



Reducing Post-harvest Loss to Advance Food Security

Steve Sonka, Director

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**ADM Institute for the
Prevention of Postharvest Loss**

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



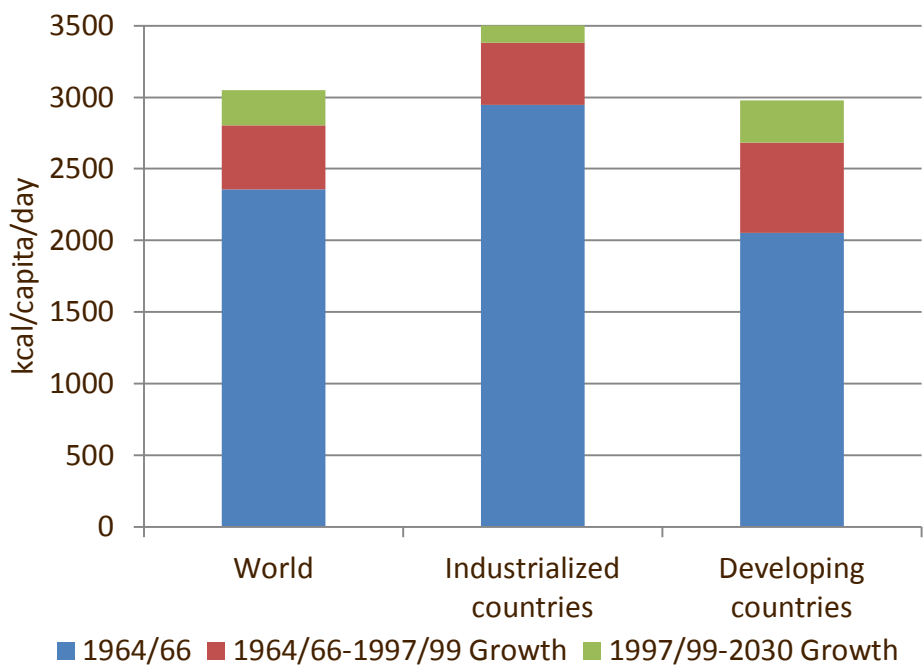
AGENDA

- **Future food security challenges** 
- **Several “views” of post-harvest loss**
- **The ADM Institute and its contributions**

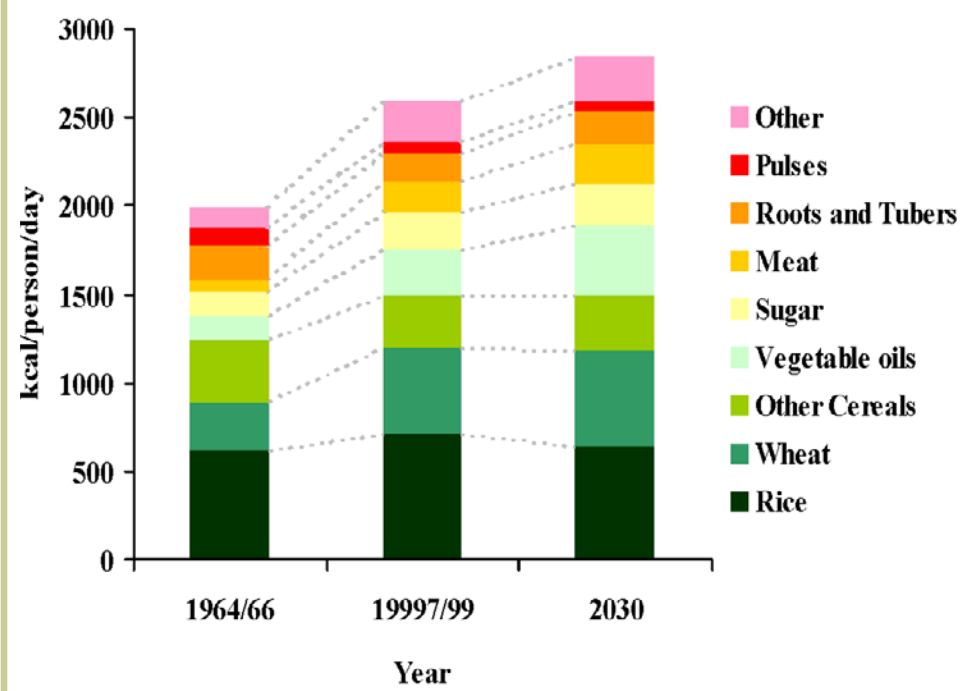


Global Food Demand Is Predicted to Increase 70% by 2050 (FAO; 2009)

