drought like disaster and this phenomenon

emerged many time ago no further step has been taken to address this issue. Instead of adopting a preventive and proactive strategy the government has always responded belated. The provincial government adopted the policy of charity and distributed food packets and water bottles among famine victims. Instead of taking reactive measures the governments should adopt the politics of charity or politics of empowerment and livelihood diversification (Herani, 2009). It is not the drought that is killing the infants but political apathy (Sindhu, 2014). Poor governance, corruption and incompetent and dysfunctional political machinery have exacerbated the situation (Riaz, 2014). The deaths caused due drought and undesirable mass relocation of drought hit families have raised serious human right issues in the country. In the countries with weak governance and low GDP, the risk of being killed by the disasters like flood and cyclones are very high (UNISDR, 2011).

Sen (1981) used entitlement approach to explain the deadly famine in Bangladesh. He postulated that famine occurs due to failure of entitlement for certain groups in the society. He proved that drought was not caused due to unavailability of food. It is worth mentioning that Sind province produces more wheat as compared to its requirement. Due to prevalence of outdated feudal system in Pakistan, the institution of democracy has not flourished well here. Occupation of families on political parties has led to emergence of "feudocracy" here. Participatory democracy is more helpful to resolve the issues of masses as compared to representative democracy (Alexander, 2013). Political patronization of the government institutes by powerful local elites has worsened their performance (Niaz, 2014). The culture of "fiefdom" - no government officer can be deputed without consent of local political elites - has seriously eroded the capacity and capability of the government institutions.

Infrastructural factors the drought hit district has not been adequately linked to other parts of the province. The physical isolation further exacerbates the conditions of the famine hit families. Many people cannot reach the hospitals well in time. Dilapidated and outdated modes of transportation and communication hinder the Thar families to move with ease to other parts of the province so that they could earn their livelihood. Furthermore lack of sufficient water storage tanks does not allow the people to take the full advantage of rain water. The irrigation system is very limited that does not cater the needs of people (Riaz, 2014). The population in this area is highly scattered that does not correspond to modern town planning system. The health facilities are located at considerable distance. Physical and social barriers faced particularly by women bear serious consequences for them and newly born children. Hardships of migration and relocation during dry periods add more to the sufferings of vulnerable segment of population, particularly women and children, inadequate investment by government in social infrastructure e.g. health, education, irrigation (Niaz, 2014).

Climate change Scientists have been continuously striving to unleash the linkages between global climate change and food insecurity. Gradual increase in the global

temperature and sea level has been posing enormous threat to human settlements. Erratic and least predictable weather conditions have serious threats to livelihood of the people around the globe. Droughts badly hit the communities that are solely dependent on the rains to cultivate their crops. While on the other hand recent catastrophic floods in Pakistan have played havoc on the lives and property of the many parts of Punjab and Sindh province. Such type of frequent flooding has not been observed in the past. Climate change and its related disasters are impoverishing the poorest of the poor in many developing countries of the world. Climate change induced rise in the temperature will affect the most vulnerable and poorest citizen in the world and they will face the risk of heat waves, lengthy droughts and floods and extreme rainfalls (Andrew et al., 2013). Climate change is one of the biggest threats to Pakistan that may lead to water scarcity, mass starvation and ultimately political turmoil and upheaval (Riaz, 2014). Climate change is disturbing the eco balance in Pakistan (Babur, Ali and Baig, 2013),

Institutional factors Institutional failure is one of the major factors that caused the drought to transform into famine (Sindhu, 2014). Lack of institutional framework to deal with such type of emergency situations has serious consequences for those who undergo such types of trial and tribulations. Each province in Pakistan has its own Provincial disaster Management Authority (PDMA) that has the sole role of disaster management. However, such institutions lack the desired technical and human resources to deal with such non routine situations. Neither these institutions have capability to permanently monitor such situations and assess the risk that can put the lives and livelihood of the people into danger. These non-government entities pay a patchy and diffused response. Ultimately non state actors such as national and international NGOs, philanthropist and local charities come forward to exploit the situation. Past experience in the field of disaster response has revealed that such actors are involved in an uncoordinated and haphazard relief work that ends with no substantial results. Lack of institutional mechanism to monitor such situations in Pakistan and slow aid distribution by the concerned departments has aggravated the situation (Niaz, 2014). While inefficient government machinery has did not take the notice when children were dying (Masood, 2014).

