

Capital requirements of developing countries' agriculture to 2050

**Global Perspective Studies Unit
Food and Agriculture Organization of the United Nations**



Background and objective

The investments outlook to 2030/2050

Background/objectives

- This is the first step to create an assessment of total capital requirements needed to be consistent with FAO's long-term outlook (WAT2030/2050).
- Results are still preliminary, not all areas (working capital) not all activities are covered (upstream, institutions, roads);
- Basis for the second step: (normative) alternative scenarios e.g. for new development goals;

Assumptions, scope, metrics

What has been measured and how?

1. FAO baseline projections to 2030/2050;
2. 40 agricultural activities linked to capital needs by unit costs and capital needs per output in ...
3. 26 investment areas, 14 relate to primary agriculture, 12 to downstream industries;
4. Imputed capital requirements, not actual; deviations and convergence; short-term / long-term;
5. Investment needs but not financing sources: No differentiation between public/private nor between domestic/foreign;
6. 93 developing countries, no developed countries or countries in transition

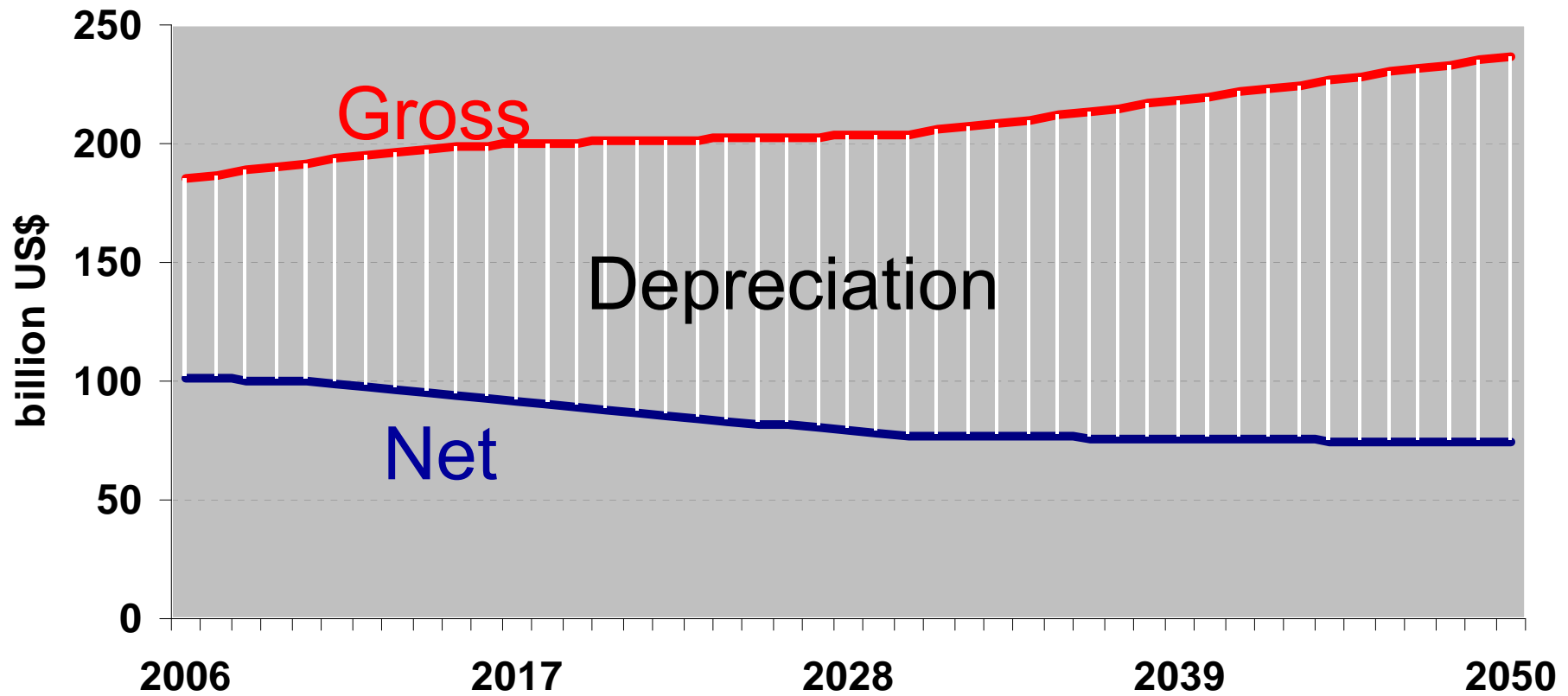
Results

1. Investment needs & capital stocks

Cumulative investment requirements to 2050

billion US\$ (2009 prices)			
	Net	Depreciation	Gross
Total for 93 developing countries	3,636	5,538	9,174
Total primary production	2,378	2,809	5,187
of which crop production	864	2,641	3,505
of which livestock production	1,514	168	1,683
Total downstream	1,257	2,729	3,986

Total annual investment requirements in developing countries' agriculture (in 2009 US\$)