Per capita food consumption

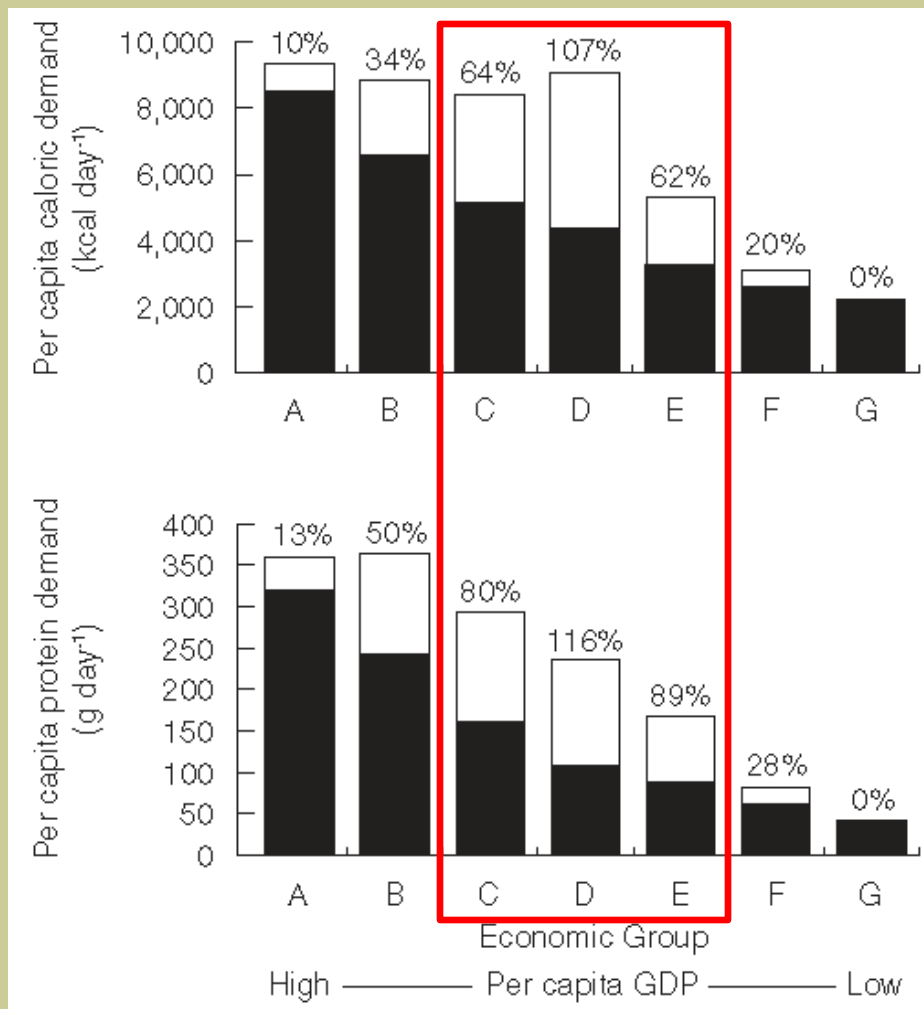


Dietary changes in developing countries



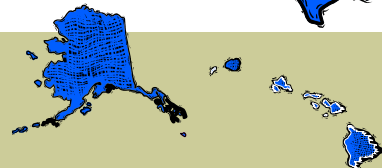
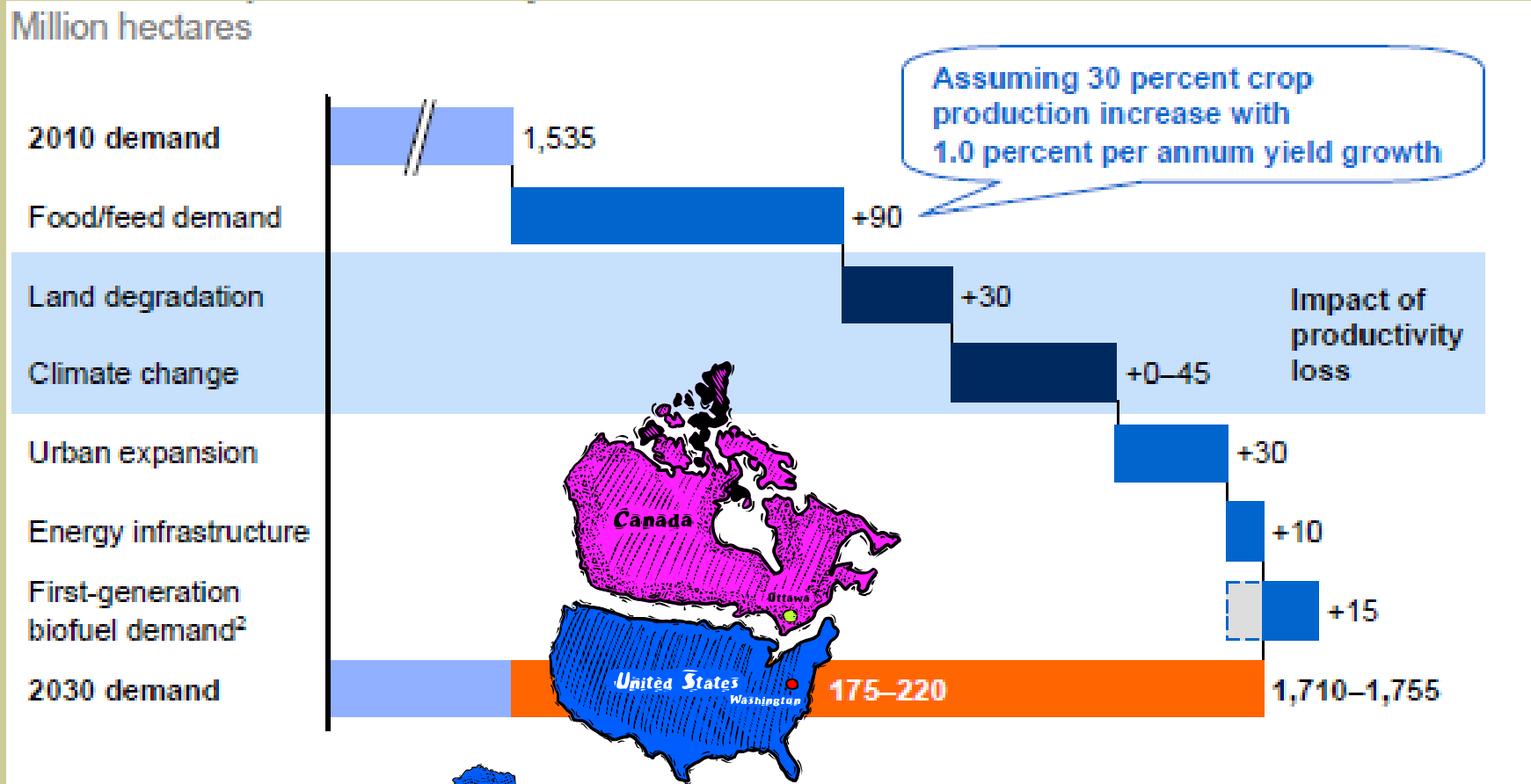


Global Crop Demand Is Estimated to Double From 2005 to 2050 (NAS; 2011)





