India's Food Challenge

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The key question

- Large and growing population…likely to be the most populous nation on the planet by 2030 (1.4 billion by 2026)
- Second fastest growing large economy (above 8% p.a in the last five years), next only to China ; and half of average Household expenditure spent on food…
- With more than 17% of global population, less than 4% of global agri-land and less than 3% of global fresh water supplies, can India feed its population?

Pressure on land and water resources increasing by the day…

- Average holding size falling over years, from 2.3 ha in 1971 to <1.3 ha in 2005; more than 80% HHs have less than 2 ha and together account for more than 40% of cultivated area;

- Per capita availability of water declining, groundwater depleting fast (in Punjab receding by 33 cm p.a), and quality deteriorating…

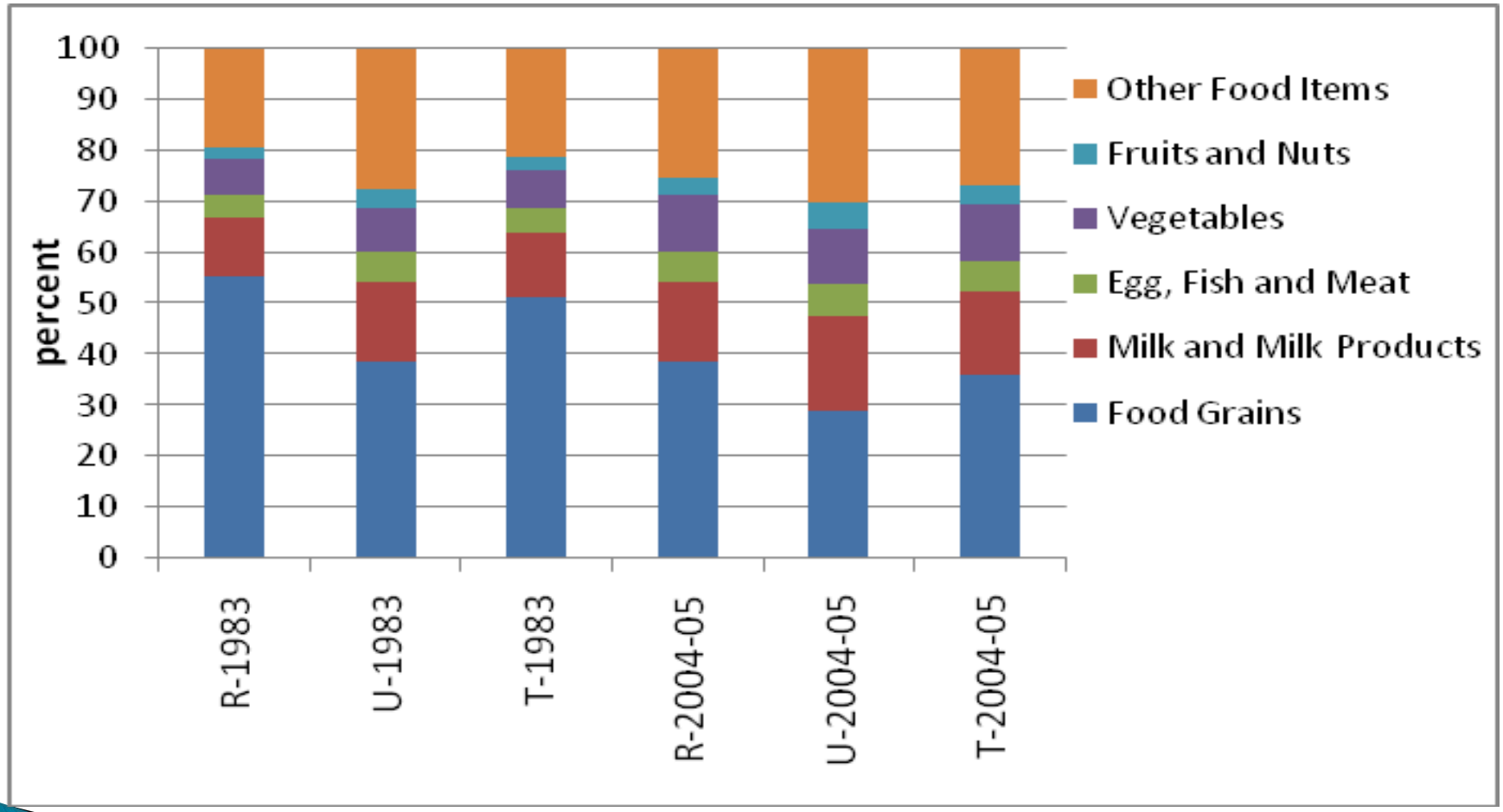
- Soil degradation, suffering from micro-nutrients…
- Climate change poses additional challenge

Many studies in the past had forecast India to be a large importer of grains…

Some notable ones are:

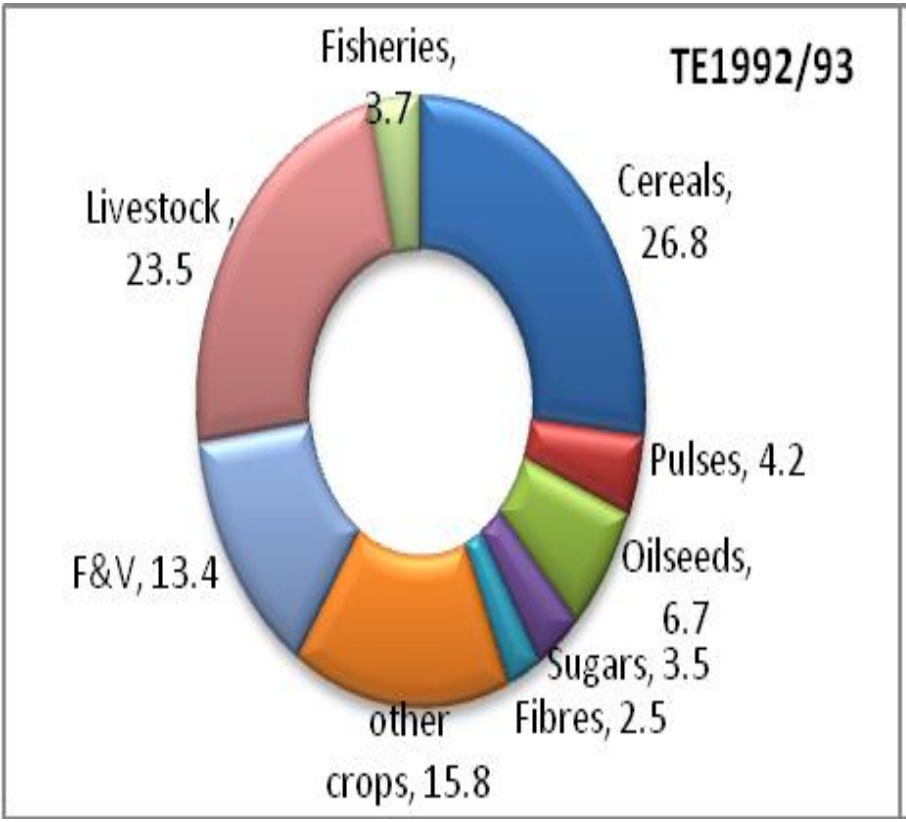
- Bhalla, Hazell and Kerr (1999): India will import 64-115 mt of grains by 2020
- Planning Commission (GoI, 2006): demand-supply deficit of 10 mt by 2011-12
- Binswanger, Parikh, et.al (2011): could be 70 mt of imports by 2039

