

# The world fertilisers market: What risk for the European Union ?

Regions at work for Bio-Economy - 7-9 July 2014

Bérengère Lécuyer - [blecuyer@live.fr](mailto:blecuyer@live.fr)

INRA – UR 1134 (LERECO)

En collaboration avec V. Chatellier (INRA) et K. Daniel (ESA Angers)



# 1 - Mineral fertilisers are produced from non-renewable resources that are highly concentrated

## Mineral fertilisers are produced from non-renewable resources

- Natural gas for N, phosphate rock (PR) for P and potassium salts for K
- PR and Potassium salts are mainly extracted to be transformed into fertilizer
- P and K resources are not only non-renewable but also non-substituable
- **Rising costs of extraction and transportation on the medium run**
- **Risk of a resource depletion on the long run**

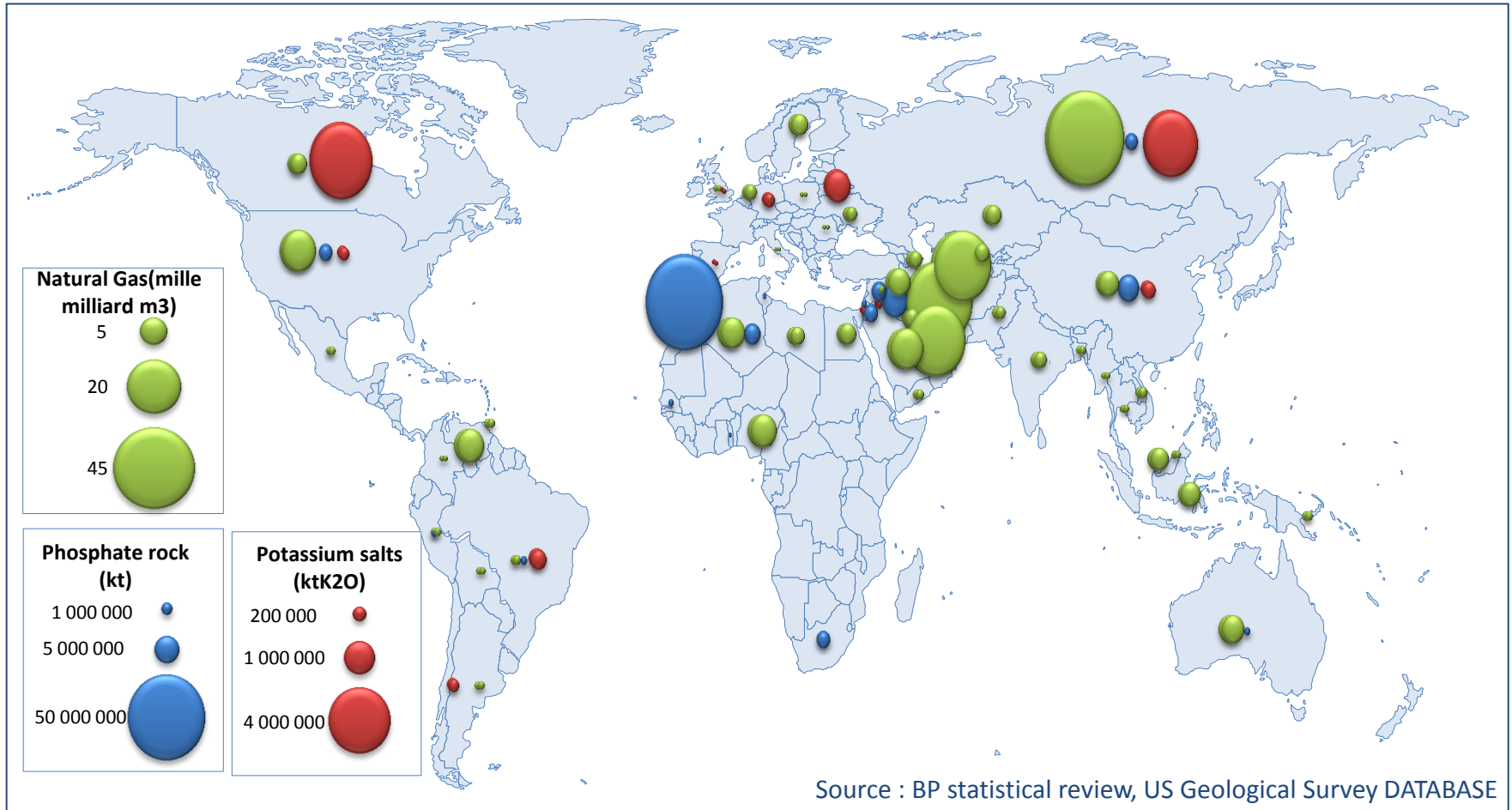
## These resources are highly concentrated among countries and companies

