



**Food and Agriculture
Organization of the
United Nations**

for a world without hunger

OECD-FAO Projections of Indonesian Agriculture to 2020: Implications for Water Resources and Water Quality

Sustainable Water Management for Food Security

Bogor, Indonesia

13-15 December 2011

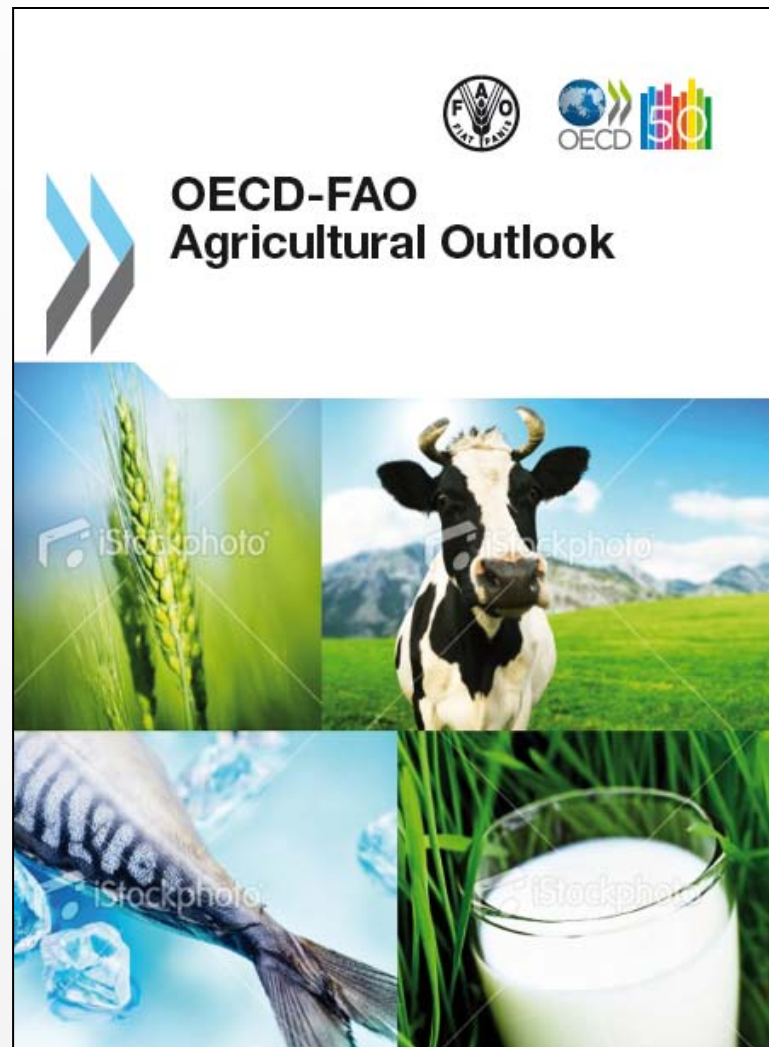
Holger Matthey

FAO

OECD-FAO Agricultural Outlook



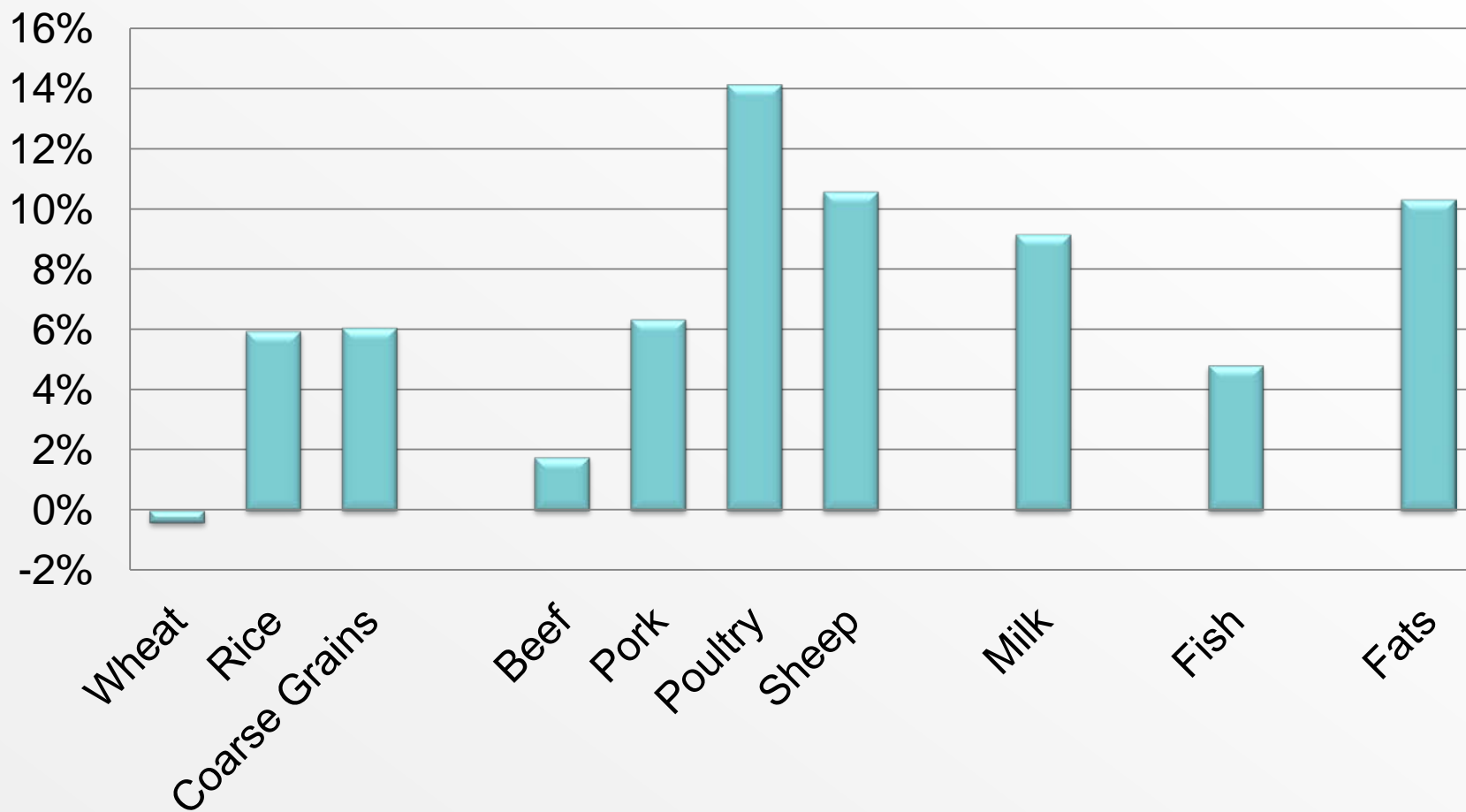
- Joint OECD-FAO report
- Country collaborators
- Model based projection, not forecast
- 10 year horizon
- Major temperate commodities, plus tropical oil crops
- Global coverage



