

The need and Importance of Natural Resources Management education in the schools, colleges and Universities curriculum in Balochistan

Social Sciences

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Abstract

The natural resources in Balochistan are under severe threat of depletion. Balochistan is faced with many disasters like floods, droughts, cyclones, earthquakes and landslides etc. These disasters can be prevented if the natural resources are properly managed. Many of these disasters occur due to human mismanagement of the natural resources. Therefore, it is pertinent to introduce the subject of natural resources management in to the curriculum at schools, colleges and Universities. The students can be influential and effective communicators about natural resources conservation and management and the lessons learned at schools will also be transmitted to parents at home. This will also lead to trained people in natural resources management. The trained persons will be able to serve in watershed management, forest management, wild life management, fisheries management, rangeland management, land use planning, biodiversity conservation and river basin management etc. The integration of disaster risk reduction education at school and university level has been emphasized in this paper and no doubt, is the need of the time. If the natural resources are properly managed, it would lead to decrease incidents of disasters. Therefore, this paper urges the need for integrating natural resources management in the curricula in Balochistan.

Key words: NRM education; DRR education; Balochistan

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1. Introduction

Balochistan has been blessed by Allah with a variety of natural resources. The province although with dwindling water resources has variety of natural resources and covers almost 43% land extent of the country. Besides the mineral resources, the province is bestowed with juniper forests (The second world's largest juniper forests of the world); Chiltan Markhor (the endemic species of Markhors in Balochistan) and variety of herbs that are widely used for indigenous treatment of different diseases. Natural Resources Management (NRM) is the management of natural resources that include land, water, soil, plants and animals with emphasis on how management affects the present and future generation's life quality. NRM is actually related with managing the ways in which people and landscape interact. NRM started with the resource conservation movement in the early 19th century. The Brundtland commission also known as the world commission on environment and development (WCED) in 1987 on sustainable development led to its global concern for conservation of natural resources. The sustainable development concept was further strengthened through agenda 21 that resulted from the UN conference on environment and development in Rio de Janeiro, Brazil in 1992. To address the problems of food security, poverty, and natural resource degradation, a new management and research approach called integrated natural resource management (INRM) has recently emerged (Gottret & white, 2002). Several scholars have emphasized the need of NRM. Manning (1998) stresses the need for Educating natural resource professionals for ecosystem management.

There is also a strong argument that NRM education will minimize disaster incidents. Disaster managers develop and implement tools for reducing vulnerability to natural hazards. Bonifacio et al. (2010) and Sharpe & Kelman (2011) reported that disaster risks reduction (DRR) education is very important because it will reduce the impacts of disasters. NRM education will provide humans with the knowledge to cope with the natural hazards and these measures will also provide a tool for vulnerability reduction (Abramovitz et al., 2002). There are also studies that actually combine the DRR, NRM and climate change adaptation to improve livelihoods of the people (IUCN, I.S.S.D, & Livelihoods, S. E. I., 2003). This paper therefore, emphasizes the need for integration of NRM education in the schools, colleges and universities in Balochistan. This is because if the natural resources are properly managed, there would be fewer chances of disasters. For example, if the watersheds and forests are properly managed, there would be fewer chances of floods and soil erosion. Similarly, the proper

management of land resources would halt the chances of drought and desertification of lands (Figure 1).

2. Methodology

The study is based on extensive literature review. Secondary data were collected from reports, research articles, conference papers and workshops. We used the search engines “google Scholar” and “Science direct” for searching articles on natural resources management and curriculum, sustainable land management and curriculum worldwide because of access to these search engines in university of Balochistan. The results did not show articles specifically related to NRM and SLM on Balochistan, but showed articles related to sustainable water and/or ground water management; rangeland management; resources conservation and management; land degradation and desertification.

3. Current status of disasters and need for NRM education in Balochistan

Balochistan has been victim of large scale disasters (NDMA, 2007) and the incidents of disasters are on the rise recently as experienced by the droughts of 1999 to 2003, earthquake of Awaran in 2013 and frequent flash floods at different time scales. Experts suggest that in future there would be a substantial increase in the frequency and intensity of these disasters in Balochistan. Researchers and experts believe that a proactive approach is better than a reactive approach, because an investment of 1 US\$ in prevention of a disaster, saves 7US\$ in the cost of recovery from it. The subject of NRM should therefore be introduced; in order to bring awareness about the importance of natural resources and to train the people to use the resources in a proper sustainable way. This may decrease the chances of natural disasters. For integrated natural resources management, initiatives have been taken in Vietnam to incorporate multiple sectors such as agriculture, aquaculture, environment, disaster management, tourism and health into natural resource management (Tran & Shaw, 2007).

The subject of NRM has recently been introduced in few Universities in the country such as the Swat, Hari Pur and Shaheed Benazir Bhutto (Shiringal) universities. In the colleges, Schools and Universities of Balochistan, the NRM discipline is non-existent at all. The inclusion of the NRM subjects in Colleges and Schools may create the sense of resource stewardship, sustainable use of the limited resources and conservation of biodiversity etc. The students can be influential leaders in disseminating the resource conservation methods and techniques at their homes and in the communities.

