Food Prices, Agricultural Development and Poverty

Presentation to the Conference “The immoral biofuel?”
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FEATURE-As biofuels boom, will more go hungry?

Wed Mar 7, 2007 1:04pm EST

(This is part of a series on renewable energy)

By Ruth Gidley

LON
feed
biofu
several poor countries, but some expert
rise.

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FOOD-FOR-OIL PROGRAM

Starving the People To Feed the Cars

By Lester R. Brown
Sunday, September 10, 2006; Page B03

Wider food price paradox

- World Bank and others
  - Successful conclusion to the agricultural negotiations in the Doha Round has potential to lift tens of millions out of poverty by raising world market prices
- Historical evidence
  - The huge drop in poverty in China initiated by reforms which led to higher food prices
- Senauer and Sur (2001)
  - A 20% increase in food prices in 2025 relative to a baseline will lead to an increase of 440 million in the number of undernourished

    "Declining food prices have a powerful income effect for the poor, for whom food spending usually accounts for at least 50% and as much as 80% of total expenditures.
- Are low food prices pro-poor?

Outline

- National food security impacts of higher food prices
- Household impacts of higher food prices
- Global response to higher food prices
- Biofuels: an opportunity for developing countries?
- Conclusions and main messages

Section 1. National food security impacts of higher global food prices

National-level food security impacts

- Countries that are net food exporters will experience improved terms of trade, while net food importers will face increased costs
- Food import bills have reached record highs
  - 29% higher in 2007 compared to 2006 (FAO, 2008)
  - 40% higher for LIFDCs (UN CFA, 2008)
  - Bulk of increase accounted for by higher cereals and vegetable oils prices
  - More expensive feed led to higher prices for meat and dairy product imports
  - Rise in international freight rates
- Higher food prices accompanied by rising fuel prices
  - Offsets for some but exacerbates for most (IMF 2008)
- May be offset for others by higher export earnings
- Balance?

Food vs fuel price shocks

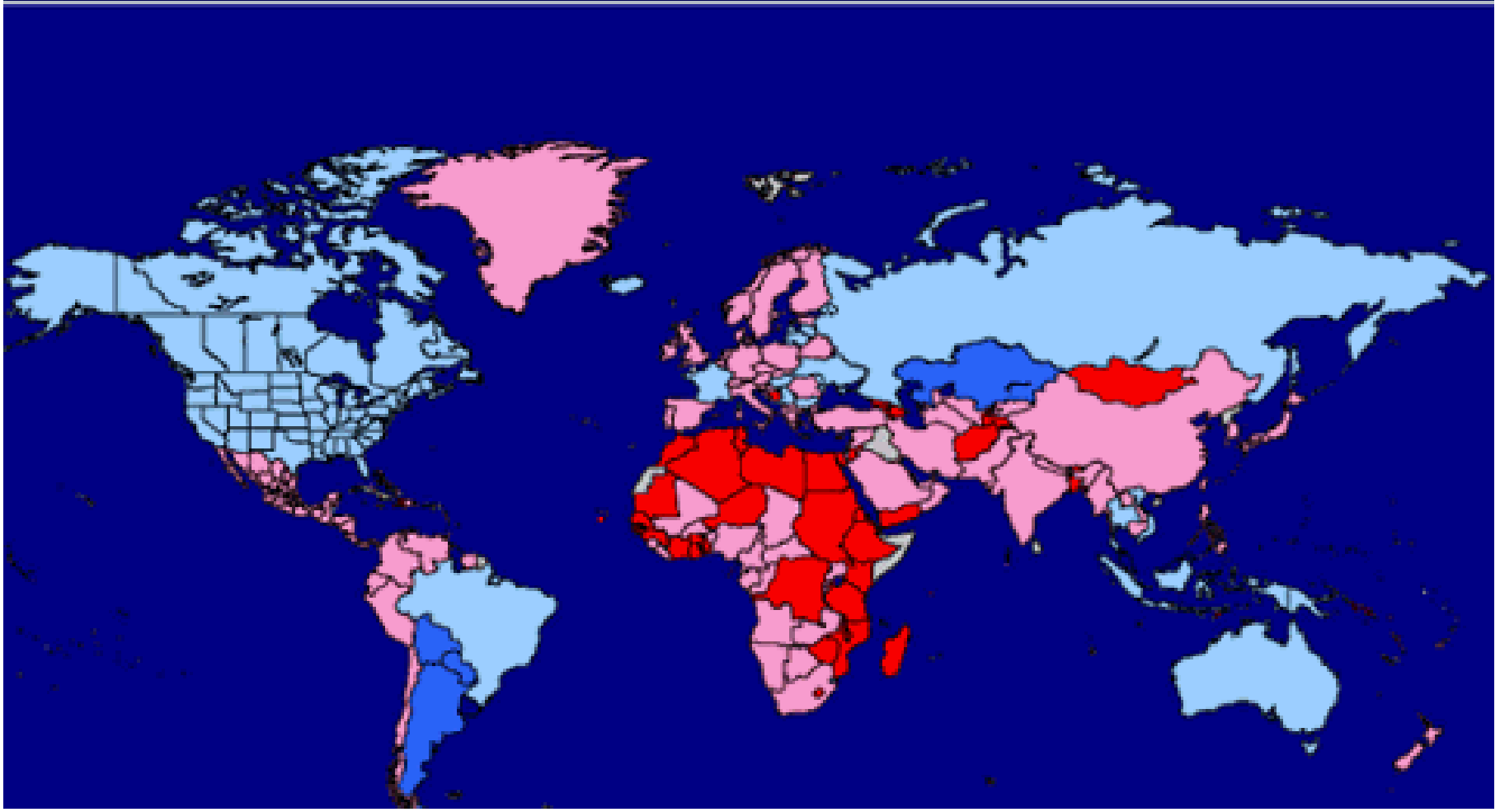
Table 1. BOP Impacts of Fuel and Food Shocks on PRGF-eligible Countries [1]

	Increase in Jan 07-Apr 08	Increase in Jan 07-Jul 08	Increase in May-July 08
Food shock			
In percent of GDP	0.5	0.9	0.4
In months of imports	0.2	0.3	0.1
Fuel shock			
In percent of GDP	2.2	3.4	1.2
In months of imports	0.7	1.2	0.5

[1] The shocks are measured as the size of the BOP impact for the indicated period expressed relative to 2007 GDP and relative to 2008 months of imports. "Fuel shock" applies to 58 net fuel mporters, "food shock" to 33 net food importers.

