

Food Security, Disasters and Climate Change in the Andean Region

Factors contributing to vulnerability to food insecurity relative to disaster risk and climate change

In the Andean Region, climatic change and the risks of disasters of climatic origin are factors that highly affect food security and sustainable development. This map intends to capture these vulnerabilities and has been constructed as part of the WFP Andean initiatives aimed at linking the issues of food security with climate change adaptation with an emphasis on risk reduction strategies.

Information Sources:

Bolivia: Servicio Nacional de Meteorología e Hidrología (SENAMHI). Programa Nacional de Cambios Climáticos (PNCC). Unidad de Contingencia Rural/ Ministerio de Desarrollo Rural y Tierras (UCR/MDRYT). Sistema Único Nacional de Información de Tierras (SUNIT). Sistema Nacional de Información de Salud/Ministerio de Salud y Deportes (SNIS/MSD). Instituto Nacional de Estadística (INE). Unidad de Análisis de Políticas Sociales y Económicas (UDAPE).

Colombia: DNP, Ministerio de Ambiente, Lineamientos de Política de Cambio Climático, Colombia 2002. Instituto Geográfico Agustín Codazzi (IGAC). DNP, Documento Corpes Social Número 113, Política Nacional de Seguridad Alimentaria y Nutricional (PSAN), 2008. ICBF, et al., Encuesta Nacional de la Situación Nutricional en Colombia ENSIN, 2010. PNUD, Las regiones de Colombia frente a los objetivos del milenio, 2004. Ministerio del Ambiente, Segunda Comunicación Nacional ante la Convención Marco de las Naciones Unidas sobre Cambio Climático, Capítulo Cuatro, Vulnerabilidad, 2010. DANE, Reporte final de áreas afectadas por inundaciones, 2010 – 2011. Ministerio de Agricultura y Desarrollo Rural, Información sobre los impactos del invierno y las estrategias para la adaptación al cambio climático, 2012. PNUD, Informe Nacional de Desarrollo Humano, 2011.

Ecuador: Secretaría Nacional de Planificación (SENPLADES). Instituto Nacional de Estadísticas y Censos (INEC). Segunda Comunicación de Cambio Climático (Secretaría Nacional del Ambiente). Ministerio de Coordinación y Desarrollo Social (MCDS), Mapa de la Desnutrición Crónica. Instituto Nacional de Meteorología e Hidrología (INAMHI). Mapa de Vulnerabilidad a la Inseguridad Alimentaria (VAM-PMA). Centro Internacional para la Investigación del Fenómeno de El Niño (CIIFEN).

Peru: Instituto Nacional de Defensa Civil (INDECI). Censos Estadísticos. Dirección de Ordenamiento Territorial (DOT/MINAM). Servicio Nacional de Meteorología e Hidrología (SENAMHI). Instituto Nacional de Estadística e Información (INEI).

Segunda Comunicación de Cambio Climático (MINAM). Methodological Process:

This map seeks to preliminarily identify areas in which food security is most threatened by climate change and the risk of disasters of climatic origin, to allow focusing future analysis in greater depth, as well as to target possible areas in need of interventions and support.

Based on official public information published by or obtained from government agencies in each country in the region (Bolivia, Colombia, Ecuador and Peru) spatial analysis was focused on three components and their convergence:

- a) Food Security
- b) Disaster Risks
- c) Climate Change

The analysis of the food security component took into account variables that allowed an approximation of the vulnerability of availability, access, and utilization of food as well as the existing VAM analysis (Vulnerability Analysis and Mapping) in those countries counting with this analysis.

For the analysis of disaster risks, only risks related to the climatic context were considered and the following statistics were used depending upon availability: historical weather records, emergency registries, monitoring reports and official maps of physical vulnerability and risks according to availability in each country.

The component of climate change was addressed starting from each country's Second Communication under the United Nations Framework Convention on Climate Change (UNFCCC), taking into consideration vulnerabilities, trends in temperature, precipitation and prospective climate scenarios for 2030 to 2040 in each country.

Given the available data were elaborated and published in different years, the analysis is based on the behavior of indicators in the decade of 2001-2010 and, in some cases includes information from 2011.

Geographic information systems (GIS) were used for the integration and analysis of these components, applying spatial techniques such as map algebra, multivariate analysis, principal components, weighing and others depending on the particular information and the level of detail and the analysis unit defined in each country.

The geodesic representation of each country has its own parameters. However, this representation was converted to the international geographic system with Datum WGS-84 in order to be able to integrate the national maps into the system established for the regional presentation.

The boundaries and names shown on these maps do not imply official endorsement or acceptance by the United Nations. Also, due to space restrictions, the islands belonging to Ecuador (Galapagos), Colombia (Archipelago of San Andrés, Providencia and Santa Catalina), Peru (islands Pacific Departments of Ancash, Arequipa, Callao, Ica, La Libertad, Lambayeque, Lima, Moquegua, Piura and Tumbes) may not be represented in the map.

GROUP 1	GROUP 2	GROUP 3	GROUP 4	GROUP 5
Low Vulnerability	Medium Vulnerability	High Vulnerability	Very High Vulnerability	Severe Vulnerability

Probability of Climate Change	Moderate	Moderate	High	Very High	Highest
Vulnerability to Disaster Risk	Low	Moderate	High	Very High	Highest
Level of Food Insecurity	Low	Moderate	High	Very High	Very High
Bolivia (Municipalities)	21	79	57	32	148
Colombia (Departments)	7	7	7	6	6
Ecuador (Parishes)	153	582	820	586	389
Peru (Districts)	42	332	597	673	190

