

Global Environmental Changes and Food Security in Indo Gangetic Plains: Issues and Activities



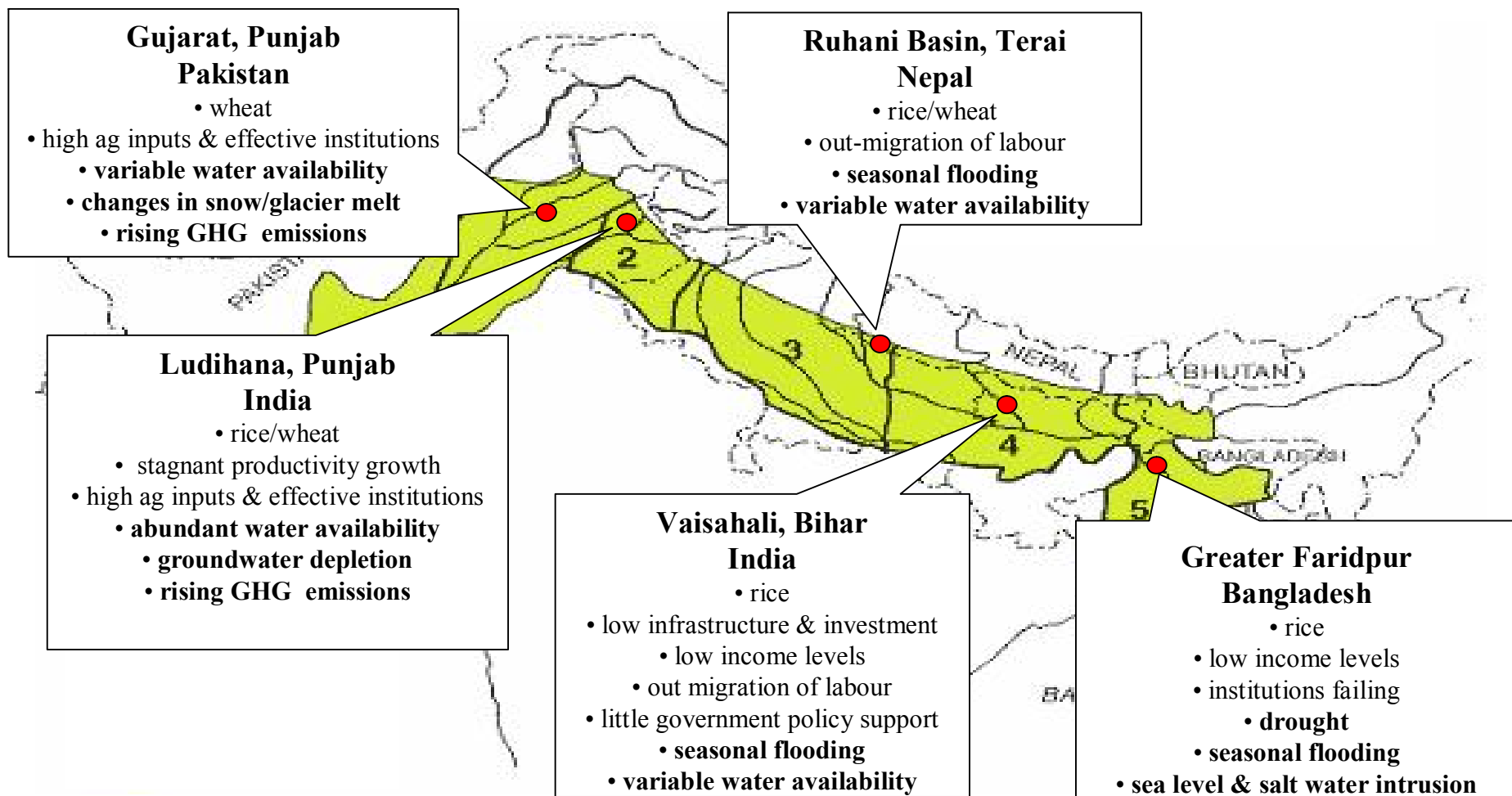
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Context for IGP Food System Vulnerability Analyses

range of study districts across the IGP (w/ CGIAR & APN)



Source: Multi-authored analysis of IGP food system vulnerability to GEC. GECAFS Report. In prep.

