Preface

Tariq Banuri¹ · Mansour Almazroui² · Mariam Saleh Khan³ · Fahad Saeed^{2,4} · Zekai Şen²

Published online: 23 November 2018
© The Author(s) 2018

This special issue of “Earth Systems and Environment” is being presented at a time when awareness of the subject matter, i.e. climate change, is on the rise not only among the masses but also in the policy corridors in Pakistan.

Even though it contributes less than 1% of all global Green House Gas (GHG) emissions, Pakistan is one of the countries in the world which are most affected by climate change. In the past 20 years, the country has been hit by frequent and devastating floods, recurrent heat waves, a prolonged drought, erratic weather patterns leading to lowered agricultural productivity, emergence of new diseases, and the looming threat of desertification due to the recession of the Himalayan glaciers. Future global warming is likely to exacerbate all these impacts.

According to Germanwatch’s Global Climate Risk Index,¹ Pakistan is at the 7th position in the world among countries most affected by climate change in the 20 years from 1997 to 2016. During this period, the country experienced 141 extreme weather events—such as cyclones, storms, floods, Glacial Lake Outburst Floods (GLOFs) and heatwaves—leading to the loss of 10,462 lives and economic losses worth US \$3.8 billion (equivalent to 0.605% of the GDP in the 20 years period).

Like many other developing countries, coping with climate change is also a development-related challenge for Pakistan. Energy is the driver of economic growth as well as human development. It is impossible for developing countries to maintain their growth momentum without expanding

their available energy resources. The impacts of global warming mentioned above, combined with changes in the economic and financial environment, are likely to adversely affect the development momentum. One major concern is the potential adverse impact of climate change and global climate policies on energy costs in Pakistan. Conventional and fossil fuel-based energy will gradually have to be phased out, and reliance on newer and more sustainable forms of energy (e.g. solar, wind, bio-energy) as well as hydro and nuclear sources will be the need of future.

Considering the country’s high vulnerability to climate change, it is imperative to have strong science-based evidence, not only for the purpose of climate change mitigation and adaptation but also for the formulation of a holistic development policy. Given this context, the Science-Policy Conference² on Climate Change (18–20 December 2017) was organized to (see Footnote 2)

1. Enhance scientific understanding of the changing climate and associated impacts on socio-economic sectors.
2. Develop policy recommendations to address the challenges affecting Pakistan’s development.
3. Promote coordination among researchers and institutions working on different aspects of climate change in Pakistan and facilitate their collaboration with international scientists and experts engaged in similar research activities.
4. Encourage sharing of knowledge and best practices on adaptation and mitigation strategies, including capacity building of national institutions and experts.

The conference was organized by the Global Change Impact Studies Center (GCISC) and attended by more than 700 delegates representing international and national research organizations, academia, government, media, law, parliamentarians, and civil society.

Some of the following text is also repeated in the website of the Science-Policy Conference on Climate Change. See <http://sp3c.org.pk>.

✉ Mansour Almazroui
mansour@kau.edu.sa

¹ Higher Education Commission, Islamabad, Pakistan

² Center of Excellence for Climate Change Research, King Abdulaziz University, Jeddah, Saudi Arabia

³ Öko-Grünes Leben e.V., Hamburg, Germany

⁴ Climate Analytics, Berlin, Germany

¹ <https://germanwatch.org/en/cr>.

² <http://www.hec.gov.pk/english/Pages/Home.aspx>.

The conference (see Footnote 2) included five parallel research workshops on the themes of

- (a) Climate science.
- (b) Climate and water.
- (c) Agriculture and food security.
- (d) Impacts and adaptation.
- (e) Mitigation and policy.

The purpose of these workshops was to allow researchers to present the latest research on these areas.

The best research studies were selected by the conference (see Footnote 2) scientific committee for submission to this special issue. After a thorough peer-review process, we have selected the articles presented in this special issue. They provide an informative insight into key aspects of the above-mentioned issues, especially the prospect of future heat waves, based on climate modeling, and the impacts of climate change on migration, business value chains, human well-being, security, and gender.

It is hoped that the articles included in this special issue will enhance scientific knowledge and awareness of a range

of issues related to climate change. These articles will also provide an information base for the work to be undertaken in the sixth assessment cycle of the IPCC (Intergovernmental Panel on Climate Change) and its associated reports. Finally, this may provide an opportunity for Pakistan to highlight its extreme climate vulnerability on international forums like the United Nations Framework Convention on Climate Change (UNFCCC). Such international exposure may further help to effectively portray its case, and also increase pressure on the developed countries to adopt meaningful policies and measures to fight the menace of climate change.

We hope that the readers of this special issue will find it both informative and useful.

Open Access This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.