Source: IMF September 2008

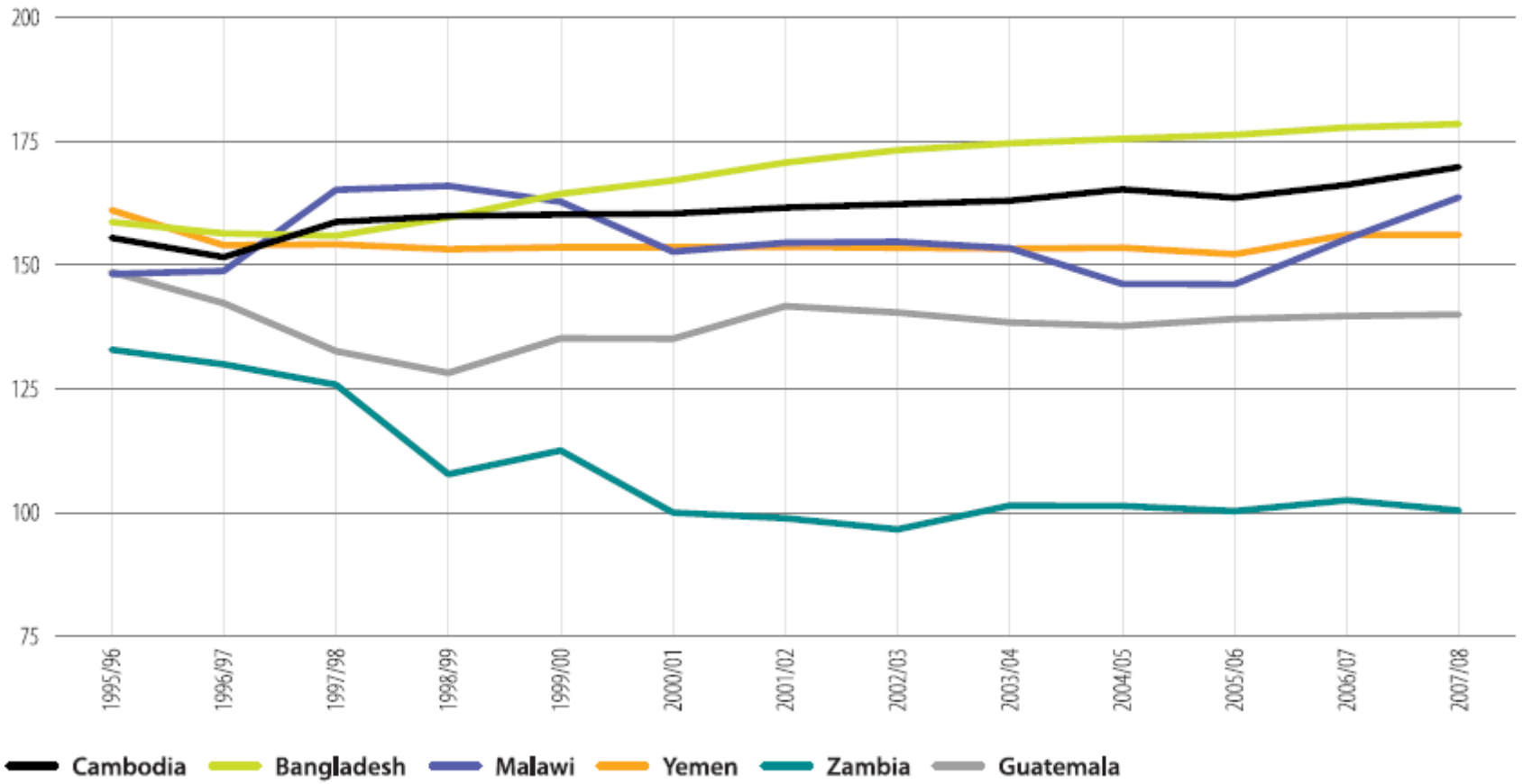
2007-2008: Impact of Projected Food Price Increases on Trade Balances



Source: IMF (2008)

Countries in red expected to suffer biggest trade balance losses from higher food prices; countries in blue expected to show biggest gains

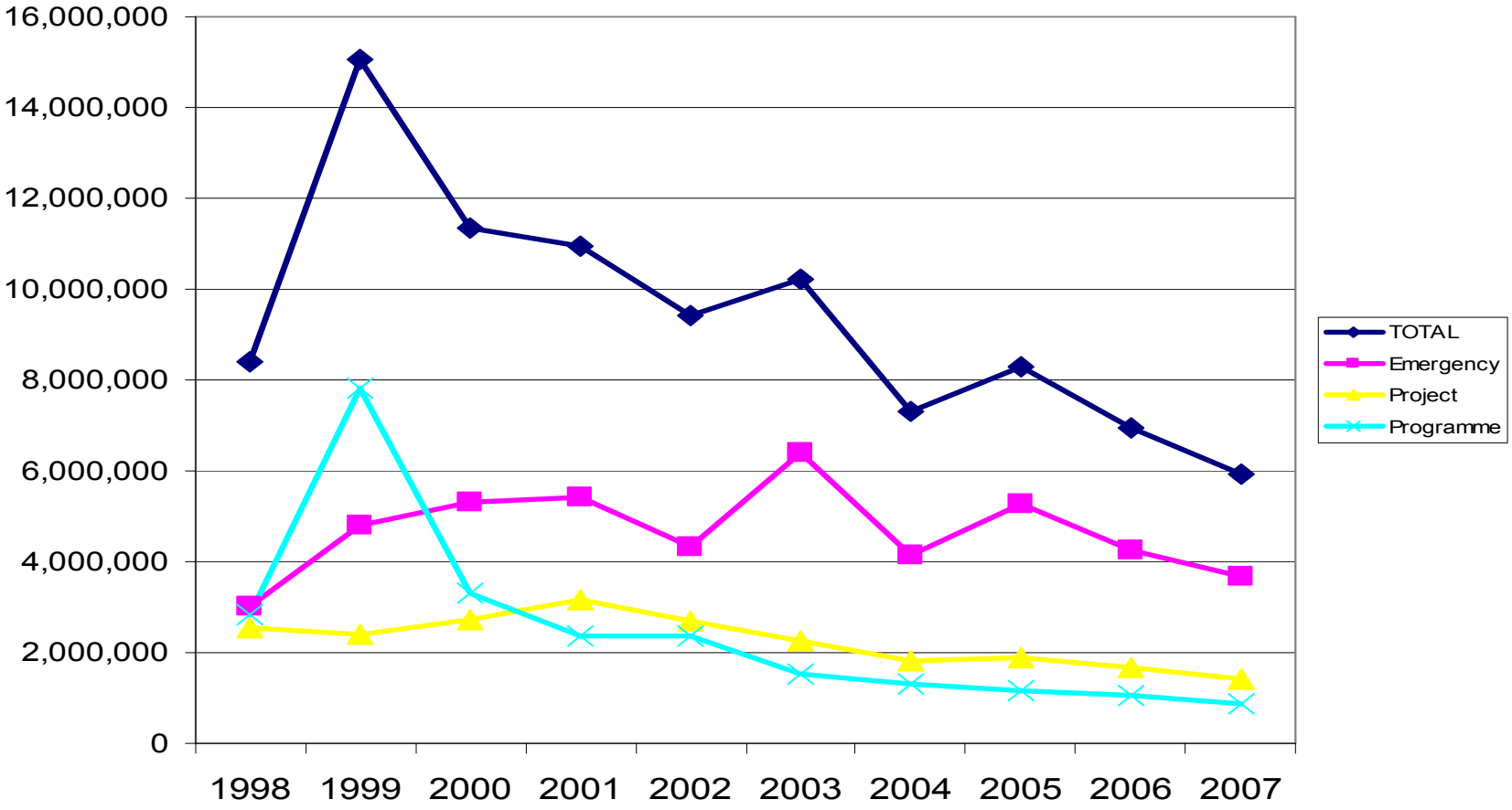
Figure 11 **Per capita consumption of all cereals**