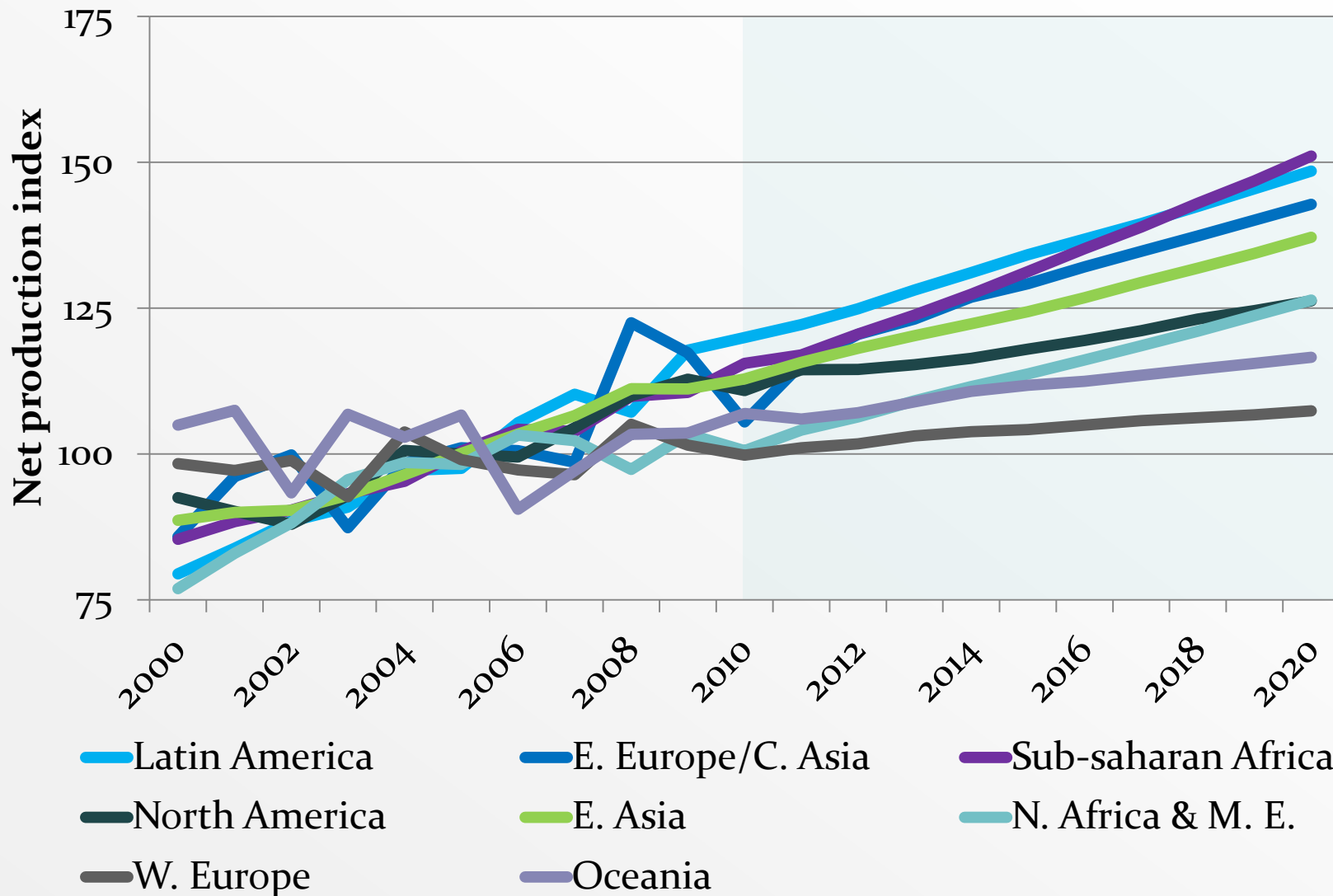


Global shift from staple foods to value-added products continues

Per-capita food consumption change between 2008-10 and 2020

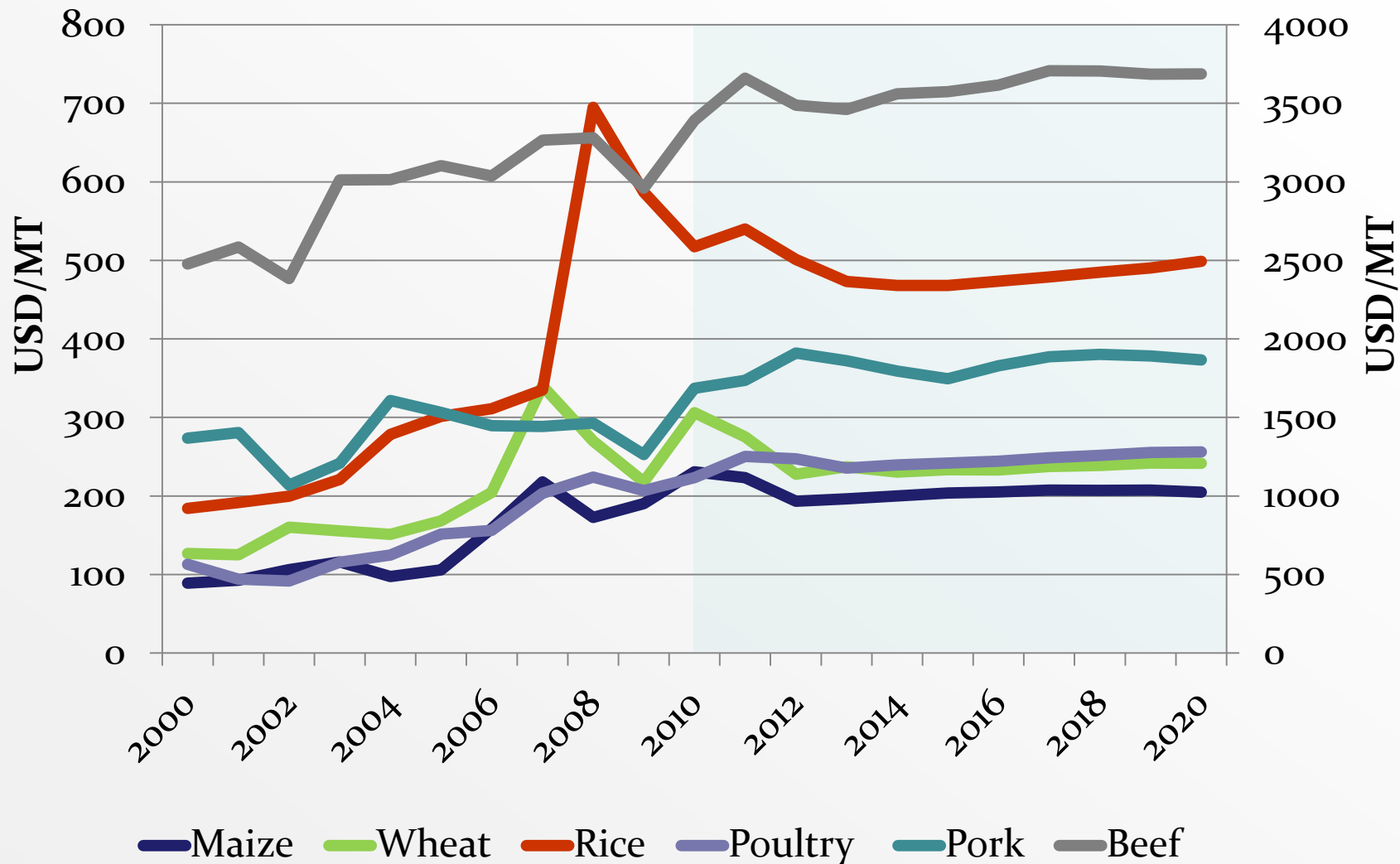


Agricultural supply response mainly from Latin America and Eastern Europe