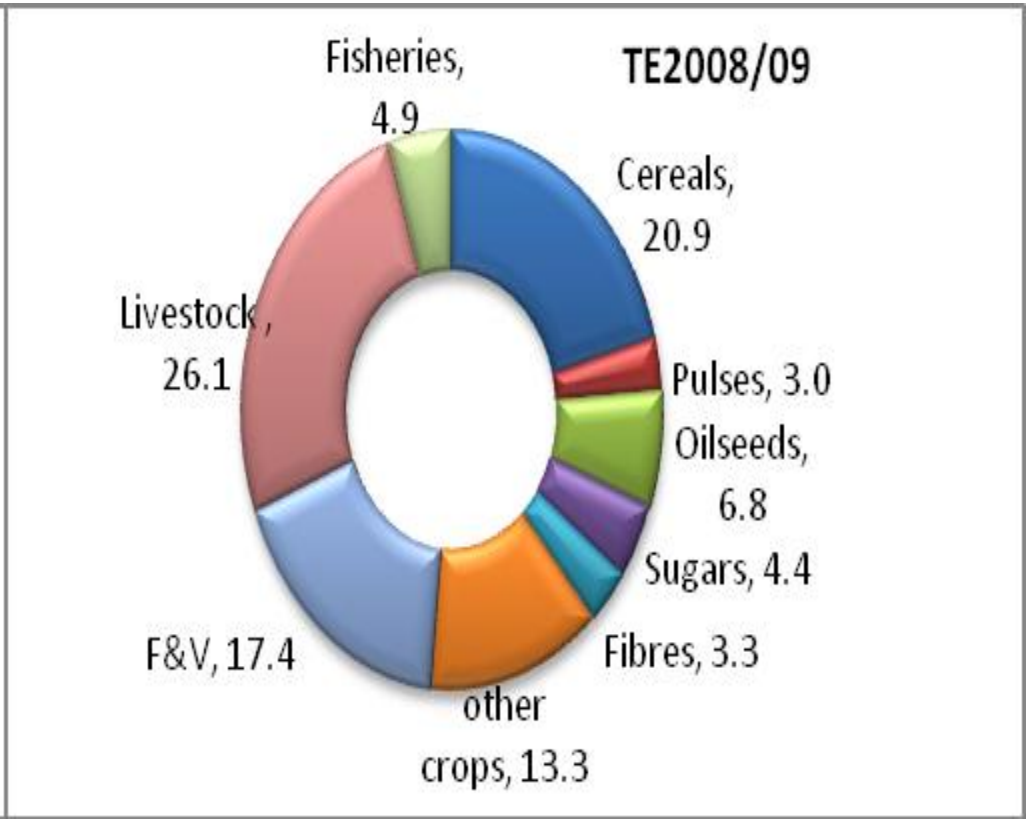
Foodgrains basic staples, but account for less than 35% of food expenditure… Changing Complexion of Indian *Thali* (Platter)



Source: Consumption expenditure data from NSS Report 508/61/1.0/1, NSSO 2006, GoI.

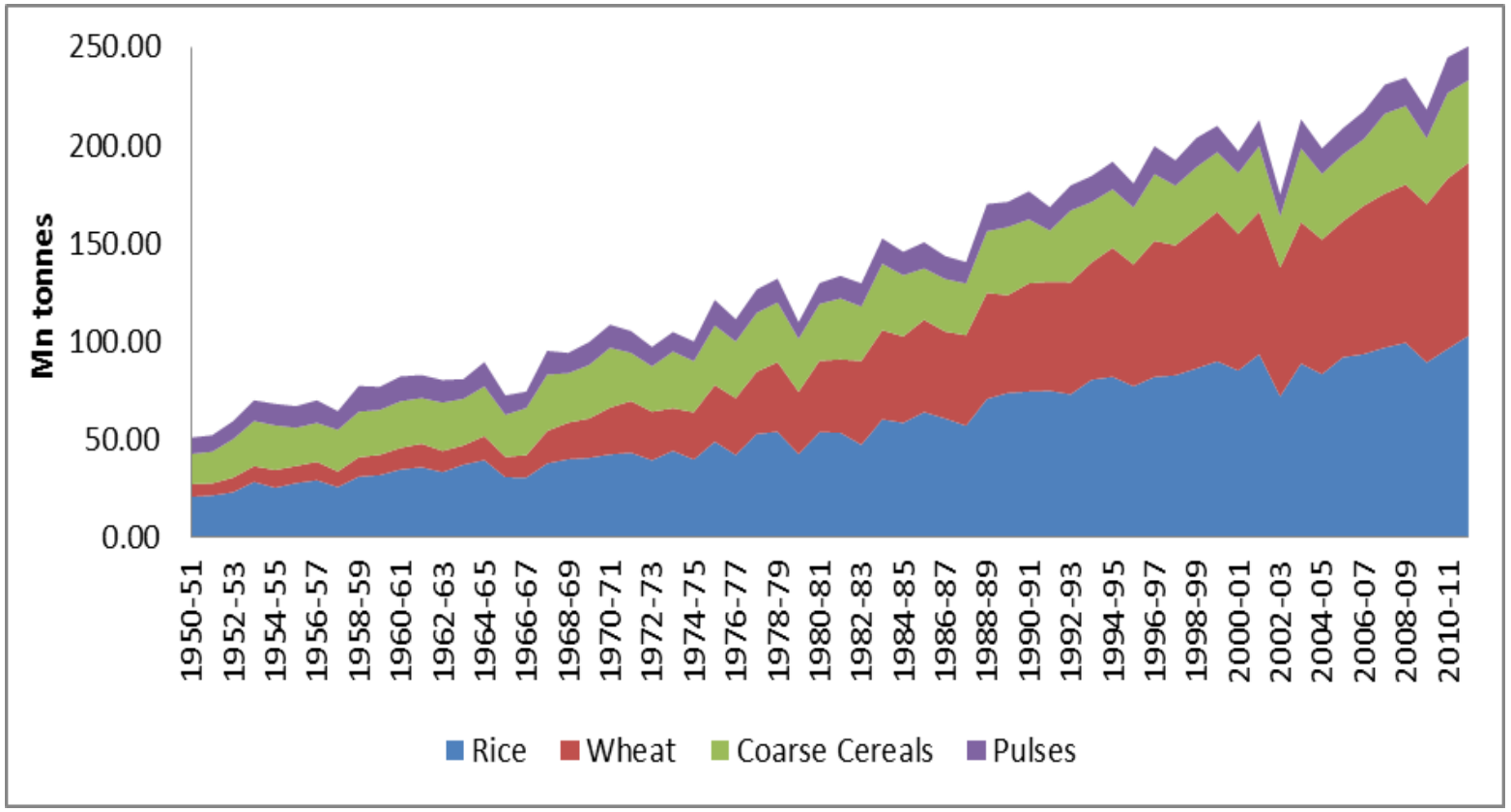
Food grains account for less than 25% of agri-output (food and non-food)



