

An aerial photograph of a large industrial coal port. In the foreground, a large black and red cargo ship is docked at a pier, with several green tarps covering its deck. In the background, another similar ship is docked. The port is filled with conveyor belts, cranes, and large piles of coal. The sky is clear and blue.

Marchés charbonniers mondiaux : croissance et défis

**Sylvie Cornot-Gandolphe
14 janvier 2013**



AGENDA

- 1. La demande de charbon: une croissance forte, mais beaucoup d'incertitudes**
- 2. L'offre est abondante**
- 3. Le commerce est en plein développement**
- 4. Volatilité des prix du charbon**

DEUX CATÉGORIES DE CHARBON

□ **HARD COAL:**

□ **subdivided into**

- **Steam coal** (electricity/industry)
- **Coking coal** (iron and steel industry)
- **Energy content > 4500 kcal/kg, water content < 35%**
- **Worldwide traded commodity**

□ **BROWN COAL or LIGNITE**

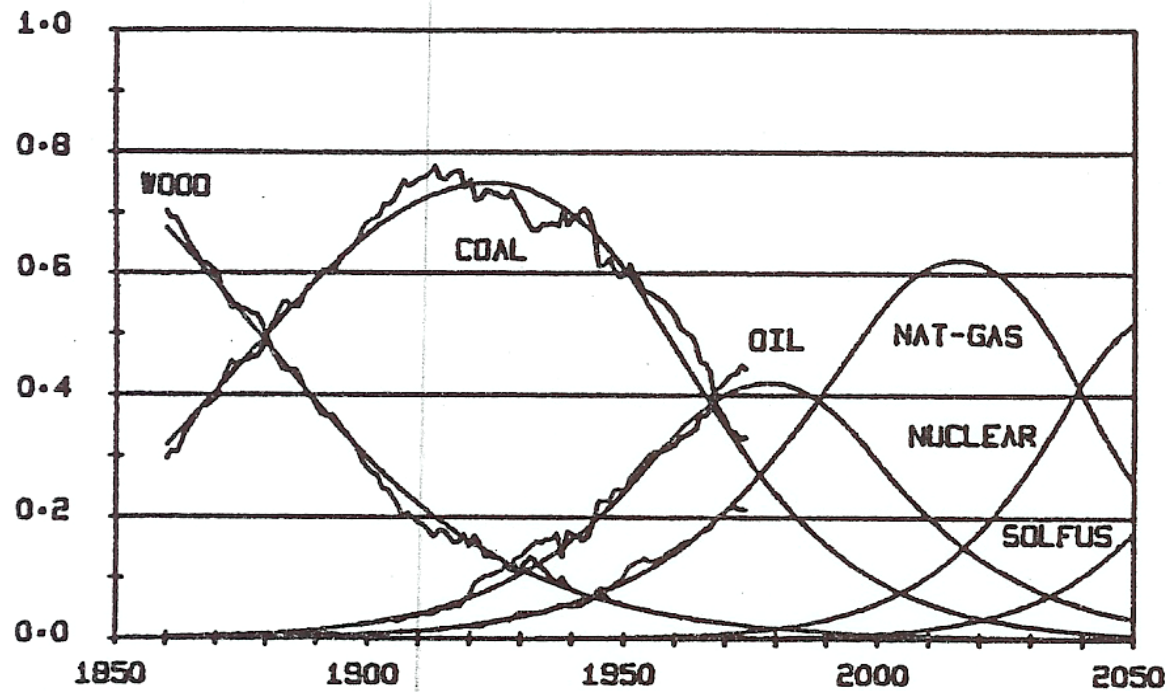
- **Energy content < 4500 kcal/kg, water content > 35%**
- **Hence only regional transport/utilization on local markets**

