

# Geopolitics and Governance of Phosphorus

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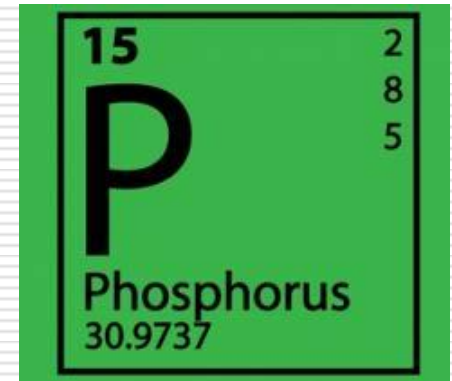
Berlin

March 5-6, 2015

# Little progress on P governance

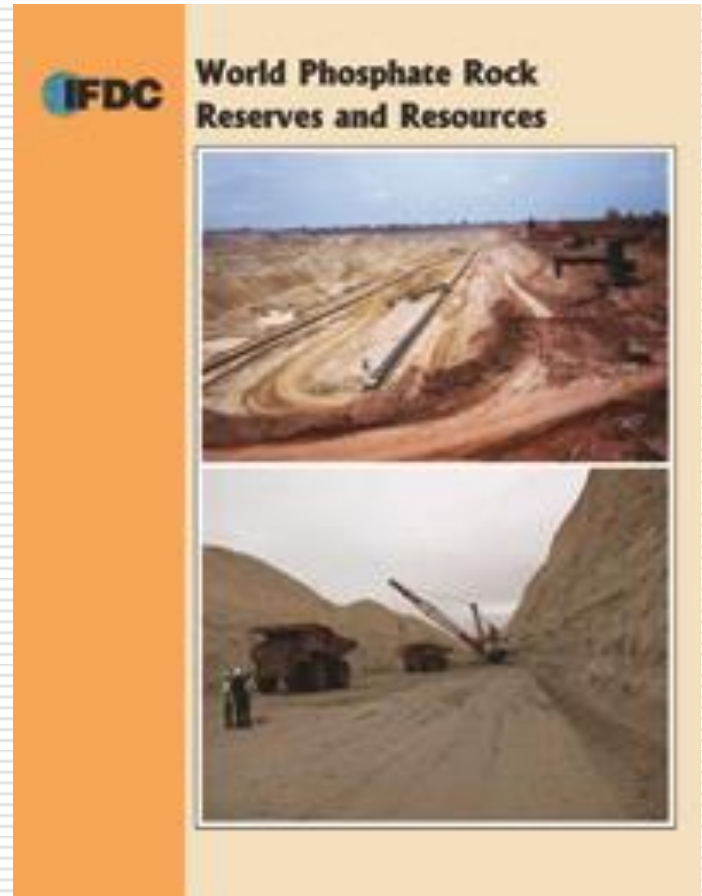
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- ❑ Common perception: Food & fertilizer have no limits – just water is limiting
- ❑ EU's mammoth agro-subsidy (1 billion Euros/wk) creates false security – now fragile
- ❑ No government will lead the dialogue – food price increases would be a political disaster
- ❑ Industry has taken a very low profile
- ❑ UN is not pro-active
- ❑ No geopolitical crisis yet like 1972 oil
- ❑ Duncan Brown's empty gas tank analogy still prevails



# Turning point 2010

- Until 2010 USGS P-rock data showed peak P possible in 30-40 years
- IFDC 2010 report quieted the peak phosphorus debate & Morocco “given” global monopoly status
- USGS changed its way of estimating commercial P reserves; resources can be commercial reserves
- UNEP showed interest in the peak phosphorus debate but backed off after 2010



# What happened since 2010

- ❑ IFDC report produced very little discussion but was criticized fundamentally by Dutch researchers in 2013 (Edixhoven et al)
- ❑ European Sustainable Phosphorus Platform launched
  - Interest in recycling P has intensified
  - P-rock now on the EU Critical Raw Materials List
- ❑ Moroccan OCP expanding rapidly now in order to meet future global demand