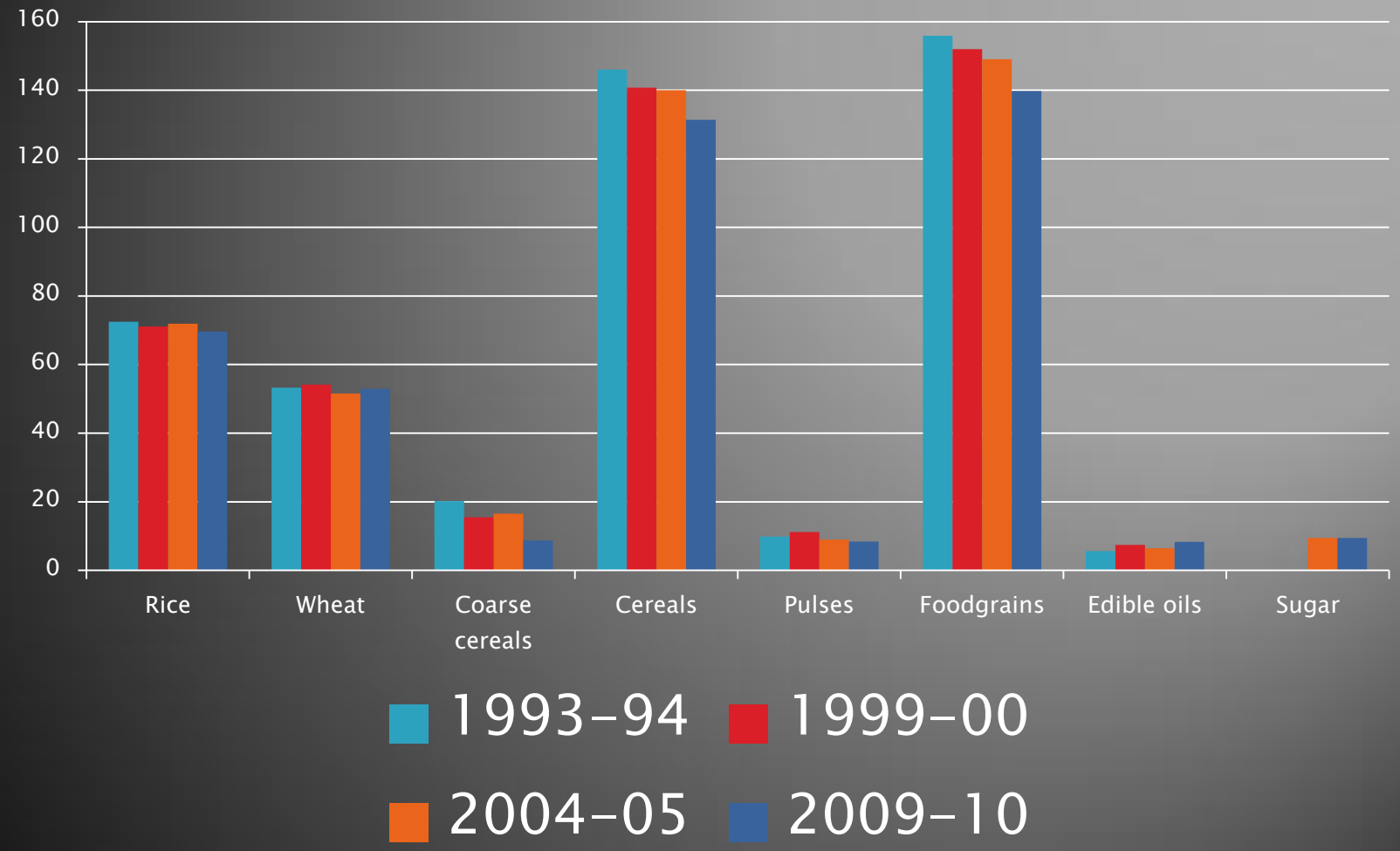


Source: Value of Output data from National Accounts Statistics, various issues, CSO, GoI.