Most countries seem to be able to maintain a non-declining per capita cereal consumption, although this does not rule out reduction among poorer households, or reductions in expenditure on other foods or health and education

Source: FAO (2008)

Impact on food aid flows
tonnes cereals in grain equivalent

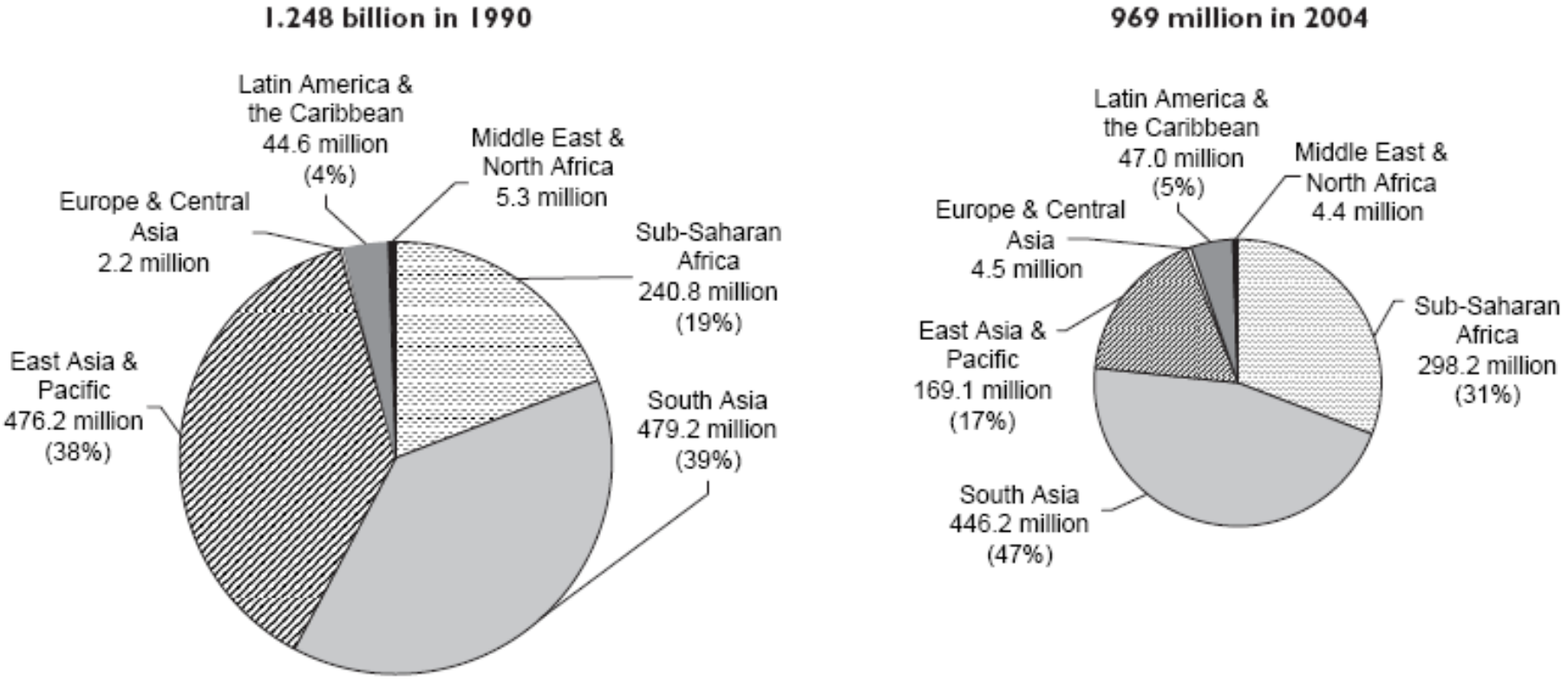


Source: WFP Interfais

Section 2. Household impacts of higher global food prices

Where the poor live

Figure 2 Where the US$1-a-Day Poor Live, 1990 and 2004



Impact of high prices: Bangladesh

- Five-person household living in Bangladesh on one-dollar-a-day per person spends its $5
  - $3 on food
  - $0.50 on household energy
  - $1.50 on non-foods
- A 50% increase in food and energy prices cuts $1.75 from their expenditures
- Food expenditures will be cut most, and will be accompanied by:
  - Reduced diet quality
  - Increased micronutrient malnutrition, increasing probability of developmental damage

Source: Based on von Braun (2008)

Household food security impacts depend on price transmission

- Impact depends on the extent to which international prices pass through to domestic markets
  - Exchange rate appreciation against the US$
  - Policy instruments to insulate domestic prices from international markets
    - Government procurement, trade measures
    - Different countries adopted different policies
- Impact (on producers) also depends on competitiveness and length of the domestic marketing chain
- Ivanic and Martin (2008): pass through rate of 0.66 leads to increase of 105 million in poverty, pass-through rate of 0.33 to an increase of 45 million.