Earth Syst. Dynam. Discuss., 4, 1005–1034, 2013  
www.earth-syst-dynam-discuss.net/4/1005/2013/  
doi:10.5194/esdd-4-1005-2013  
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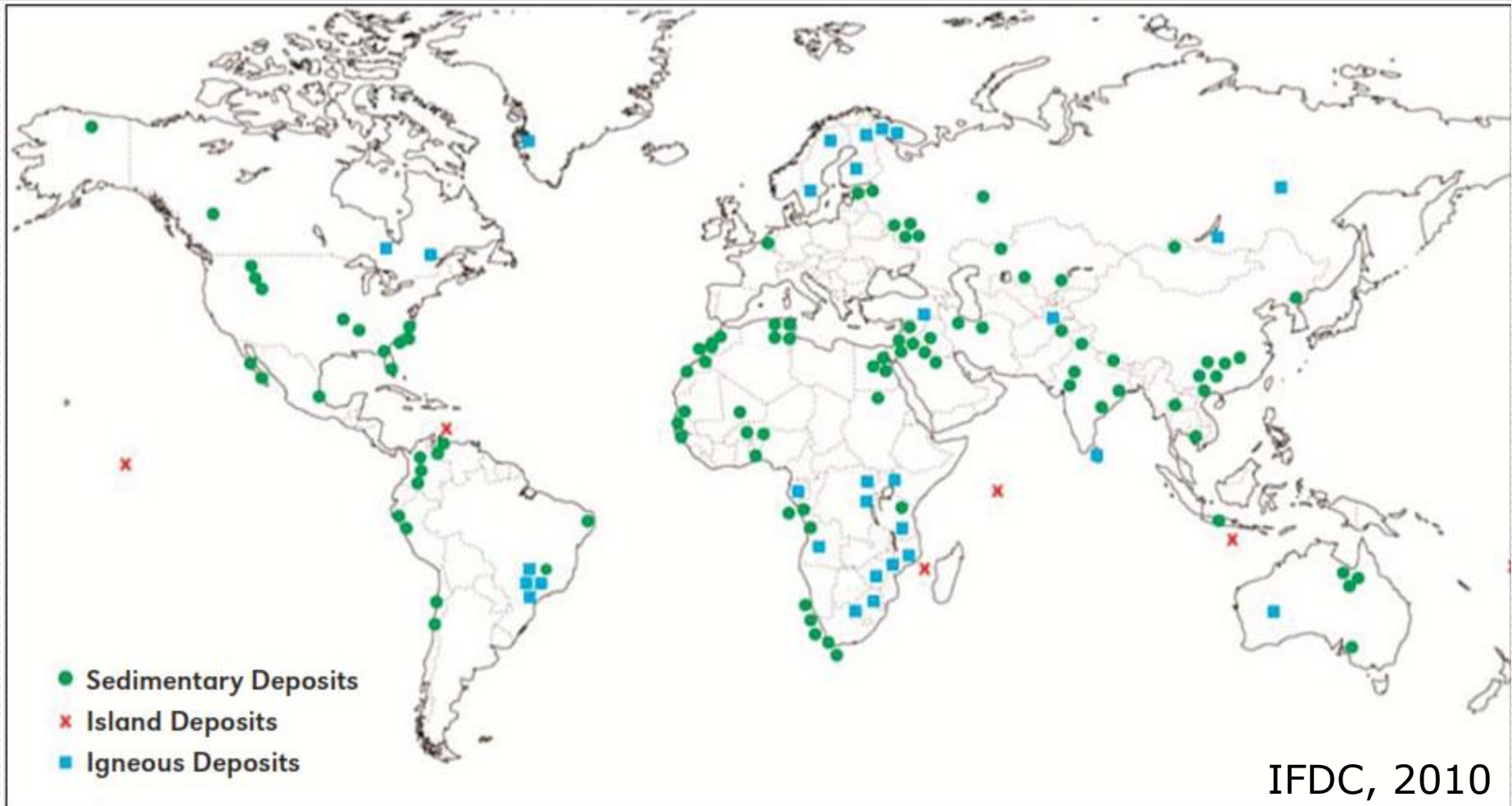


This discussion paper is/has been under review for the journal Earth System Dynamics (ESD). Please refer to the corresponding final paper in ESD if available.