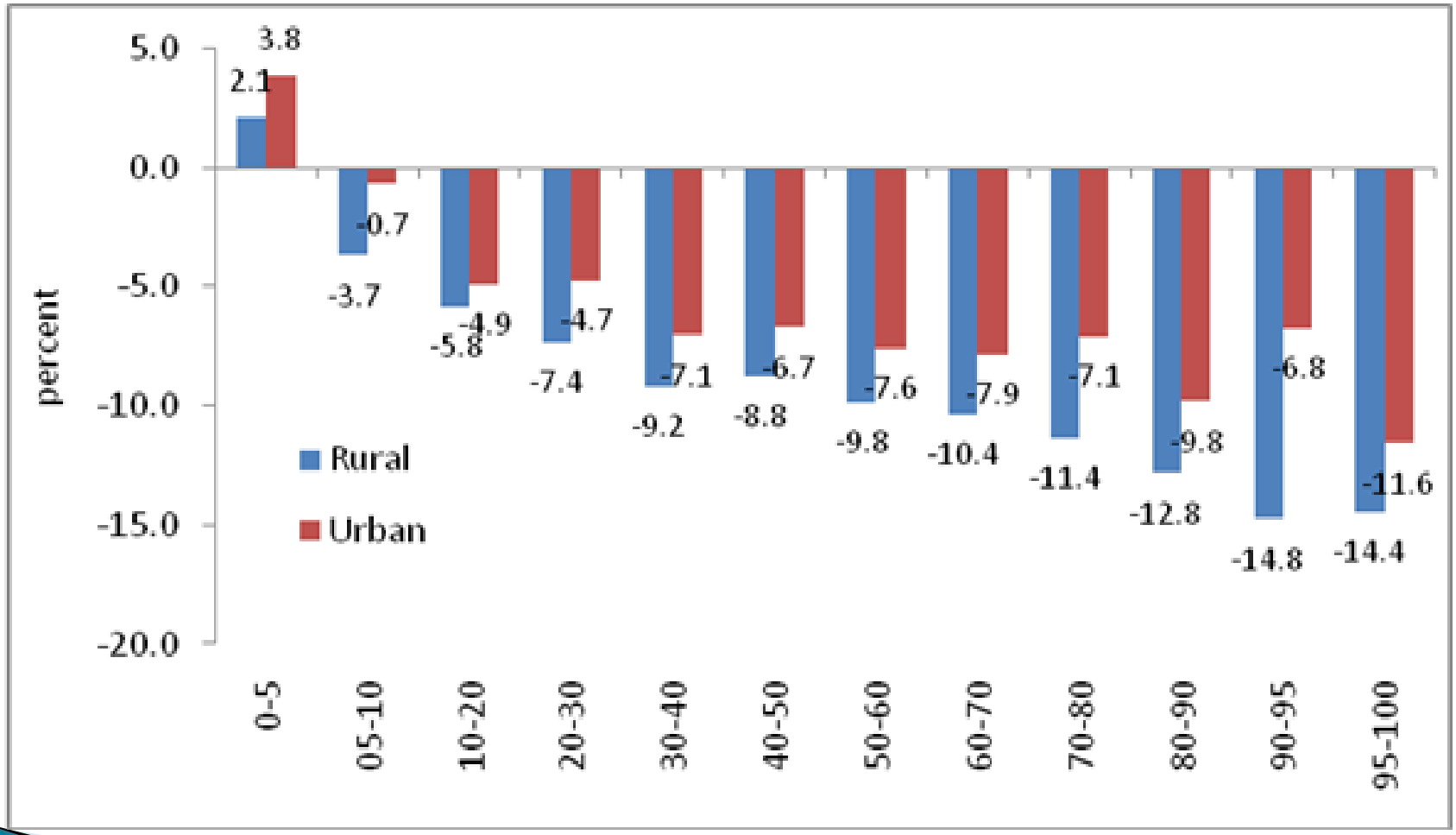
Foodgrain production 1950-2010
(from 50 mt in 1950-51 to 250 mt in 2011-12)



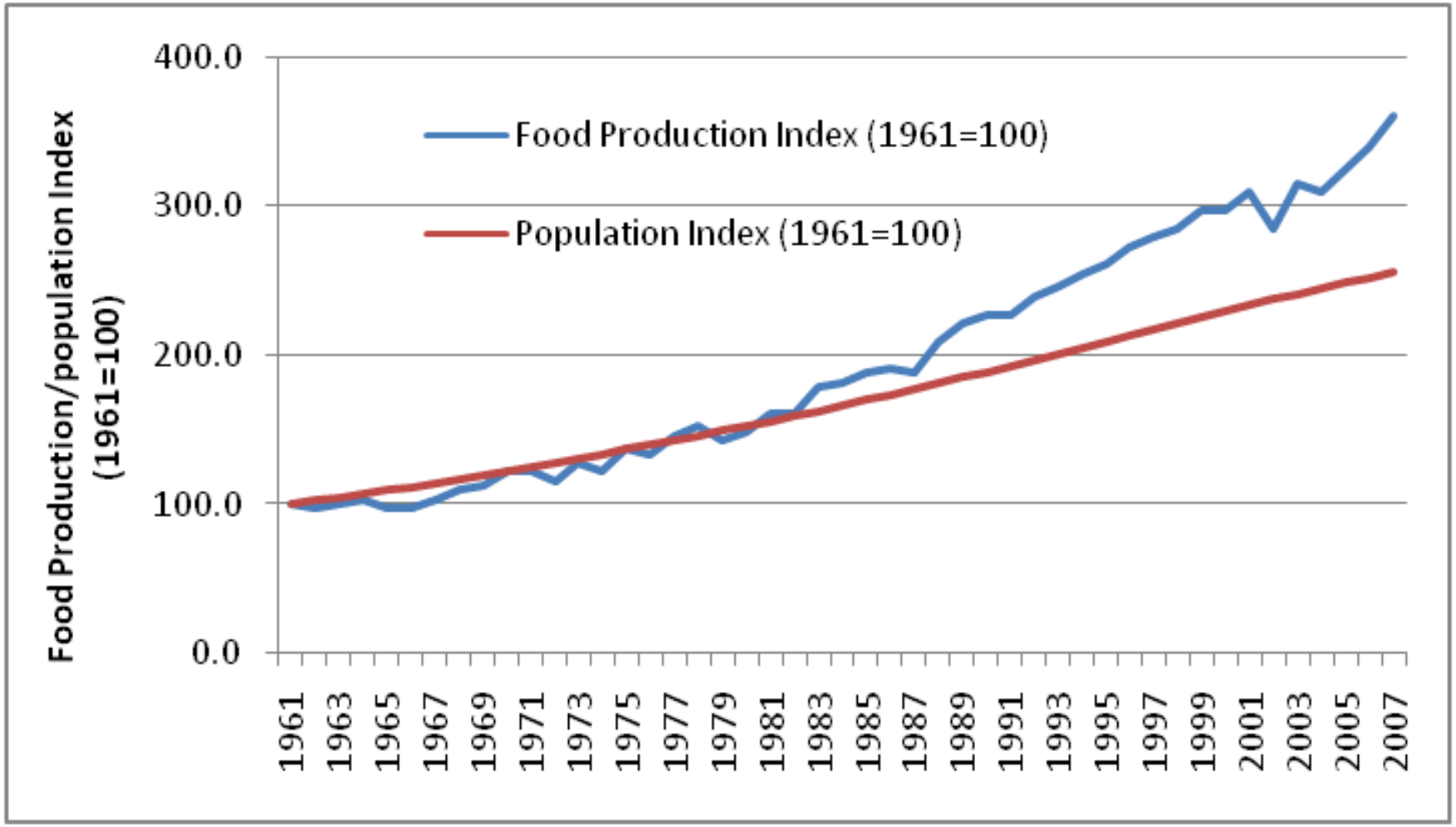
Annual Consumption NSS
kg/per capita



Percent change in monthly per capita cereal consumption in rural and urban India: 1993/94 and 2004/05



