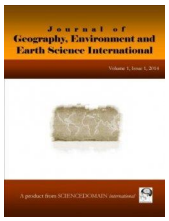

Journal of Geography, Environment and Earth Science International
3(3): 1-5, 2015; Article no.JGEESI.18706

SCIENCEDOMAIN *international*
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Climate Change Adaptation and Disaster Risk Reduction in Pakistan: Where are we Standing?

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Authors' contributions

This work was carried out in collaboration between authors BAM and MH. The report was generated as a joint contributed approach by the authors BAM and MH. The report design, writing protocol, and finalization of the draft were all remained under keen observation of the two authors. However, in addition author BAM performed manuscript submission processes. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JGEESI/2015/18706
Editor(s):
(1) Wen-Cheng Liu, Department of Civil and Disaster Prevention Engineering, National United University, Taiwan and Taiwan Typhoon and Flood Research Institute, National United University, Taipei, Taiwan.
Reviewers:
(1) Antipas T. S. Massawe, University of Dar es Salaam, Tanzania.
(2) Meine Pieter van Dijk, ISS of Erasmus University, The Netherlands.
Complete Peer review History: http://sciencedomain.org/review-history/10544

Mini-review Article

Received 6th May 2015
Accepted 19th July 2015
Published 14th August 2015

ABSTRACT

The article aims to highlight the issue that resists to enhance the resilience to climate change and to reduce the vulnerability to natural disasters in most of the developing countries like Pakistan – a country extremely vulnerable to the impacts of climate change and natural hazards. Due to similarities and overlapping of CCA and DRR spheres, the related policies could not be implemented so far. In Pakistan role of CCA and DRR authorities show lack of coordination with stumpy attention and investment in both areas. The perpetuation of vulnerabilities, after the occurrence of repeated natural disasters, also reveals lack of lesson learning processes in the concerned organizations. In Pakistan, as among one of the natural disasters' affected countries, the debate substantiates the results in high recommendations to integrate CCA and DRR that would be helpful to surmount the mystifications in decision making.

Keywords: CCA; DRR; Pakistan; management.

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1. BACKGROUND

With the increasing trend of climate change all over the world, the risk of natural disasters has been escalating. According to an assessment report of Inter Government Panel on Climate Change (IPCC), global rise in temperature will affect mid-latitudes, semi-arid latitudes by increasing drought conditions [1]. However, intense water stress, damage from frequent storm occurrence and coastal flooding will affect millions of more peoples annually in different parts of the world. Additionally to the tangible impacts, climate change has a high potential to multiple the often devastating impacts of some natural hazards. This change in climatic pattern has increased the risk associated with natural disasters by increasing the frequency and magnitude of the extreme events. The ongoing situation with devastating results shows that the traditional coping/ response/ planning mechanisms for disasters with respect to the past vulnerabilities may no longer suffice. Such vulnerabilities to the changing climatic schemas may affect and alternate the associated risk factors substantiating the new threats that a community have never dealt with [1,2].

The term *"Adaptation"* in relation to climate change is taken as a set of rules to minimize the threats/impacts of changing climate and maximizes the resilience for predicted threats/impacts. Whereas DRR is the development and application of polices, schemas and practical mechanisms to minimize vulnerabilities and risk throughout the society.

It has been argued at different forums about the overlapping of CCA and DRR. To do so it is of utmost importance to identify the similarities between these domains, meanwhile it is noteworthy that strong methodological similarities in reducing the vulnerabilities to disaster and climate change, aid effectiveness results in successful integration of CCA and DRR [3-5].

2. HOW CCA AND DRR OVERLAPS?

The two terminologies, DRR and CCA, in actual represents policy making goals, objectives, fundamentals including to deal with the ongoing problems of disasters and concerning the emerging issue of climate change respectively. As a matter of fact these two domains instigated with different origins but they intersect in terms of dealing with probable common factors as climate and weather [6,1].

Adapting the climate change and reducing the disaster risk shares a common aim of building the resilience in front of the hazard, additionally CCA and DRR increase their commonalities by sharing the same end beneficial i-e the community that we lived in. In doing so, CCA deals with climate related hazards (flood, drought, storm etc) in terms of their changing behaviors and physical parameters, whereas, DRR has a wealth experience in dealing with these events. As with mutual benefits, DRR towards reducing the vulnerability adapt different schemas that more often supports CCA. With the example of reforestation as one of the DRR measures implemented to reduce flood impacts also lessen the long term degradation of soil and also controls the local climatic variables as temperature and rainfall. DRR also contributes CCA by means of policy and institutional level approaches as well as in the technical methodologies and schemas with tool implementation, development of legislation, community based approaches, land-use planning, environmental protection, dam construction and many more. However, CCA also does this in vice versa. Adapted schemas and technicalities supports DRR (vulnerability assessment, regional and national planning, capacity building, response methodologies etc) [7-10].