Therefore, the NRM education will conserve resources and thus lead to reduced poverty and vulnerability to disasters.

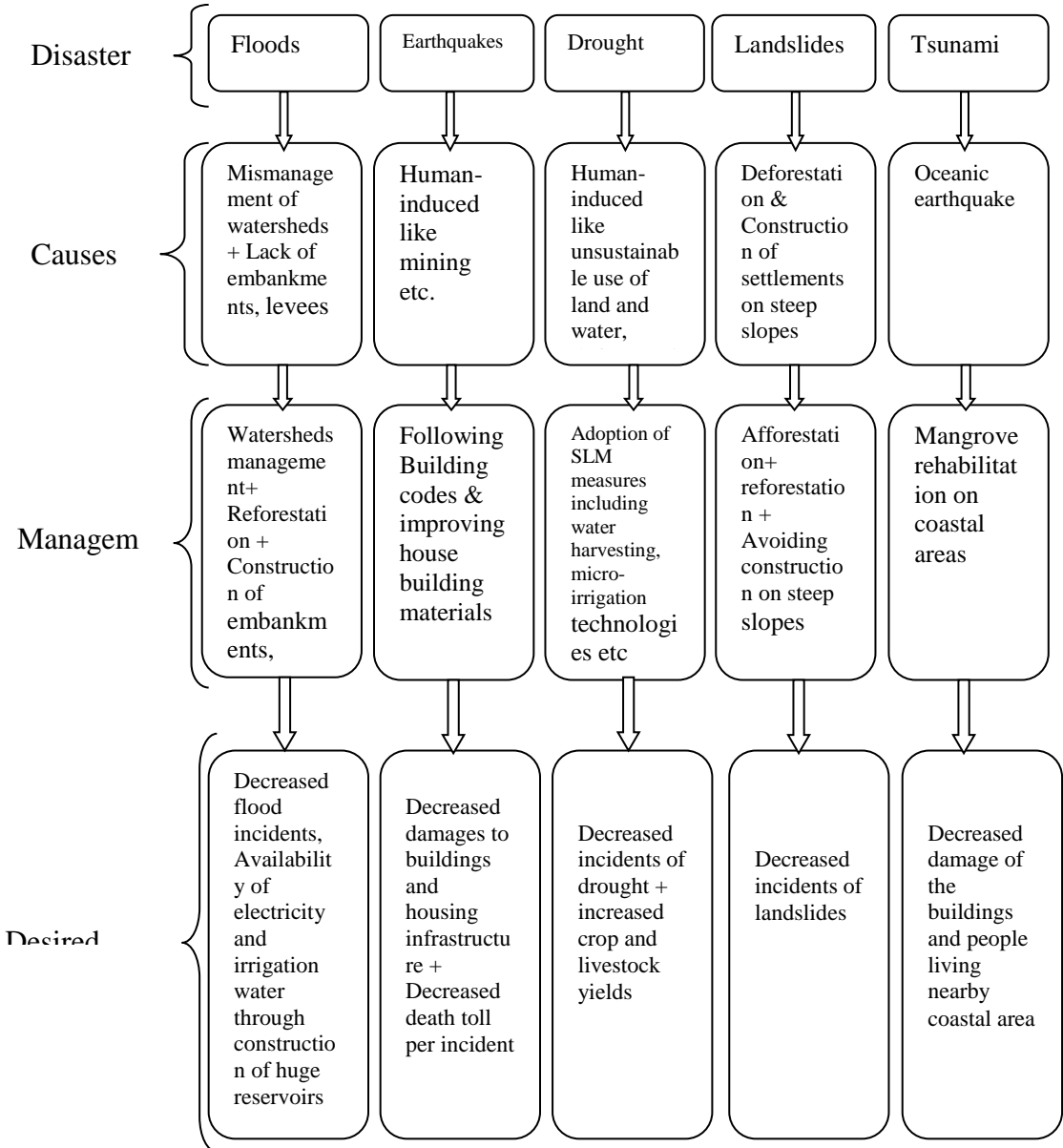


Figure 1: Relationship of Natural Resources Management and Disaster Risk Reduction

4. Natural Resources and Human mismanagement

If we continue wasting water and polluting the dwindling supply of ground water available today, we are going to deprive our future generation of ground water. There are also concerns of ground water depletion in province of Balochistan due to unsustainable use of underground water resources. Balochistan has less forested area, but the current rate of deforestation due to illegal logging may deplete these resources in the coming future. The forests besides providing timber may also be beneficial in several other ways. These include regulating; provisioning and aesthetic services. Cultivation of new land for increased production due to increasing population has also led to the deforestation, agriculture intensification and marginal land cultivation. Deforestation has not only disturbed the natural cycles but it has also brought destruction in the form of decreased biodiversity of plant and animal life. Instead of bringing new lands under production, the present cultivable lands are under severe threat of land degradation and desertification. Decreasing productivity from farmlands and rangelands because of unsustainable management has caused problems of land degradation and degradation of rangelands.