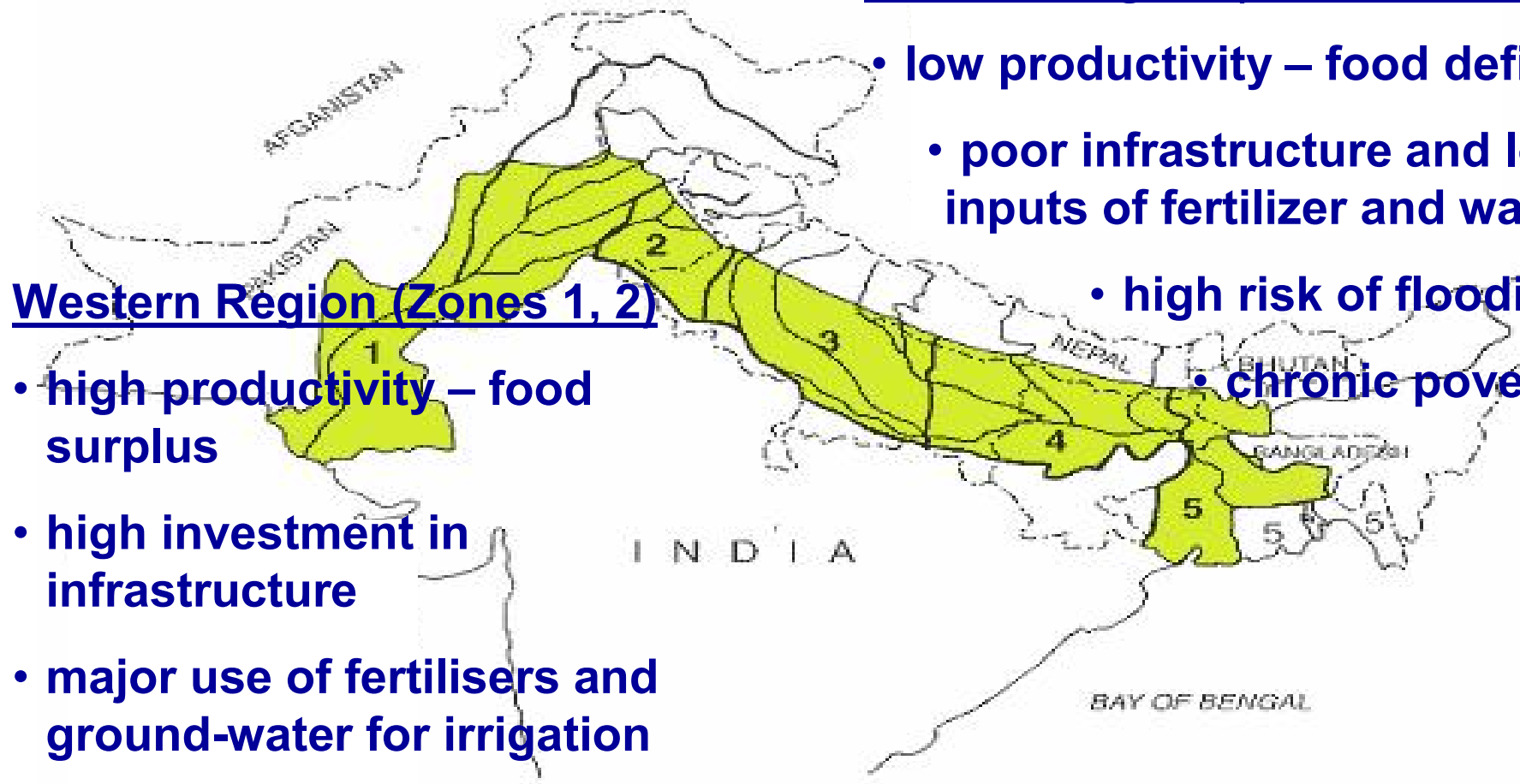
Indo-Gangetic Plain: Strong W – E variations