Household food security impacts – short run

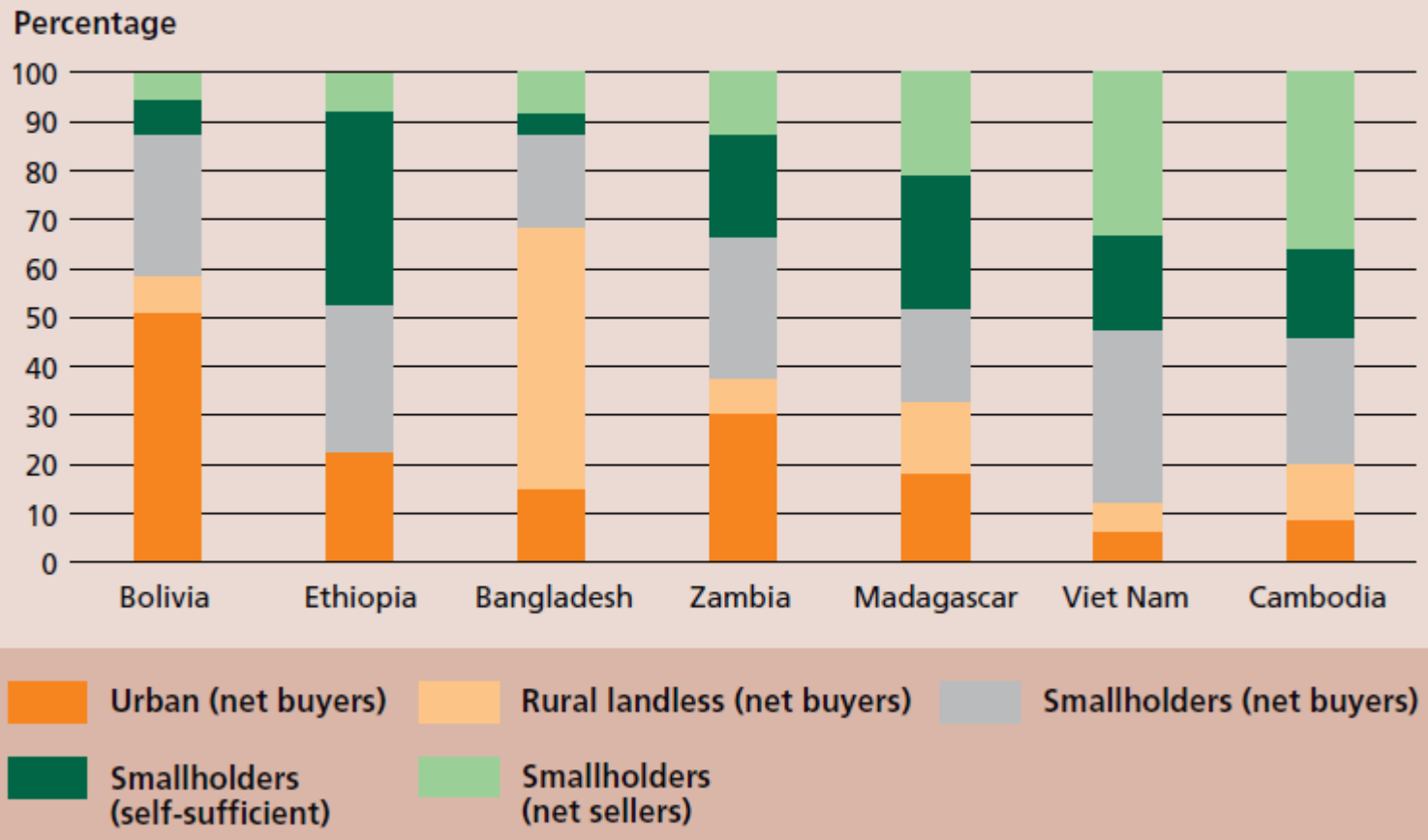
- Impacts operate through food prices and household incomes
- Higher prices will benefit net food sellers, but hurt net food buyers
- Which are the poor – net buyers or sellers?

Share of net staple food-seller households among urban, rural and total households

COUNTRY/YEAR	SHARE OF HOUSEHOLDS		
	Urban	Rural	All
	(Percentage)	*(Percentage)*	*(Percentage)*
Bangladesh, 2000	3.3	18.9	15.7
Bolivia, 2002	1.2	24.6	10.0
Cambodia, 1999	15.1	43.8	39.6
Ethiopia, 2000	6.3	27.3	23.1
Ghana, 1998	13.8	43.5	32.6
Guatemala, 2000	3.5	15.2	10.1
Madagascar, 2001	14.4	59.2	50.8
Malawi, 2004	7.8	12.4	11.8
Pakistan, 2001	2.8	27.5	20.3
Peru, 2003	2.9	15.5	6.7
Viet Nam, 1998	7.1	50.6	40.1
Zambia, 1998	2.8	29.6	19.1
Maximum	**15.1**	**59.2**	**50.8**
Minimum	**1.2**	**12.4**	**6.7**
Unweighted average	**6.8**	**30.7**	**23.3**

Source: FAO, 2008a.

FIGURE 28
Distribution of poor net buyers and sellers of food staples[1]



[1] Percentage of poor population buying or selling internationally traded staples (rice, wheat, maize, beans).

Source: World Bank, 2007.

Observations on previous tables

- While almost all urban dwellers are net food consumers, not all rural dwellers are net food producers
- In only two countries does the share of net selling households exceed 50 per cent
- Net food sellers will typically be those farmers with more land
- Even in rural areas, the greater share of the poor are net food buyers

Barrett *Food Policy* (2008) - East and Southern Africa

- A large share of smallholders – commonly the majority – are net buyers of the food crops they produce
  - Households are not autarchic, but sellers and buyers at different times of the year or of a proportion of their supplies/needs
- Most small farmers in the region are hurt, not helped, by policies that increase local prices for staple foodgrains
- **".. policymakers and many development researchers continue to discuss development policy for rural Africa as if all farmers were net sellers of the crops they produce and thus stood to benefit from increased prices. The evidence against that popular belief is by now overwhelming."**

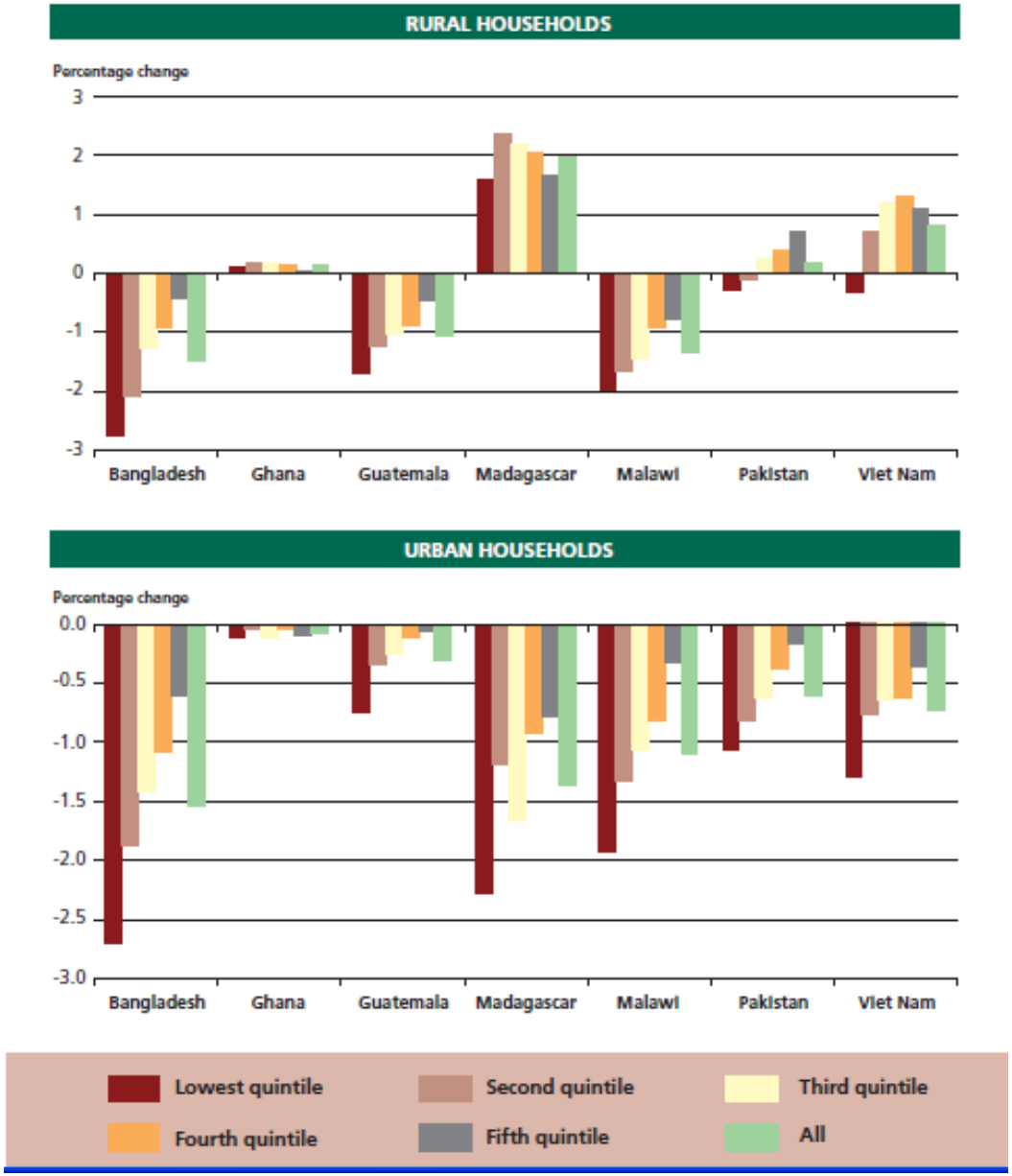
More on the characteristics of net food buyers and sellers