Demographic and socio-economic factors As temperatures warm, many of the world's poorest and most vulnerable citizens will face the growing risks linked to more intense or lengthy droughts, extreme rainfall and "flooding and severe heat waves – risks that threaten lives and livelihoods, as well as the hard-won gains made on poverty in recent decades (Andrew, 2013). Disasters affect the people differentially. Past research in the field of disaster has proved that the marginalized section of the society has been badly hit. Women, children, old people and those located at the lower level of economic hierarchy are badly hit by the disasters (UNISDR, 2011). Due to their marginalized social position the poor are condemned to live in the vulnerable and unsafe conditions. Gross socioeconomic inequities and endemic poverty embedded

in the Pakistani society has greater implications for those who undergo such type of disasters. Scientists have attributed feudalism as the one of cause of famine in Thar. Pakistan produces wheat in surplus quantity; however the distribution of land resources is unequal due to feudalism inherent in Pakistani society. Many communities in Pakistan that are at the verge of food insecurity are landless. Famine like situation in Tharparkar occurred as a result of lack of “land rights” of Thari people (Anonymus, 2014). Hindus make 40% of population. Hindu communities are more marginalized and poor (Riaz, 2014). Pakistan is included in the 11 countries that are mostly at the risk of disaster induced poverty (Andrew, 2013). Different local social conditions influence the mortality rate due to catastrophes. The popular theoretical traditions suggest the demographic characteristics and the very nature of disaster impact the mortality rate. Many geophysical, infrastructural, social and political factors may interact to determine the mortality rate caused by the disasters (Aldrich & Sawada, 2014). Due to decline in everyday expenditure, people recourse to loans. Usually loans are extended at a very high interest rate. Exploitation by loan sharks have further pauperized the poor (Niaz, 2014). Continuous hike in inflation and devaluing of currency manifolds the risk drivers.

Cultural factors Cultural barriers faced particularly by women push them and their children to unsafe conditions of life. Culturally, it is desirable for women to give birth to children in the home rather than in the hospital. Local birth attendant is more preferred as compared to qualified doctor. Women wear veil and a male doctor is not allowed to conduct a medical checkup of the women. Children born outside the hospital face unhygienic conditions and there are more chances that they fall prey to disease. Tharparkar is a barren desert. Topographic conditions of the area are not suitable for cultivation. Majority of the population rely on rain water and cattle rearing for their livelihood. Throughout the year people keep on moving in search of water and grazing fields for their cattle. Despite these survival problems, the indigenous people love to live there with their unique way of life. Overall, people’s cultural beliefs and attitudes lead them to live with perpetual risks.

Conflict and social fragility Political instability and conflict erode the risk governance capacities and such countries experience difficulties to address the risk drivers (UNISDR, 2011). Ongoing militancy and armed conflict have accrued the lot of attention and severely plagued the country. The society is socially segmented on several aspects. Religious, ethnic and political fault lines have tended to fragment the society. Armed conflict with terrorists in federally administered tribal areas has conspicuously accrued the attention of the government and relief agencies. Understandably the government finds it difficult to pay attention to a slow onset hazards such as drought. Due to perennial social discrimination, many rich Hindu merchants migrated to India (Niaz, 2014). Annually five thousand Hindus are migrating from Sind province and majority belongs to Tharparkar district. These merchants used to extend easy loans to poorer people in case of emergency. Such an informal social support was a great

source of coping during adverse conditions. Migration of Hindu families further weakened the social fabric of the drought hit district.

## CONCLUSIONS

This paper has highlighted the social, physical and cultural vulnerabilities and potential risk inherent in our socio-political organisation that interacted with drought and transformed into a social crisis. These multidimensional risks entail serious implications for vulnerable segment of the communities particularly women, children and elderly people. The literature review also illustrates that authorities in Sind province do not consider drought like situation a serious issue and they have never prioritised to mitigate it.