- **Risk of price-setting (especially for phosphate rock and potassium salts)**
- But enhancing competition in the PR market since the price spike
- Some of the countries possessing resources are geopolitically unstable
- **Risk of a lack of investments or production shut-down**

## The main N and P producers are the main consumers of fertilizers (China and USA)

- **Risk of a resource depletion on the medium run in these countries** and finally a higher resource concentration at the global level
- **The Chinese exports tax reduce the global availability of fertilizers**

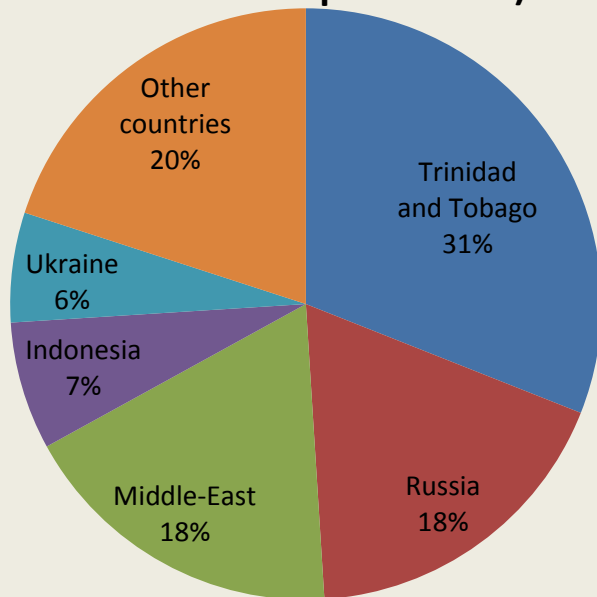
# 1. Reserve distribution of natural gas, phosphate rock and potassium salts



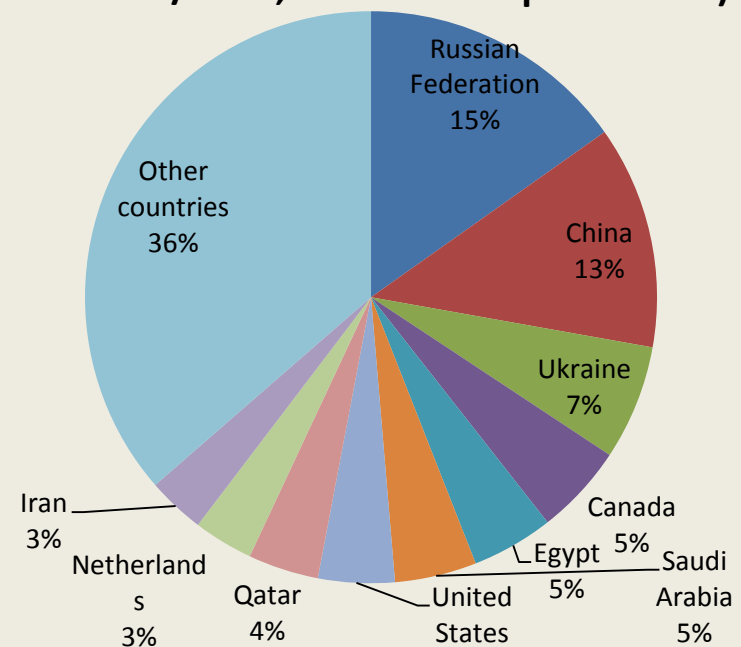
- ➔ Russia, Turkmenistan, Iran and Qatar concentrate 60% of proven natural gas reserves
- ➔ 85 to 90% of world's remaining reserves of Phosphate rock (PR) are controlled by only five countries (Morocco, China, Algeria, Syria and Jordan)
- ➔ Canada, Russia and Belorussia concentrate almost 90% of potash reserves