1. La demande mondiale de charbon: une croissance sans fin?



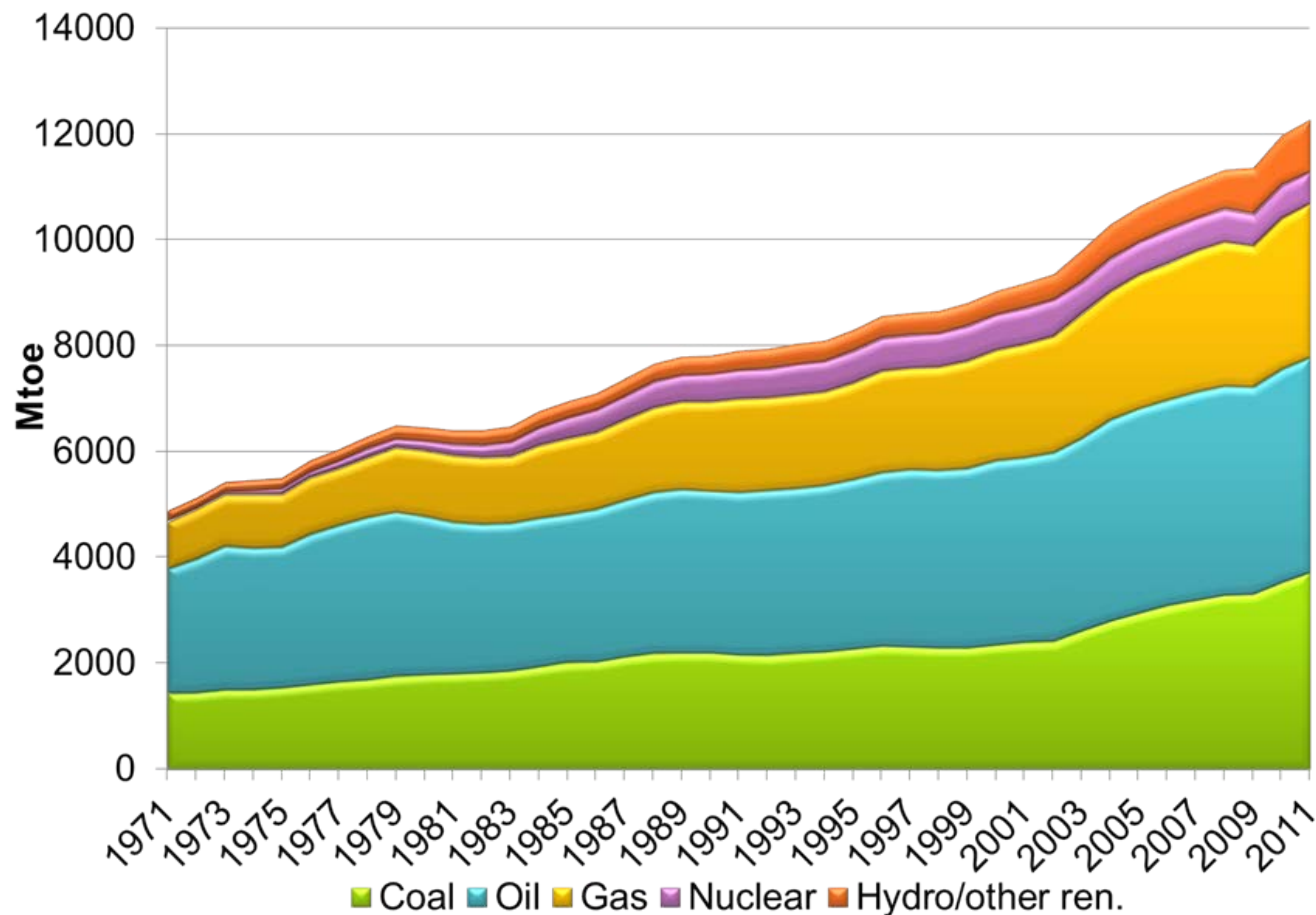
VISION DE L'IIASA EN 1973

Share



Source: International Institute for Applied Systems Analysis (IIASA)