## Policy Implications

Pakistan stands on the horns of dilemma. On one hand it faces flood like situation in one part of the country while on the other hand many parts of the country are exposed to severe drought like situation where average rainfall is declining due to global climate change situation. Pakistan needs to adopt hazard specific policy to tackle such emergency situation that lead to roll back the minimum development gains achieved by this country. Risk assessment, sustained monitoring of drought inducing situations and handling the vulnerabilities that convert the drought into famine and other social consequences can mitigate the adverse impacts drought. Good governance is imperative to improve the lives of disenfranchised section of the society. Availability of functional physical infrastructure helps to moderate the effects of adversity. Drought resilient communities can be constituted by creating awareness among masses and training them how to take preventive and mitigative measures to avoid the social catastrophes. Each year many parts of Pakistan undergo severe flood. The flood water can be tapped and stored to help the drought stricken region. Besides all this, a culturally sensitive and people centred drought mitigation policy could succeed in Tharparkar. Most of the people rely on livestock and crops grown by rain water. The Tharis should be encouraged to diversify their livelihood opportunities. They should be imparted modern skills so that they could work in urban areas to earn their livelihood.

## REFERENCES

- Ahmad, S., Hussain, Z., Qureshi, A. S., Majeed, R., & Saleem, M. (2004). Drought mitigation in Pakistan: current status and options for future strategies. Retrieved from [http://www.iwmi.cgiar.org/Publications/Working\\_Papers/working/WOR85.pdf](http://www.iwmi.cgiar.org/Publications/Working_Papers/working/WOR85.pdf)
- Aldrich, D. P., & Sawada, Y. (2014). The Physical and Social Determinants of Mortality in the 3.11 Tsunami. Retrieved from <http://ssrn.com/abstract=2421779>
- Alexander, D. E. (2005). An interpretation of disaster in terms of change in culture, society, and international relations. What is a disaster (Ed). Ronald W. Perry and E. L. Quarantelli. Retrieved from [http://cus.upc.edu/cooperacio/fitxers/what\\_is\\_disaster.pdf](http://cus.upc.edu/cooperacio/fitxers/what_is_disaster.pdf)
- Alexander, D. E. (2013). Disaster, resilience and the tension of opposites. IRDR occasional 2013. Retrieved