- Aksoy and Isik-Dikmelik (2008)
  - Based on household surveys for nine countries, agrees there are more poor net food buyers than sellers
  - But suggests that half these households are marginal net food sellers, thus price increases will have small impacts on their welfare
  - Notes that the average incomes are net food buyers are higher than the average incomes of net food sellers, so higher food prices transfer income from rich buyers to poorer sellers and thus are ‘pro-poor’.
  - Note that policies of low food prices in developing countries (e.g. through rural taxation) penalised agriculture to the detriment of overall economic growth

Poverty impacts of higher food prices - methodological caveats

- Household survey estimate of income generally lower than expenditure
- Use of headcount indicator means $1 change in real purchasing power can move household in or out of poverty
  - Dessus et al. (2008) show that 88% of the increase in urban poverty depth due to the global increase in food prices is from poor households becoming poorer and only 12% from households falling into poverty.
- Nature of clustering around the poverty line can lead to non-linear relationship between the rate of price increase and the change in poverty
  - Ivanic and Martin (2008) show that, in rural Peru, the impact of a 20% price rise on the poverty headcount is five times greater than that of a 10% rise

FIGURE 29
Average welfare gain/loss from a 10 percent increase in the price of the main staple, by income (expenditure) quintile for rural and urban households



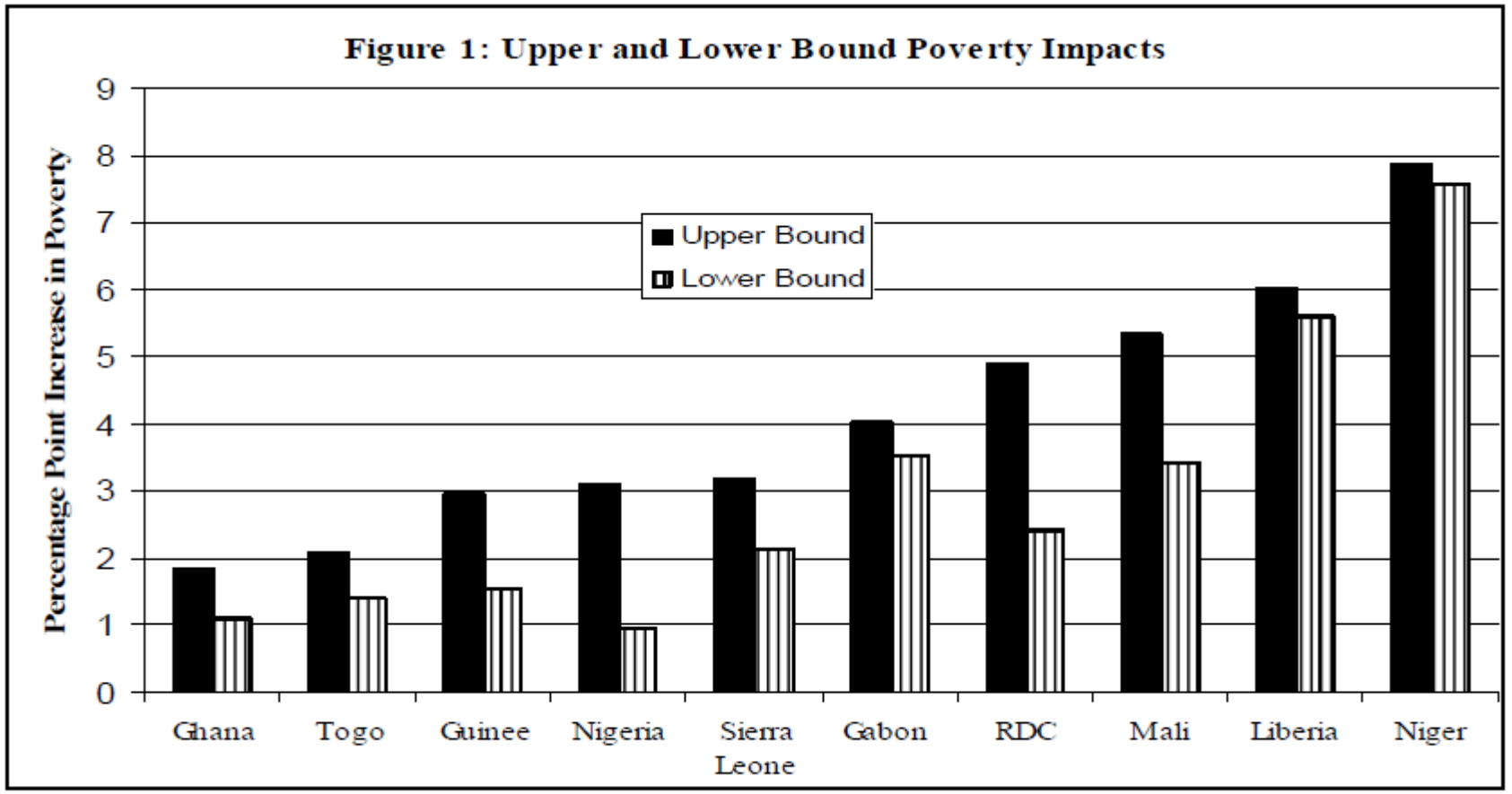
Poverty impacts of higher food prices – short run

Single staple food, 10 percent price increase assumed

No behavioural responses

Poorest quintiles the worst affected in both urban and rural areas

Even in some countries where rural households gain on average, poorest quintiles lose



Source: Wodon et al. (2008a). Impacts are estimated for a 50% increase in food prices.