Eastern Region (Zones 3, 4 & 5)

- low productivity – food deficit
- poor infrastructure and low inputs of fertilizer and water
- high risk of flooding
- chronic poverty

Western Region (Zones 1, 2)

- high productivity – food surplus
- high investment in infrastructure
- major use of fertilisers and ground-water for irrigation
- irrigation real costs very high



Characterization of Food Systems in IGP

Food Security outcome	Determinant characteristics	Which if any food system activities contribute to this determinant?	Which other drivers contribute (social welfare, environmental)?	Major actors
Availability <ul style="list-style-type: none"> • Production • Exchange • distribution 				
Access <ul style="list-style-type: none"> • Affordability • Allocation • Preference 				
Utilization <ul style="list-style-type: none"> • Food safety • Social value • Nutritional value 				

Characteristics of Food Systems

	Gujrat, Pakistan	Ludhiana, India	RTB, Nepal	Vaishali, India	Faridpur, Bangladesh
Food Availability	<ul style="list-style-type: none"> • Sufficient Staple foods available locally 	<ul style="list-style-type: none"> • Food surplus region. • Almost 50% of households do not produce as they do not own land. 	<ul style="list-style-type: none"> • High seasonal variation affects local food availability. • Food distribution is poor in rural areas. 	<ul style="list-style-type: none"> • Food production highly affected by the incidence of drought/ floods. 	<ul style="list-style-type: none"> • Highly insufficient food production.
Food Utilization	<ul style="list-style-type: none"> • Wheat and rice major consumption items. • Pulses are primary source of protein. • Milk adds diversity to food consumption. 	<ul style="list-style-type: none"> • Wheat and rice major consumption items. • Pulses and milk are the major sources of protein. • Large variation across income classes. 	<ul style="list-style-type: none"> • Rice is major food item. • Lentils and beans are the major source of protein. 	<ul style="list-style-type: none"> • Rice is the major food item. • Poor households mostly consume grains. 	<ul style="list-style-type: none"> • Rice is the major food item. • Diets are low in diversity.
Access	<ul style="list-style-type: none"> • Purchasing power varies across households. 	<ul style="list-style-type: none"> • Purchasing power varies. • Strong market infrastructure for staple food but low incomes and recent price rise adversely affected access of the poor to food. 	<ul style="list-style-type: none"> • Prices rise sharply in lean season. • It adversely affects the distress sellers. 	<ul style="list-style-type: none"> • Incomes are low and prices fluctuate, adversely affecting the poor households. 	<ul style="list-style-type: none"> • Household incomes are low. • Thus they have poor access to food.

Major Determinants of the Food Systems: IGP

Western Region:

- Productivity levels are high but falling significantly.
- Decline in rainfall, further resulting into a decline in ground water table.
- Significant decline in soil health due to intensive cultivation practices.
- Incomes from farming are declining and hence the fall in household incomes. It badly affects the purchasing power.
- Sharp rise in food prices badly affecting the access to food.
- Consumption pattern is changing; richer consuming high value foods and poorer substituting with cheaper and self produced foods.

Eastern Region:

- Productivity levels are low and further declining.
- Flooding in Vaishali (Bihar, India) and Bangladesh is a serious problem, adversely affecting the food availability.
- Per capita land holdings are also declining, adversely affecting the income from farming.
- Household incomes are low and vary throughout the year.
- Purchasing power is low and is adversely affected by the seasonal price fluctuations as well as food price rise.