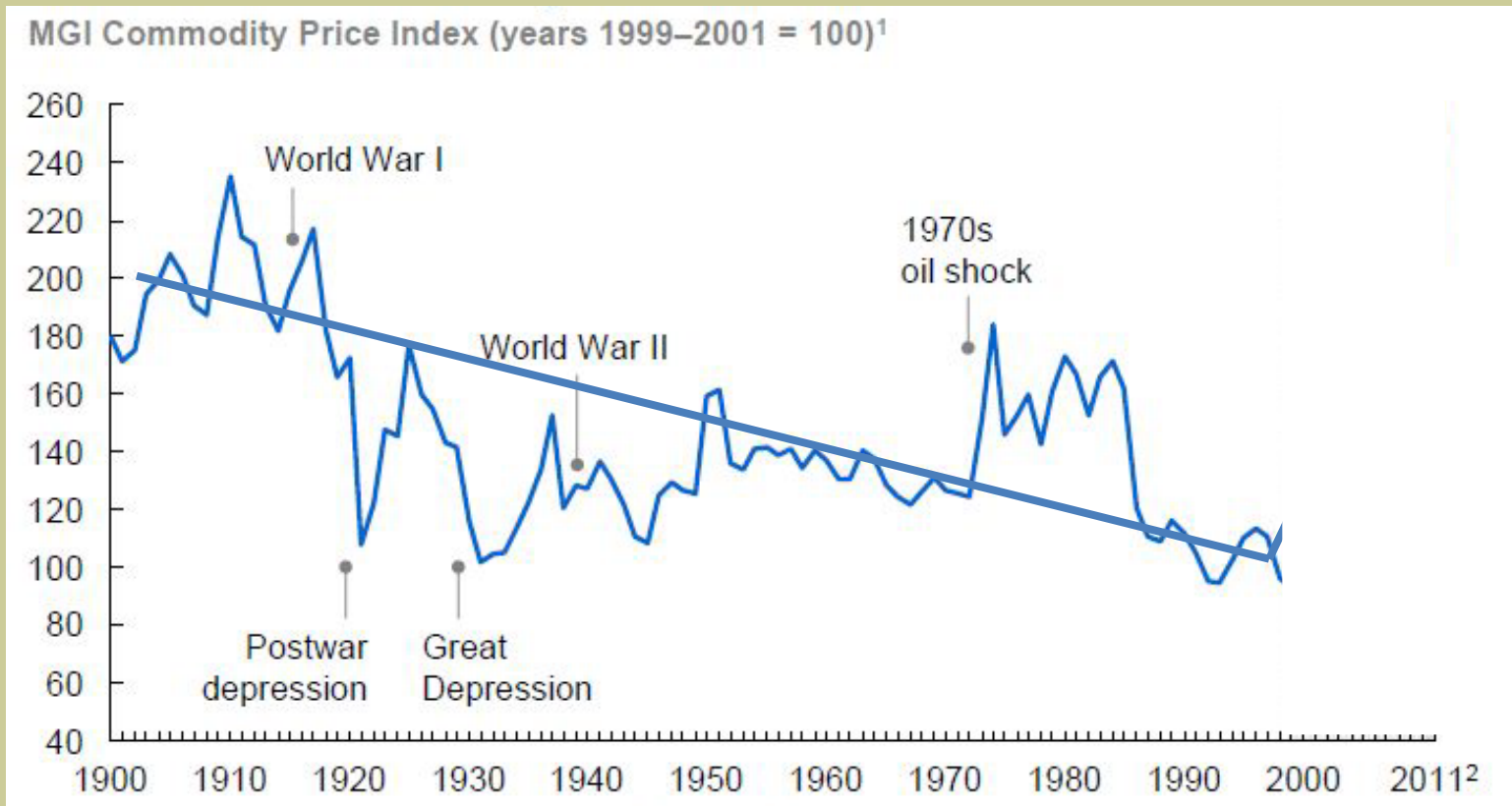
2030 Food Demands Require About 200 Million More Hectares (McKinsey; 2011)





Commodity Price Changes

Tell Interesting Story (McKinsey; 2011)





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X

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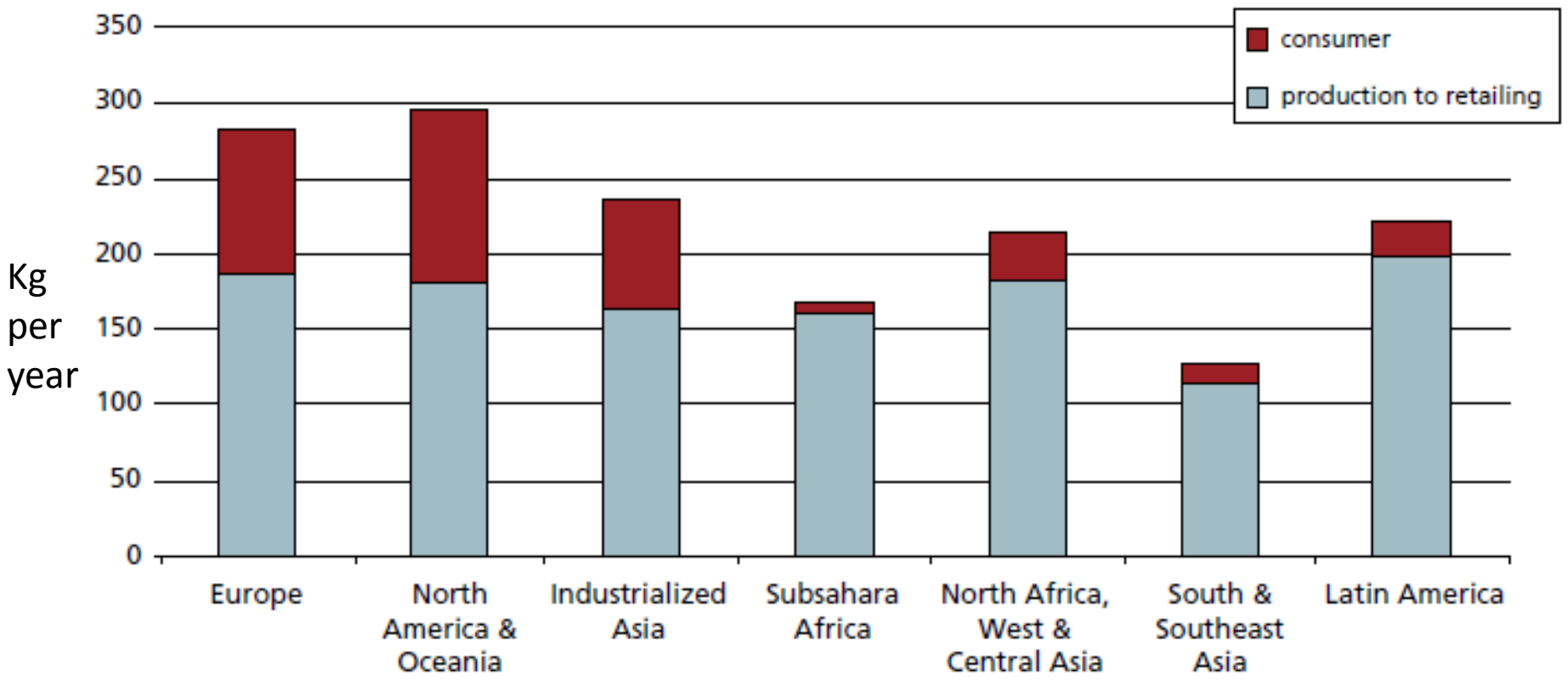
- **The ADM Institute and its contributions**



PHL Varies by Region (FAO; 2011)

DATA!

