

# Presentation

Presentation from the 2009 World Water Week in Stockholm  
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**WORLD**  
in Stockholm,  
August 16–22, 2009 **WATER**  
**WEEK**

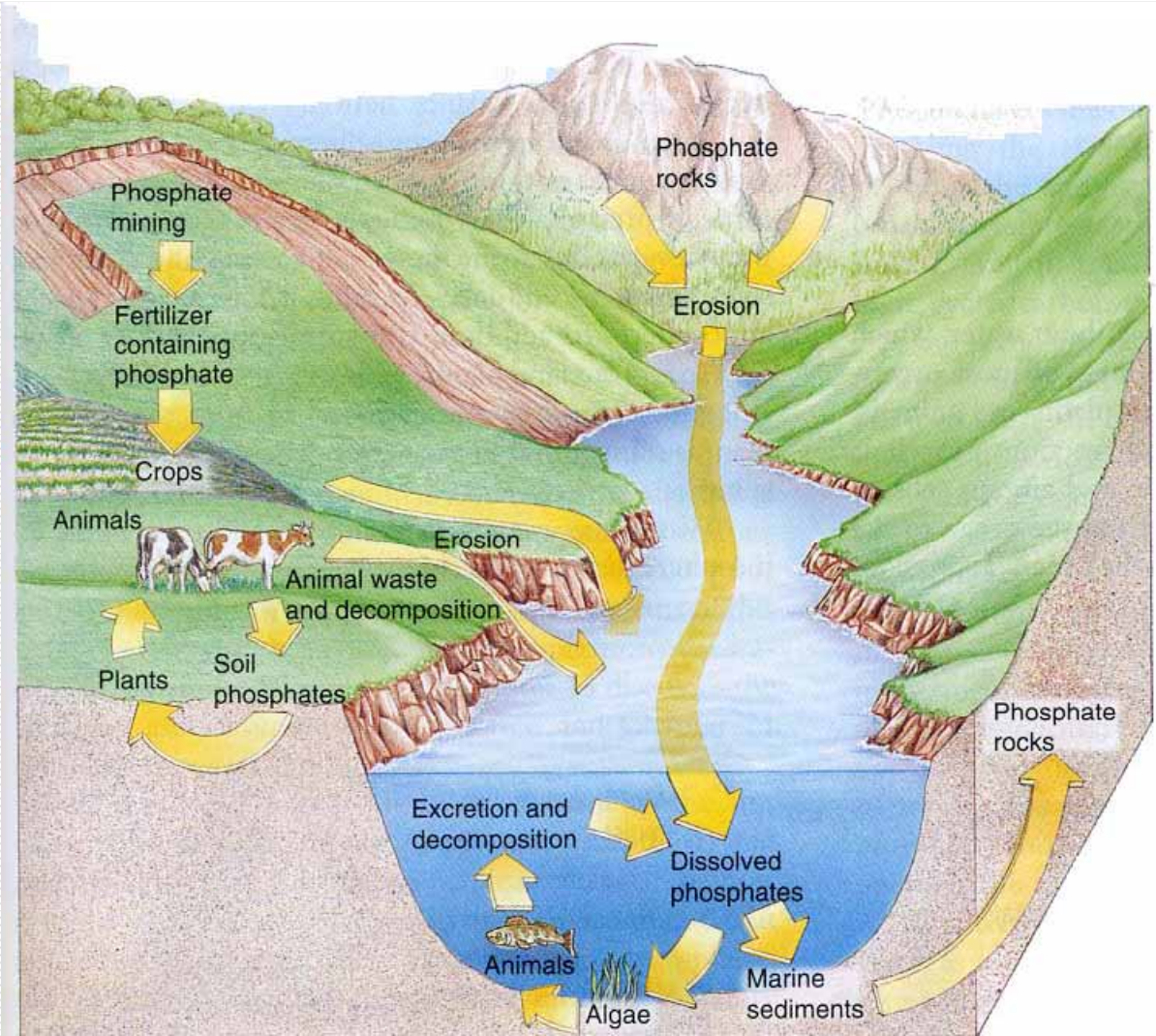
# **Peak Phosphorus – The Next Inconvenient Truth**

