



World Food Programme

SAVING
LIVES
CHANGING
LIVES

WFP Critical Corporate Initiative: Climate Response Analysis for Adaptation

Nepal

Alliance



RESEARCH PROGRAM ON
Climate Change,
Agriculture and
Food Security



December 2021

Acknowledgements

PUBLICATION INFORMATION

This publication is a product of the collaborative effort by the Alliance of Bioversity International and the International Center for Tropical Agriculture (The Alliance), the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), and the World Food Programme (WFP).

Main authors: Felicitas Röhrig (Consultant), Benjamin Schiek (The Alliance), Aniruddha Ghosh (The Alliance), Julian Ramirez-Villegas (The Alliance), Harold Achicanoy (The Alliance), Alejandra Esquivel (The Alliance), Cesar Saavedra (The Alliance), Godefroy Grosjean (The Alliance).

Project leaders: Godefroy Grosjean and Peter Läderach

WFP team leaders: Pablo Arnal and Vera Mayer

Proofreading: Scriptoria Solutions

Design and layout: Katya Kuzi

Photos: ©2012/CIAT/Neil Palmer, accessed from Flickr

SPECIAL THANKS

The authors would like to thank Giancarlo Pini (WFP), Nicolas Bidault (WFP), Bikash Paudel (WFP), Man Kshetri (WFP), Katarina Kohutova (WFP), Adam Savelli (The Alliance), Dorcas Jalango (The Alliance), Megan Mayzelle (Scriptoria Solutions) and Stephanie Jaquet (The Alliance) for their contributions to this publication.

RECOMMENDED CITATION

This document should be cited as:

Röhrig, F., Schiek, B., Ghosh, A., Ramirez-Villegas, J., Achicanoy, H., Esquivel, A., Saavedra, C., Grosjean, G. 2021. WFP Critical Corporate Initiative: Climate Response Analysis Nepal. The Alliance of Bioversity and The International Center for Tropical Agriculture; World Food Programme. 71 p.

Table of contents

Acknowledgements	2
Key messages	4
Acronyms and abbreviations	8
Introduction	9
Part 1: National Context	10
1.1 Geography	11
1.2 Agro-ecological characteristics	12
1.3 People and livelihoods	14
1.3.1 Socioeconomic characteristics	14
1.3.2 Socioeconomic challenges	14
1.3.3 Food and nutrition security	16
1.4 National climate profile	18
1.5 Economic analysis using IMPACT model	18
1.5.1 Supply-side impacts of climate change	20
1.5.2 Climate change impacts on the diet trajectory	21
1.5.3 Climate change impacts on prevalence of hunger and malnourishment	22
1.5.4 Conclusions and recommendations based in the IMPACT analysis	23
1.6 National climate change policies and development strategies	24
1.6.1 National climate strategies and finance mechanisms	24
1.6.2 National development strategies and finance mechanisms	24
1.6.3 International alliances and finance mechanisms	25
1.6.4 Gaps and opportunities	26
Part 2: Context within selected intervention areas	27
2.1 Intervention areas and crops of focus with rationale for selections	28
2.2 Climate risks by province	30
2.2.1 Mean climate projections	31
2.2.2 Climate hazard analysis for selected hazards	32
2.3 Current and future crop suitability	35
2.4 Hotspots with co-occurrence of risks	37
2.5 Summary by province	39
Part 3: Review of World Food Programme activities and recommendations for optimization	41
3.1 Review of current relevant WFP activities and recommendations for programmatic response	42
3.2 Programmatic recommendations for WFP climate adaptation response	44
3.3 Scoping of WFP programmatic partnership opportunities	49
3.4 Potential funding mechanisms	49
Part 4: Synthesis	51
Part 5: References	57
Part 6: Annex	61
Annex 1: IMPACT results	62
Annex 2: Methods for spatial analysis to generate maps for hotspot analysis	68

Key messages

CONTEXT

- **Nepal is one of the countries that is most vulnerable to natural disasters and climate change. Climate change presents detrimental impacts on food and nutrition security.** To better respond to and anticipate the needs of Nepal's population in relation to current and future climate challenges, this report assesses projections of climate change's effects on food and nutrition security and vulnerability indicators. This report also outlines recommendations for climate adaptation programming for World Food Program (WFP) operations in three selected provinces of Nepal - namely Province 2, Karnali, and Sudurpaschim Province.
- **The government of Nepal's policy focuses on climate change and disaster risk response - yet gaps in implementation exist, especially at the province and district levels.** Insufficient funding, lack of capacity at the province and district levels, and administrative restructuring and decentralization due to the country's adoption of a new constitution in 2015 provide openings for WFP programming to support the government in addressing, designing, and implementing food and nutrition security policies for climate adaptation.