**Recent revisions of phosphate rock reserves and resources: reassuring or misleading? An in-depth literature review of global estimates of phosphate rock reserves and resources**

J. D. Edixhoven<sup>1</sup>, J. Gupta<sup>2</sup>, and H. H. G. Savenije<sup>1</sup>

# World phosphate rock resources



# Commercial Reserves P-Rock 2013

(‘000 tons)

Country	Reserves	%
Morocco	50,000,000	74.6
China	3,700,000	5.5
Algeria	2,200,000	3.3
Syria	1,800,000	2.7
Jordan	1,500,000	2.2
South Africa	1,500,000	2.2
USA	1,400,000	2.1
Russia	1,300,000 <sup>b</sup>	1.9
Peru	820,000	1.2
Saudi Arabia	750,000	1.1

**changes in  
2014 tonnage**

**1,300,000 ↓**

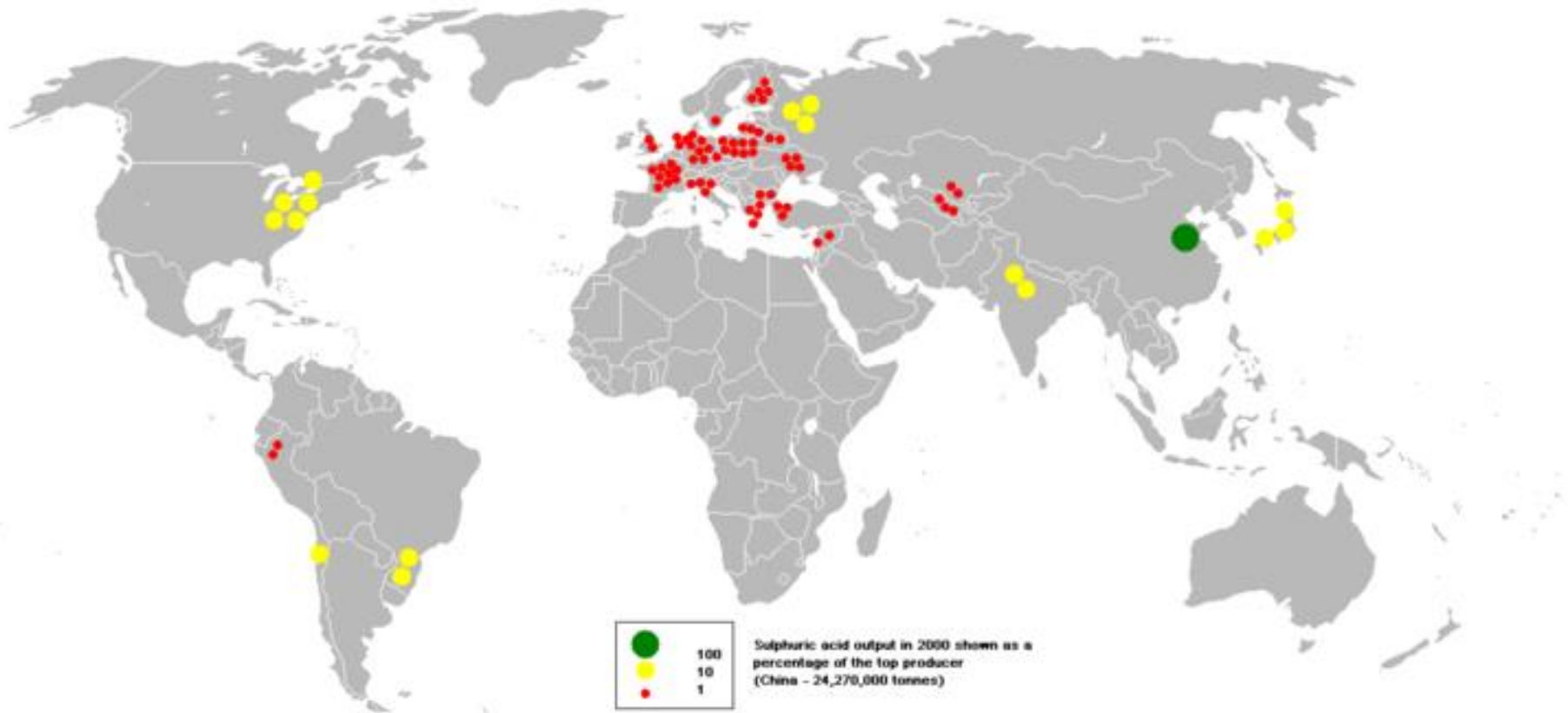
**1,100,000 ↓**

**211,000 ↓**

97% in 11 countries

# Sulphuric acid production

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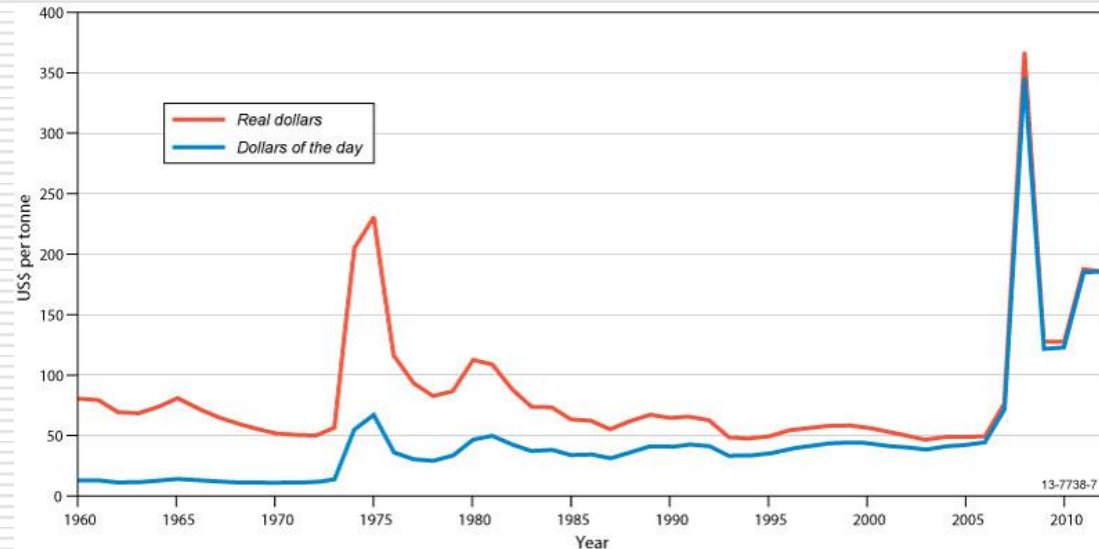


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Few countries have both P and S, requiring trade agreements

# Geopolitics causing price hikes in phosphorus

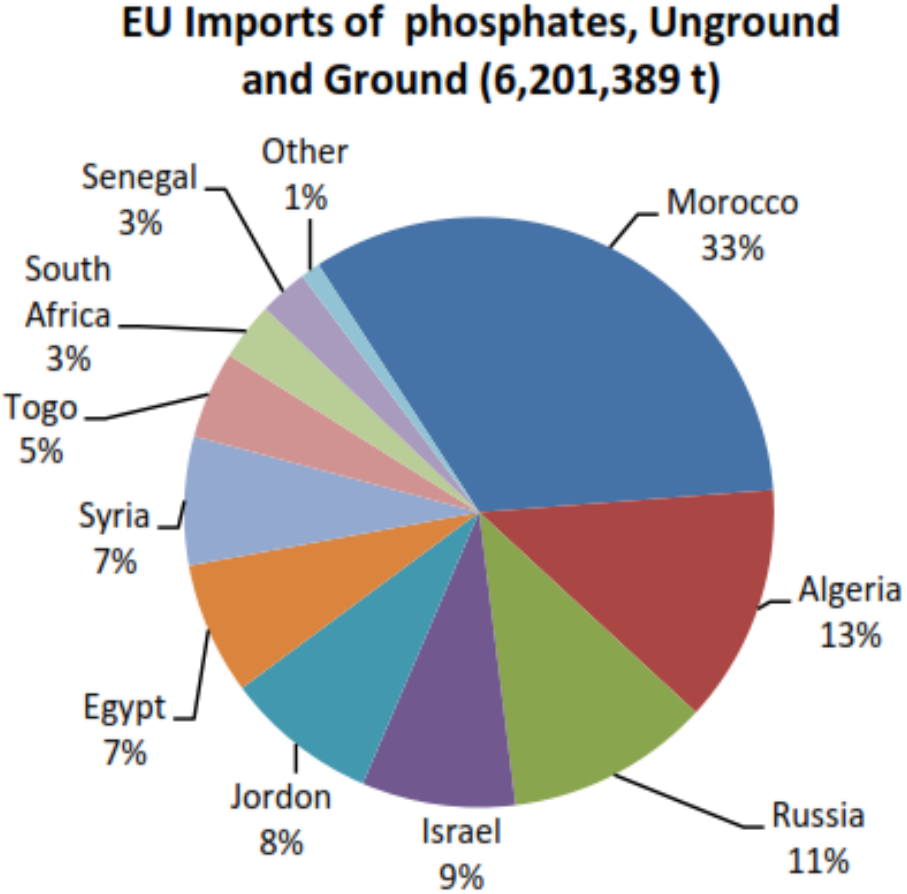
- ❑ Oil price increases due to conflicts (1973/2008)
- ❑ China export embargo
- ❑ P cartels
- ❑ Northern Africa
  - Morocco-Algeria conflicts
  - Arab Awakening
- ❑ Preferential free trade agreements with Morocco – eg US, India, EU