Peeping into past: Food production increasing faster than population since early 1980s



Source: World Bank 2010
Note: Food does not include beverages as they don't have any nutritive value

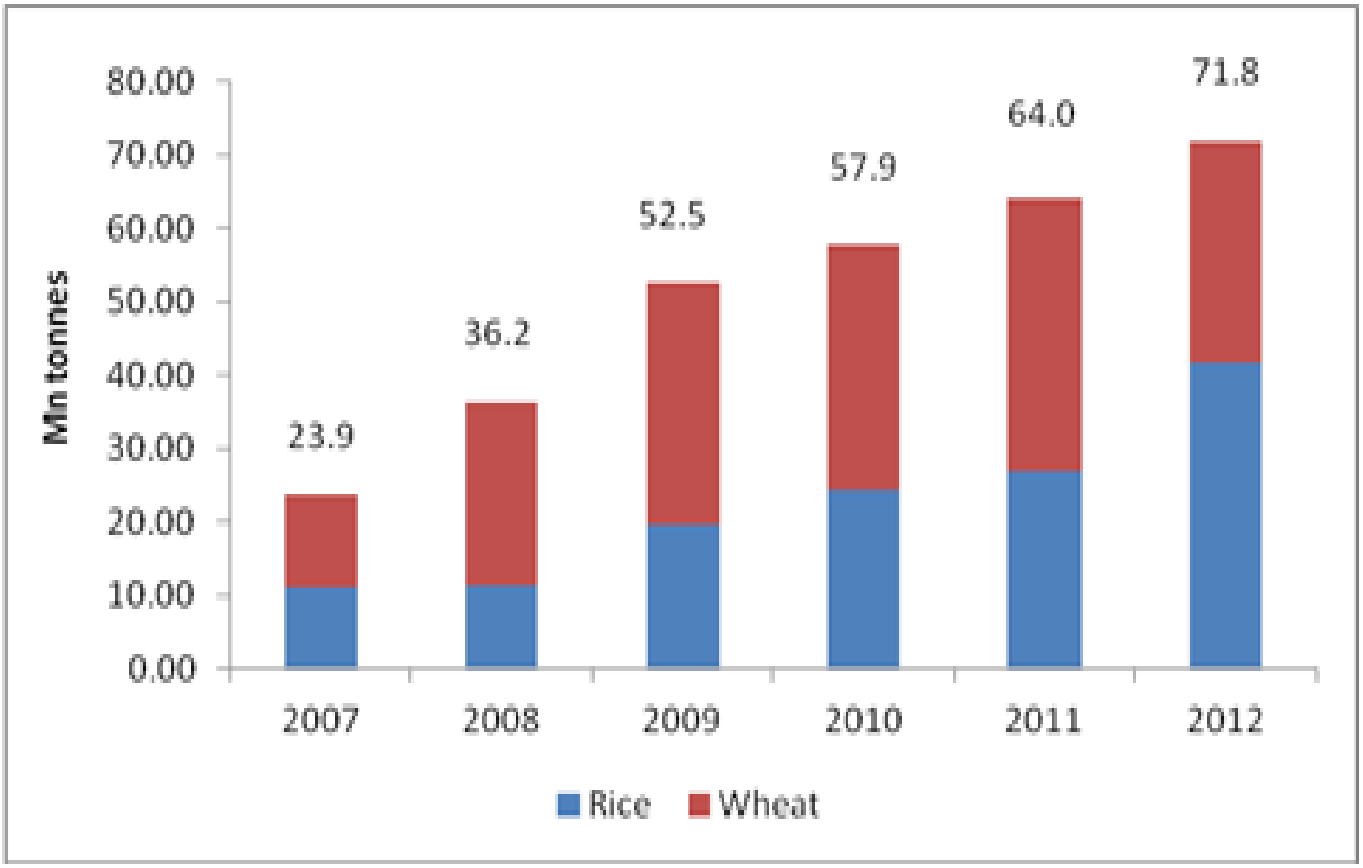
Strides in production of foodgrains, milk, fish, eggs, and F&V… vis-à-vis population

Agri-Commodity/ Year		1950-51	1970-71	1990-91	2010-11
Foodgrains	Million tonnes	50.8	108.4	176.4	252.2 (2011-12)
Milk	Million tonnes	17	23 (1973-74)	53.9	121
Fish	Million tonnes	0.75	1.75	3.84	8.00 (P)
Eggs	Billion number	1.8	7.8 (1973-74)	21.1	60 (P)
F&V	Million tonnes			85	221
population	million	361	548	846	1210