- from <http://www.ucl.ac.uk/rdr/publications/irdr-occasional-paper-2013-01>
- Alexander, D. E. (2013). There is nothing more practical than a theoretical approach to disaster. IRDR occasional paper 2013. Retrieved from <http://www.ucl.ac.uk/rdr/publications/irdr-occasional-paper-2013-01>.
- Andrew, S. et al. (2013). The geography of poverty, disasters and climate extremes in 2030 Research reports and studies
- Anjum, S. A., Saleem, M. F., Cheema, M. A., Bilal, M. F., & Khaliq, T. (2012). An assessment to vulnerability, extent, characteristics and severity of drought hazard in Pakistan. *Pakistan Journal of Science*, 64(2).
- Anonymus. (2014). Thar famine artificially created by cruel feudalism. *Daily Times*. Retrieved from <http://www.dailytimes.com.pk/sindh/03-Jun-2014/thar-famine-artificially-created-by-cruel-feudalism>
- Babur, Z. U., Ali, A., & Baig, M. N. (2013). Desertification in Pakistan, Challenges and Opportunities. *Journal of Environmental Treatment Techniques*, 1(1), 13-18.
- Beck, M. (1992). *Risk Society: Towards a New Modernity*. New Delhi: Sage.
- Boyce, J. K. (2000). Let them eat risk? Wealth, rights, and disaster vulnerability. *Disasters*, 4(3), 254-261.
- Dynes, R. R. (2002). The importance of social capital n disaster response. Retrieved from <http://udspace.udel.edu/bitstream/handle/19716/292/P+327.pdf?sequence=1>
- Haq, R. (2014, July 6). Thar drought: Precursor of dust bowl in water scarced Pakistan? Retrieved from <http://www.riazhaq.com/2014/03/thar-drought-precursor-of-dust-bowl-in.html>
- Herani, G. M., Mahmud, M., Qureshi, M. A., & Rajar, A. W. (2009). Livelihood Diversification and Opinion Polls? Analysis: Evidence FromTharparkar-Sindh (Pakistan). *Indus Journal of Management & Social Sciences*, 3(1), 64-80.
- Hillsman, S. T. (2014, January). Vantage Point. *Footnotes*, 42(1), 2-4.
- IPCC. (2007). Climate change 2007: Impacts, Adaptation and Vulnerability. Contribution of working group II to thr fourth Assessment Report of the Intergovernmental Panel on Climate Change. Retrieved from [http://www.ipcc.ch/publications\\_and\\_data/publications\\_and\\_data\\_reports.shtml](http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml)
- Irshad, M. (2013). Extreme Weather, Risk and Social Crisis: An Analysis of Un-Answerability. *Planet@Risk*, 1(1), 3-6.
- Lewis, J., & Kelman, I. (2013, July 7). Creating disaster. Retrieved from [http://www.colorado.edu/hazards/o/archives/2013/jul13\\_observerweb.pdf](http://www.colorado.edu/hazards/o/archives/2013/jul13_observerweb.pdf)
- Masood, A. (2014, March 10). Famine hits Thar. *Daily times*. Retrieved from <http://www.dailytimes.com.pk/opinion/10-Mar-2014/famine-hits-thar>
- May, F. (2007). Cascading Disaster Models in Postburn Flash Flood. Retrieved from [http://www.fs.fed.us/rm/pubs/rmrs\\_p046/rmrs\\_p046\\_443\\_464.pdf](http://www.fs.fed.us/rm/pubs/rmrs_p046/rmrs_p046_443_464.pdf)
- Murtaza, N. (2014, March 22). Famine: the other factors. *Dawn*. Retrieved from <http://http://www.dawn.com/news/1091557/famine-like-situation-in-thar-after-severe-drought>
- Niaz, I (2014). The Culture of Power and Governance of Pakistan 1947-2008. *IPRI Journal* 11(1), 96-109.
- Pakistan Press International. (2014, March 17). Famine situation in Thar a natural phenomenon. *Daily Times*. Retrieved from <http://www.dailytimes.com.pk/sindh/17-Mar-2014/famine-situation-in-thar-a-natural-phenomenon-cm>
- Riaz, F. (2014). Pakistan: Life and death of a worker. South Asia Citizens Web [www.sacw.net](http://www.sacw.net) › South Asia Labour Activists Library
- Sen, A. K. (1981). *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford: Clarendon Press.
- Shepherd, A., Mitchell, T., Lewis, K., Lenhardt, A., Jones, L., Scott, L., & Muir-Wood, R. (2013). The geography of poverty, disasters and climate extreme in 2030. Retrieved from <http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8633.pdf>
- Shreve, C. M., & Kelman, I. (2014). Does mitigation save? Reviewing cost-benefit analyses of disaster risk reduction. *International Journal of Disaster Risk Reduction*, 10, 213-235.
- Sindhu, A. L. (2014, March 17). Thar famine: A crisis of national security. *Daily Times*. Retrieved from <http://www.dailytimes.com.pk/opinion/17-Mar-2014/thar-famine-a-crisis-of-national-security>
- UNISDR. (2011). Revealing Risk, Redefining Development. Retrieved from [http://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/GAR-2011/GAR2011\\_Report\\_Prelims.pdf](http://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/GAR-2011/GAR2011_Report_Prelims.pdf)
- Weichselgartner, J., & Kelman, I. (2014). Geographies of resilience: Challenges and opportunities of a descriptive concept. *Progress in Human Geography*, 1-19.
- Wisner, B., Blaikie, P., Cannon, T., & Davis, I. (2003). *At risk natural hazards, people's vulnerability and disasters (2nd ed.)*. London: Routledge.