Lower bound estimates take both producer and consumer impacts into account

Upper bound estimates only take into account consumer impacts, justified by imperfect price transmission and higher price of fertiliser

Strong gender dimension to poverty impacts

- Female-headed households typically fare worse than male-headed households
  - Even though female-headed housholds are not disproportionately represented among the poor
  - Female-headed households tend to spend a greater proportion of their income on food
  - In rural areas, they generally have less access to land and don't depend as much on staple sales

Source: FAO 2008

Household poverty impacts – longer run

- What happens when substitution and behavioural responses are taken into account?
- Could positive labour market effects (increased demand for labour) overcome the negative impact of higher food prices on the purchasing power of the rural poor?
  - YES (Ravillion 1990 study for rice in Bangladesh)
- Can farm productivity increase in response to increase in price of food staples?
- How important are the multiplier effects of increased farm incomes for rural businesses?
- Methodology of choice is Computable General Equilibrium analysis but constrained by severe methodological and data issues in linking macro-micro models

Four African countries net staple buyers and sellers

Table 3.6. Staple Crop Marketing Position in Case Study Countries by Income/Expenditure Quintiles

% Rural households	Madagascar[b]			Kenya[c]			Ethiopia[d]			Tanzania[e]	
Expenditure/ income quintile[a]	Net buyers	Autarkic	Net sellers	Net buyers	Autarkic	Net sellers	Net buyers	Autarkic	Net sellers	Net buyer	Net sellers
Q1 (bottom)	67	8	25	83	9	8	58	9	34	89	11
Q2	64	14	22	71	14	15	57	6	37	81	19
Q3	67	5	28	69	9	23	56	7	37	72	28
Q4	64	11	25	57	14	28	53	7	40	76	24
Q5 (top)	74	6	20	47	13	40	66	5	29	72	28

Sources: Minten and Barret 2006; Mude 2005; Sarris, Savastano, and Christiaensen 2006; World Bank 2005b.
a. Expenditure quintiles are used for Ethiopia and Tanzania; income quintiles are used for Kenya.
b. Net rice-marketing position of rural population (Minten and Barret 2006).
c. Net maize-marketing position of 1,500 smallholder maize growers in Kenya in 1997 (Mude 2005).
d. Net cereal-marketing position of rural households in Ethiopia in 1995 (World Bank 2005b).
e. Net food-marketing position of rural households in Kilimanjaro (Sarris, Savastano, and Christiaensen 2006).

Using a partial equilibrium approach, their main conclusion is that policies leading to higher food prices are likely to increase poverty, even after factoring in countervailing wage and productivity effects.

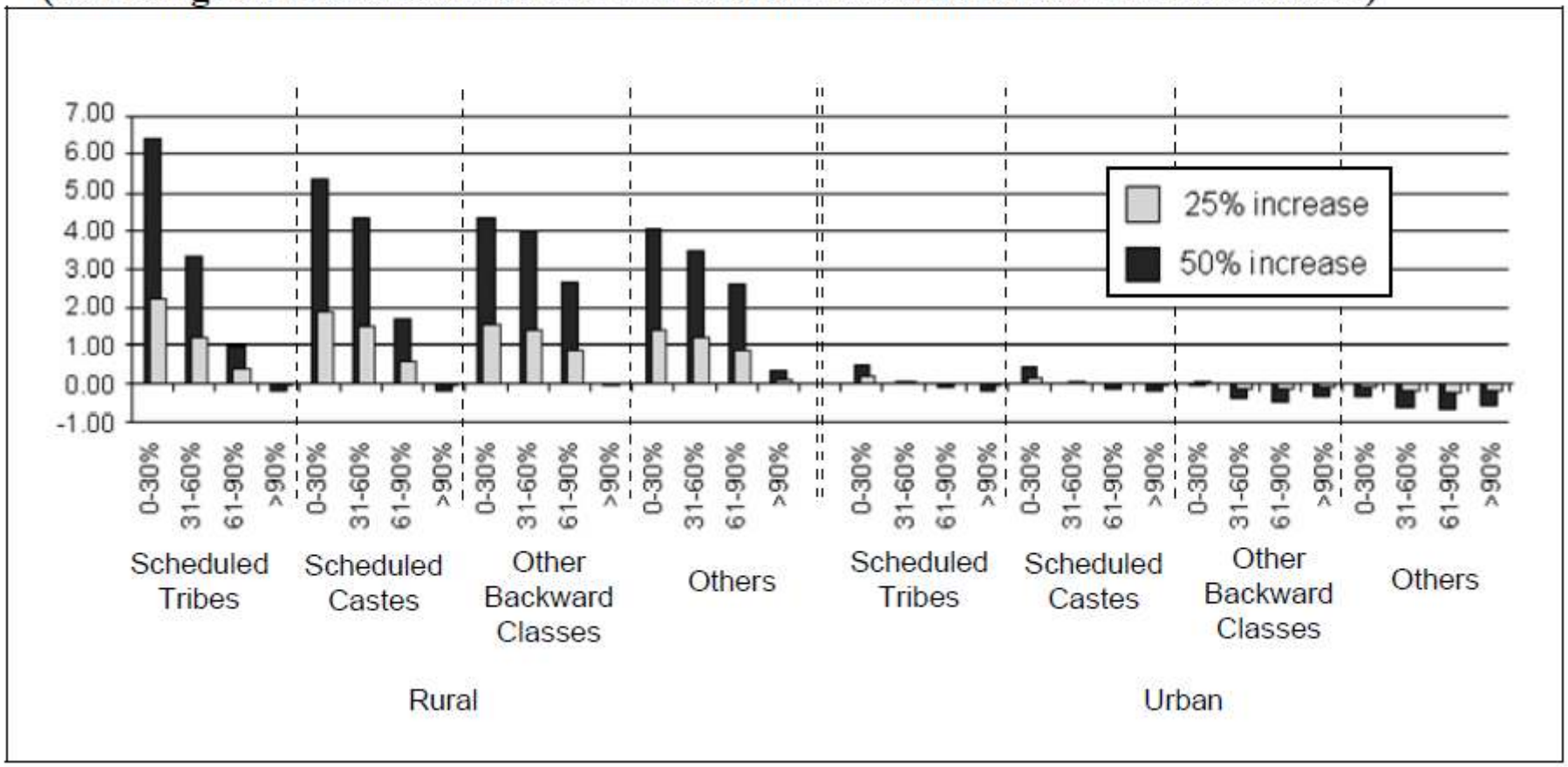
Source: Christiaensen and Demery (2007) Down to Earth, World Bank

Other studies

- Ivanic and Martin (2008)
  - Study first-order welfare impacts (including wage effects) in ten countries for range of commodities
  - Overall impact of higher food prices on poverty is generally adverse
  - Extrapolating (heroically!) from the average percentage point increase in poverty rates in the sample, they conclude that the actual increase in food prices 2005-early 2008 may have led to increase in global poverty of 105 million

Figure 4. Impact of an Increase in the World Price of Rice on Indian Households

(% change in real income relative to baseline nominal income to households)



Using CGE approach, higher rice prices benefit most poor households, with labour markets playing a largely positive role in transmitting price effects

Similar if more muted effects for wheat Source: Polaski (2008)

Section 3. Global response to higher food prices

Proposed policy actions

Source: IFPRI, 2008, UN High Level Task Force Comprehensive Framework for Action 2008

- The emergency package
  - Expand humanitarian assistance to food insecure people
  - Eliminate agricultural export bans and export restrictions
  - Undertake fast-impact food production programmes in key areas
  - Manage macroeconomic impacts
- The resilience package
  - Invest in social protection
  - Scale up investments for sustained agricultural growth
  - Improve international trade markets
  - Change biofuel policies

Section 5. Biofuels: an opportunity for developing countries?