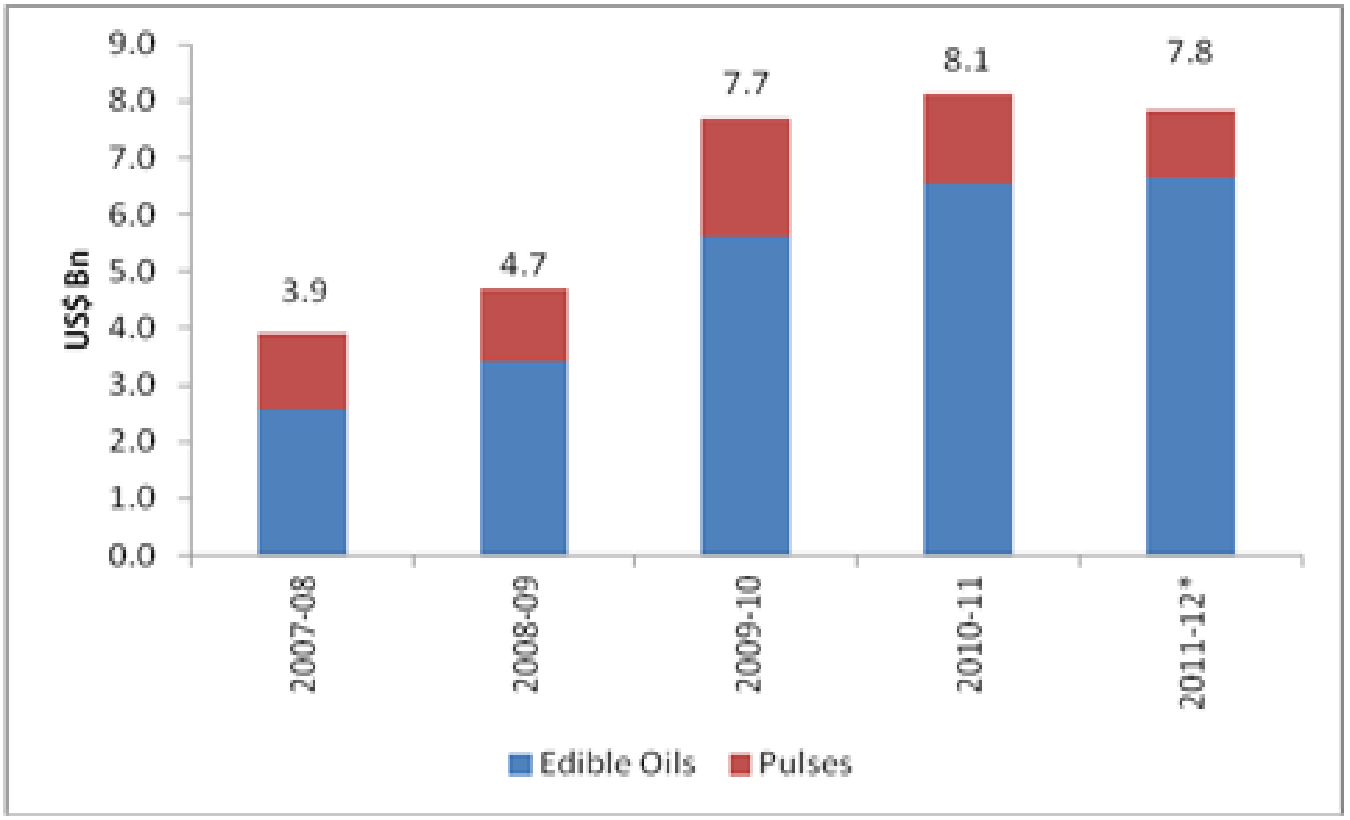
Net Availability kg/per capita

	1993-94	1999-00	2004-05	2009-10
Rice	75.7	74.3	64.7	67.4
Wheat	58.2	58.4	56.3	61.3
Coarse cls	24.5	21.5	21.7	19.8
Cereals	158.4	154.3	142.7	148.5
Pulses	13.6	11.6	11.5	11.6
Foodgrain	172.0	165.9	154.2	160.1
Edible Oil	7.1	10.4	11.4	13.4
Sugar	12.5	15.6	15.5	18.8

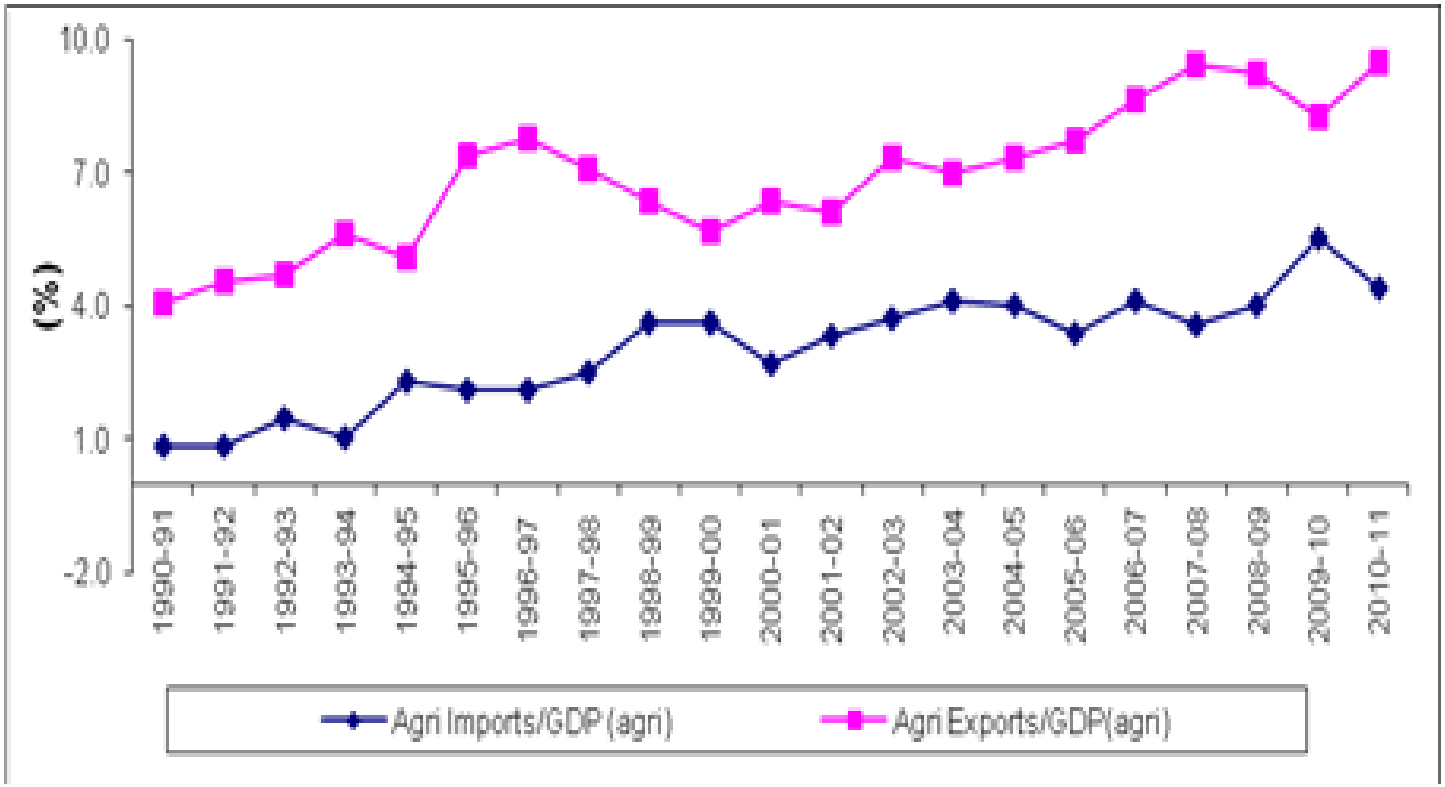
Bulging stocks of rice and wheat… despite India having exported roughly 10 mt of cereals in 2011-12