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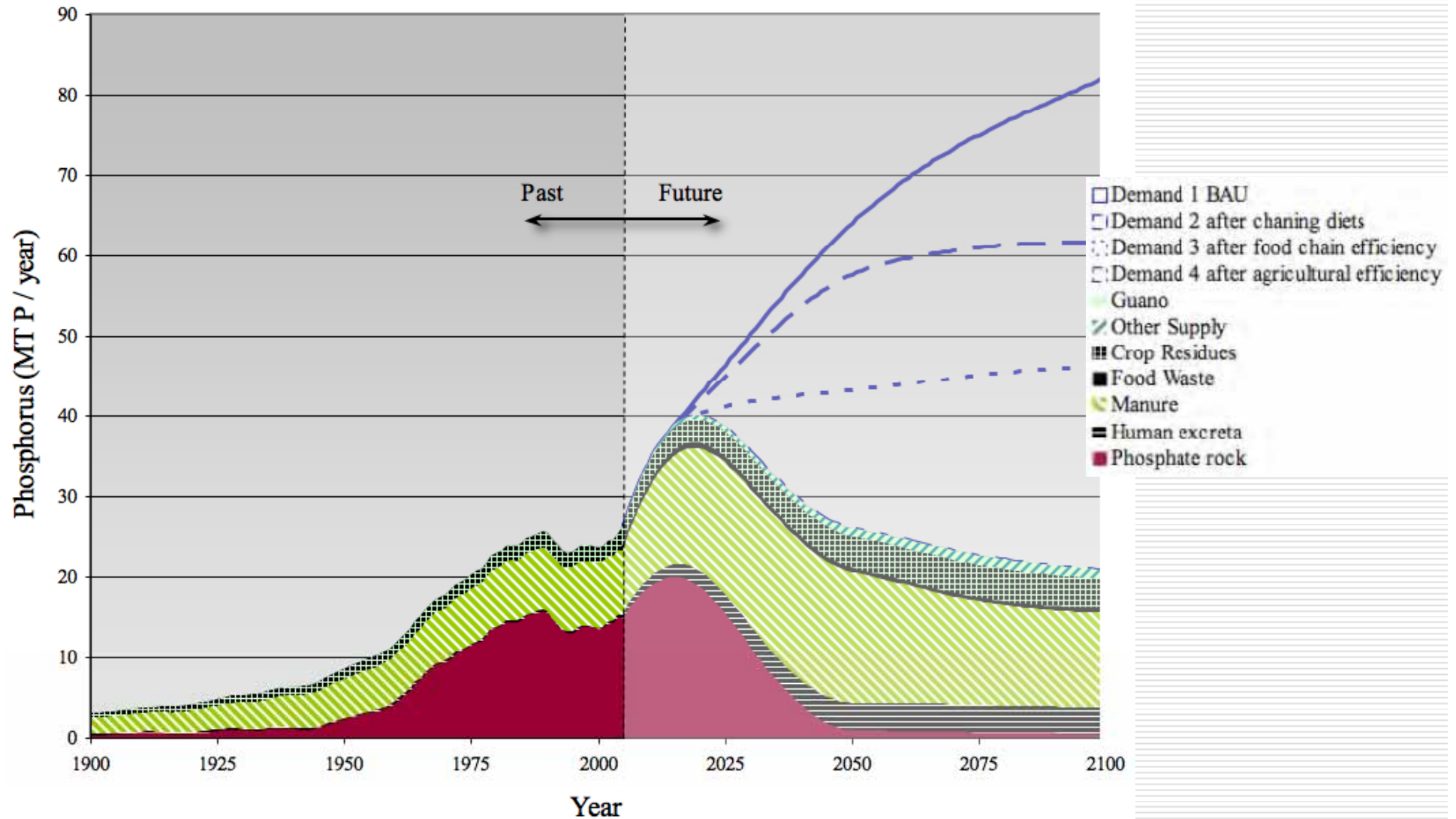
**Arno Rosemarin & Ian Caldwell  
Stockholm Environment Institute**