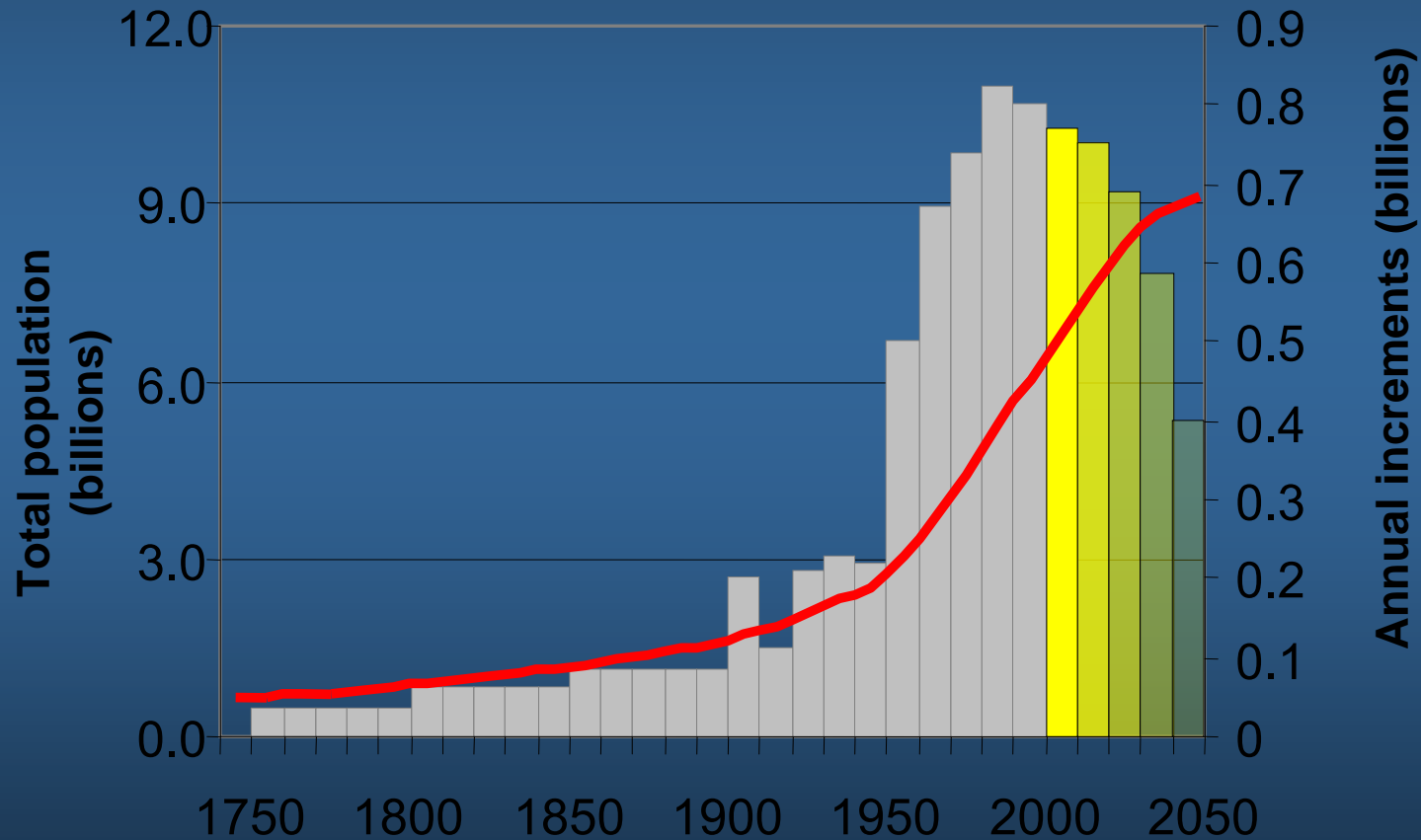


Growth rates of agricultural production

	1961- 2007	1981- 2007	1991- 2007	2005/0 7-2030	2030- 50	2005/0 7-2050
Developing countries	3.5	3.6	3.5	1.8	1.1	1.5
sub-Saharan Africa	2.6	3.3	3.1	2.7	1.9	2.3
Near East/North Africa	3.0	2.7	2.5	2.1	1.3	1.7