# 1 – Main exporters of ammonia and nitrogen fertilizers

World exports of ammonia (14 Mt in 2011, 10% of total production)



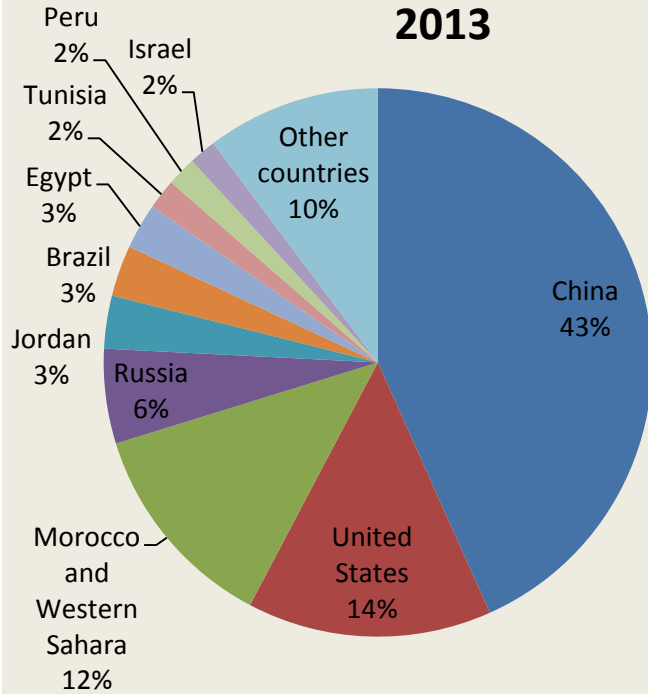
World nitrogen fertilizers exports (33 Mt of N in 2011/2012, 30% of total production)



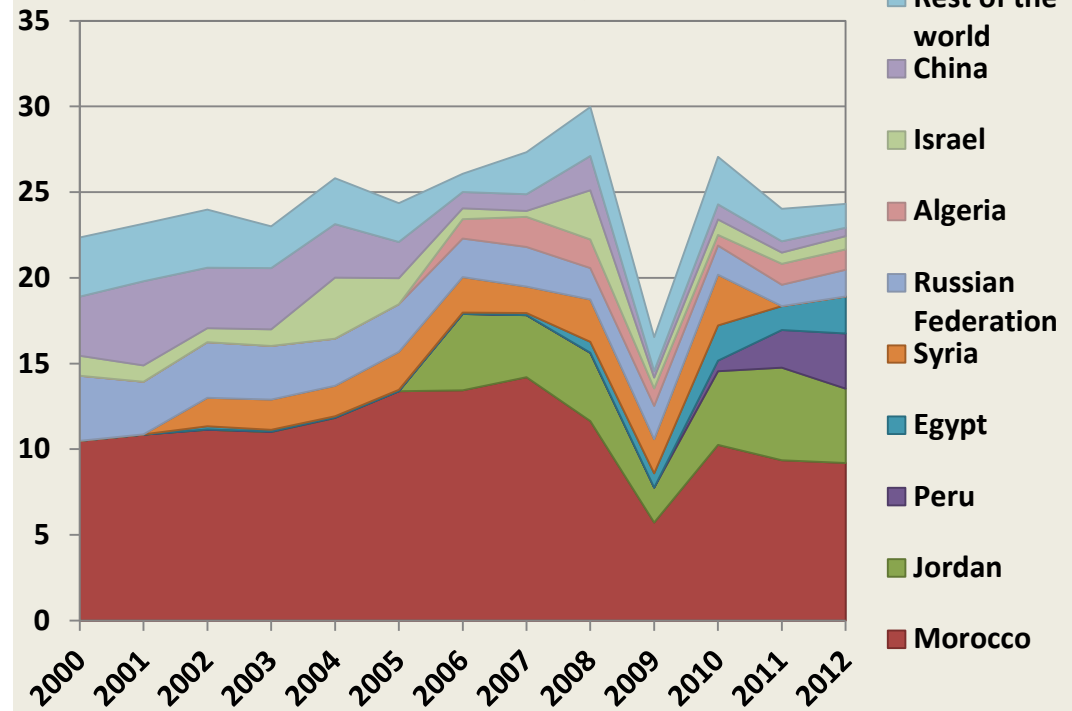
- ➔ 60% of the world production of ammonia is concentrated in 5 countries
- ➔ Trinidad exports the totality of its production and is the main ammonia exporter
- ➔ China, India and the United-States transformed their ammonia production locally but China is the second leading exporter of nitrogen fertilizers

