

The last straw?

The additional burden of climate change
on food security in the Hindu Kush-Himalaya



“The climate has already changed so much and we are dependent on water. After the floods last year, now it has become the time of drought (before monsoon). There is no rain. But we are obliged to cultivate. If not, we have nothing to eat.”

60-year old farmer, Lower Lawpani, Tinsukia, India

The food price spikes of 2007–08 brought food security into sharp focus on the global agenda. Declines in international commodity markets, financial speculation in low cereal stocks, dramatic weather events, soaring oil prices, and growth in biofuels competing for cropland merged to produce a global crisis. Coupled with the growing impacts of climate change, the question of whether we would have enough food to feed a growing world population in the future vaulted to the top of political agendas.

However, as with so many global issues, some regions are far more vulnerable to food insecurity than others. Mountain regions are particularly hard hit. In places such as the Hindu Kush-Himalaya (HKH), food security is not only a question for the future but for today. Here, vulnerability is a fact of life. Around half of the world's undernourished people live in Bangladesh, China, India, Nepal and Pakistan, and in all of these countries, the mountain areas have the highest degree of food deficiency.

Global drivers, local impacts

Although the state of food security in the Himalayan region is largely governed by the level and quality of agricultural production and household purchasing power, many factors play a part. The HKH is increasingly impacted by climate change, depletion of natural resource systems, effects of global economic recessions and dramatic global food price increases. Global research prioritizes lowland systems so there is a lack of research and development on mountain crops and production systems. The lack of focus and interest in mountain crops limits investment, innovation, and technical support. Furthermore, as in so many other places, it is difficult to attract youth to agriculture. The net result is diminishing local food production and reduced employment opportunities in the region.

While climate change may not be the major driver of food insecurity globally in the near term, this is of little comfort to those already living on the margins of food production. In the Hindu Kush-Himalaya, a harsh climate and rugged terrain, coupled with remoteness have always presented a major challenge to household food security. As one of the world's climate change hotspots, it is also experiencing greater-than-average changes in temperature. For the HKH population growing faster than the global average and with chronically high levels of poverty and limited opportunities for adaptation, climate change simply adds to the range of external factors threatening the availability, access, utilization and stability of food.

From the 1980s to mid-1990s, the increase in food grain production in the HKH region kept pace



with or exceeded the population growth. Per capita availability of food increased in most countries of the region. However, due to a complex mix of high production costs, no increase in agricultural lands, low returns caused partly by increasing state subsidies, and regulation of food prices in HKH countries aimed at helping urban consumers and poor communities, food grain production has remained more or less constant. Add to this a range of environmental factors and the prospects for future food security are becoming worse.

One of the most significant effects of climate change in the HKH, and the one with perhaps the greatest impact on agriculture is the availability

of water, both too little and too much. As changes in the onset and duration of monsoons become less predictable, some areas experience increased flooding, including flashfloods, while others become more drought-prone and water-stressed. At the same time, mountain glaciers, which act as vast water reservoirs for over one billion people in the HKH and the larger Asian region, are retreating. Variable and often damaging water supplies combine with other global drivers such as the ever increasing demand for food, feed, raw materials for biofuels; high energy prices; overall economic growth; and generally inadequate investments in agriculture to produce a worsening food security situation in the HKH.

Climate change calls for more robust agriculture

Flexibility in agriculture is seen as a key to adaptation. In some areas of the HKH, farmers have demonstrated an ability to adapt to environmental and market changes by taking steps such as increasing crop diversity or changing crop varieties. In other parts of the region, options are more limited. Ultimately, successful food security strategies require further building on the inherent flexibilities and diversities in local farming systems, increasing knowledge and skill levels, and developing more resilience locally.

Farmers in the HKH region are embedded in a long term process of improving their household food security situation by relying less on subsistence production and switching to cash crops. While this can substantially raise incomes, it can also increase their vulnerability to market fluctuations. International food prices and market structures are likely to be among the most important factors for food security in HKH in the near term. It is, however, extremely difficult to predict exactly how price developments will interact with other political, economic and environmental processes.



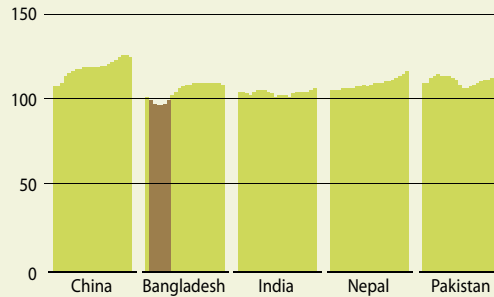
As farming systems in the HKH region gradually become more reliant on the cash economy, seasonal and long-term labour migration increases. This shift in mountain agriculture means that a major portion of the men travel to work off the farm leaving women with the responsibility for all of the work on the farm and in the family. This feminization of agriculture requires special attention in adaptation planning.

Traditionally women manage the household and carry out a large portion of the daily chores, and are in many ways adept risk managers. However, the future food security demands mean that women need to strengthen their adaptation skills. This includes coping with changing ecosystems which put greater demands on time and work such as fetching water and firewood, developing greater capacity for storing food – and in some cases water, and coping with a smaller work force on the family farm. Farm management will also require the ability to exploit flexibility and diversity by using new crops with a higher cash return, particularly mountain specific niche crops, and crops requiring less labour input, with competent extension services.