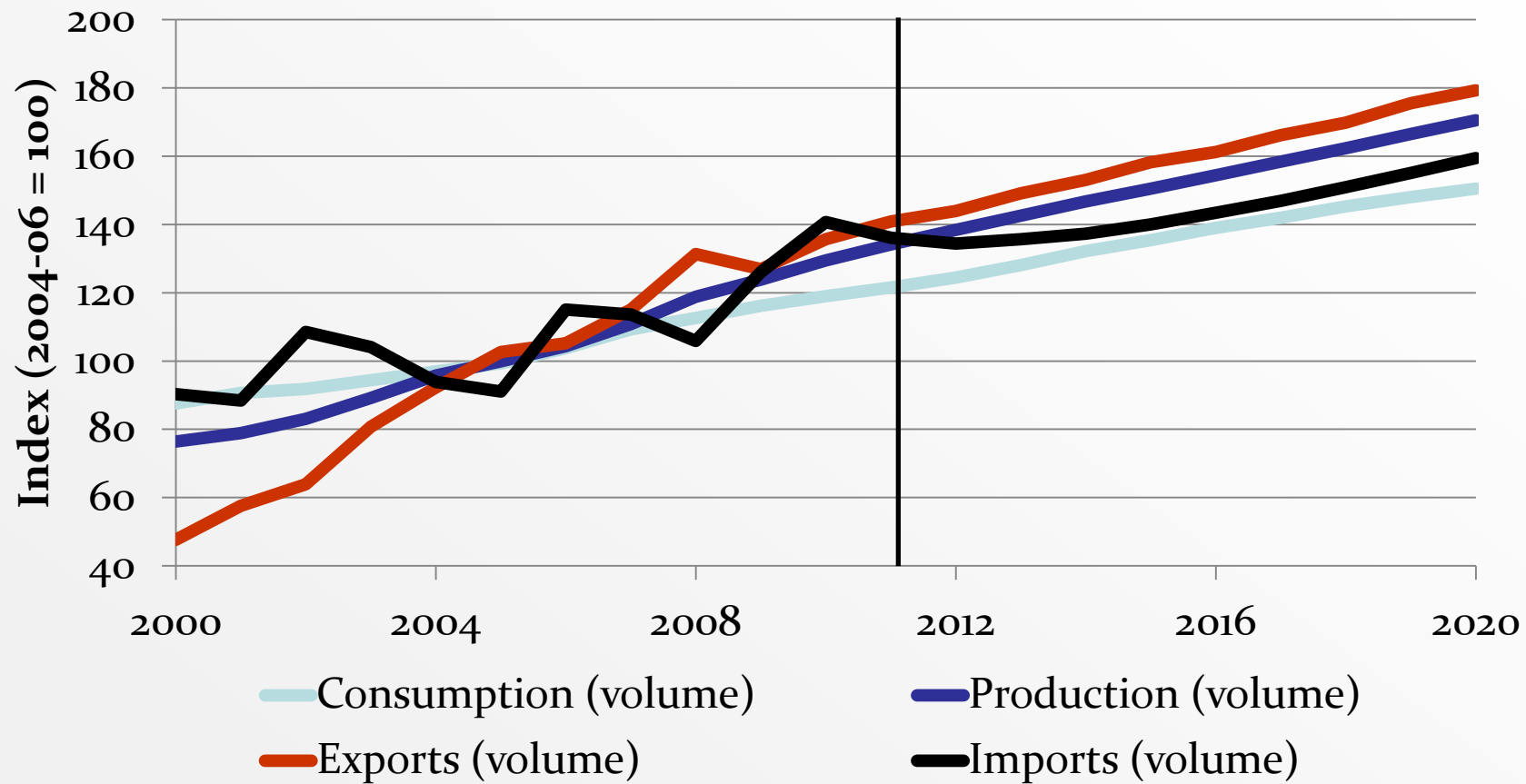
Higher price plateau



Indonesian Agriculture to 2020



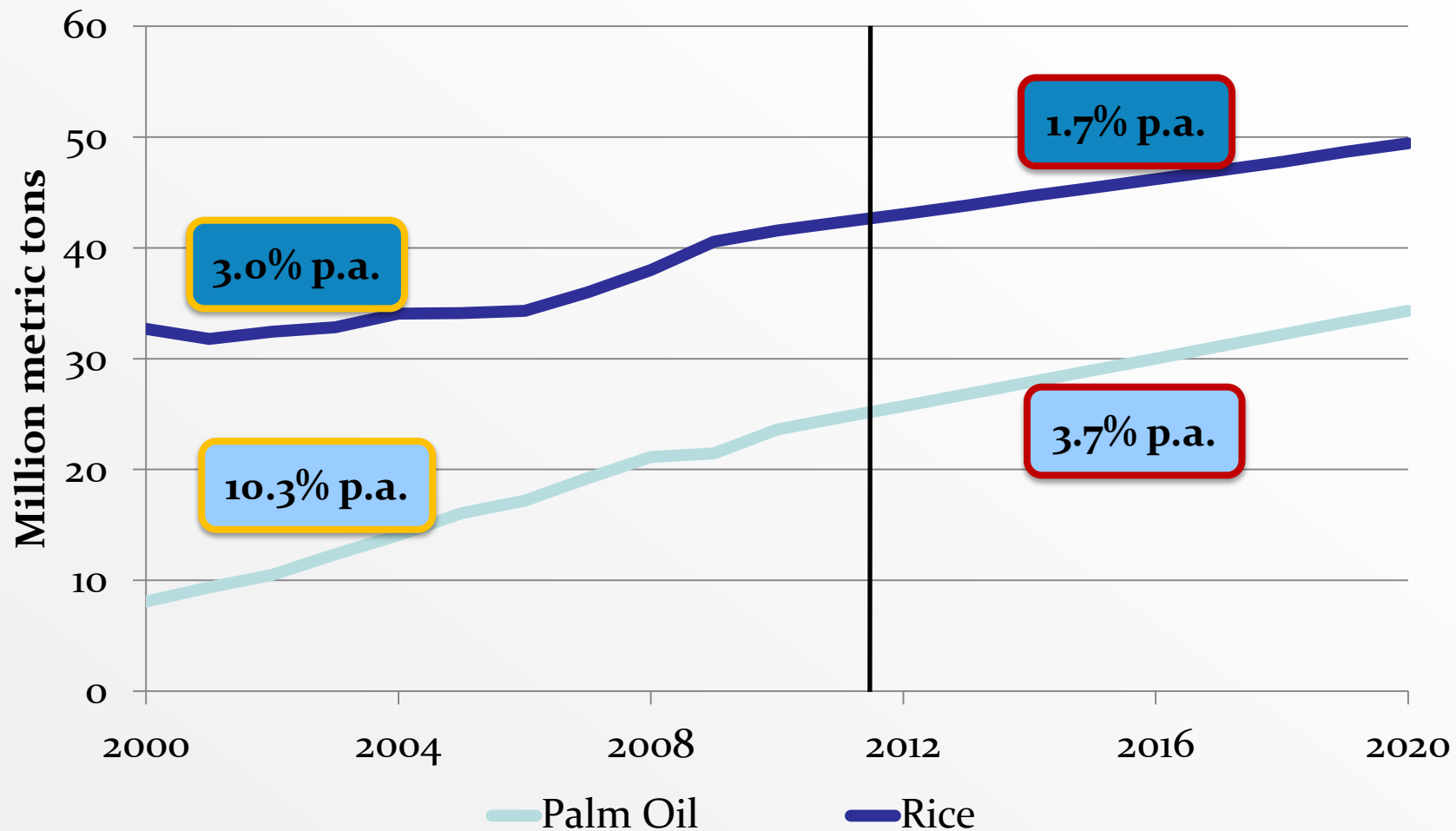
Production, consumption and trade





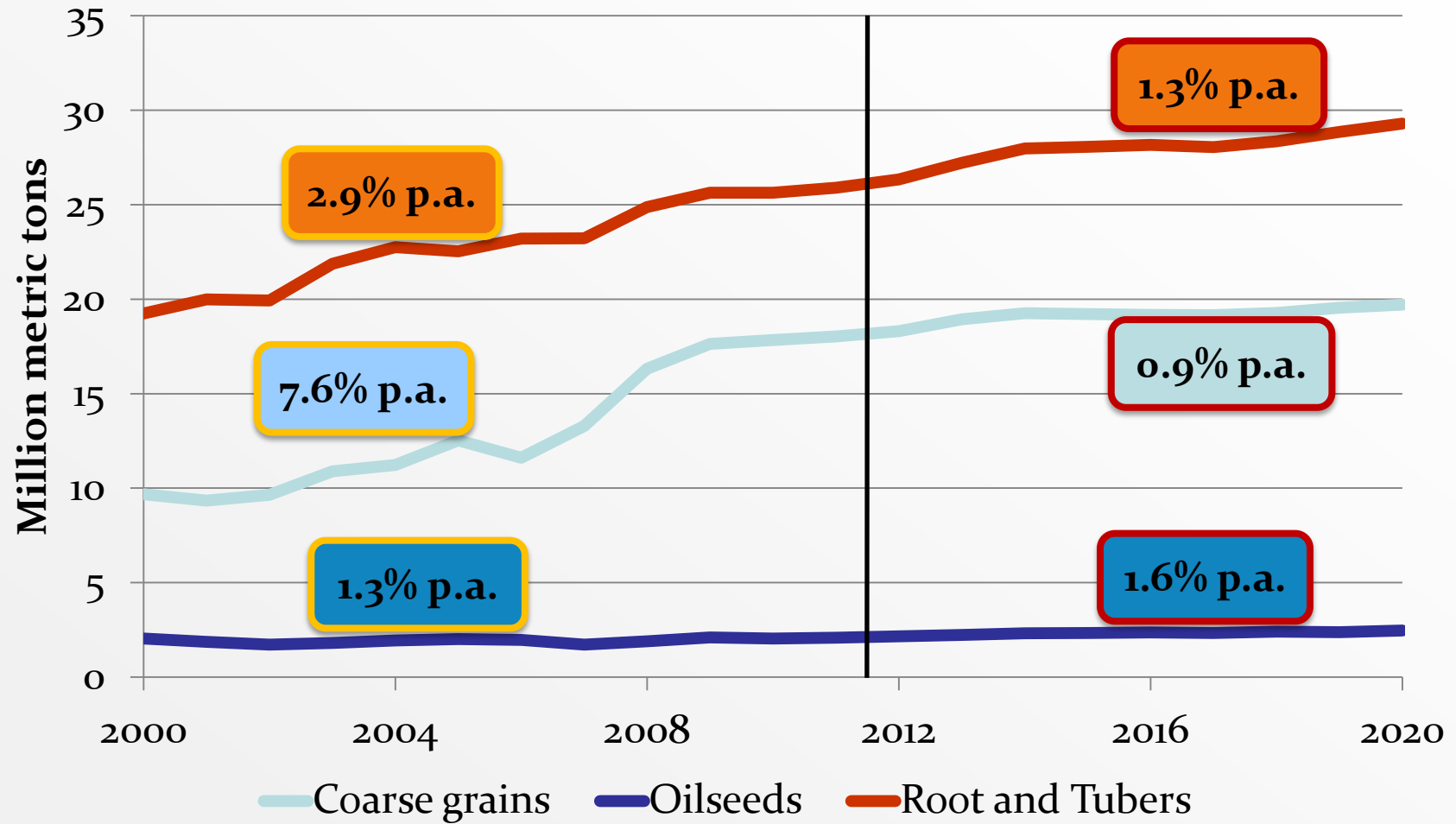
Indonesia

Production of main crops



Indonesia

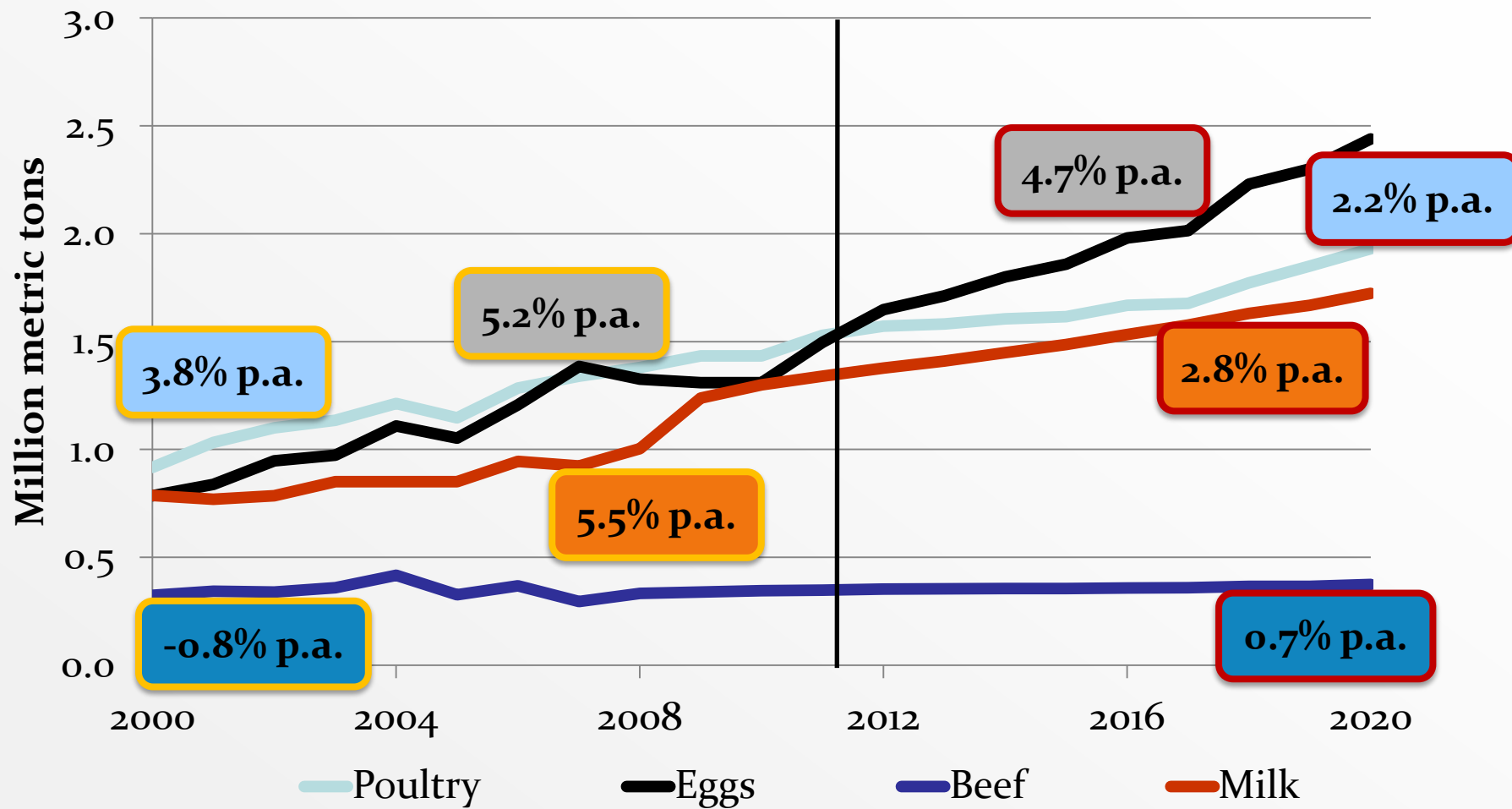
Production of minor crops