Latin America and Caribbean	3.0	3.0	3.4	2.1	1.2	1.7
South Asia	2.8	2.8	2.4	2.0	1.3	1.6
East Asia	4.3	4.5	4.3	1.3	0.6	1.0

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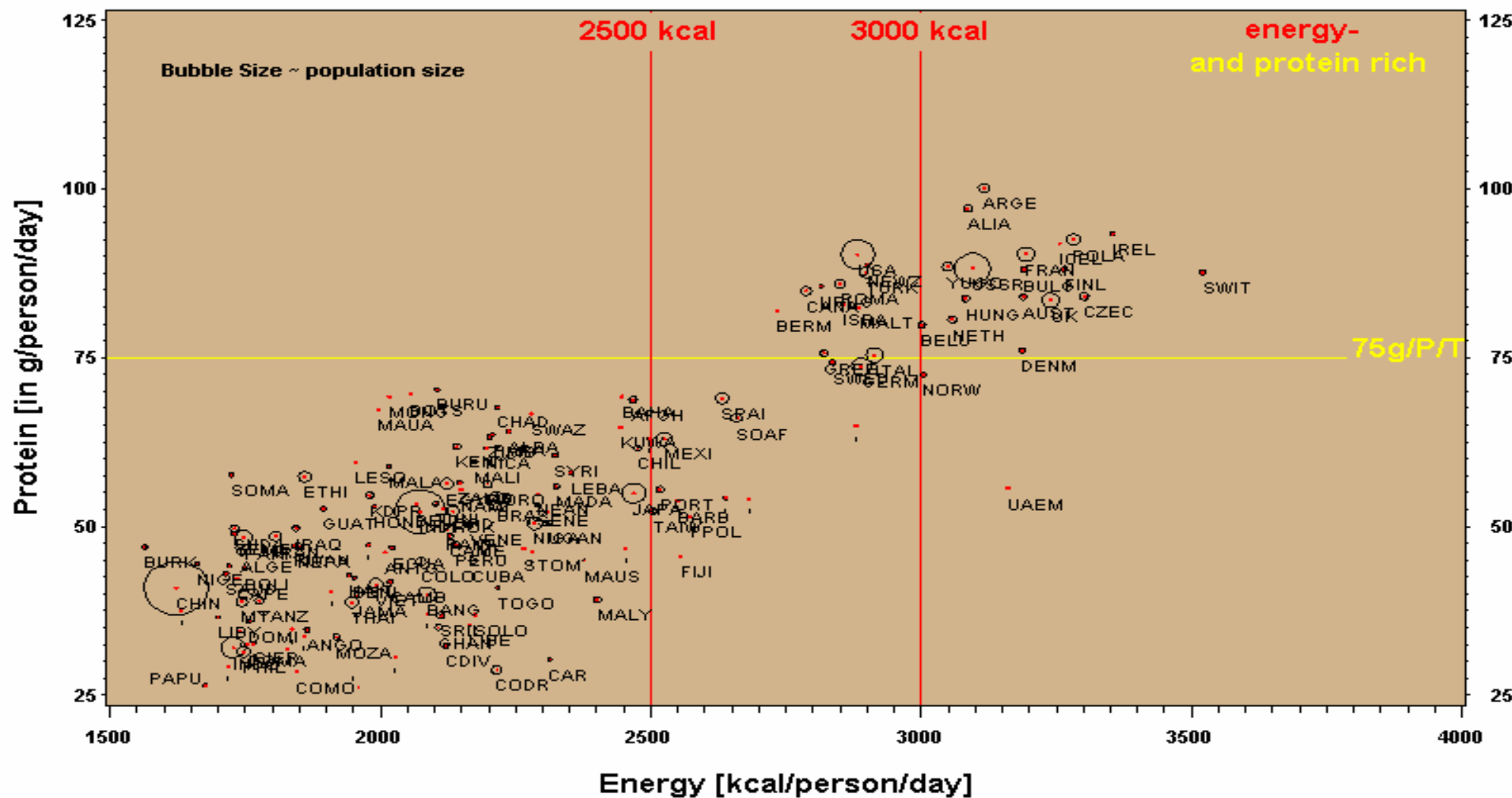
Population growth to continue, but at a slower pace