3. CCA AND DRR IN PAKISTAN

Pakistan is among one of the Asian countries that are frequently affected by the natural disasters. Due to changing weather patterns and seasonal rainfall trends, the frequency of extreme weather events is likely to increase in Pakistan and South Asia in the future. Increasing frequency of series of natural as well as man-made hazards has badly influenced the economy of the country (Fig 1). Local, regional and government level stakeholders have identified Pakistan as vulnerable and focused risk zone against glacial surges, avalanches, cyclones, flash floods, droughts, earth quakes, epidemics, landslides, pest attacks and river erosion. The change in climate over few decades causes these disasters to be more often than normal by changing the shift in monsoonal origins in the country. The changing climate increases the frequency of natural disaster occurrence all over the country with the increase in mortalities (Fig. 2).

Global warming and changing climate has impacted adversely the social community of Pakistan. Adaptation to these unfavorable effects

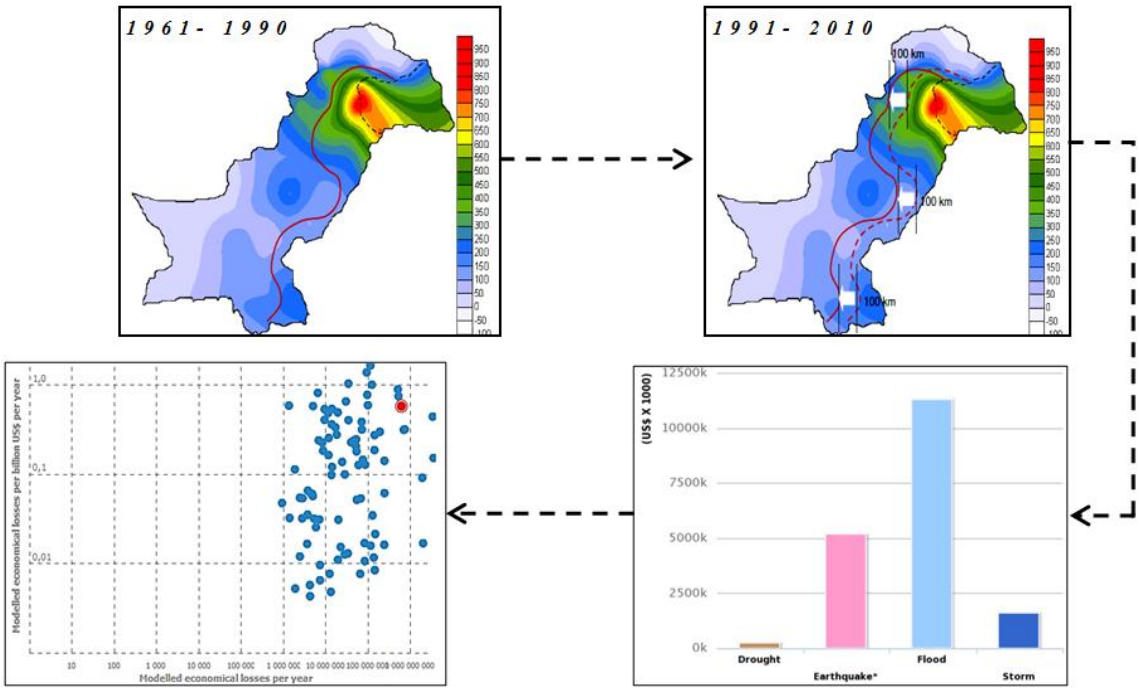

Fig. 1. Climate change and Pakistan in light of disasters
(Source: Hanif et al, 2013, [11])