UNE PART CONSTANTE AU COURS DES 40 DERNIÈRES ANNÉES

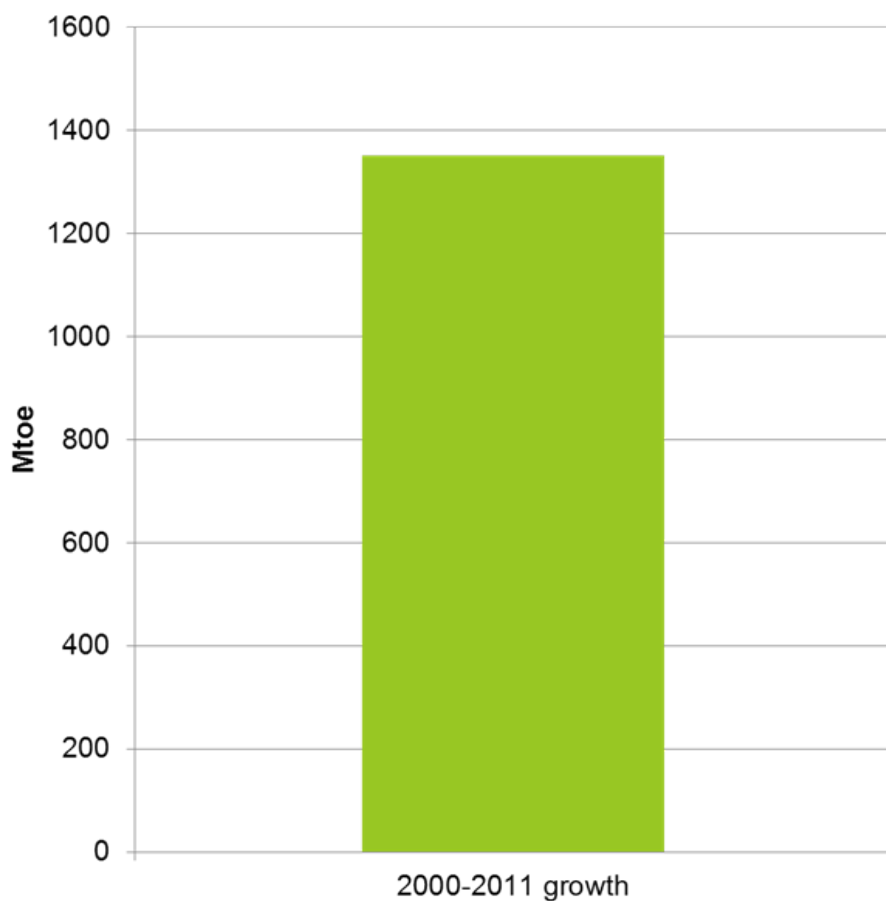


Source: IEA/BP

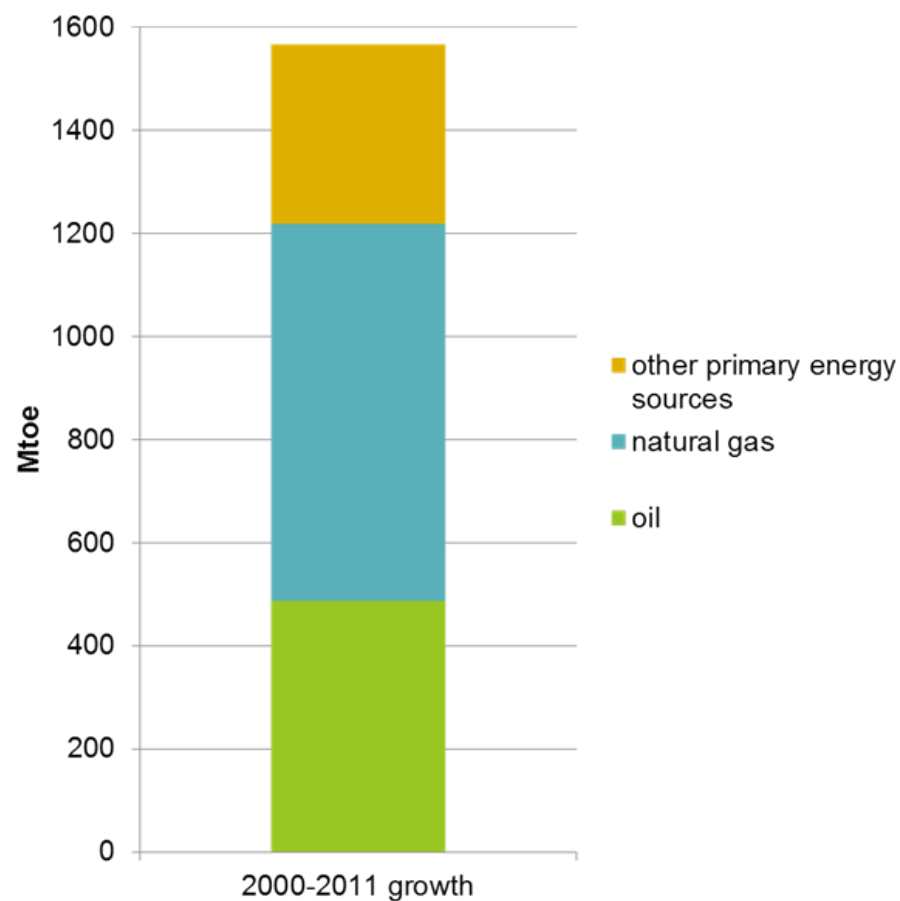
At global level, coal is the second primary energy source (30%), after oil (33%) and before natural gas (24%) - 2011 data

UNE CROISSANCE SPECTACULAIRE AU COURS DE LA DERNIÈRE DÉCENNIE

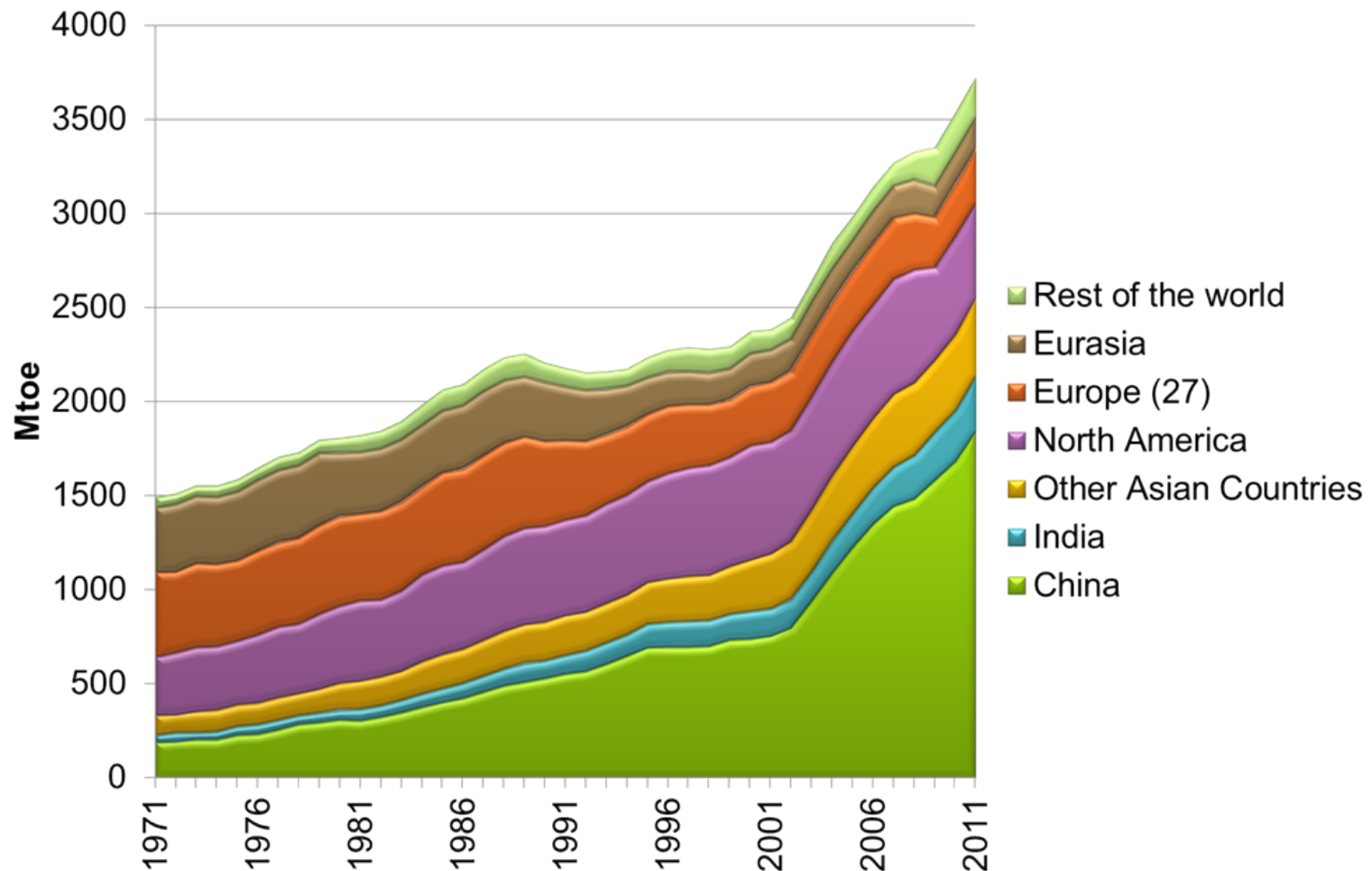
Global coal consumption 2000-2011 growth