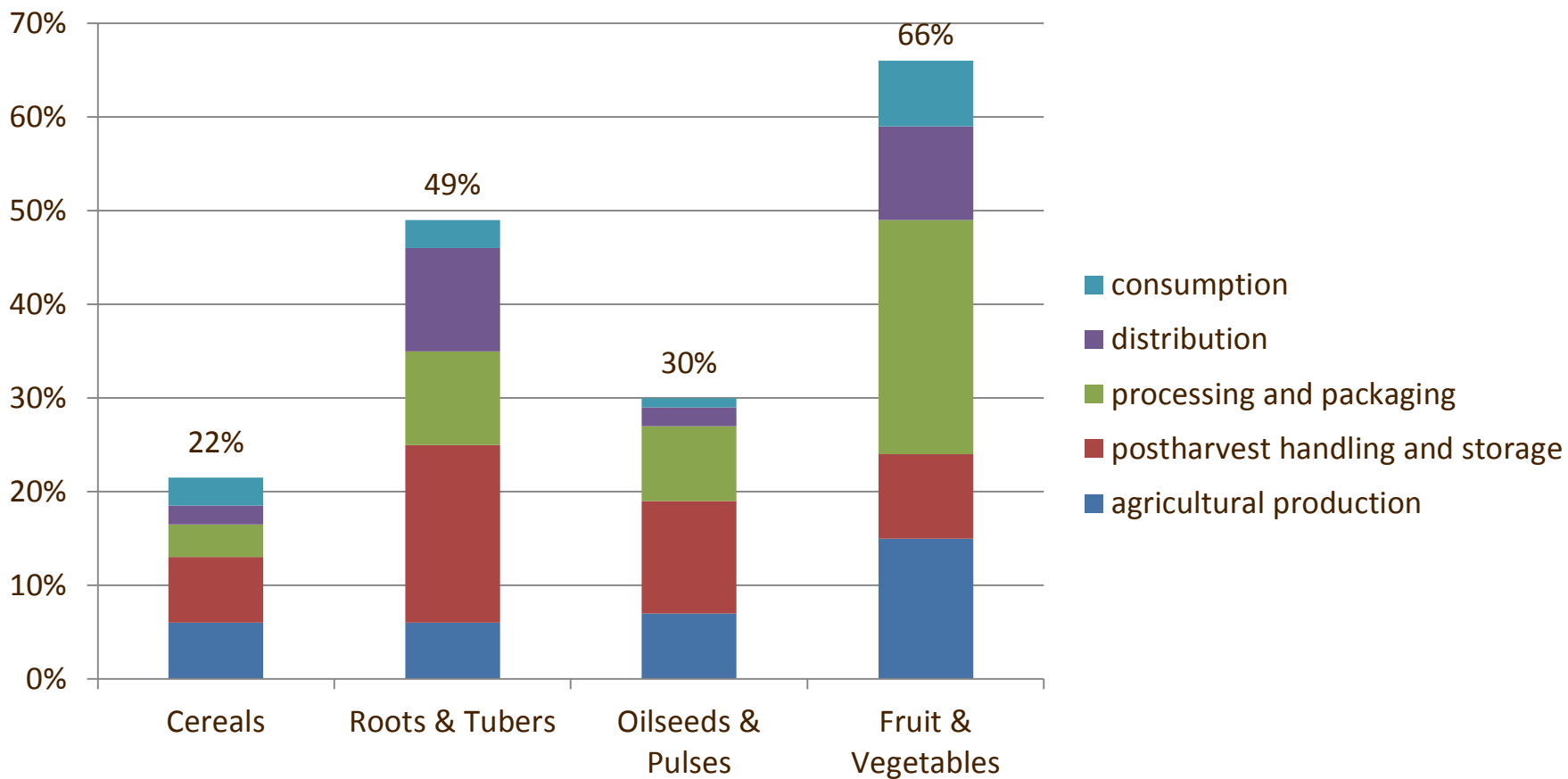
Per capita food waste and food loss (Kg/year)





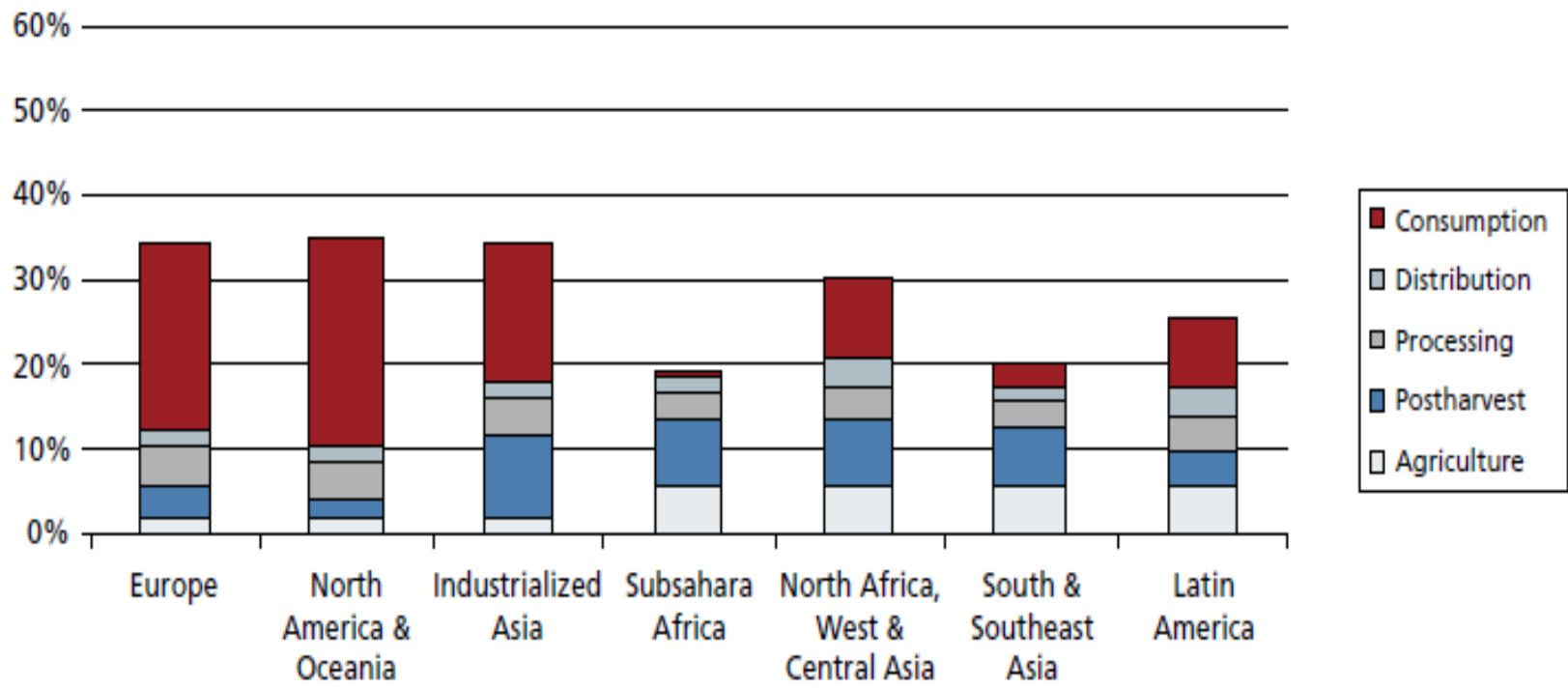
PHL Varies by Commodity (FAO; 2011)