Indonesia

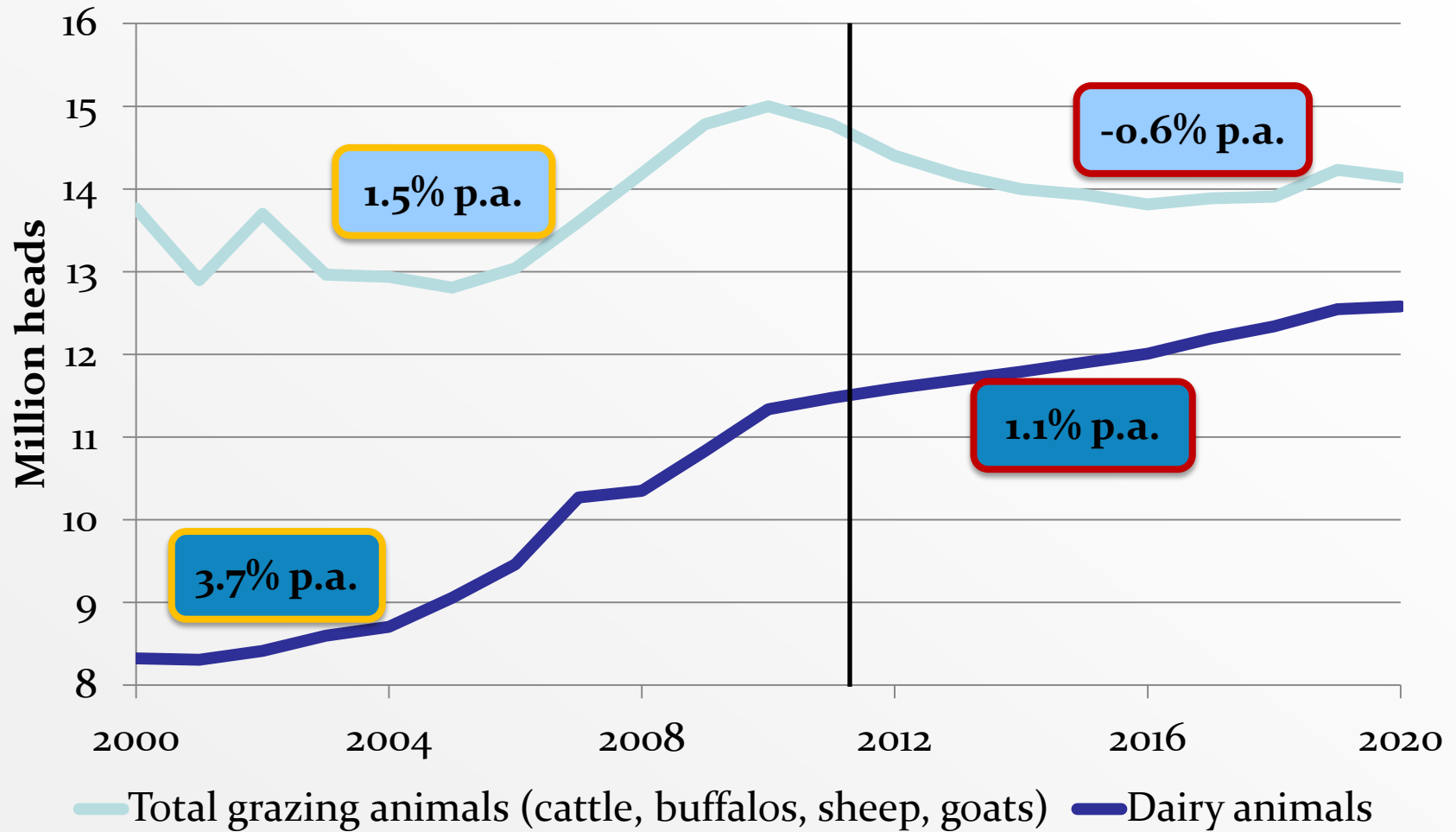
Production of livestock products





Indonesia

Live inventory of grazing animals





Implications of climate change



- Climate change is altering traditional weather patterns.
- Agricultural impacts are expected to be more adverse in tropical areas than in temperate areas.
- Higher costs \Rightarrow higher prices.
- More extreme weather events \Rightarrow increase in price volatility.
- Regional production potential could be impacted by *significant* shifts in the frequency of extreme events.
- Broad range of scenarios considered.



Indonesia

Implications for water resources



- Irrigation will remain the dominant water-using sector in Indonesia for the foreseeable future \implies 13.4 mill ha paddy to 2020, 90% wetland rice.
- Wetlands have an important role for general food production.
 - maize, cassava, soybean, sweet potatoes, groundnut
- Palm oil production requires water for processing.
- Farmers' income and rural poverty alleviation depend critically on water resource and infrastructure development.
- Emerging conflicts between competing uses.
- Investment in water supply augmentation remains an important strategy to secure food supply.