Other energy sources 2000-2011 growth



CONSOMMATION MONDIALE DE CHARBON (HOUILLE ET LIGNITE)



3700 Mtoe (about 8 Gt) consumed in 2011

Dominated by China, US and India

Source: IEA, BP

PRINCIPAUX DÉBOUCHÉS

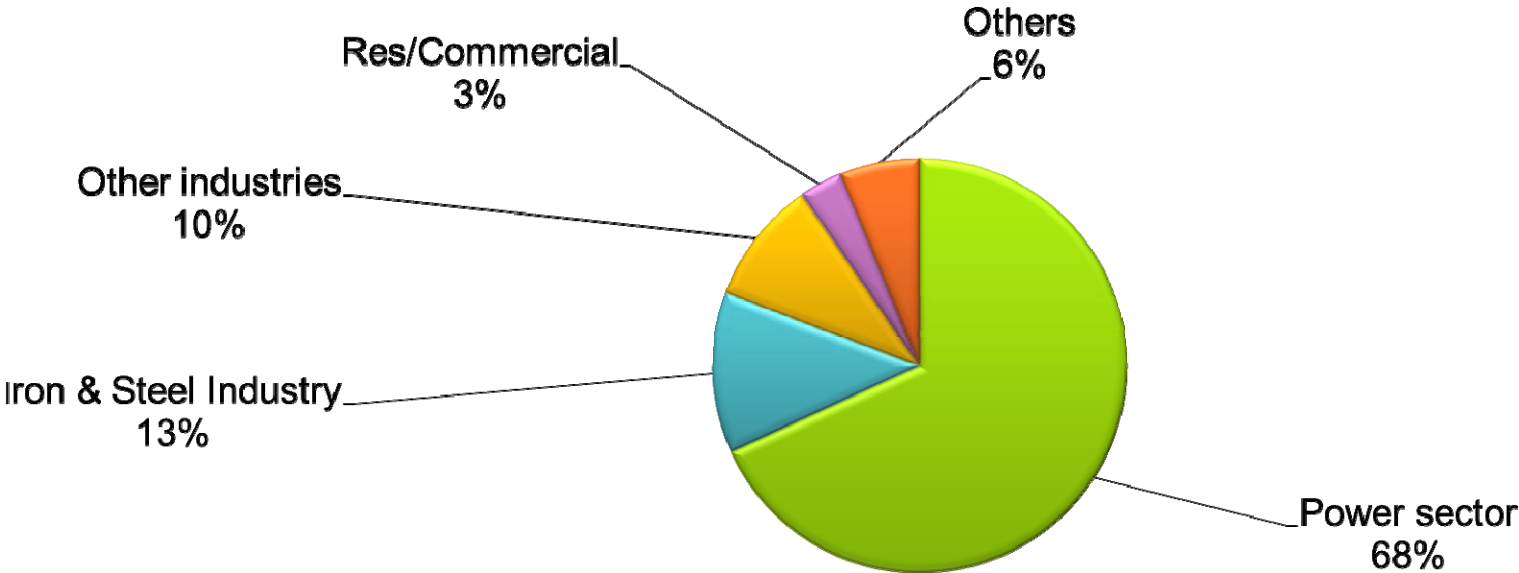


30% of primary energy demand

41% of electricity generation in the world

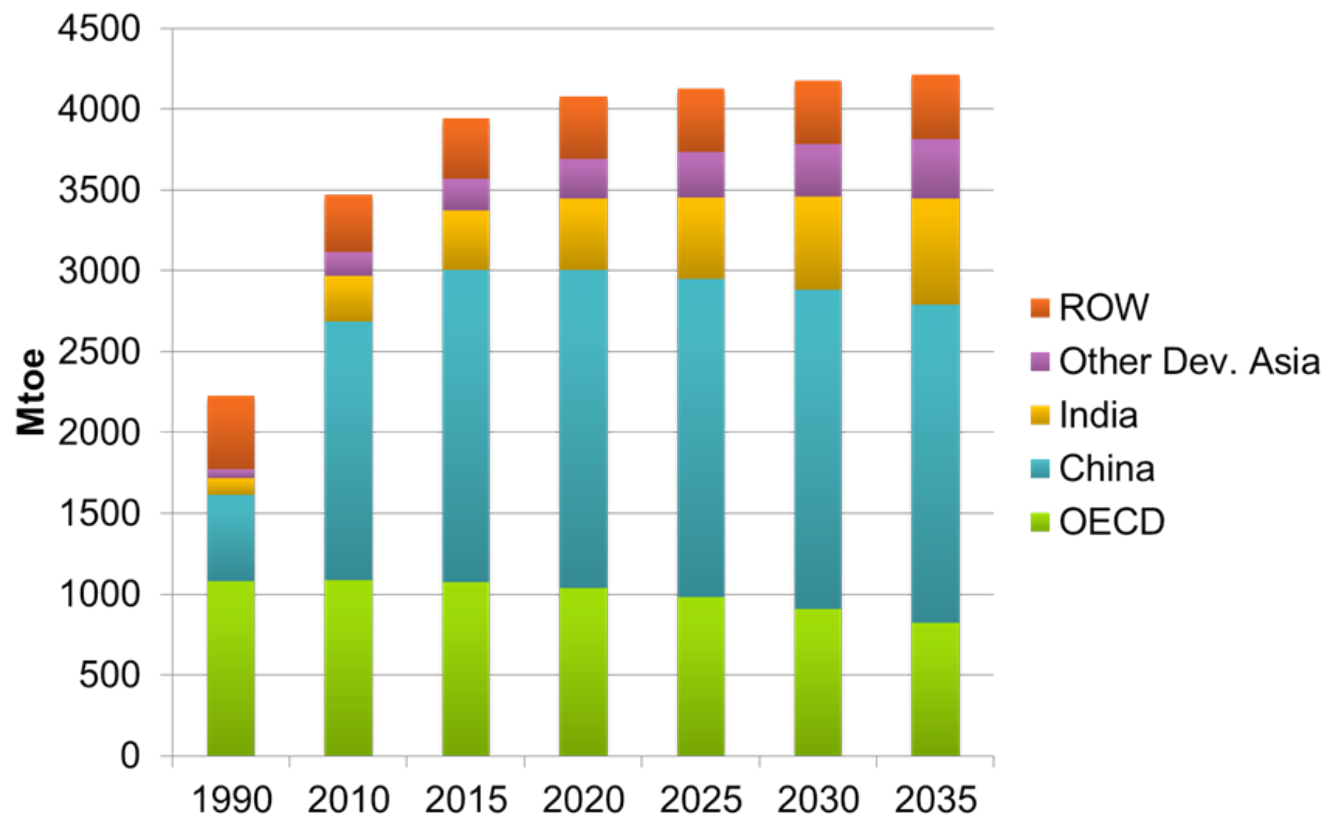
66% of steel production