# 1 – Main exporters of PR and phosphate fertilizers

**World PR production in 2013**

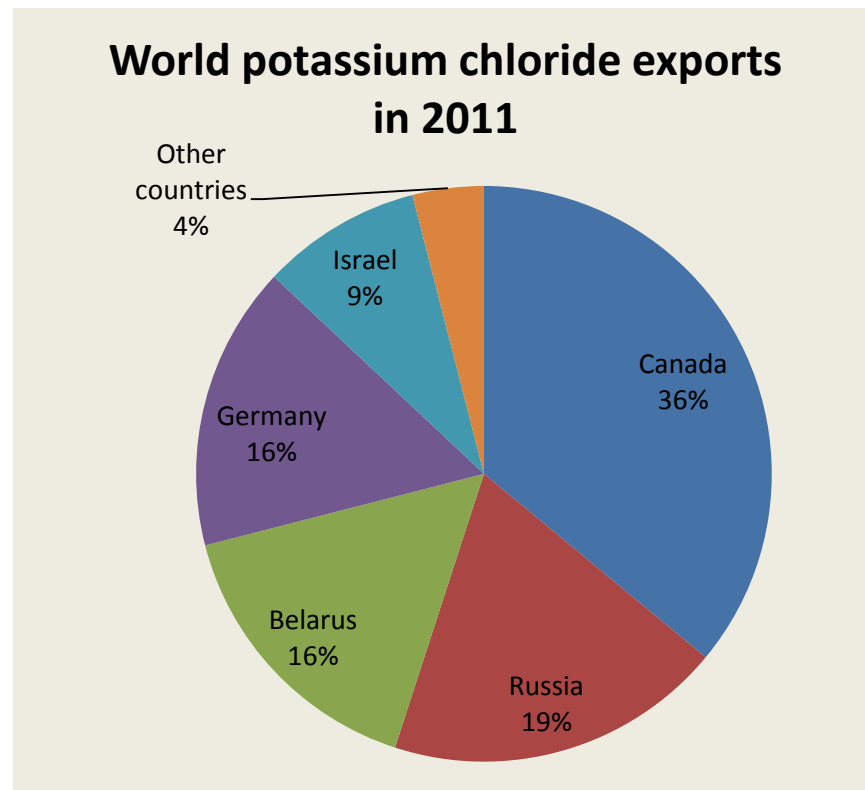
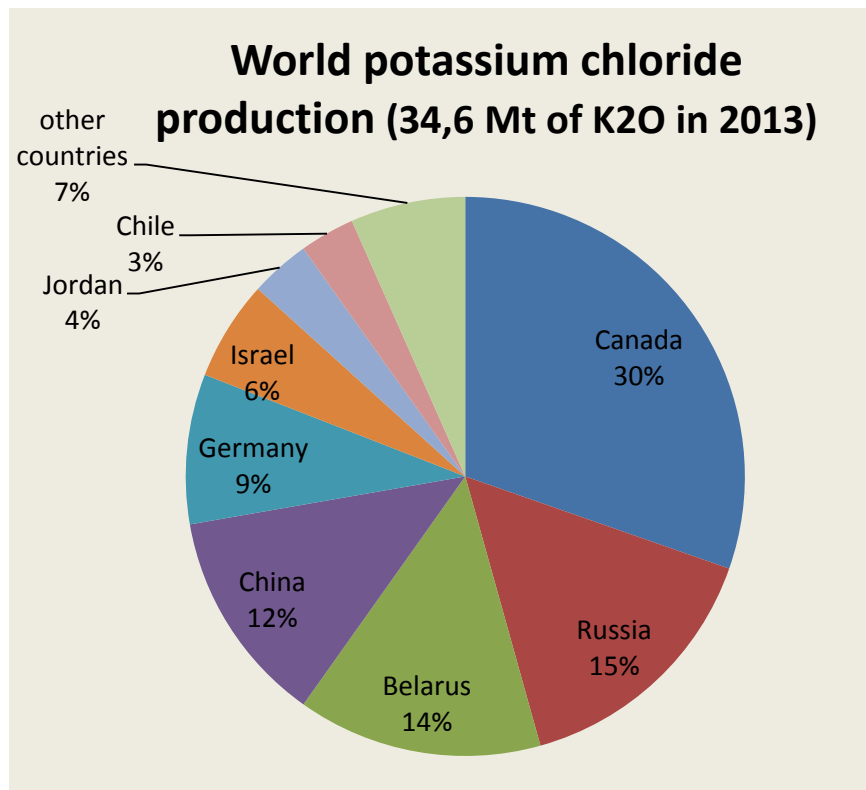