P-Rock since 1960, World Bank



# EU Imports of Phosphates



75% from 5 countries

Source: Eurostat-Comext Database, CN 2510 1000 and CN 2510 2000 [accessed August 2013]



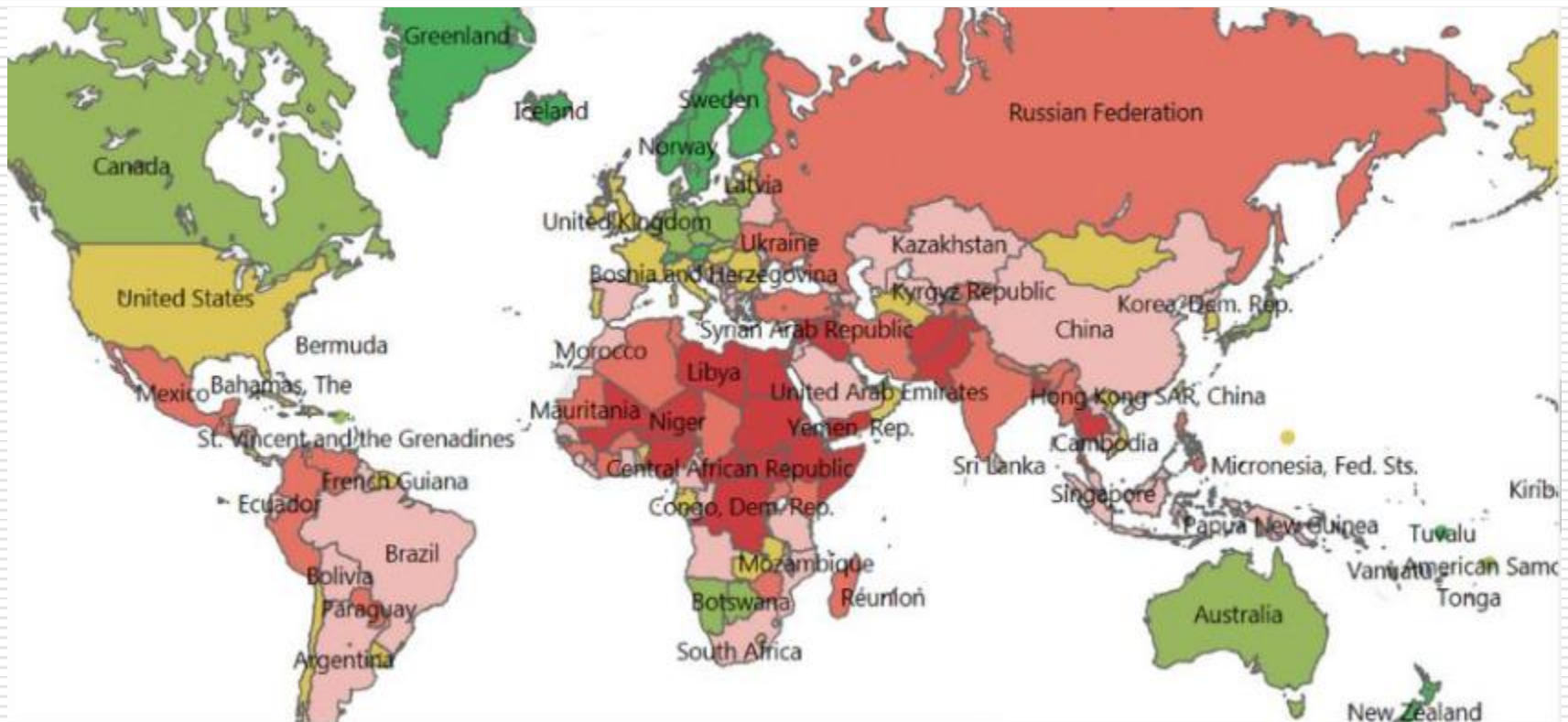
# Challenges to governance systems

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- speculation & raw material cartels
- national stockpiling
- state companies
- trade tariffs & quotas
- lack of transparency
  - revenue streams
  - due diligence in supply chains