We have so far considered the consequences of biofuel production in the developed world.

What about the potential for biofuel production in developing countries?

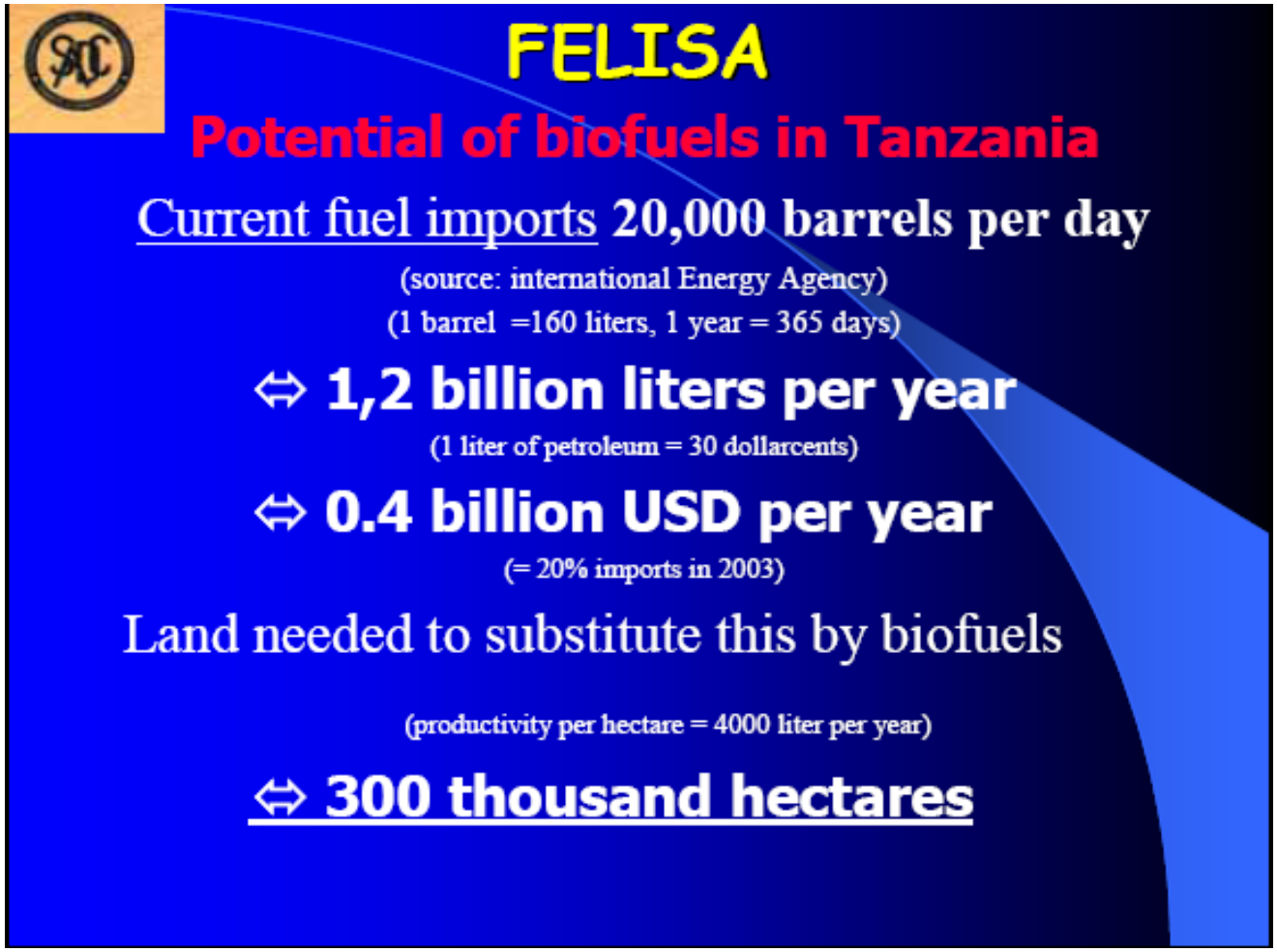
The market opportunity for biofuels

Developing countries can:

- Produce their own domestic transportation fuels, improving energy security
- Take advantage of export markets with unlimited demand
- Lower GHG emissions and assist move to low-carbon economy
- Create new jobs in rural economies

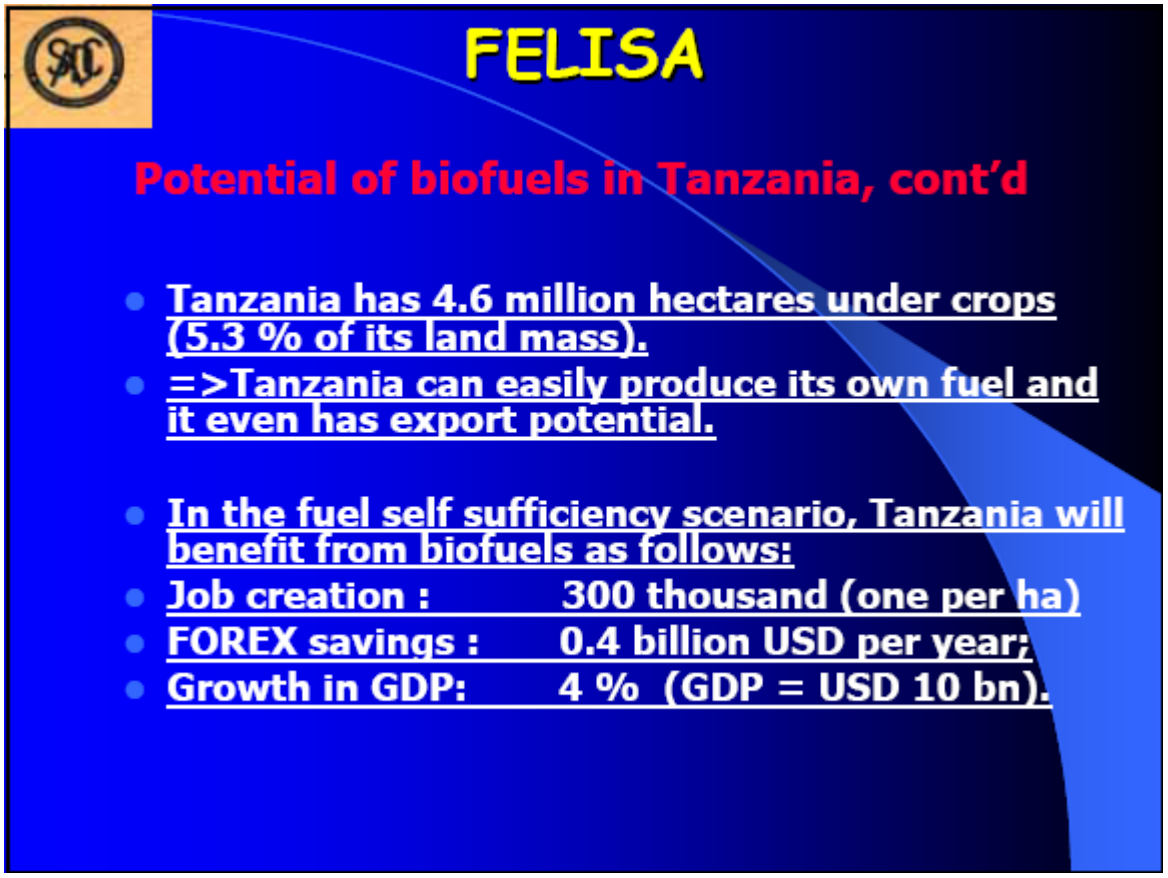
- Emergence of biofuels could help to revitalise agriculture in developing countries