CONSOMMATION MONDIALE PAR SECTEUR



Source: IEA

DEMANDE FUTURE DE CHARBON IEA WEO NEW POLICIES SCENARIO



Source: IEA World Energy Outlook 2012

At global level, an increase by around 21% between 2010 and 2035. Almost all the growth before 2020

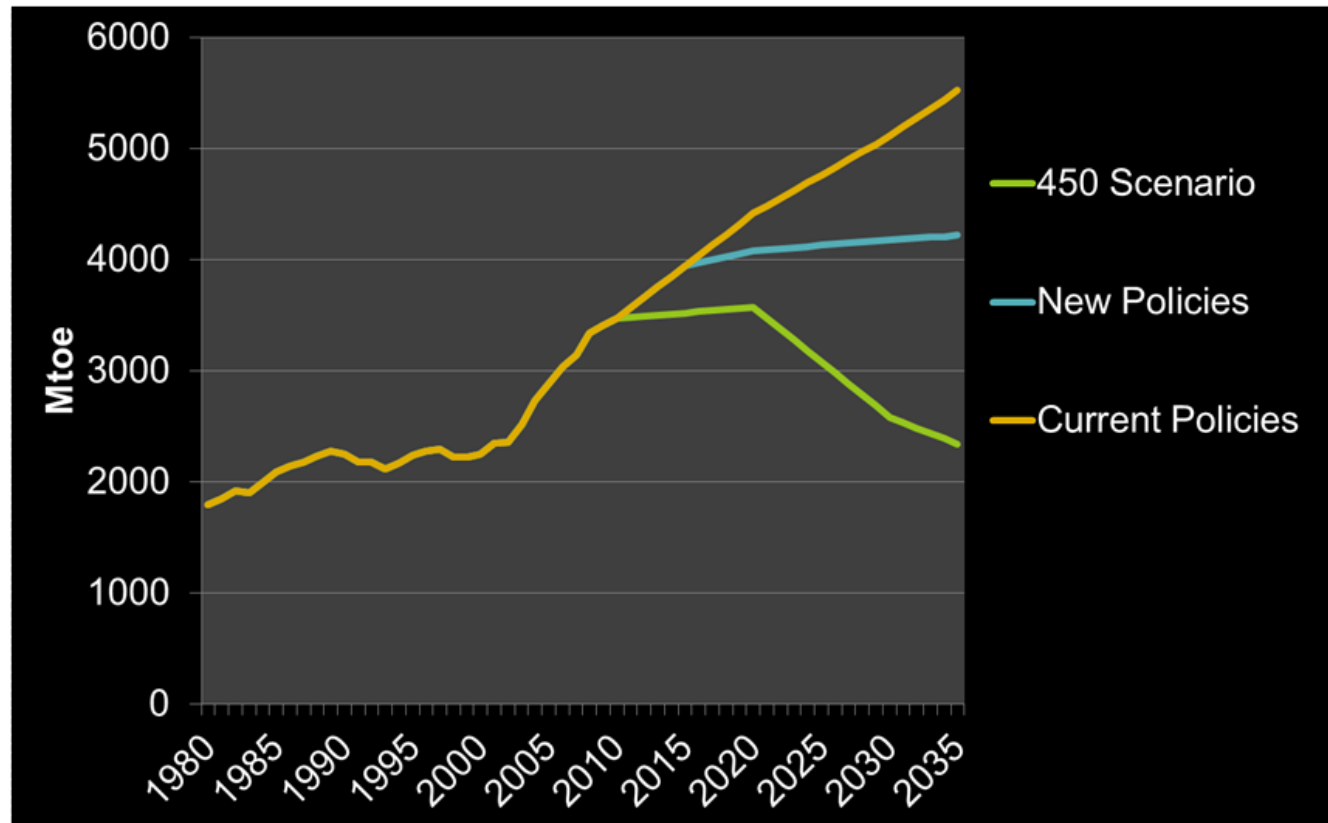
Three countries, China, India and Indonesia, account for nearly 90% of the growth.