PROJECTED CLIMATE CHANGE IMPACTS THROUGH 2050

- **Projected climate impacts, as well as recommendations for adaptation, differ strongly between and within provinces.** While climate projections suggest a general warming trend across the whole country, precipitation will likely become more erratic and unpredictable. Some parts of the country are projected to receive more precipitation in the future, and other parts are projected to receive less precipitation in the future. These changes depend on season and elevation, which varies from 60 m above sea level in the south to over 8000 m above sea level in the north. Summer monsoon rainfall is projected to increase in amount yet shorten in duration. Short and medium-term projections for the years 2030 and 2050 predict more intense rainfall during peak summer months across all assessed provinces. Projections foresee lower and upper mountain elevations becoming drier during the winter, while mid-hill areas might become wetter. Increasing winter droughts are especially problematic for high mountain districts, which have significantly less access to irrigation sources as compared to lower elevation districts. Drier winters will likely severely impact agricultural productivity and food and nutrition security in remote mountain areas, such as Karnali and Sudurpaschim Province.
- **Climate change impacts specific locales through hazards such as floods, droughts, cold spells, and heat stress.** Most of these hazards are projected to become more frequent and extensive in the future, with the exception of cold spells, which will likely become rarer due to warming temperatures. In addition, the population of Nepal is highly vulnerable, with food insecurity, inequality, poor health, little access to cities, and out-migration prevailing across the three provinces. Accordingly, the projected increase in climate hazards will likely have a disproportionately strong impact in those vulnerable areas - most notably in southern and lower hill districts across Provinces 2 and Sudurpaschim Province respectively, but also to some extent in all three provinces.
- **While low elevation districts across Provinces 2 and 7 are currently highly suitable for cultivating maize and lentil, they are projected to become poorly suitable for maize cultivation and moderately to poorly suitable for lentil cultivation.** Rice cultivation in both lowland and upland regions will remain largely unchanged; lowlands are moderately to highly suitable for rice cultivation, and uplands are poorly suitable to unsuitable, with the slight exception of low to mid-hill areas of Karnali and Sudurpaschim Provinces. This means that responders will need to consider shifting to alternative stress-tolerant crops in areas where maize and lentil cultivation declines and choosing varieties that are better adapted to new climate conditions. Where suitable, production can shift to higher areas.

ECONOMIC ANALYSIS OF CLIMATE CHANGE IMPACTS OF AVAILABILITY AND STABILITY OF FOOD SUPPLY THROUGH 2050 (IMPACT)

- **According to an economic analysis based on a future with high global carbon emissions, few mitigation efforts, and improved technology, improvements in agricultural productivity and yield are projected to increase the availability and stability of food through 2050.** This is expected to decrease levels of hunger and undernourishment. While these gains are in line with socioeconomic trends, they are due to rapid industrialization, technological innovation, and improving education, rather than improving climatic conditions. On the contrary, negative climate trends will prevent the agricultural sector from reaching its maximum potential. Maize and other cereal crops face the gravest threat, although the production of pulses, millet, sugarcane, vegetables, cotton, and wheat will all be adversely impacted by climate change through 2050.
- **Improvements in productivity and yield may be distributed unevenly, leading to pockets of entrenched deprivation.** A geo-spatial analysis of eight dimensions of vulnerability has found different types of vulnerability occurring in tandem across all provinces, with Karnali and Province 2 most likely to face overlapping vulnerabilities. Without effective intervention, current vulnerability indicates a preponderance for future vulnerability, indicating that gains in agricultural productivity or socio-economic development may be felt less acutely in these areas.



RECOMMENDATIONS AND OPPORTUNITIES FOR FUTURE WFP PROGRAMMING, PARTNERSHIPS, AND FUNDING STREAMS

- **WFP in Nepal already has a strong focus on incorporating climate adaptation response into its programming, with great potential for future expansion into new areas and building upon existing programs.** Existing programs include initiatives on early warning systems, forecast-based financing, agricultural and livestock insurance, climate smart agriculture training for farmers and value chain stakeholders, and helping local governments develop and implement action plans. Recommendations are formulated based on climate impact analyses. These recommendations address increasing drought and heat stress as well as floods and landslides in each of the three provinces and focus on specific technologies and practices that affect livelihood, landscape and supply chain levels (table 4). To provide an environment that can build adaptive capacity at a local level, these recommendations are accompanied by suggestions for adaptation options within institutional systems, processes, and policies, as shown in Table 5.
- **WFP has many opportunities to strengthen partnerships with both local and international organizations to support climate resilience programming in the country.** WFP's most important strategy is to strengthen its collaborations with different government agencies that work on agricultural development, climate change, and food security. However, enhancing climate adaptation programming also presents an opportunity for WFP to systematically build and strengthen partnerships with other UN agencies in the country, such as FAO and IFAD. These partnerships strengthen the UN's role as one actor with common objectives for the country. This will not only enhance the effectiveness of program implementation in Nepal, but also strengthen WFP's position in relation to other organizations with longstanding expertise in climate change programming, thus enhancing WFP's ability to win funding from international donors. Nepal hosts numerous international and national non-governmental organizations with expertise and experience in the climate change field, which can provide great value to WFP in terms of partnerships.

Acronyms and abbreviations

ACLED	Armed Conflict Location & Event Data Project
AEZ	Agroecological zones
AF	Adaptation Fund
CC	Climate Change
CDaFN	Community Development and Advocacy Forum
CGIAR	Consortium of International Agricultural Research Centres
CIAT	International Centre for Tropical Agriculture
CLEAR	Consolidated Livelihood Exercise for Analysing Resilience
CSP	Country Strategic Plan
EU	European Union
FAO	United Nations Food and Agriculture Organization
GCF	Green Climate Fund
GDI	Gender Development Index
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HDI	Human Development Index
IMPACT	International Model for Policy Analysis of Agricultural Commodities and Trade
KIIs	Key Informant Interviews
KIRDARC	Karnali Integrated Rural Development and Research Centre
KVS	Koshi Victims Society
LAPA	Local Adaptation Plan of Action
LDC	Least Developed Country
LDCF	Least Developed Country Fund
Li-Bird	Local Initiatives for Biodiversity, Research and Development
MoFE	Ministry of Forests and Environment
NARC	National Agriculture Research Council
NGO	Non-Governmental Organization
ODA	Overseas Development Aid

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_30980