Tanzanian example – farming for energy



Source: De Keyser and Hongo, 2005

Tanzania – farming for energy

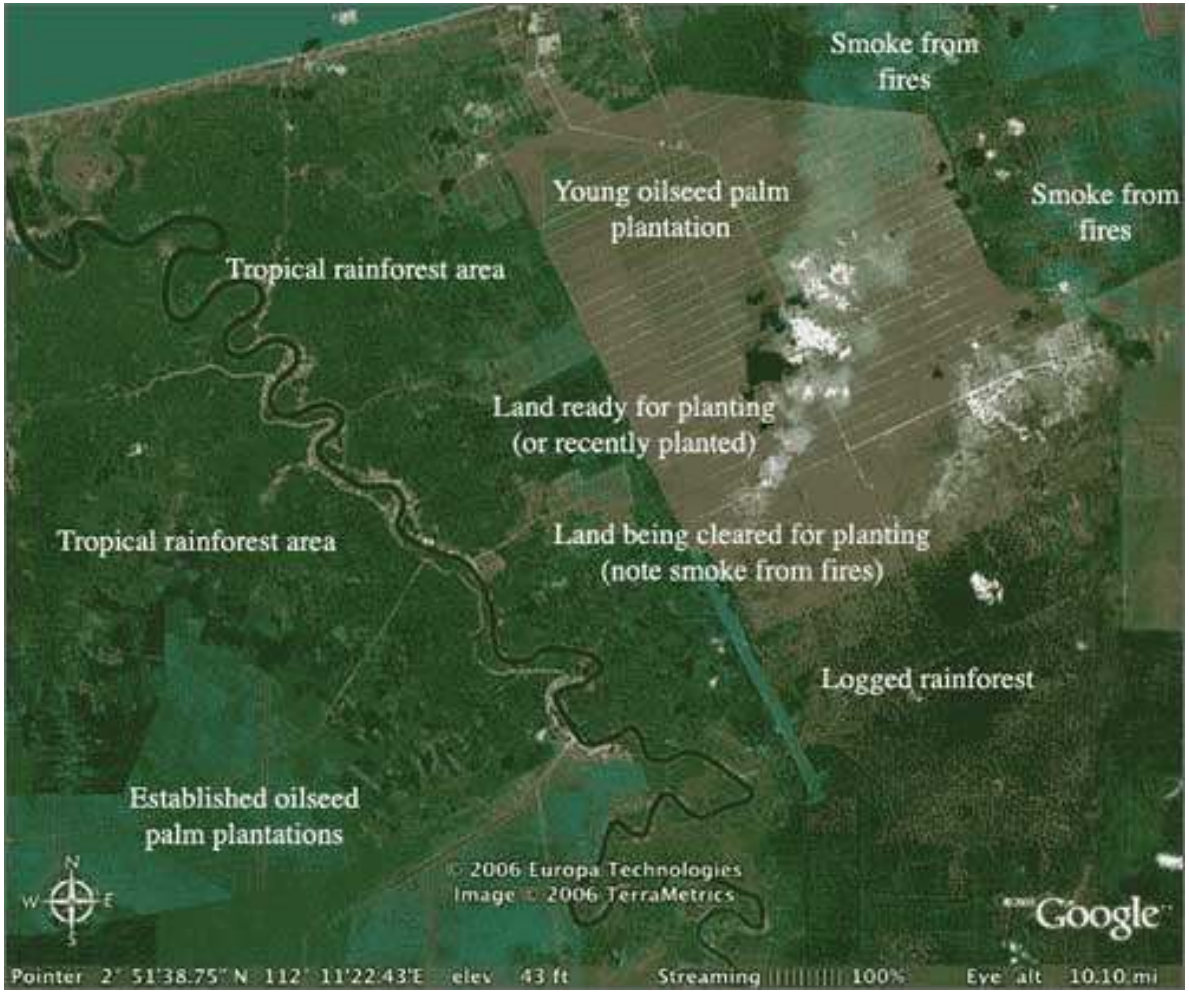


Source: De Keyser and Hongo, 2005

Objections to developing biofuels

- The effect on food security of production of energy crops
  - Some energy crops (jatropha) don't compete with agricultural land
  - Energy crops can provide synergies, not conflict, with food production
  - Efforts to increase land and labour productivity are crucial to minimise competition
- Adverse environmental consequences
  - Intensifying agricultural production on existing land and increasing use of irrigation and fertiliser risks depleting water supplies and adding to nitrogen overload
  - Extending production to new lands can threaten marginal lands and forests
- Some developing countries have significant bioenergy potential due to low population densities, large areas of suitable land, and low productivity of existing agricultural systems

Palm oil in Malaysia



Acknowledgement: http://www.cwbiodiesel.com/

Getting poor families involved

- Role for public policy
  - Encouraging contract farming and outgrower schemes
  - Protecting the resource and land rights of vulnerable groups and protected forests
  - Improving infrastructure, transportation, market coordination, credit and fertiliser distribution, land markets

Section 5. Conclusions and main messages

Conclusions and main messages

- Whether higher food prices worsen poverty or not will depend on the products involved, the patterns of household incomes and expenditure, and the policy responses of governments
- The price impacts of biofuel policies in developed countries are felt primarily in cereals and oilseeds markets, and the evidence suggests that these price increases are damaging to the poor in developing countries
- The urgency of a coordinated response to higher food prices (contrast with response to financial crisis!) including re-think of biofuel policies in developed countries

Conclusions and main messages

- The distinction between the short and long run impact of price rises is crucial
- Historical evidence that prospect of sustained higher food prices (not necessarily an adverse terms of trade shock) have stimulated agricultural growth and thus overall economic growth
- In that context, biofuel production in developing countries has the potential to energise agricultural production, if carefully managed