Post-harvest loss estimates in South & Southeast Asia





Cereal Losses Across the World (FAO, 2011)

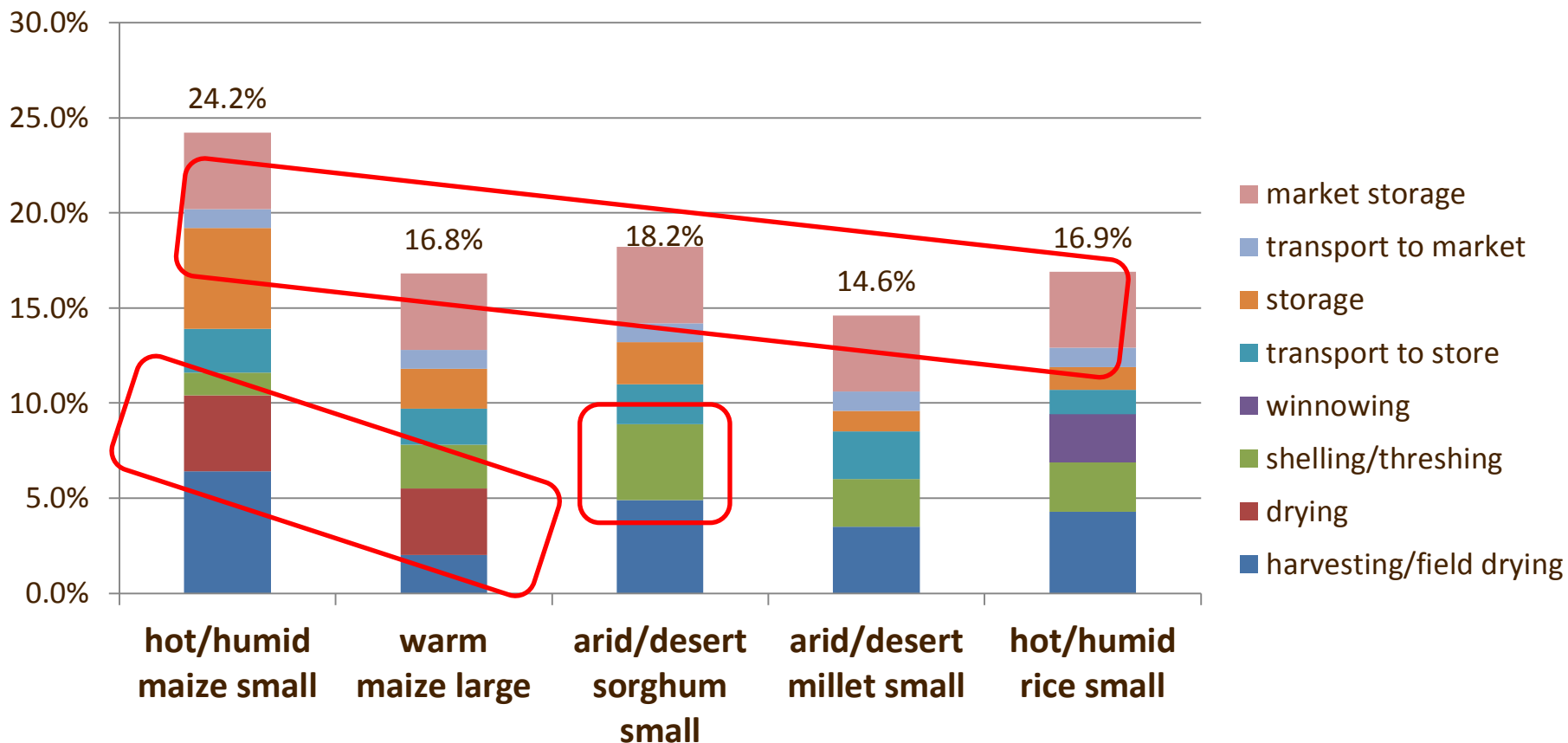




PHL Varies Across Growing Conditions

(IBRD/WB; 2011)

