

## Comments on “India 1960-2010: Structural Change, the Rural Non-farm Sector, and the Prospects for Agriculture” - May 10, 2012

**Marianne Banziger, Deputy Director, Research & Partnerships, International Maize and Wheat Improvement Center (CIMMYT), Mexico**

I appreciate the opportunity to comment on this most insightful presentation by Hans Binswanger-Mkhize. One of the most interesting aspects of his analysis is that structural change does not (need to) follow a preconceived concept. India over the past 50 years did not evolve in the same manner as China. Countries are unique and evolve differently, and what may seem like a constraint today may become a future opportunity. For example:

- Does limited urban labor absorption pose an important constraint **or** does it create a much more powerful opportunity because it stimulates decentralized rural development?
- Will insufficient formal sector jobs determine India’s future **or** will the opportunities emerging out of widespread self-employment stimulate greater innovation?
- Will the feminization of agriculture turn into an opportunity because it puts women at the basis of India’s future food security?
- Is part-time farming undesirable **or** a highly relevant form of risk management that makes India society stronger?
- And, do we deal with an agricultural sector that is ill-prepared to address future challenges because of its small scale or a sector that still “holds its breath” and can unleash tremendous growth?

Indeed, India’s evolution reminds me very much of the country where Hans Binswanger-Mkhize and I grew up no more than 20 miles apart. In the early 1800s, it was called “the poverty house of Europe”, troubled by lack of natural resources, difficult terrain and widespread malnutrition. Smallholders and part-time farming persist today, yet a rural cottage industry and decentralized development contributed very much to its structural change. My grandparents were smallholder part-time farmers edging a living out of 10 acres. My other grandparents worked as rural laborers in the informal sector. I am talking about Switzerland where today very little indicates its struggles to overcome an impoverished past. Likewise, it is only the future that will judge the power - or weaknesses - of India’s structural change.

Binswanger-Mkhize’s paper is very thorough and there remains little to add, except maybe to look into the future and assess what the next decades will bring. Is it a future where the urban and landless poor could be held hostage by part-time farmers?

Climate change will become increasingly relevant in India and South Asia over the decades to come. Indeed, next to Africa and Central Asia, it is the region where agricultural production will most strongly be affected by climate change. Wheat is one of India’s main food crops. While self-sufficient today, wheat production in South Asia in 2050 will decrease by 20-30 percent if

there is no change in technologies used. At the same time, demand for wheat will increase by more than 40 percent (CIMMYT and ICARDA 2011), creating a shortfall of food production where potentially one quarter of the global population will live (Bloom and Rosenberg 2011).

Global food prices are today rising due to demand increases that outpace agricultural production increases. People in emerging economies are changing to animal-based diets and the pressure to produce renewable energy from biofuels are the main reasons for the strong demand increase. Changing diets are the result of large numbers of people rising out of poverty, yet as such demand is not met by adequate agricultural production increases, food price increases erode those same people's purchasing power while threatening the food security of the 1 billion poorest.

For the prices of major food staples to remain stable, it is estimated that farmers' yield gains would have to increase from 1.2 percent to 1.7 percent for maize, from 0.8 percent to 1.2 percent for rice, and from 1.1 percent to 1.7 percent for wheat (derived from Rosegrant and Agcaoili 2010). This is unlikely to happen globally, and with the pressures of climate change, limited land area, falling ground water tables, more expensive energy, labor and fertilizers, it will be very challenging to maintain agricultural productivity increases to match rising demands in South Asia. Today, 175 million people in India are already sustained with grain produced with ground water that is not being renewed (Brown 2011).

Temporary and relatively small food production shortages in 2008 and 2010/11 led to the greatest food price increases since 1973 and widespread social unrest in cities of lower income countries. Poor consumers all at once had to spend twice as much of their household income on food staples to keep hunger away, reducing available incomes for non-staple foods and non-food expenses such as health and education. Even with strong economic growth in South Asia, there is the risk that food and energy price inflation could exceed income growth of significant numbers of urban poor and rural net consumers. This outcome could become a serious setback to economic growth and cause for much more widespread social unrest than seen so far. People do not like to be "driven back into poverty".