**SuSanA Side Event Aug 16, 2009**

# The linear path of phosphorus in modern times (Princeton Univ.)



# Historical and future sources of phosphorus fertilizers to meet global food demand (Cordell et al, 2009)

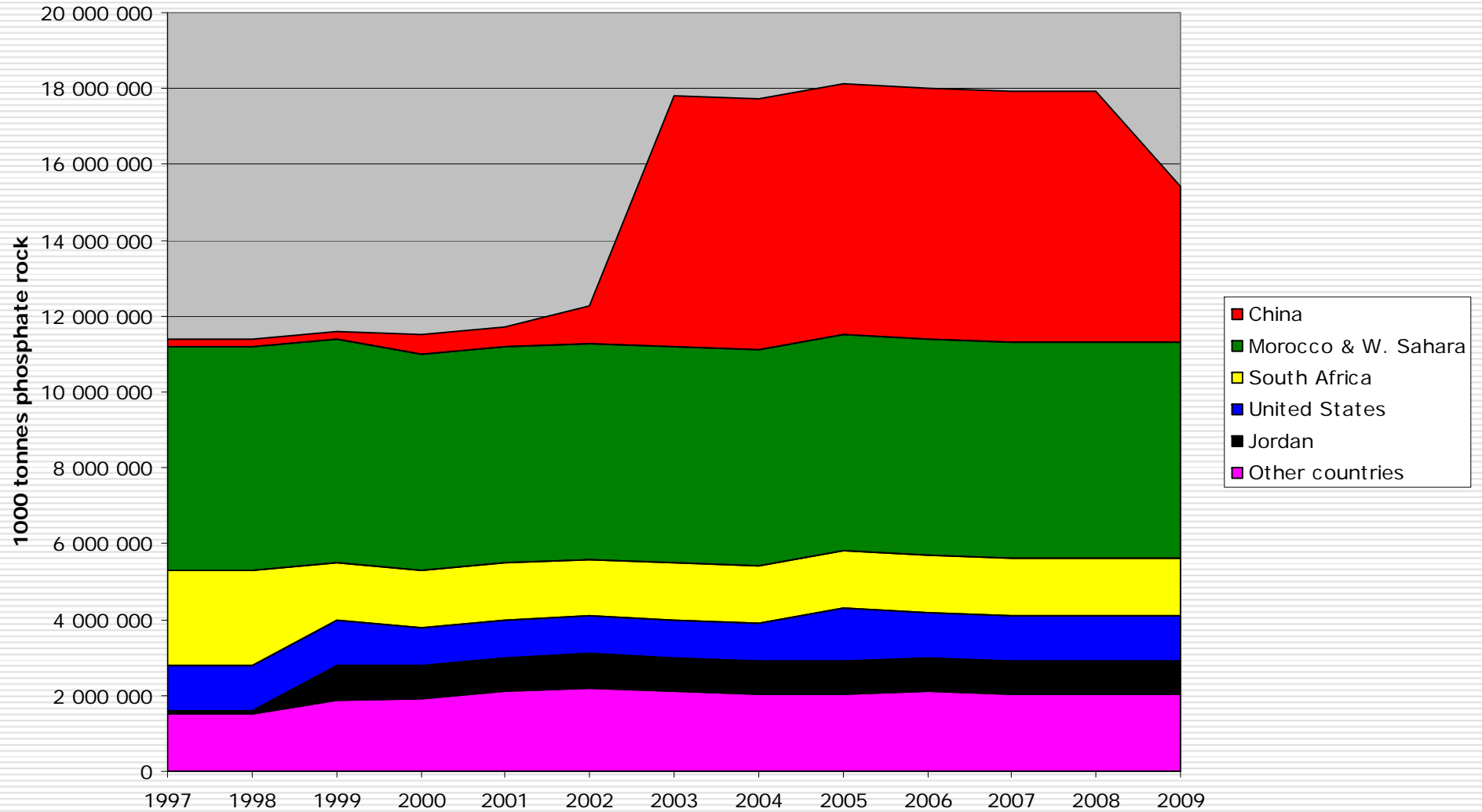


# The Scenario

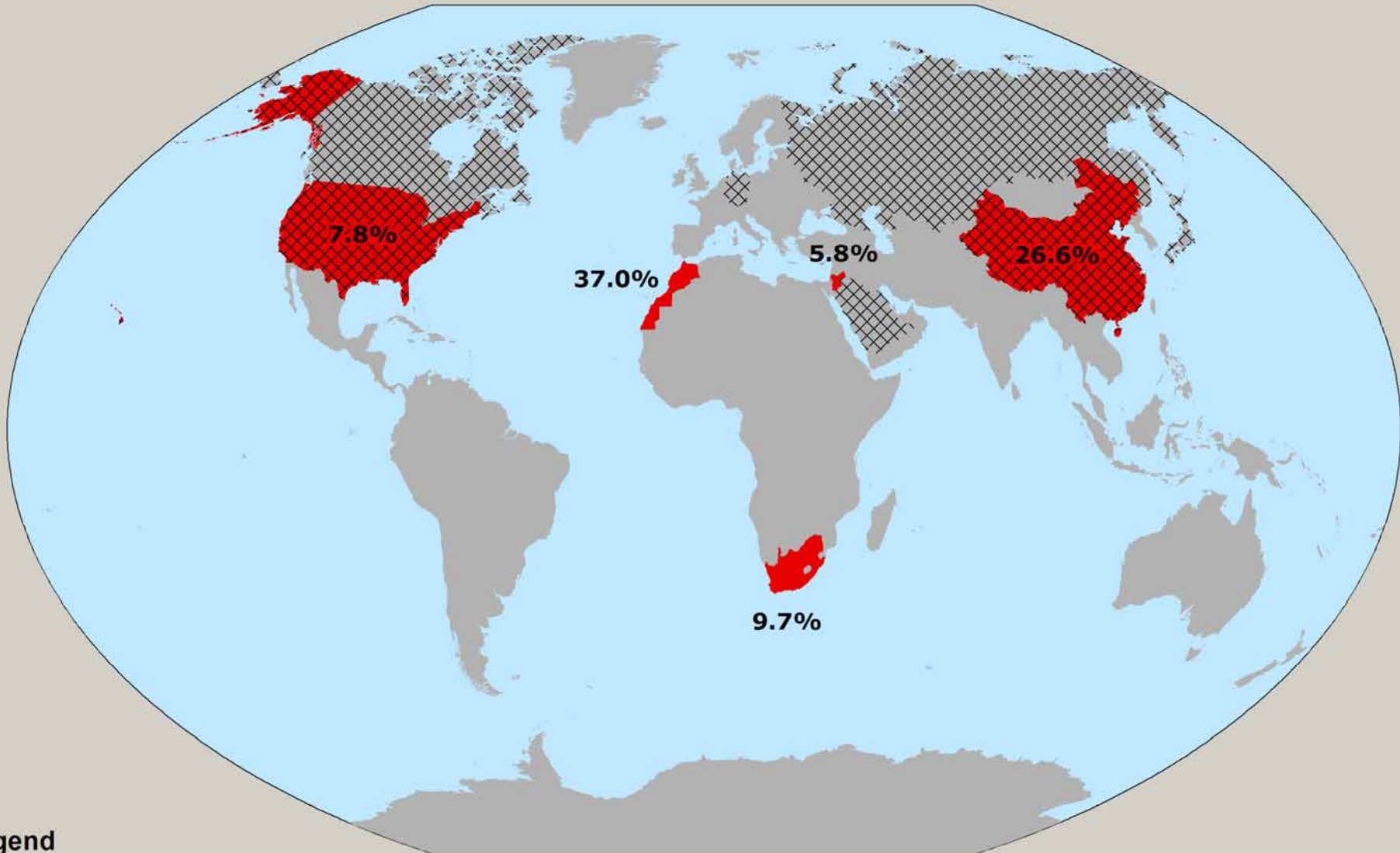
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- ❑ the US will deplete its commercially-viable reserves within 25-30 years
  - ❑ the global reserves at present extraction rates will last only about 75-100 years
  - ❑ phosphorus production from rock will peak by 2030 – after which demand will exceed supply
  - ❑ 90% of the reserves are in 5 countries (geopolitical insecurity)
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# Phosphate Rock Reserves, 1997-2009 (from USGS summaries)