**World PR exports (Mt)**



- ➔ China, the United-States and Morocco account for 70% of world PR production
- ➔ Morocco is the leading PR exporter (35-40% of world total export) but new exporting countries (Jordan, Peru, Egypt) are competing with Morocco since 2006
- ➔ China and the U.S. keep their mined phosphorus for their own fertilizer production but they account, with Russia and Morocco, of 70% of total world exports of phosphate fertilizers

# 1 – Main exporters of potassium salts



- ➔ The potassium chloride market is extremely concentrated
- ➔ Only five countries control 80% the world production of potassium chloride
- ➔ About 70% of exports are controlled by only two consortia: one North American and the other specific to Russia and Belarus

## 2 – Supply/demand of fertilisers in Europe : strong dependence on world market ?

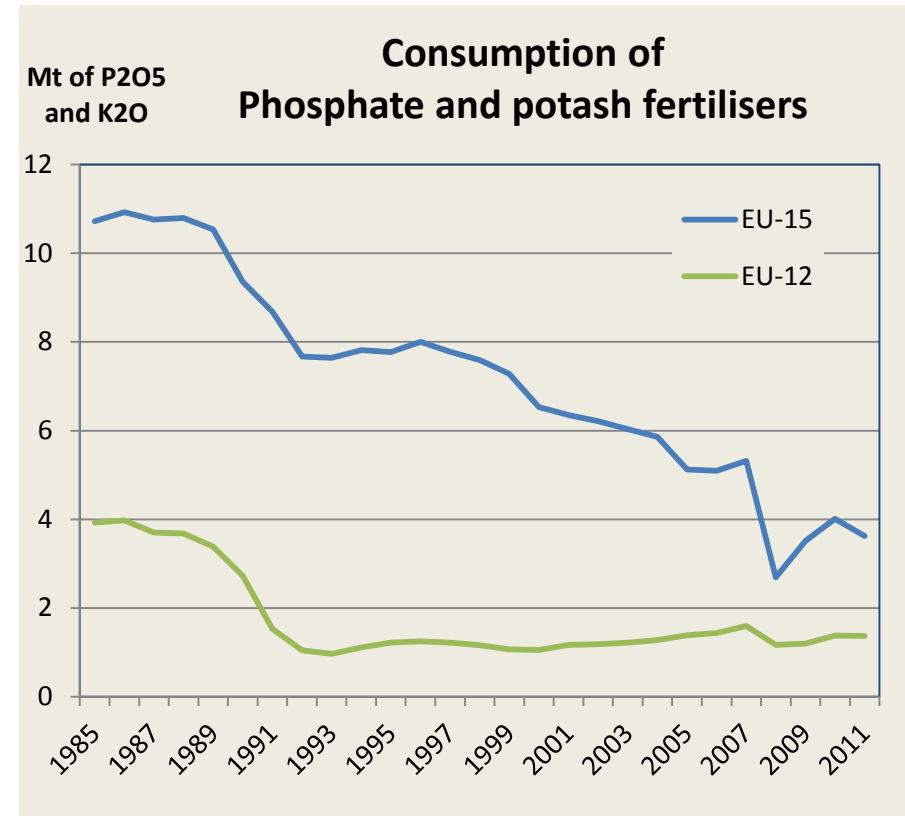
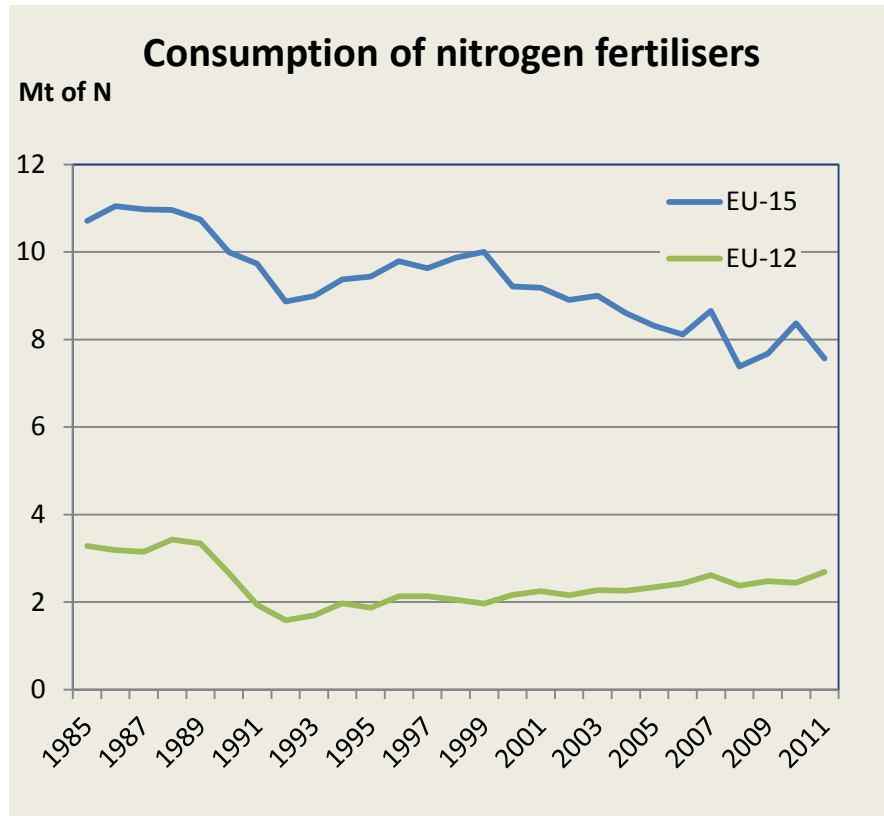
### **The European consumption of fertilisers is in a downward trend**

- Demand for mineral fertilizers is decreasing in the EU-27 since the 1980's
- The nitrogen demand is less price elastic than those of P and K fertilizers
- Fertilizers demand is declining in Western, while it is slightly increasing in Eastern

### **Supply of potash fertilizers : Europe is self-sufficient**

- Thanks to reserves available in Germany (1.5% of world deposits of potash), and to a lesser extent, those of Spain and the United Kingdom
- The EU-27 production of potash reached 3 Mt (K<sub>2</sub>O) in 2012 which is largely sufficient to supply European demand
- Nevertheless, the world supply of potash is highly concentrated