But rising imports of edible oils and pulses…



Overall agri-trade balance positive…



Supply-demand gap in 2010/2011-12 (mt)

Commodities	Studies	Demand	Supply	Gap (supply less demand)
Total Cereals	Kumar (1998)	225 (4%)	248.4 (cons TFP growth)	23.4/ 24.1/24.7
		224.3 (5%)		
		223.7 (7%)	229.2 (dec TFP growth)	4.2/4.9/5.5
Total Cereals	**PC (2006)**	214.3(4.8%)	207.66	-6.69
Pulses		19.9(4.8%)	16.06	-3.85
Total Food grains		**234.2 (4.8%)**	**223.72**	**-10.48**

Supply-demand gap in 2020/2020-21(million tonnes)

Commodities	Studies	Demand	Supply	Supply-Demand Gap
Total Cereals	Rosegrant et al. (1995)	237.3 (at 3-4% PCY growth)	237	-0.3
Total Cereals	Kumar (1998)	267 (4%)	309.0 (cons TFP growth)	42/43.2/43.3
		265.8 (5%)		
		265.7 (7%)	269.9 (dec TFP growth)	2.9/4.1/4.2
Total Cereals	Bhalla et al. (1999)	257.25 (2%)	232.2	-25.1/ -63.99/ -142.53
		296.19 (3.7%)		
		374.73(6%)	259.9	2.65/-36.3/ -114.83

QUAIDS modeling by IFPRI (2012).. key highlights…

- Forecasting exercise based on demand and supply models that have been validated
- Per capita consumption likely to decline slightly between 2004-05 and 2025-26
  - Rice – 6.1 to 5.5 kg / month; Wheat – 4.4 to 4.1 kg / month
- Demand in 2025
  - Direct: Rice 91.6 to 93.5; Wheat 68.6 to 69.4 million tons;
  - Total: Rice 104.7 to 108.6; Wheat 91.4 to 101.7 million tons;
  - Relatively greater uncertainty in indirect demand estimates
  - Need better information base

Main highlights…

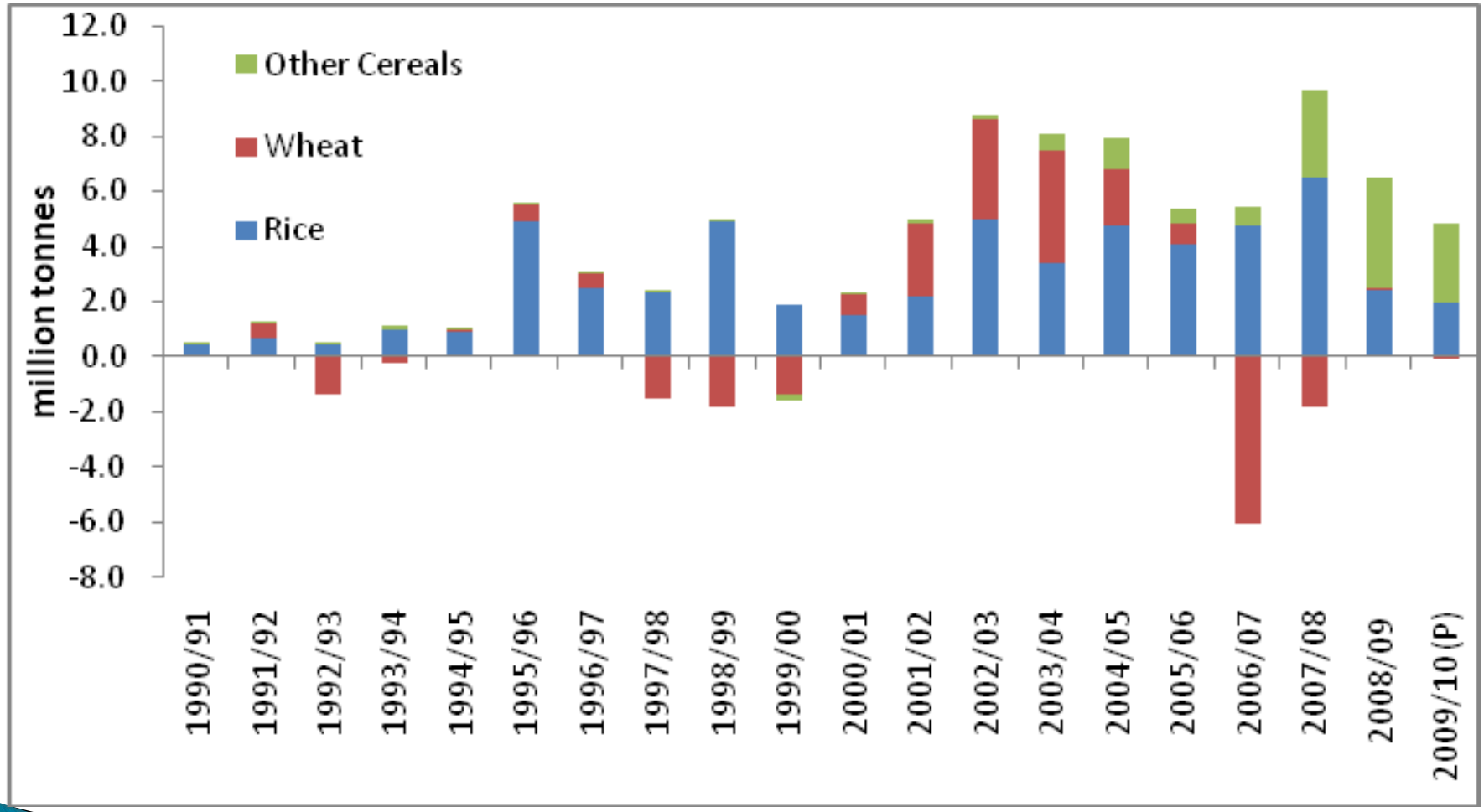
- Supply estimates for 2025 show somewhat larger range – reflecting model specifications and scenario assumptions
  - Rice 135.5 to 165.6; Wheat 93.6 to 114.6 million tons
- Gap analysis shows
  - Rice – always in surplus, which grows steadily
    - 15.5 to 30.8 m.t. in 2015; 26.9 to 60.9 m.t. in 2025
  - Wheat – mostly surplus; but some deficit in 2025 cannot be ruled out
    - 5.0 to 20.4 m.t. in 2015; -8.1 to 28.3 m.t. in 2025