A continued shift in coal demand from OECD to non-OECD countries

PRINCIPALES INCERTITUDES SUR LA DEMANDE FUTURE

- ❑ Future electricity demand and electricity mix (nuclear?, renewables, shale gas/LNG)
- ❑ Competition between coal and gas in electricity generation, linked to international gas prices vs. coal prices and CO₂ prices
- ❑ Availability of coal & cost/Infrastructure issues
- ❑ Climate change policies, plus CO₂ pricing via taxes or emission trading schemes (20, 50, 100 €/t ?)
- ❑ Development and deployment of clean coal technologies (efficient electric power plants and Carbon Capture and Storage - CCS)

DEMANDE MONDIALE FUTURE PAR SCÉNARIO



Critical influence of government policies on future coal demand

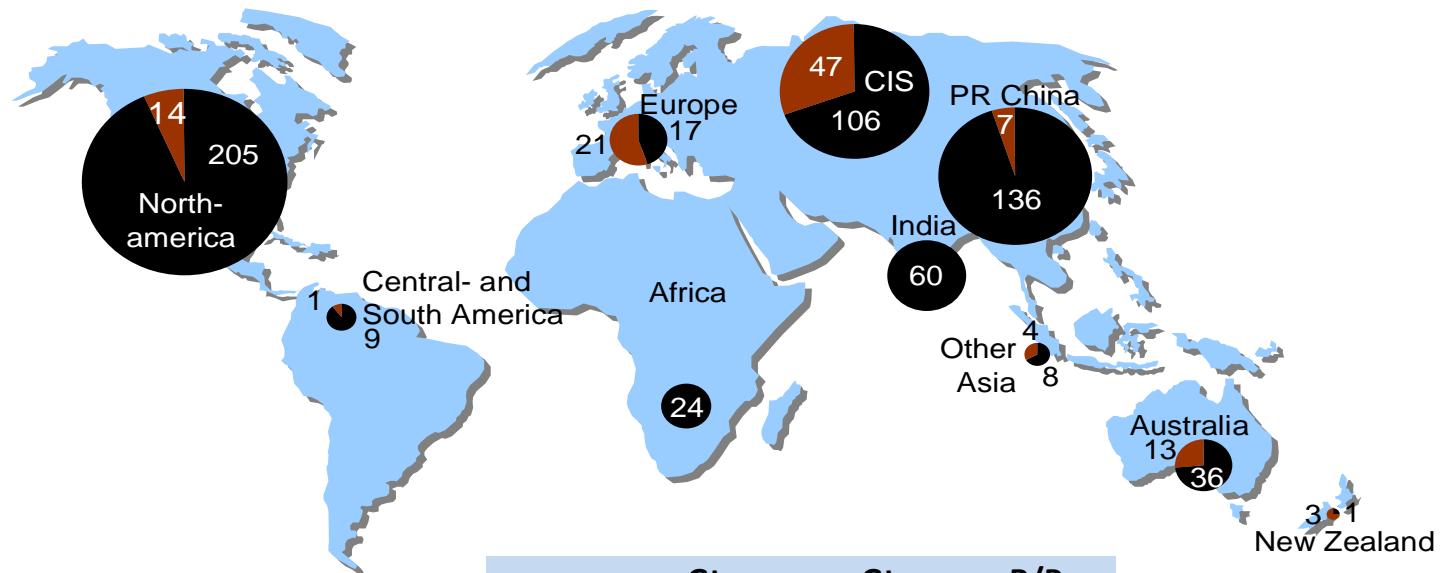
- ❑ New Policies Scenario: + 21% compared with 2010
- ❑ Current Policies Scenario: + 59%
- ❑ 450 Scenario: - 33%