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Energy- and Protein Content of the Diet, Total Availability

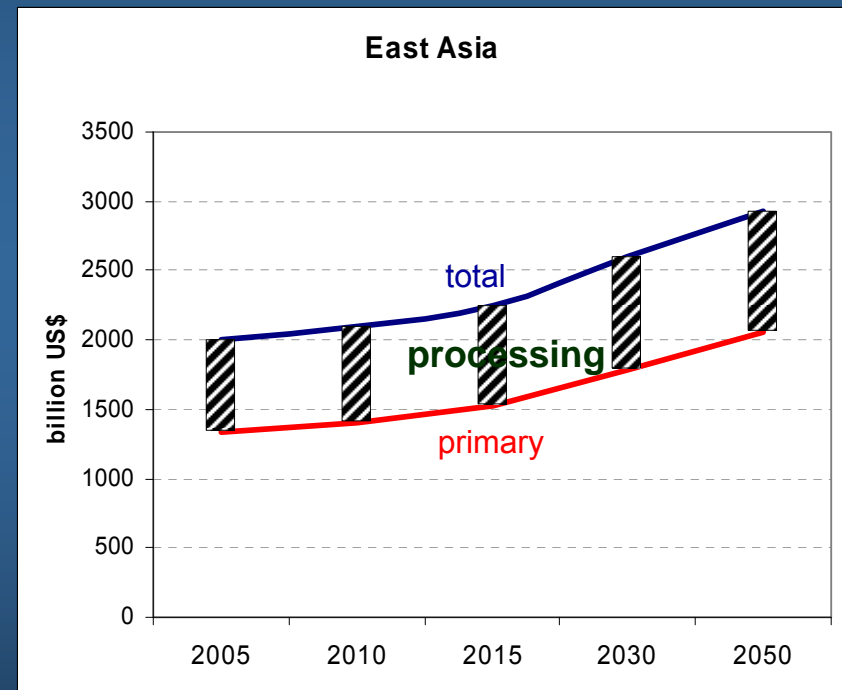
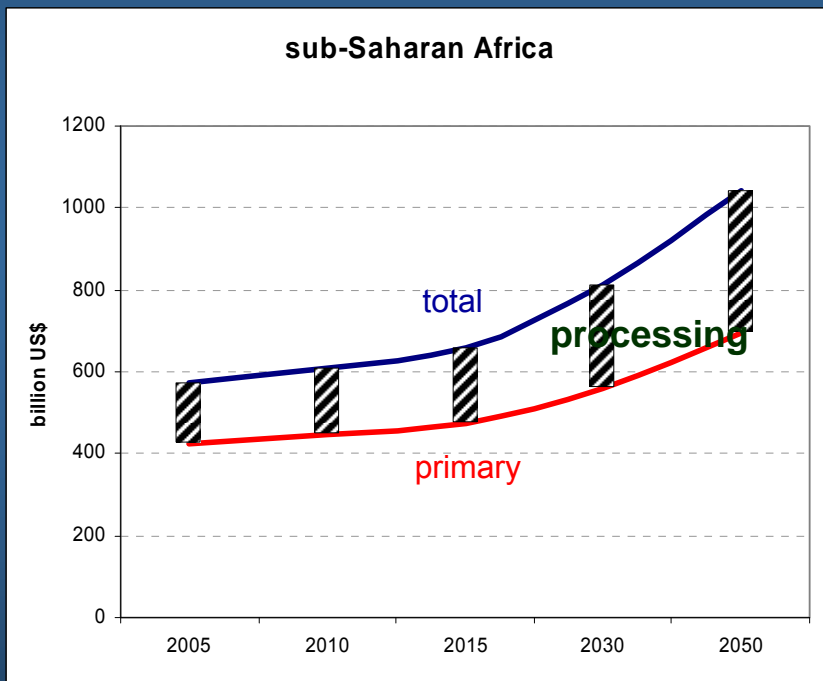
1961