Bottom line

- Managing surplus in cereals (especially rice) – rather than deficit – could be the bigger problem
- So, scope for exporting cereals to India (except in years of drought, etc) likely to be dim…

India has been a Net cereal exporter for many years

(exports of common rice and wheat banned from March 2008 through Sept 2011….exports of cereals in 2011-12 likely to be 10 mt)

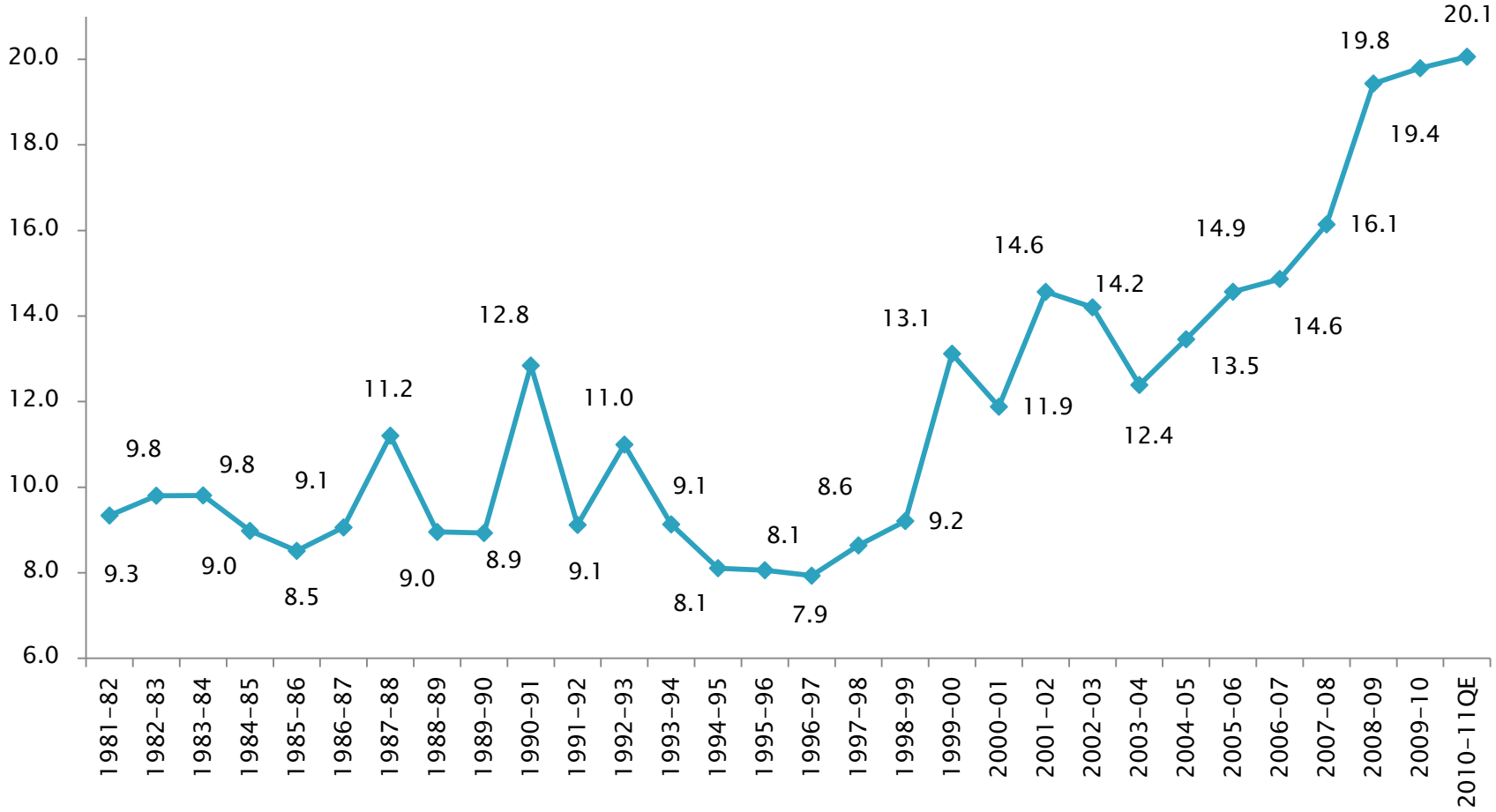


Where is the extra production of cereals coming from??? NFSM, BGREI

- Eastern India bestowed with ample water…likely to take off in rice (current average yield hovers around 2 tons/ha)
- Wheat in central India
- Coarse cereals (especially maize) picking up in Southern India; sorghum and pearl millet in western India

Foundation of hope for future…GCF

in agriculture as % of agri-GDP



Economic Access to Food remains a challenge

- Food subsidy bill hovering around Rs 60,000 crores (roughly $ 12 billion) …likely to go beyond Rs 100,000 crores ($ 20 billion) once NFSB is passed.
- Efficiency of public procurement, stocking and distribution questionable and expanding it further is debatable
- What would happen to demand if cereals are given at highly subsidized prices (coarse cereals at Rs 1/kg; wheat at Rs 2/kg and rice at Rs 3/kg)???

Where are the opportunities for US agri-business in India…

- Beyond Pioneer and Monsanto seeds, Californian raisins, almonds, Washington apples…and soyaoil and pulses (would US have palm oil???)

- By 2015, India will have 50 cities with a million plus population each…Investments in agro-processing and logistics (including cold storage chain) will pay…Tropicana and Ingersoll Rand (Pepsi Potatoes working with 20,000 farmers)…how about milk??...Nestle model for US??

- Investments in organized retailing will come hopefully, though slowly…in the meantime, fast food chains…Pizza Hut, KFC, McDonald….are flourishing