2. Une offre abondante



RÉSERVES PROUVÉES DE CHARBON

Worldwide Distribution of Coal Reserves (Btce)



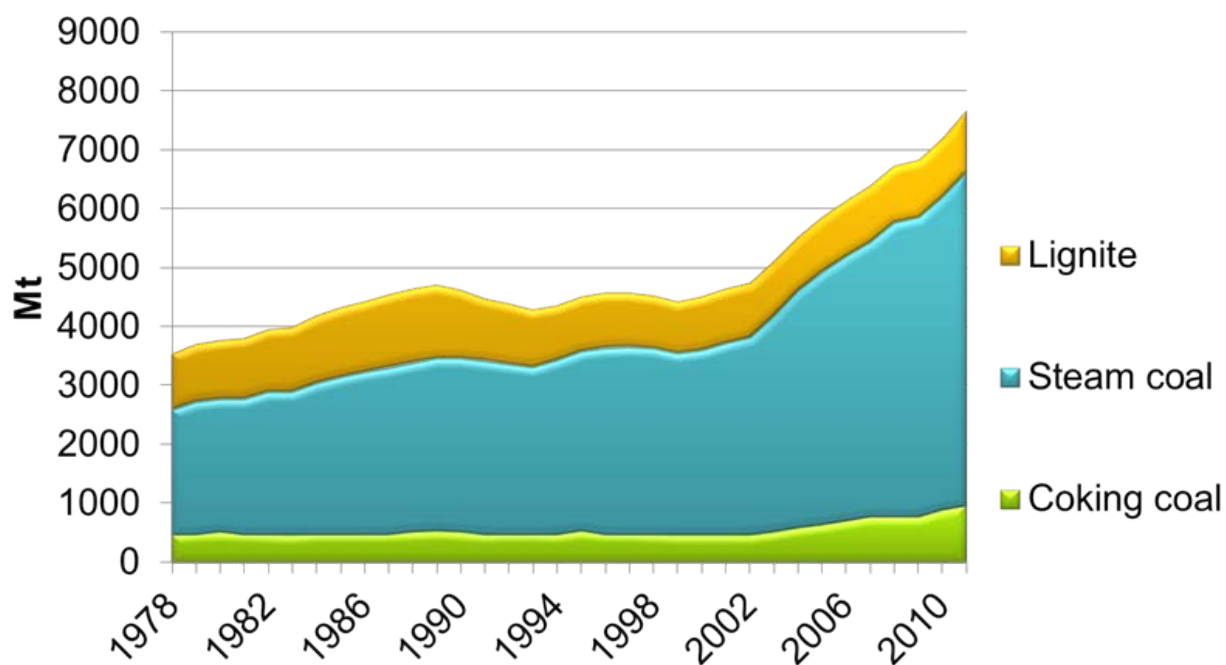
- Lignite
- Hard coal

	Gtce	Gt	R/P
Hard coal	611	723	108
Lignite	109.7	277.5	277
TOTAL	720.7	1000.5	130

Source: Federal Institute for Geosciences and Natural Resources (BGR), Hanover,

Abundant and well distributed

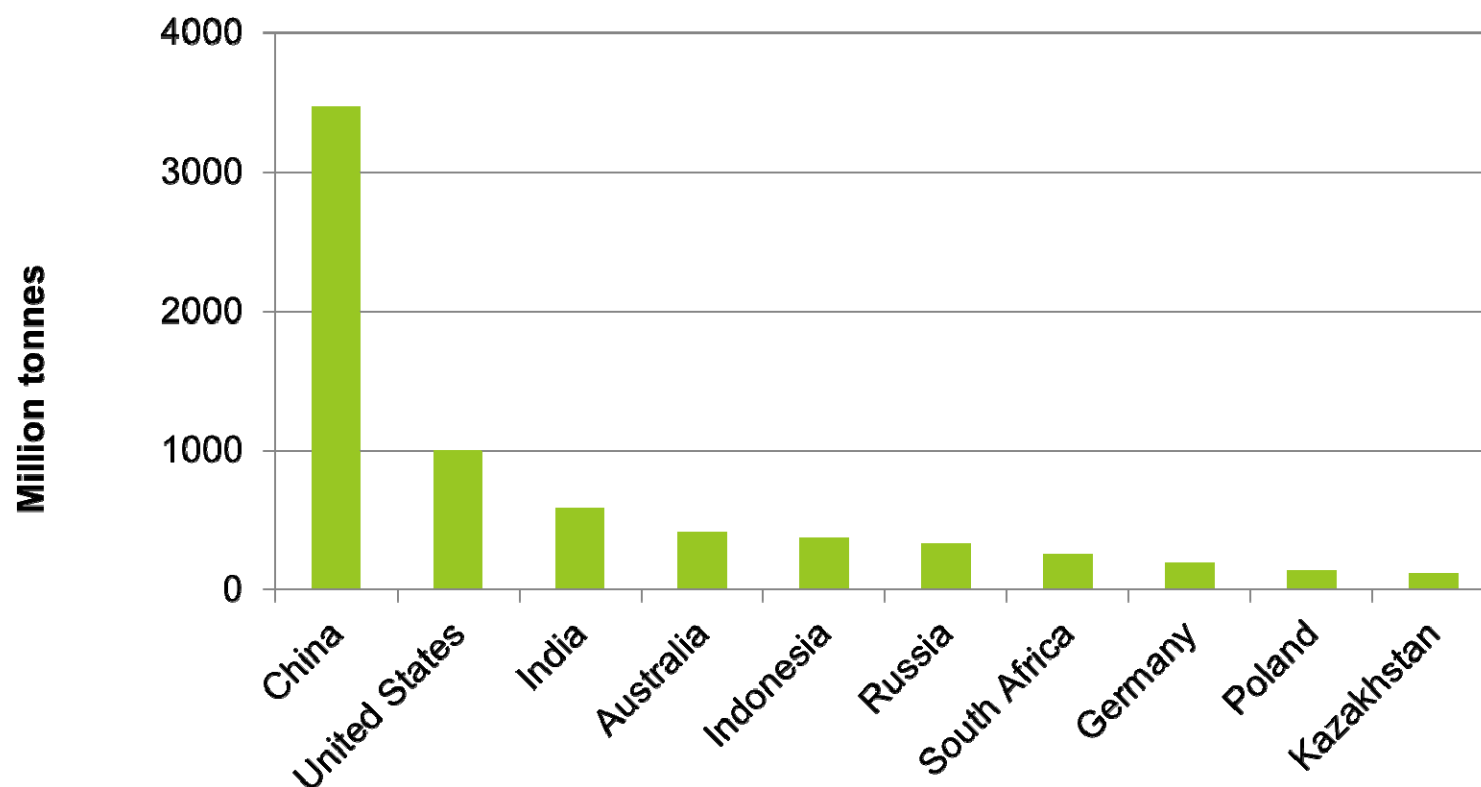