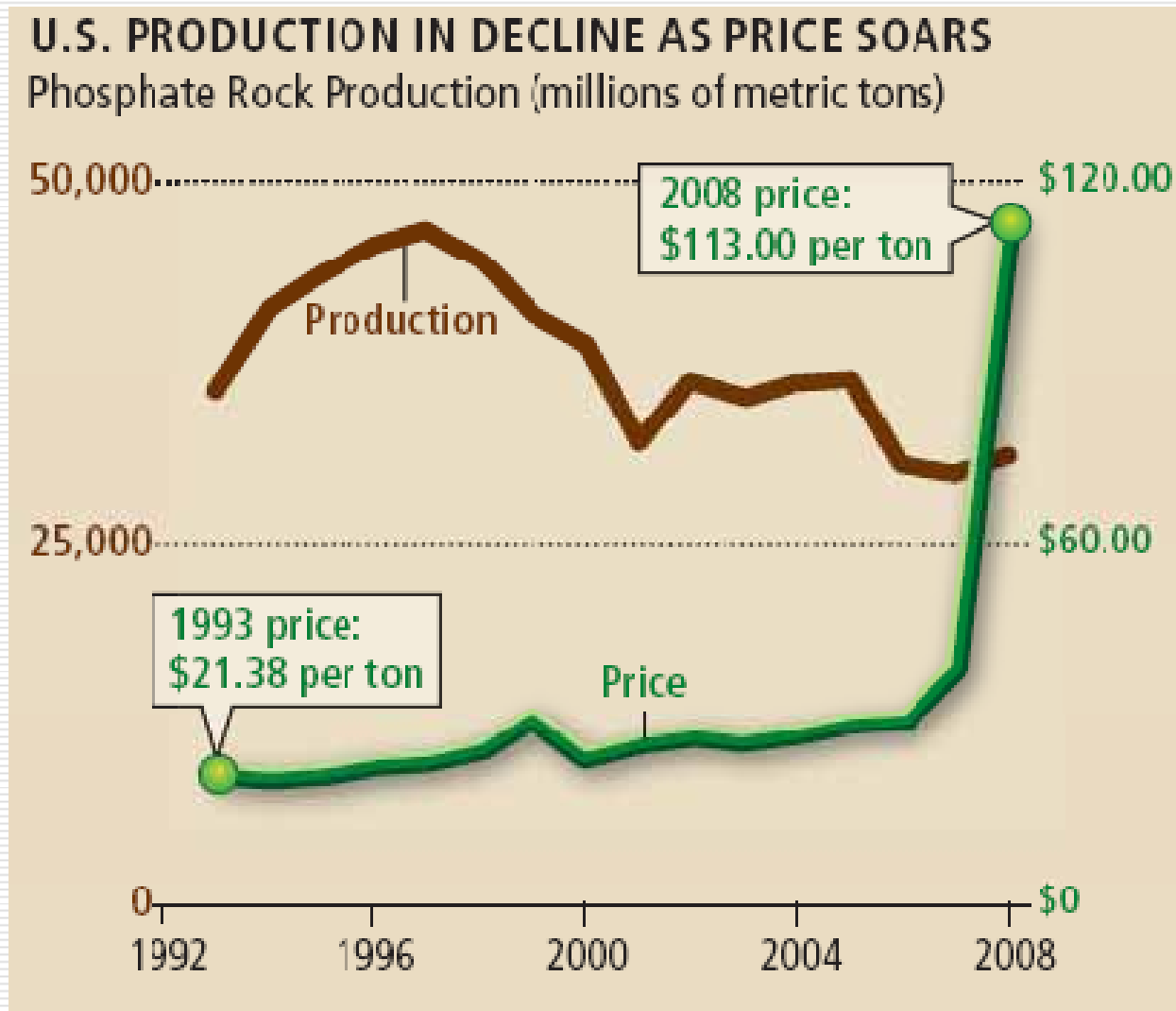
# The uneven distribution of phosphorus deposits (Caldwell, SEI, based on USGS, 2009)



## Legend

- Phosphate Rock Reserves - Top Five Countries (% of global reserves)
- These 8 countries account for 65% of global sulphuric acid production

## Phosphate rock production and price development (Vaccari, 2009)



# Scenario (cont'd)

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- as fertilizer prices rise, falling farm output and growing food insecurity are likely to provide challenges for which the world is unprepared
  - so far UN agencies, governments and international NGOs have failed to acknowledge, let alone respond to the problem
  - innovative strategies are urgently needed
    - especially agricultural reforms to reduce the demand for fertilizers (EU agro subsidy is 50 billion Euros/yr)
    - promotion of the recovery and reuse of phosphorus from organic waste sources
      - animal manure
      - human excreta and "biosolids" from sanitation systems
      - household organics (green bag programmes)
      - other organics from solid waste
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# Next Steps

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- International task force
  - White paper laying out the facts
  - Communications and awareness
  - International commission
  - Global convention
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