



The Effect of Climate Change on Plant Genetic Resources and Agriculture in Oman

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Abstract – The Sultanate of Oman is the country of vast biodiversity in the Arabian Peninsula, which reflects Oman's unique place between two geographic regions northern part closely resembles Asia whereas southern part has similarity to Africa in its climate and physiographic regions. It is clear from the findings of the IPCC (Intergovernmental Panel on Climate Change) that the Sultanate of Oman is vulnerable to the potential impacts of climate change like the ones being experienced as increased average temperatures, less and more erratic precipitation, sea level rise (SLR) and desertification. In 2007 and 2010 Oman suffered heavily from severe tropical cyclonic storms named as *Gonu* and *Phet*. They had a significant adverse effect and caused heavy damages on agriculture and plant genetic resources (PGR) which in turn affected the country's economy. The objectives of this study are to highlight the general information of the climate change and its impact on agriculture and its plant genetic resources (PGR) in Oman. Besides, this report emphasizes on the most important activities of various ministries and national institutions/ organizations related to the environment and climate change and their role on mitigating the risk of these changes. The Ministries and other national institutes/ organizations have carried out rapid assessment and initiated preliminary studies on the identification of climate change impacts which indicated that Oman is likely to be affected by climate changes in future. From the review of reports and other documents it can be concluded that Oman is vulnerable to climate change, its agriculture and plant genetic resources are under increasing pressure and increasing population, urbanization and other factors along with their interaction with climate change and the environment are playing significant roles in causing impacts on both agriculture and its PGR.

Keywords – Biodiversity, Climate Change, Impacts, Plant Genetic Resources, Agriculture, Oman

impacts will cause serious damage to the economy of the world as well as Oman which already suffers from aridity, soil salinity, recurrent drought and water scarcity. These all threaten to country's food security. Recently, German Watch has ranked Oman as 40 in terms of Global Climate Risk Index based on 1990-2008 data [3] in comparison with Bangladesh and UAE, which were ranked 1 and 156, as examples.

There is a significant concern about the impact of climate change on plant genetic resources and agricultural production worldwide. Climate change affects dynamics of ecosystem in various ways such as shift in the distribution of a wide range of crops and losses of cropping areas. Rise in temperature and change the environment could help in the spread of invasive alien species, pests and parasites. As ecosystems change, the distribution of disease vectors is likely to be affected with consequences for epidemiology of many crops and livestock disease [4]. The climate change also threatens strategic reservoir of the genetic resources of crops and livestock which need adoption for production. It also affects the aquaculture and marine life and distribution of aquatic diseases, parasites and toxic algae bloom.

Climate also affects many environmental aspects, including the temperature, oxygenation, acidity and salinity. The effect on agricultural production is expected to vary by crop, locations as well as the degree of warming and the direction and magnitude of precipitation change [5-6]. The effects of climate change are expected to reduce agricultural productivity, stability and incomes in many areas of the world. The problem of climate change was identified as early as the nineteenth century. This issue did not appear on the international scientific and political agenda until the first world conference held in 1979 [7]. In