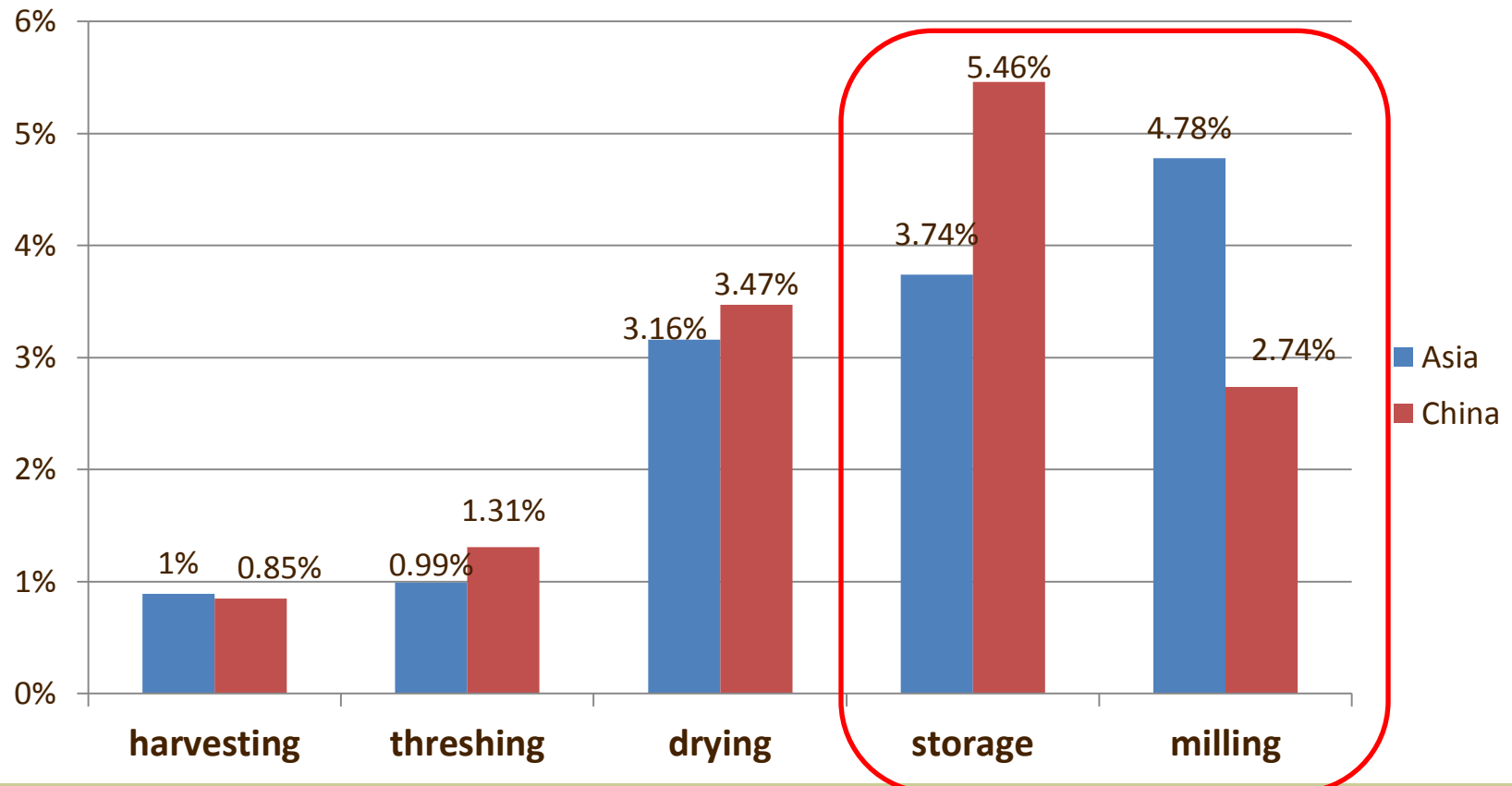
Generalized loss profiles for major grains in Eastern and Southern Africa





PHL Varies Between Countries: For Same Crop (FAO; 2002)

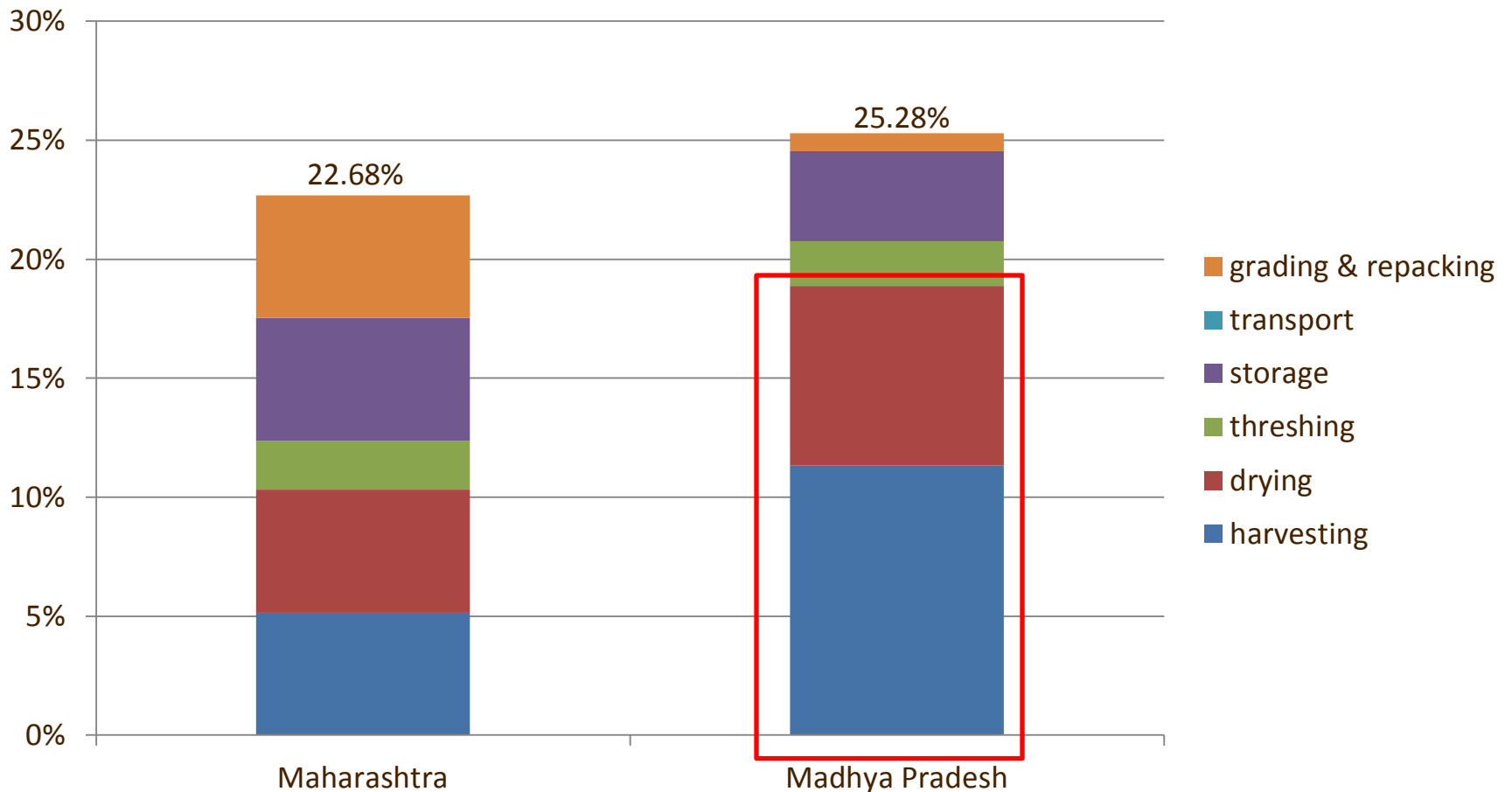
Rice: Total post-harvest losses





PHL Varies Between States Within One Country (ADM Institute; 2012)

Estimated post-harvest loss of black gram in India





A More Specific Perspective: Rice in SE Asia (IRRI; 2011)

In SE Asia, physical losses range from 15-25%.