## 2 – Supply/demand of fertilisers in Europe : strong dependence on world market ?





## 2 – Supply/demand of fertilisers in Europe : a strong dependence on world market ?

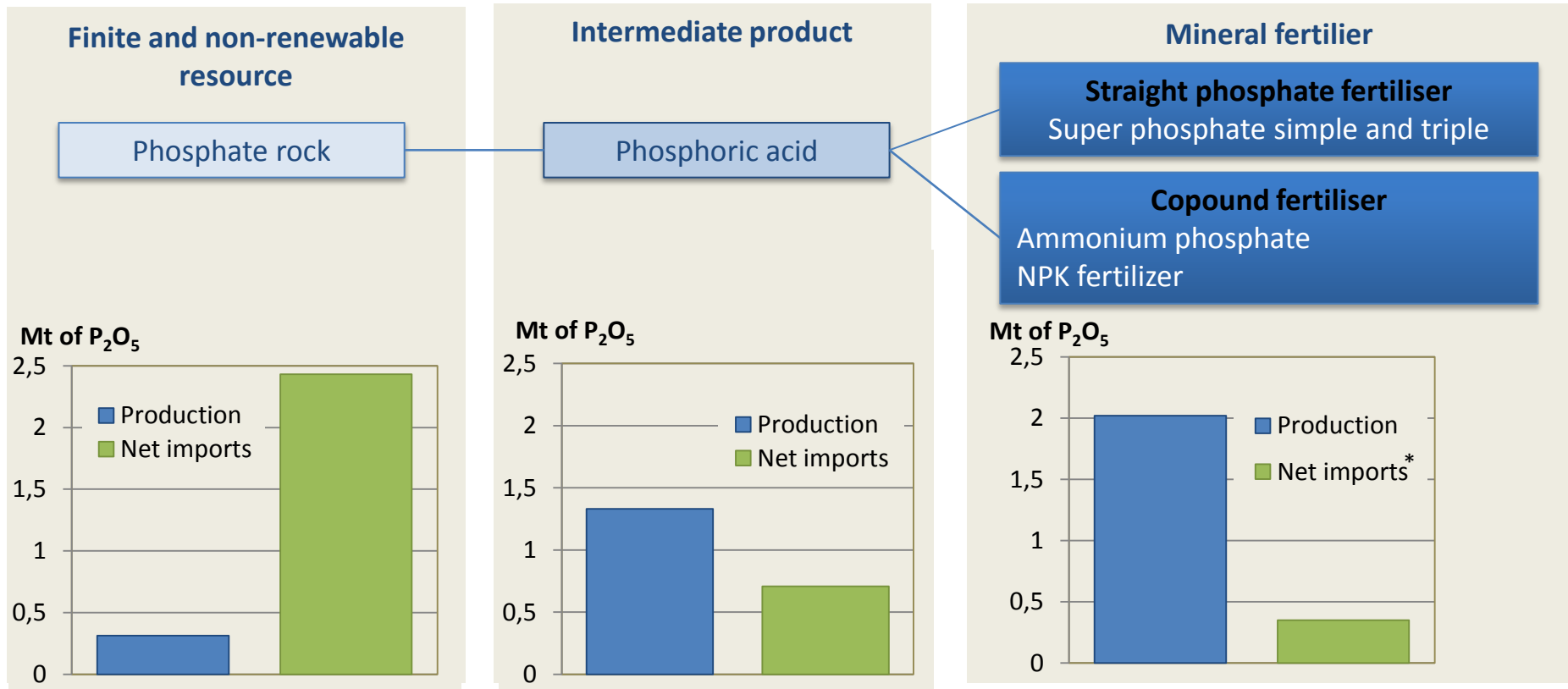
### Supply of nitrogen and phosphate fertilizers : a lack of resources in EU-27

- More than half (60% in 2010) of the natural gas consumed in EU-27 is imported
- Reserves of phosphate rock are almost non-existent in Europe
- **The European needs in phosphorus and nitrogen are supplied by imports**
- Historically, the European Industry of fertilizers imports raw materials (natural gas and PR) which that are then transformed in fertilizers

### Supply of N and P fertilizers in the EU-27 : dependence on world market

- The EU is highly dependent on regions currently subject to political crisis (both for supply of raw material and of fertilizers)
- The relations with Russia (a leading supplier of natural gas, phosphate rock and fertilizers) are uncertain
- The European industry is facing much higher production costs than in countries rich in resource because of higher raw material costs