There is the assumption that food production deficits in regions negatively affected by climate change, such as South Asia, will be met by greater production in temperate areas that may benefit from climate change. The questions that are rarely examined are "at what price?" and "will the poor be able to pay for it?"

Returning to the example of wheat, productivity increases in the so-called first world "bread baskets" have been minimal over the past decade (FAOSTAT 2012). In addition, in spite of high prices, the profitability of wheat production has been inadequately attractive to farmers in these areas, and there is a shift from wheat to other more profitable crops, such as maize and canola. So even though agronomically more suitable for wheat production, the economic realities for farmers in high income/ temperate countries may not make up for shortfalls emerging in lower income/warmer regions such as South Asia and at prices that are affordable to the poor in those regions.

As a result, and even though affected by climate change, sustaining agricultural productivity increases in South Asia will be very much at the core of determining future food prices and availability, economic development and social stability in this region. Indeed, over the past decade, wheat productivity increases in several South Asian countries have been much higher than those in the north as the use of fertilizers, irrigation and modern varieties has increased. With these avenues exploited - and in the case of irrigation and fertilizers sometimes unsustainably used - new and scale-neutral technologies such as heat tolerant crop varieties or cell phone mediated precision agriculture that allow smallholder farmers to optimize agronomic management, profitability and resource use will become important game changers. Rainfall water is plentiful in some of the poorest regions of eastern India and when matched with new technologies can be the source of rural development while meeting emerging food deficits.

In 2010, the Indian Prime Minister in his address to the nation on Independence Day restated the agenda for agricultural R&D in India. “Our government wants a food safety net in which no citizen of ours would go hungry. [...] This requires enhanced agricultural production which is possible only by increasing productivity. [...] Our country has not witnessed any big technological breakthrough in agriculture after the Green Revolution. [...] We need technology which would address the needs of dry land agriculture. In addition, our agriculture should also be able to deal with new challenges like climate change, falling levels of ground water and deteriorating quality of soil.”

Following this call for action and a partnership that already contributed once to overcoming a major food crisis, the Government of India and CIMMYT signed on October 5, 2011 an agreement to establish the Borlaug Institute for South Asia in India. The institute will co-locate international and South Asian scientists for joint research on the emerging food security challenges facing South Asia. Even with relatively modest income increases in South Asia, demand increases for basic food staples will exceed supply, mostly due to the underlying metrics (population, land area). In the case of wheat, one of India’s main staples, we conclude that imports might not forestall major food price increases due to logistical constraints (volumes) and farm income realities in high-income countries. Meanwhile, new technologies must be developed to support productivity increases in smallholder environments in South Asia.

To conclude, Hans Binswanger-Mkhize’s paper highlights the feminization of India’s agriculture. More than ever, these smallholder women farmers will be at the center of India’s future. With appropriate support they can become the engines for sustained agricultural productivity growth and contribute to avoiding food deficits and food price rises in South Asia.

## References

- Bloom, D.E. and Rosenberg, L. 2011. The Future of South Asia: Population Dynamics, Economic Prospects, and Regional Coherence. <http://www.hsph.harvard.edu/pgda/working.htm>
- Brown, L. 2011. How to Prevent Environmental and Economic Collapse. Earth Policy Institute.
- CIMMYT and ICARDA. 2011. Global Alliance for Improving Food Security and the Livelihoods of the Resource-poor in the Developing World. [www.wheat.org](http://www.wheat.org)
- FAOSTAT 2012. <http://faostat.fao.org/>
- Rosegrant, M. W. and Agcaoili, M. 2010. Global food demand, supply, and price prospects to 2010. International Food Policy Research Institute, Washington, D.C. USA.