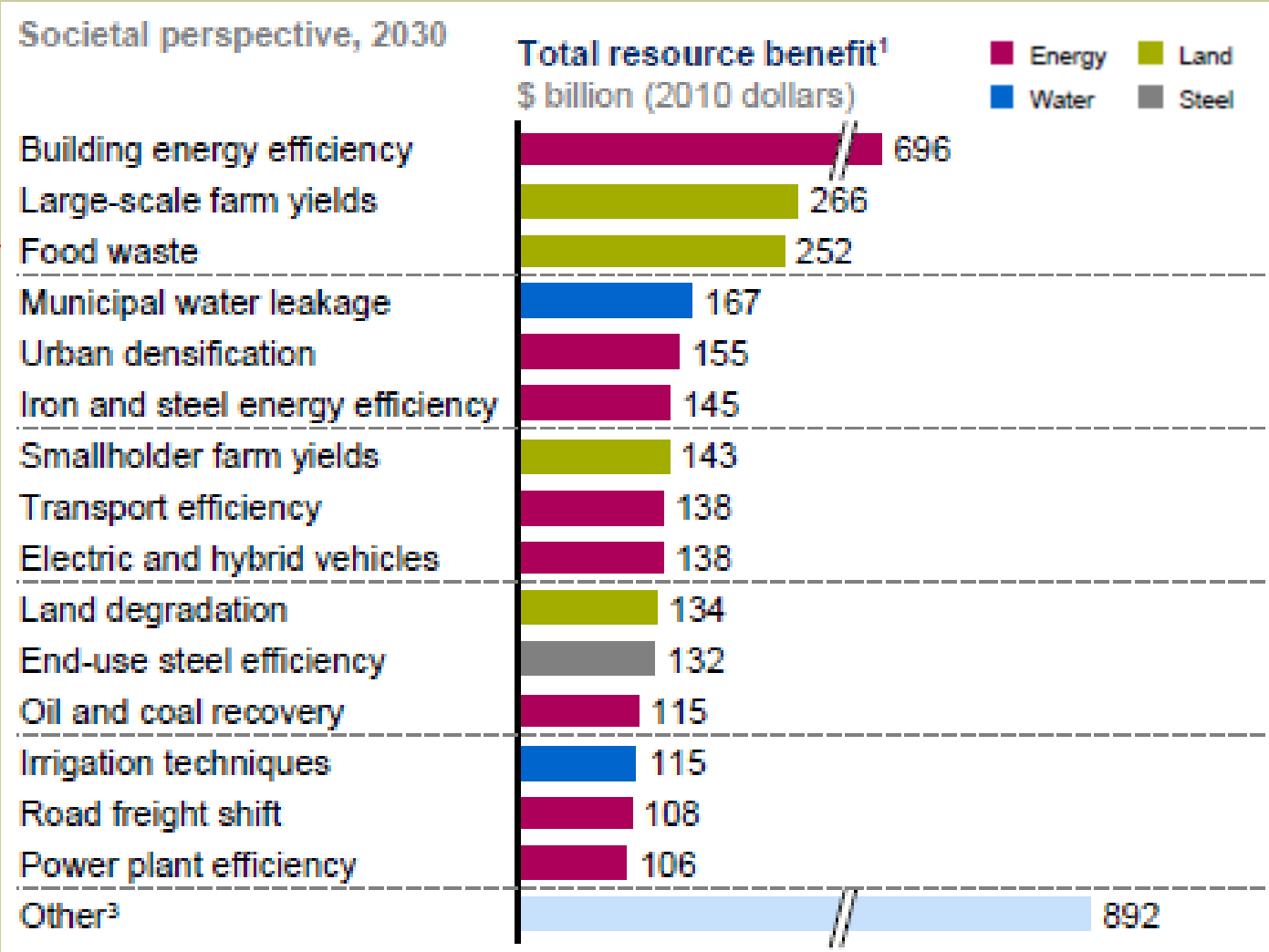


**Quality losses range from 10-30%
(loss in value)**



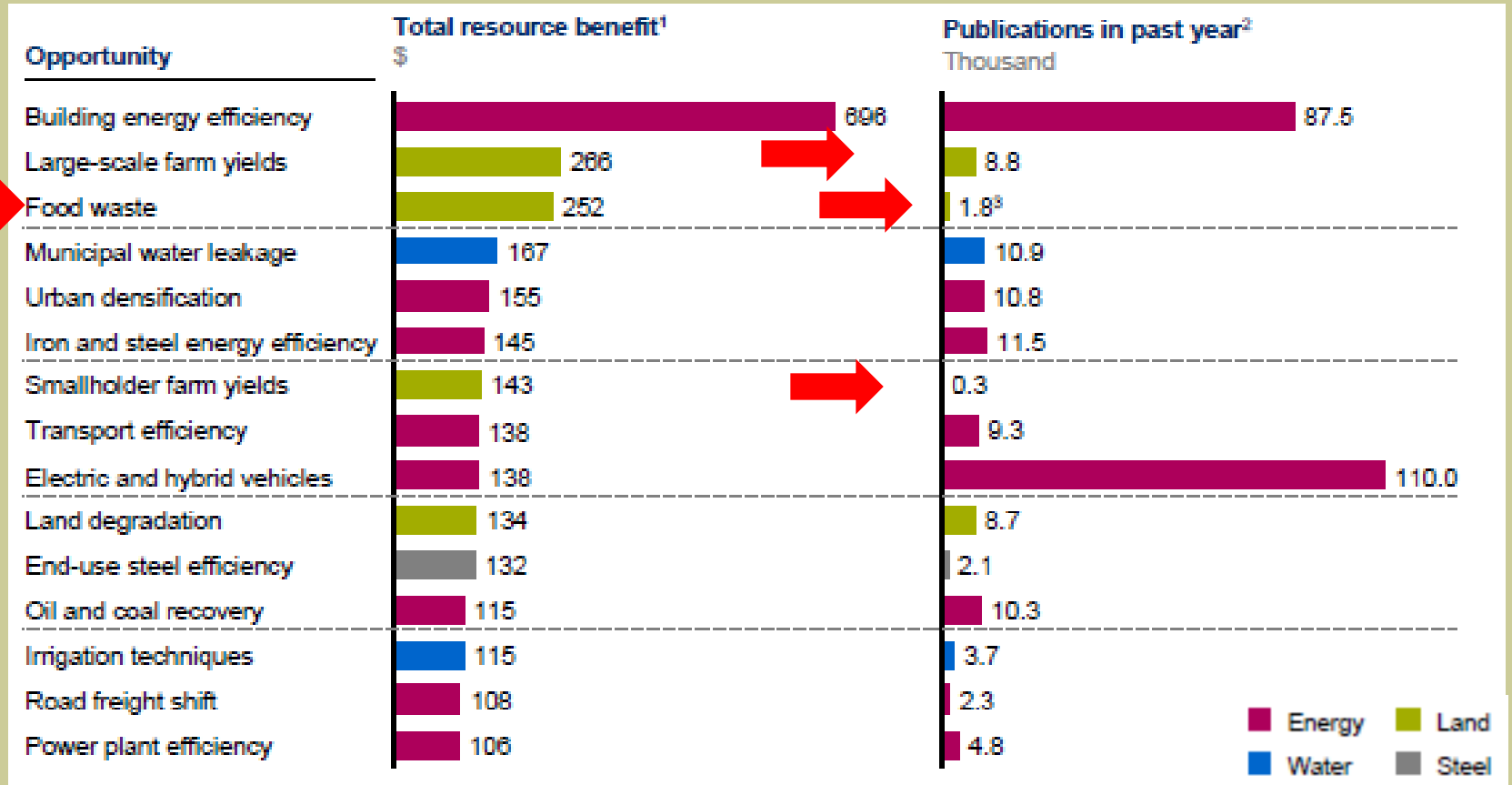


Reducing PHL and Increasing Yields Have High Potential (McKinsey; 2011)





Little Attention Is Devoted to PHL and Yields (McKinsey; 2011)





Why Reduce Post-harvest Loss? Some Hypotheses

- **Estimates suggest 1/3 of agricultural production is “wasted” and doesn’t reach food consumer**
- **Investment required to reduce PHL could be modest**
- **Technology advances should make reduction more feasible and less expensive**
- **Arable land, water, energy are in limited supply – reducing PHL can lessen pressure on scarce resources**



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X

- **Several “views” of post-harvest loss**

X

- **The ADM Institute and its contributions**





Timeline of the ADM Institute

- | | |
|---|---|
| Fall, 2010 | Initial conversations |
| Jan 19, 2011 | Official announcement & celebration
\$10 Million gift
India/Brazil emphasis
Staple crops |
| Feb, 2011 | Seed research efforts initiated
\$0.4 million in funding allocated |
| Mar /Jul, 2011 | Visioning processes |
| Fall, 2011 | RFP issued
\$2.1 million in funding allocated |
| Throughout 2011 – Prospecting for collaborating entities | |



The ADM Institute for the Prevention of Postharvest Loss

Vision Statement

Key elements include:

- To be an international information and technology hub
- To encompass technologies, practices and systems
- To focus on staple crops in key agricultural domains



Research Themes



Measurement & technology development



Systems informatics & analysis



Policy analysis



Education, training, & information transfer



2011 Funded Projects

Measurement & technology development