Source: FAO

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Primary vs. processed different levels and dynamics of capital stock growth across regions



Growth accounting to 2030/2050

1. Limits

- Only primary agriculture
- Differences in growth of working capital growth assumed away

2. Components:

$$\Delta\text{AG-GVP} = \Delta\text{AG-Labour} + \Delta\text{Capital} + \Delta\text{Land} + \Delta\text{Rest}$$

3. Results

	Capital	Labour	Land	Rest
DING	71	-16	25	20
SSAF	48	59	28	-35
LATI	62	-73	49	62

Results 2: Performance indicators

Gross value of production **per agricultural labourer** (1990 ICP\$ per person)

	2005	2030	2050	2050/2005
Developing countries	792	1,185	1,658	2.09
sub-Saharan Africa	404	506	612	1.51
Latin America and Caribbean	4,646	9,738	16,853	3.63
Near East / North Africa	1,621	2,804	4,346	2.68
South Asia	525	738	1,085	2.07
East Asia	753	1,251	1,988	2.64

Gross value of agricultural production by region (billion US\$, 1990 ICP)

	2005	2030	2050	2050/2005
Developing countries	1,053	1,603	1,985	1.88
sub-Saharan Africa	83	157	230	2.77
Latin America and Caribbean	196	325	412	2.10
Near East / North Africa	84	137	178	2.13
South Asia	197	315	405	2.05
East Asia	493	669	760	1.54

Agricultural labour force (millions) by region

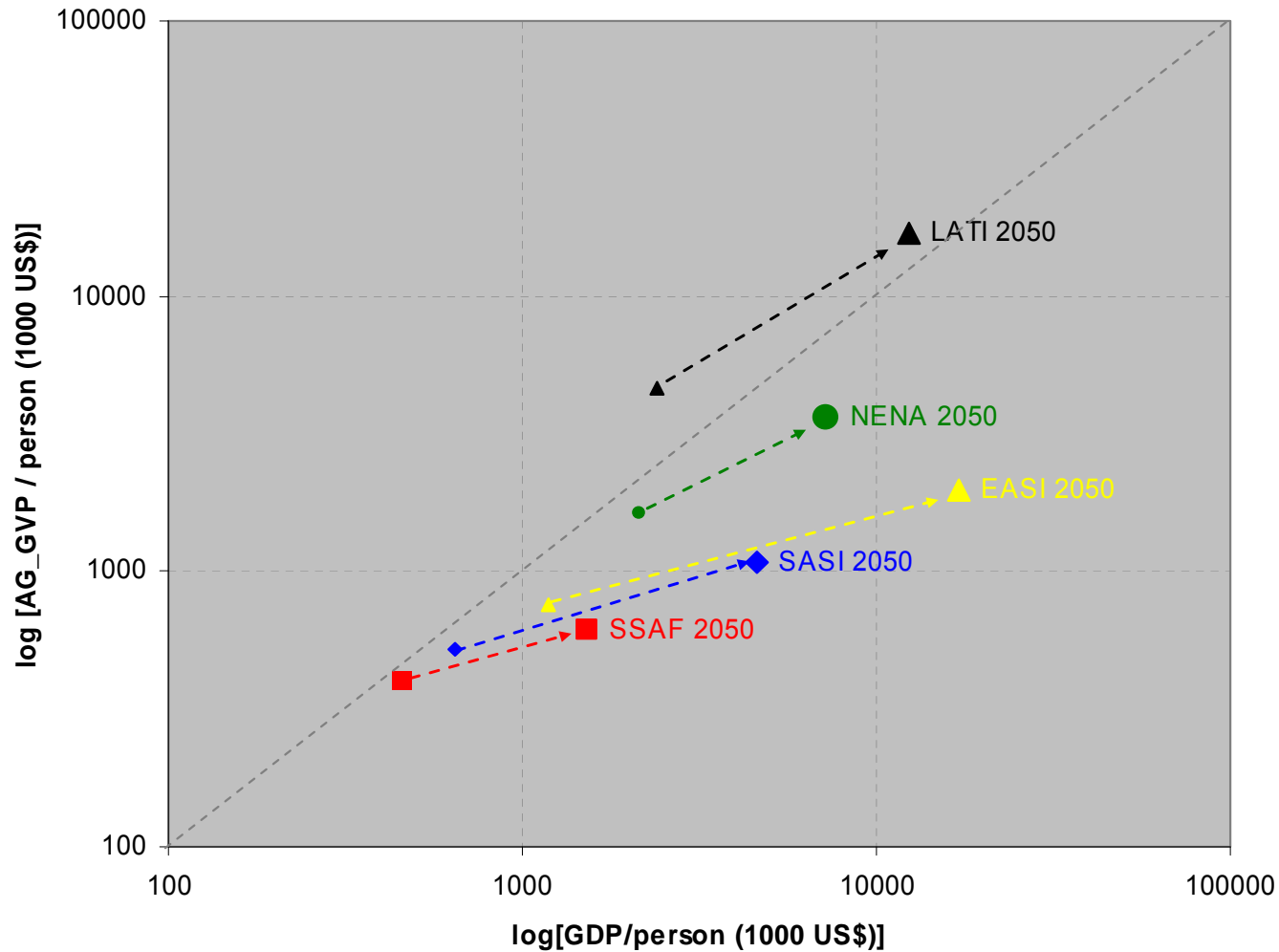
	2005	2030	2050	2050/2005
Developing countries	1,330	1,353	1,197	0.90
sub-Saharan Africa	206	310	376	1.83
Latin America and Caribbean	42	33	24	0.58
Near East / North Africa	52	49	41	0.79
South Asia	376	426	373	0.99
East Asia	655	535	382	0.58