Due to increasing population, the demand for food and other daily necessities is increasing. Huge amount of natural resources are consumed in the industries, releasing lot of waste materials to the environment. Natural resources like land and water and other raw materials can be found as naturally occurring substances. The value of these deposits is usually dependent on the amount available for extraction and their extraction beyond the required amounts can be dangerous. Poverty often leads to mismanagement and degradation of natural resources (Scherr, 2000). Majority of the natural resources are exploited by the people due to their low standard of living. For example due to non-availability of natural gas in some parts of the Ziarat, has led to severe deforestation. Studies of Mainguet, 2012, showed that human activities are responsible for all stages of desertification. In Balochistan, the unsustainable use of land and water resources by the people has also led to severe desertification. Due to the addition of the toxic materials from industries, several problems like global warming, sea level rise, changes in weather pattern and acid rain, forest fires and ozone layer depletion and land degradation have come in to existence at macro and even at micro level. Two major consequences of these problems appears to me as, one in the form of increased landlessness of the farmers in terms of arable

land, that may lead to food shortages in the near future and second, is the worst effects of environmental problems on human health.

5. NRM relationship with Resilience and disasters

Resilience is a dominant theme in NRM (Thomalla et al., 2006). Sustainable and integrated management of natural resources, including reforestation schemes, proper land use and good management of rivers and coastal areas will increase the resilience of communities to disasters by reversing current trends of environmental degradation (Tran & Shaw, 2007). Repairing ecosystems and replacing natural resources is much more expensive but imperative than prevention, and in some cases, the damage is irreversible (Stemer, 2003). Adaptive and community-based NRM can enhance resilience into both human and ecological systems for coping with environmental changes and disasters (Tompkins, 2004).

Sustainable and integrated management of natural resources, including reforestation schemes, proper land use and judicious settlements, should increase the resilience of communities to disasters by reversing current trends of environmental degradation and dealing with hazard management (Kelin et al., 2003). An example can be mangrove cultivation in the coastal areas that can cope with the Tsunami (Hoang et al, 1998; Barbier, 2006). The degradation of the natural environment, such as deforestation and the conversion of agricultural land to residential areas, has made the impact of floods more serious and longer lasting in the lowland areas and has created more flash floods in upland regions (Tran & Shaw, 2007). A number of sustainable land management (SLM) best practices should be identified in each of the study areas and their effects observed on natural resources (soil, water, vegetation and biodiversity) and impacts on livelihoods and ecosystem services. The sustainable hazard mitigation policy needs to be adopted that links wise management of natural resources with local economic and social resiliency (Mileti, 1999).

6. Integrating Children and youth in NRM and government responsibilities

There is lack of knowledge about environmental education and lack of a natural science background in schools (Ham and Singh, 1998). Some scholars have suggested the suitability of NRM and sustainability education for university levels, like studies of Corcoran & Wals (2004). Others suggest that the cross-disciplinary nature of natural resource management, integrating fields of knowledge in natural resource curricula has become an important

challenge for universities (Ginger et al., 1999). However, we believe that the children and youth can play a key role in natural resources management. A challenge to the field of natural resource education is, first, to make children aware of key resource management issues (Pomerantz, 1991). Once, the children and youth become aware, they will be able to share their concerns about environmental education (Tilbury, 1995).

Youth have a deep relationship with nature and their attitudes toward the environment can be easily changed with educational intervention (Williams & Dollisso, 1998). The community resources can better be managed by the young generation of schools (Hart, 2013). The field of natural resources is in a strong position to build a more integrated and holistic component into its system of higher education (Manning, 1998). Now the justification for student's involvement in NRM education is that students can serve as civil army for many environmental tasks. This paper is concerned with the important fields of NRM, such as awareness, education, training and research. The NRM education will create awareness among the people regarding the renewable and non-renewable resources, depletion of resources and conservation of resources. The students can play an important role in

- Resource stewardship
- Sensitization
- Awareness campaigns
- Planting Trees
- Celebrating environment day
- Cleaning of parks and nearby rivers from wastes

The government of Balochistan should allocate funds for the development of NRM education in the country. This task can be achieved through

- Development and production of textbooks and databases on NRM at schools, colleges and universities in local as well as English language. The contents should cover the types of natural resources, their importance for humans and how they can be managed properly for sustainable use.
- Training of the school, college and university teachers for teaching the subject of NRM

- Conducting workshops for farmers on conservation of land resources especially in mountainous areas
- Establishing links with donors like IUCN, WWF, GTZ and UNESCO

7. Conclusion and recommendations

Natural resources management is an important part of the curriculum in western countries, as the literature review has identified. We know that many natural resources are limited. To make sure that our future generations will not experience the worse effects, we need to be aware about the concept of sustainability. Therefore, in order to preserve the land and water resources for the future use, the concept of sustainable land management is very important. There is a dire need of integrating sustainable agriculture, sustainable agroforestry, sustainable ground water management, sustainable land management and sustainable natural resources management in the curricula of schools, colleges and universities in Balochistan. This is because our future as well as future generations will depend on these resources. When the students will understand the importance of the resources for their lives, they will take actions to save these resources from degradation. Besides this, the proper management of natural resources will act to minimize the chances of both natural as well as man-made hazards.

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