- **Mary-Grace Danao**
 - Measurement, Documentation and Postharvest Processing for the Prevention of Postharvest Losses of Soybeans and Corn
- **Peter Goldsmith**
 - Managing Grain Losses in Continuous Cropping Systems of the Tropics through On-Farm or Cooperative Storage

Systems informatics & analysis

- **Ximing Cai**
 - Appropriate Technology Development and System Integration for Post-Harvest Loss Prevention
- **Luis F. Rodríguez**
 - Concurrent Science, Engineering, and Technology for the Prevention of Postharvest Loss

Policy analysis

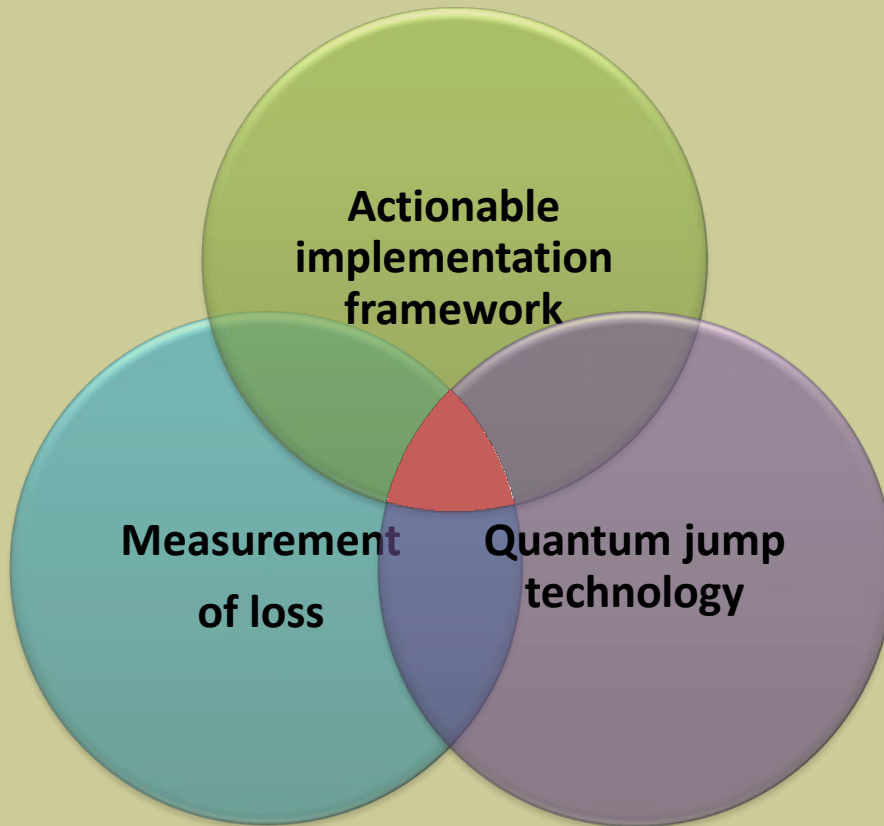
- **Kathy Baylis**
 - Supply Chain Policy and Strategy Analysis for Prevention of Postharvest Loss
- **Mary Arends-Kuenning**
 - The Nature of Small Landholder Agriculture in the Brazilian States of Sao Paulo and Parana and Implication for Understanding Postharvest Loss

Education, training & information transfer

- **Barry Pittendrigh**
 - Education, Training and Information Transfer to Minimize Postharvest Losses – Scientific Animations Without Borders



Our Aspirational Contributions





Reference

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- Tilman, D., Balzer, C., Hill, J., & Befort, B.L. (2011). Global food demand and the sustainable intensification of agriculture. *Proceedings of the National Academy of Sciences of the United States of America*, 108(50), [20260-20264](#).
- World Bank. (2011). Missing food: The case of postharvest grain losses in sub-Saharan Africa. Washington, DC: The International Bank for Reconstruction and Development / The World Bank.



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UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

ssonka@illinois.edu

<http://postharvestinstitute.illinois.edu>