# Political Stability and Absence of Violence/Terrorism 2013

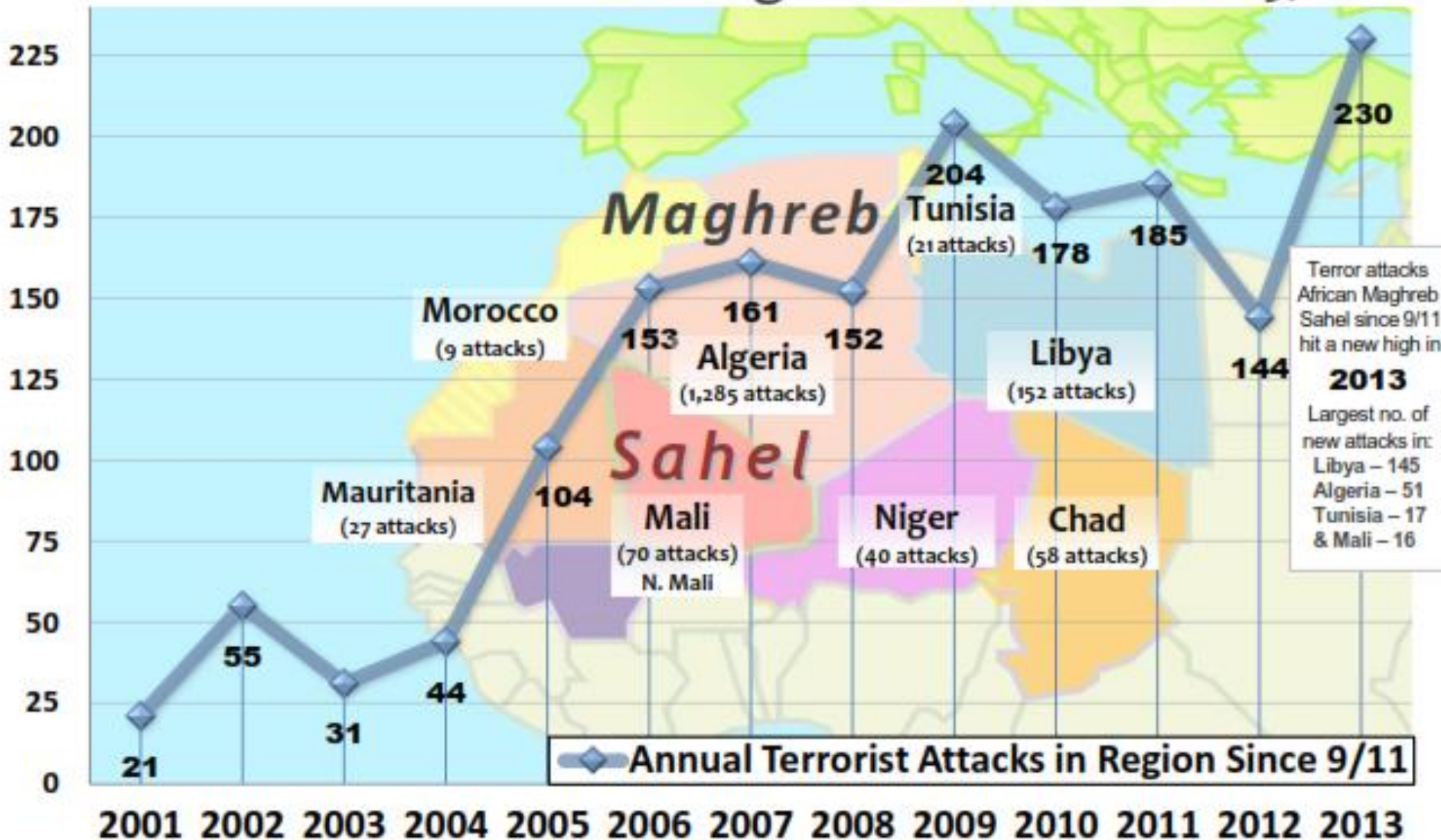


Percentile Range

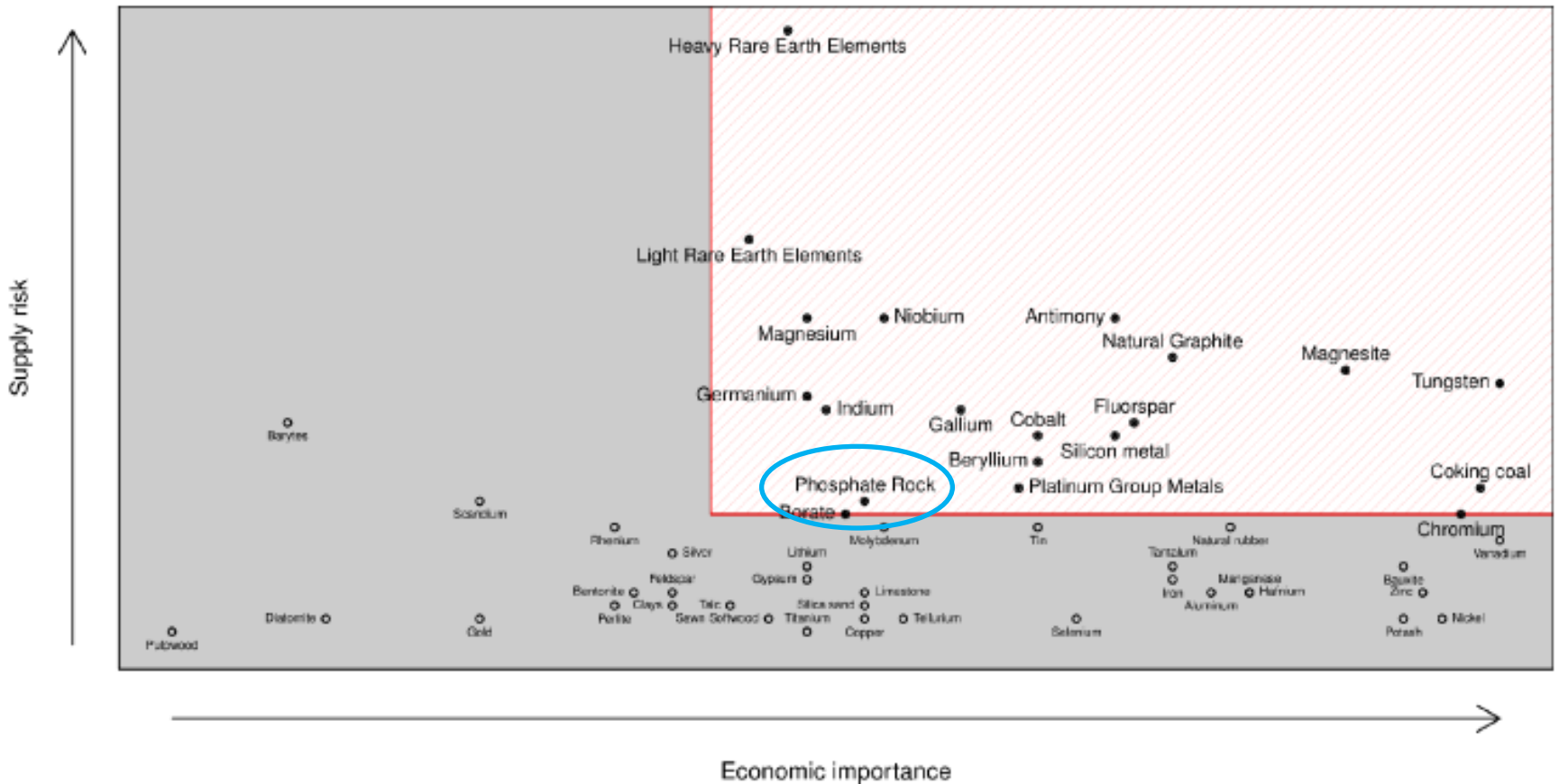


World Governance Index

# Terrorist Attacks in Maghreb & Sahel Since 9/11



# Phosphate rock now on EU List of Critical Raw Materials



# What is the EU List of Critical Raw Materials?

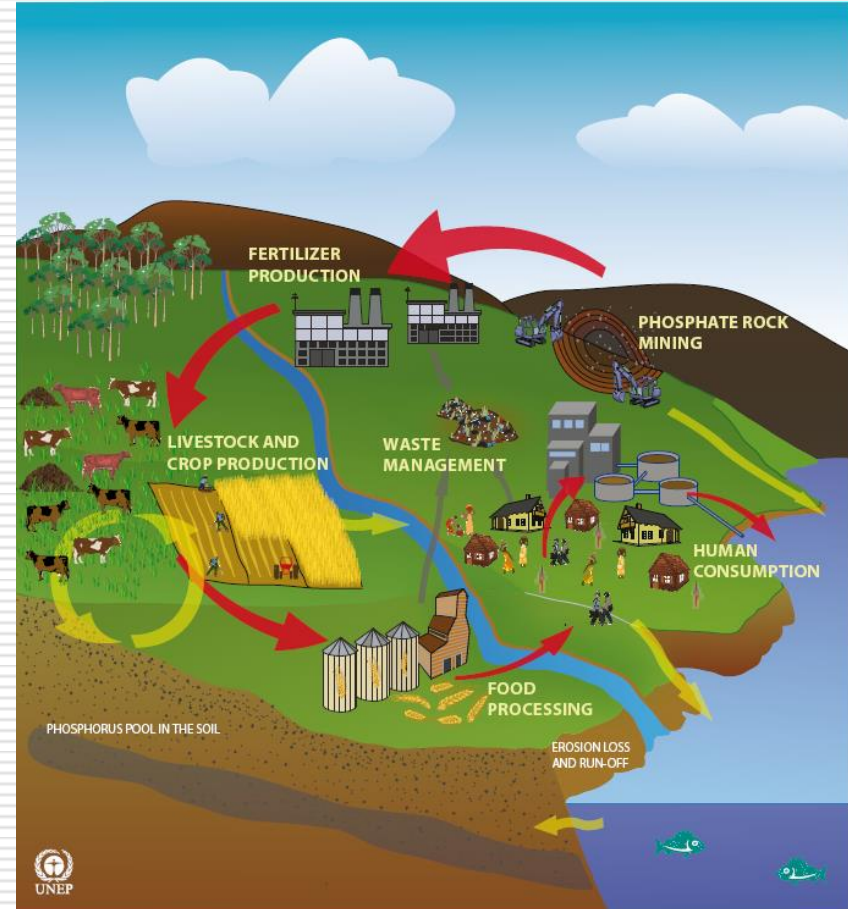
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- ❑ Started in 2011 by DG Enterprise
- ❑ Centred on gross value added to the EU GDP
- ❑ Centered on supply risk linked to WGI (World Governance Indicators)
- ❑ Focuses on non-energy and non-food or non-agriculture materials
- ❑ Phosphate rock is therefore an anomaly since it is essential to agriculture
- ❑ Phosphate rock requires a special category and status