Vulnerability of Food Systems

Western Region

- The GECs are making the food production systems **vulnerable** due to fall in productivity, decline in soil health, climatic variations.
- Access to food is also showing low to medium **vulnerability** due to expected fall in household income and rise in food prices.
- Food systems show less vulnerability w.r.t. food distribution and food utilization. It is because of well developed infrastructure. However, food diversity declines due to price rise and fall in incomes.
- Food safety is an important concern due to contamination of ground water and vegetables.

Eastern Region

- Production showing **high vulnerability** due to fall in land size and decline in household self-sufficiency in food production.
- Access to food shows **high vulnerability** due to expected fall in household income and rise in food prices.
- Distribution is moderately vulnerable due to poor infrastructure, skewed distribution and trade vulnerability.
- Food utilization shows low to medium vulnerability, although food safety is the concern.

Adaptation Strategies for GECs

Short Run Strategies

- **Falling Production/Productivity:** More intensive cultivation, higher input use and increased use of ground water.
- **Access to food:** Diversifying to other income sources to increase household income. Lot purchase to safeguard against rising prices. Out-migration in the Eastern region is important adaptation strategy.
- **Food Safety:** Self production, but landless households cannot do so. They will have to spend more on safer foods.

Long Run Strategies

- Households are generally not clear with long-run strategies.
- Many believe that intensive input use will help.
- Many farmers intend to leave agriculture or significantly reduce their dependence on it as their income source.

Do these Adaptation Strategies Mitigate Vulnerability of Food Systems in the Long Run?

Perhaps Not

- **Intensive input use:** This will further deepen the crisis. Deterioration of soil health and further fall in ground water.
- **Diversifying to other income sources:** States are failing to generate other income sources due to poor human resources and assets.
- **Self production for Food Safety:** No doubt that self producers will be safe but the people who are relatively more vulnerable such as landless and urban labour households will have to shell much higher prices endangering food security.

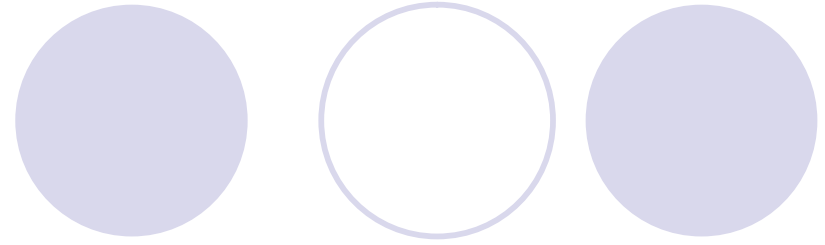
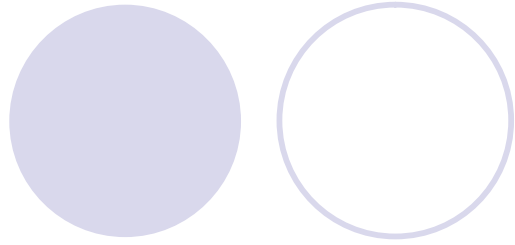
Some Important Issues for Future Analysis

- Need to differentiate between sustainable and non-sustainable mitigation strategies. Impact analysis of identified strategies on future vulnerability will help.
- Farmers and the State are emerging as major actors for important food security outcomes. Their involvement (both in policy planning and implementation) is very important for success in future on GEC and food security issues.
- **National v/s regional food security:** In food surplus regions (Indian and Pakistan Punjab), although vulnerability of food systems may not disturb food security in the region, but national food security will surely be in trouble.

Will Scenario Development Help?



- **It is better to build scenarios based on different policy actions, mitigation strategies and degrees of vulnerability.**
- **This will help come out with a range of policy options.**
- **Different scenarios have different probabilities and may become a reality under different socio-econo-political situations.**
- **Thinking in terms of scenarios will help.**



Thank You