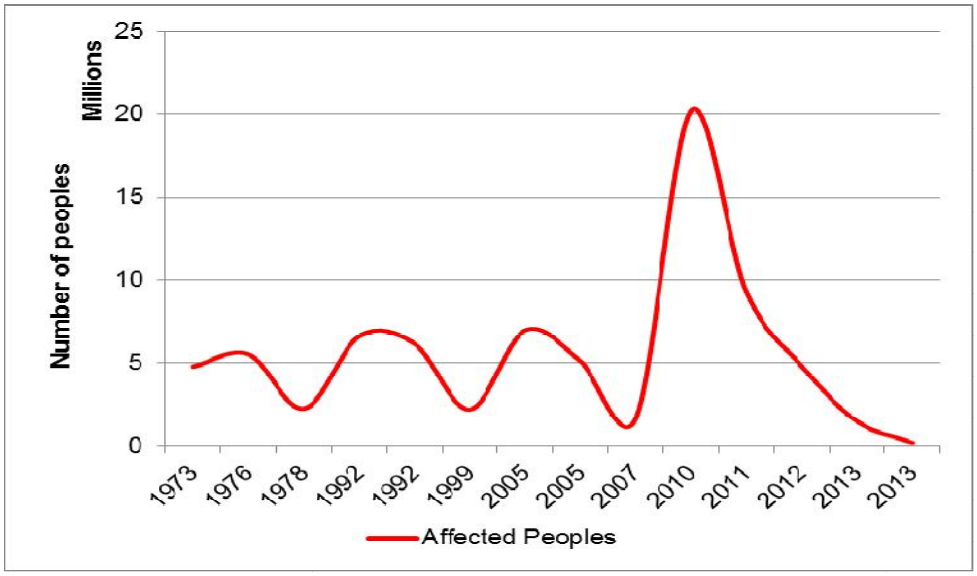

Fig. 2. Top disaster event's year with more affected peoples in Pakistan
(Source: NDMA) [12]

of climate change and for vulnerability, government must have to deploy organizations and a central authority for coordination of different disaster institution and other organizations, must formulate effective polices and encourage research on climate change issues. Pakistan has already low water storage capacity and the excess water by frequent torrential rains during monsoon causes urban, flash and riverine flooding in the country. After the occurrence of super flood 2010, Pakistan has formulated NCCP (National Climate Change

Polciy) and DRR Policy that unfortunately could be implemented so far due to overlapping issues of CCA & DRR.

In Pakistan, local communities have been observed traditionally adapting the environment. These communities comprehend the risk in their surroundings and try to build coping mechanisms for vulnerability reduction. However, high variability in climate, the events occurring are far beyond the capacity measurement of communities. As a result these communities remain un-resilient to such events. The high frequency and mortality percentage lets the government to promulgate National Disaster Management Ordinance (NDMO). The ordinance results in the establishment of National Disaster Management Authority (NDMA) at federal level. In Pakistan NDMA is the only determined and focused group that coordinates and facilitates the strategically implementation of DRR, response and recovery programs. However, National Disaster Risk Management Framework Pakistan (NDRMFP) has been formulated for technical guidance of DRR processes. Pertinently, in a long term vision, to dealing with the disasters there is no comprehensive, continuing and institutional planning is under view. The department of disaster management, environmental protection institutes and development organizations works individually with isolation surrounding atmosphere. The situation results in poor coordination between the sectors and lacking of integrated approach in planning measurements against disasters. The lack of integrity within and among the organizations got responsible for complete, well organized and an effective disaster management program in Pakistan.

At state level, skewed pattern of disaster preparedness and mitigation plans is observed towards structural aspects. However, weak intensions are there towards non-structural parameters (knowledge and capacity building of locals and livelihood protection issues etc) [11,12].

4. CONCLUSION AND RECOMMENDA-TIONS

The increased frequency of disasters occurrence, causes huge damages to socio-economic sectors in Pakistan. Aid effectiveness is one of the major pillars towards the rehabilitation of communities that are continuously influenced by the natural disasters. Due to the absence of integrity among the disaster management organizations and departments in Pakistan, aid effectiveness cannot play its role in forte. Unbalanced aid distribution leads the local community to remain vulnerable and prone for future concerns. Lack of community based approach; local awareness and climate researches have lead the scenario in destroying the coping strength in almost all parts of the country. Whereas, in different parts of world, integrated approaches are impacted by different countries to increase the resilience. A climate change plan with DRR measures in a flood prone area of Pune, Strategic action plan for climate related future disaster risk is prepared by ocean tsunami team, Coordination between regional governments to support adaptation to risk associated with water related disasters in highlands of Andean, DRR and CCA are placed as the mainstream with the integration among regional sectors, Comprehensive strategy adaptation in parallel to risk management is observed to prepare, prevent recover and response in India, Maldives, Peru, Samoa and United kingdom respectively.

Lack of coordination between organizations and stakeholders has aggravated the situation of CCA & DRR in Pakistan. There is need to establish effective early warning system in Pakistan to reduce the risks associated with climate change and natural hazards. The demand of weather and climate services and early warning system has increased by stakeholders such as agriculture, water, energy, health sectors. Due to overlapping of CCA & DRR, it seems difficult to convince the policy makers and the donors to invest in these sectors.

With the brief highlight about DRR and CCA, following recommendations are postulated that should be implemented in Pakistan and other parts of globe for the resilience towards climate change and associated impacts

i. Reducing the climate change impacts by the implementation of DRR integrated with adaptation.
ii. More efficient and effective utilization of financial and natural resources.
iii. Increasing the sustainability of integrated CCA and DRR approaches.
iv. Motivated research dimension in climate change and its impacts.
v. Awareness at government level agencies through training programs.
vi. Sophisticated policies implementation.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://sciencedomain.org/review-history/10544