**So what to do we need to prioritize?**

# P value chain – multiple components to govern

- ❑ Rock phosphorus (apatite)
- ❑ Sulfuric acid - 5 parts  $H_2SO_4$  give 3 parts  $H_3PO_4$  in the wet extraction process
- ❑ Phosphorus products (MAP, DAP, SP, etc)
- ❑ Agro and food system - soil, food and animal feed
- ❑ Manure, excreta, solid waste





# Phosphorus sustainability to be governed

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- Reduce
  - Improved efficiency in mining and extraction
  - Improved fertilizer use and technology
  - Less consumption of meat and dairy products
- Recycle
  - Improved recycling of food production wastes, sludge, manure, struvite, polonite, etc.
- Economic instruments and flexible fees
  - Large users pay more tax fees than smaller users

# Data governance of P rock still lacking

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- P-rock reserves/resources (USGS)
  - No UN agency involved
  - Open to influence (eg IFDC 2010 report)
- Fertilizer production and consumption (FAOstat)
- Commercial sources of data (IFA, CRU, etc.)
- Need for a neutral agency to monitor P-rock data

# Possible track ahead

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- White paper on phosphorus
  - Building on the GPRI Blueprint for Global Phosphorus Security
- Global conference and Global convention
  - Transparency on data regarding P-rock extraction and trade
  - Independent monitoring agency
  - National reporting systems on use and reuse
  - Best practices optimizing reuse
  - Economic instruments promoting reuse & taxing waste
  - Linkage to global food security strategies
  - Communications programme



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