Capital stock per worker (in 2009 US\$ per person)

	2005	2030	2050	2050/2005
Developing countries	4.28	5.72	7.68	1.79
sub-Saharan Africa	2.78	2.62	2.77	1.00
Latin America and Caribbean	25.24	45.70	77.77	3.08
Near East / North Africa	11.61	17.33	25.41	2.19
South Asia	3.88	4.59	6.10	1.57
East Asia	3.06	4.87	7.67	2.51

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Growing income gaps between agriculture and non agriculture across most regions



New markets

1. Food markets grow, but slower
 - Asia: Satiation, Africa: lack of purchasing power
 - Export markets often elusive
2. Energy markets
 - Energy markets virtually unlimited (energy prices to be high)
 - Higher prices, more volume but higher input costs
 - more food insecurity
3. Environmental services, climate change mitigation (technology transfers, capital needs, etc.)
 - higher incomes
 - more food security
4. All markets: more capital & more know-how
 - Needs vs. factor endowment in developing countries
 - Need for resource pooling and institutional challenges
 - More output but also higher capital intensity and substitution, net effect on labour ?

Next steps

Next steps

1. Incremental needs to achieve more ambitious targets (scenario based on existing investment projections)
2. Differentiation private/public and foreign (FDI/ODA)/domestic
3. Full account of working capital, fertilizer, fuel, feedstuffs, pesticides, etc.
4. Priority areas for public investment, foreign/domestic, and by public good area (R&D, institutions, infrastructure, etc.)

Summary and conclusions

1. Still growing, but slowing incremental capital needs for the future
2. Vast regional differences in levels and growth rates of capital needs for the future, low but rapidly growing
 - SSAF: too many farmers to share too few resources
 - LATI: too few people left in agriculture
3. Small holder agriculture faces challenges: food market growth limited, need to pool resources, know-how, capital, institutions
4. Agricultural income growth below and to lag non-agricultural incomes in most regions; rising ag/non-ag and perhaps rural/urban poverty gap.
5. New markets for agricultural production and agriculture-related services (CC mitigation) could raise capital requirements considerably (e.g. for new technologies). But they also open new sources of finance.

Thanks.
Questions?



The investments outlook to 2030/2050

1. Background and objective
2. Assumptions, Scope, Metrics
3. Results
 - Investments and capital stocks
 - Performance indicators
4. Next steps
5. Summary and conclusions

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