## 2. Supply-chain of phosphate fertilizers in EU-27

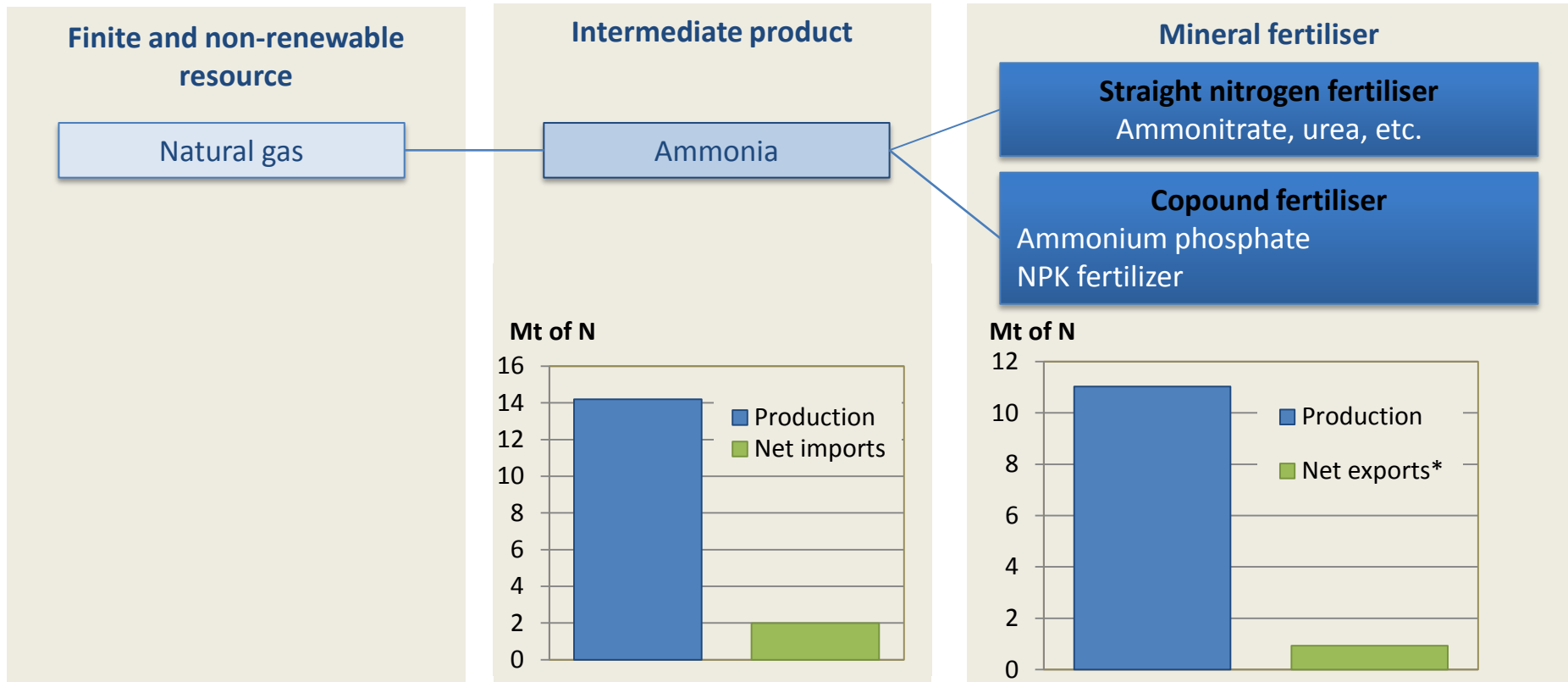


- ➔ Per year, the EU is importing around 6 million tons of natural phosphate (exceptionally, in 2009 only 4 million tons of phosphates were imported). Morocco covers 30-35% of all imports into the EU followed by Russia (14% of all imports), Algeria (13%) and Israel (8%)
- ➔ Last years, the EU-27 has imported between 1 and 1,2Mt of phosphate fertilisers (P<sub>2</sub>O<sub>5</sub>) mainly from Russia, Morocco and Tunisia

Source: IFA, statistics DATABASE, 2012

\*Net imports are calculated as the difference between consumption and production

## 2. Supply chain of nitrogen fertilisers in EU-27



- ➔ More than half (60% in 2010) of the natural gas consumed in EU-27 is imported, mainly from Russia and Algeria
- ➔ 14 Mt of ammonia were produced in EU-27 in 2012, which is 10% of total world production
- ➔ To supplement local production, nitrogen is imported mainly in the form of ammonia and finished product urea mainly from Russia, Egypt, Algeria and Ukraine

Source: IFA, statistics DATABASE, 2012

\*Net imports are calculated as the difference between consumption and production

# Thank you for your attention

Bérengère Lécuyer  
blecuyer@live.fr  
INRA, LERECO