Food availability

Food supply as a percentage of food requirement, 1990-2013



The indicator expresses the Dietary Energy Supply (DES) as a percentage of the Average Dietary Energy Requirement (ADER) in each country. Average supply of calories for food consumption is normalized by the average dietary energy requirement estimated for its population

The cost of rice

US Dollars per kilogram



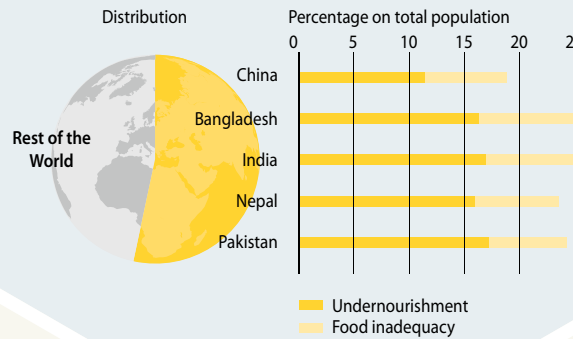
Availability

FOOD SECURITY

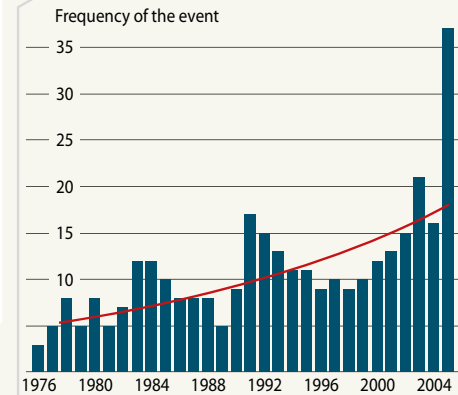
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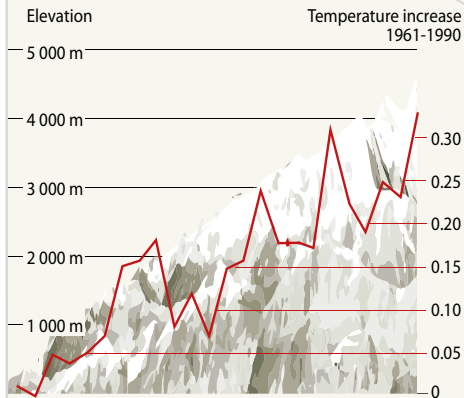
Undernourishment and food inadequacy



Flood frequency increases in the HKH region



Tibetan Plateau: temperature increased more in high altitude regions



Sources: FAO Food Security Statistics and FAO GIEWS Food Prices Data, accessed October 2013; EMDAT OFDA CRED Database; Liu, X. and Chen, B., Climatic warming in the Tibetan Plateau during recent decades. Int. J. Climatol, 2000.

Action today to prepare for tomorrow

In the Hindu Kush-Himalaya, it is essential to increase efficiency in food production to keep up with the population growth without seriously compromising environmental sustainability. Under the additional burden of climate change, it becomes

clear that this challenge must be shouldered not only by farmers but also by local, regional and international institutions with the capacity to implement more effective policies and programs aimed at the root problems of future food security.

On World Food Day 2013, Christiana Figueres, Executive Secretary of the UNFCCC stated that, “if we are to sustainably feed the world’s population in the future, we need to see action today that prepares farmers around the world for the impacts of climate change.” In the Hindu Kush-Himalaya, this means striking to the heart of several complex challenges:

- The need for policies in the region that acknowledge the additive role of climate change impacts to other environmental, economic and political stressors on food security and livelihoods so as to better link climate change mitigation and adaptation to development strategies. Policies need to reflect that local agricultural production and purchasing power are the key determinants of food security. At the same time, it is vital that action be taken at the international level via the UNFCCC to support smallholder farmers.
- The need to support smallholder farmers to develop the inherent flexibility in their farming systems towards greater production diversity and eco-agricultural systems that provide critical ecosystem services (water regulation, genetic diversity, habitat, pest control, climate regulation) and essential food resources.
- The need to improve access to education, training, and information programs to help mountain communities cope with and exploit opportunities from changing environmental conditions, and ensure that these also address the special concerns of women.



“Food security and climate change are interlinked. Hundreds of millions of people are undernourished or face food insecurity, and climate change is making it harder to feed a growing population.”

Christiana Figueres, Executive Secretary of the UN Framework Convention on Climate Change (UNFCCC)

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HICAP is aimed at contributing to the enhanced resilience of mountain communities through improved understanding of vulnerabilities, opportunities, and potentials for adaptation. A full length report on food security in the Hindu Kush-Himalaya will be released in 2014.

For more information about HICAP, please visit: <http://www.icimod.org/hicap>

The views and interpretations in this publication are those of the author(s). Graphic by Riccardo Pravettoni. Photos by Bjørn Kaltenborn, Sarah Marie Nischalke and Laxmi Dutt Bhatta.

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