Indonesia

Implications for water quality



- Issues of water resources management, both quantitative and qualitative, are increasingly important in years ahead.
- Expansion, intensification and diversification of agriculture
 - palm oil, maize and livestockpotentially contribute to water pollution.
 - fertilizer, herbicides, pesticides, and animal waste,
 - degradation of upper watersheds with increased run-off
- Projected strong increase in palm oil production could exacerbate water pollution (POME).
- Pollution from industrial and domestic activities water may jeopardize the availability of clean irrigation water.



Indonesia

Sustainable development of resources



- Because industrial and municipal water use will grow over time, the shift of water from agriculture to municipal and industrial uses will require that water resources be managed according to integrated and coordinated concepts.
- The future of irrigation should be considered as an integral framework in order to increase human welfare, to provide social justice, and to maintain the ecosystem sustainability.
- Along with overcoming water and land resources problems, important national initiatives to continue: improving agricultural infrastructure, increasing the quality of intensification, improving the institutions, conducting reforestation and re-greening programs.



Thank you

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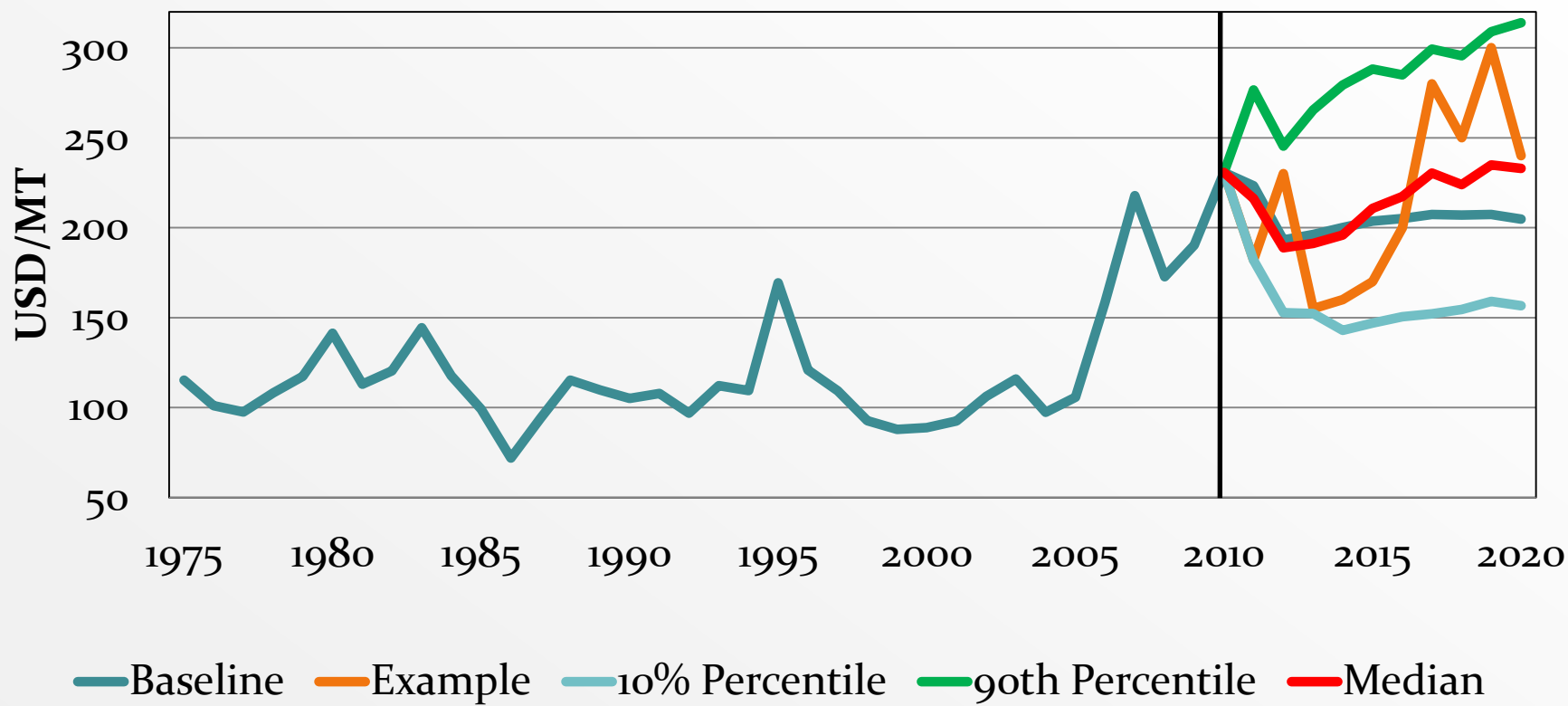
Scenarios

(for discussion only)

Stochastic analysis of yield and price variables



Stochastic coarse grain price projections





Price impact