ÉVOLUTION DE LA PRODUCTION MONDIALE PAR TYPE DE CHARBON



Global coal production totaled about 7.7 Gt in 2011

High increase in steam coal production over the past decade: +82%

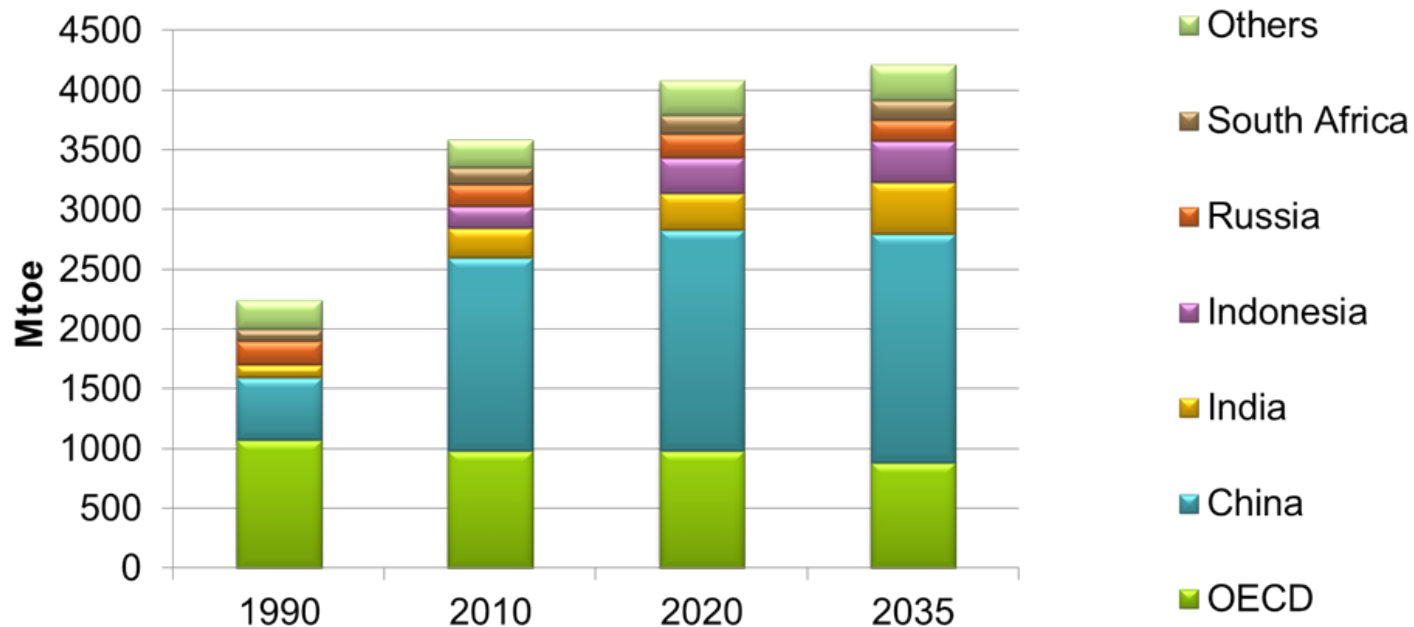
10 1ERS PAYS PRODUCTEURS



Top 10: 6.9 Gt (90% of global hard coal and lignite production)

China and US: 58%

UNE CROISSANCE DE 21 % DE LA PRODUCTION MONDIALE D'ICI 2035



Coal production reaches about 4200 Mtoe by 2035 (about 8.5 Gt)

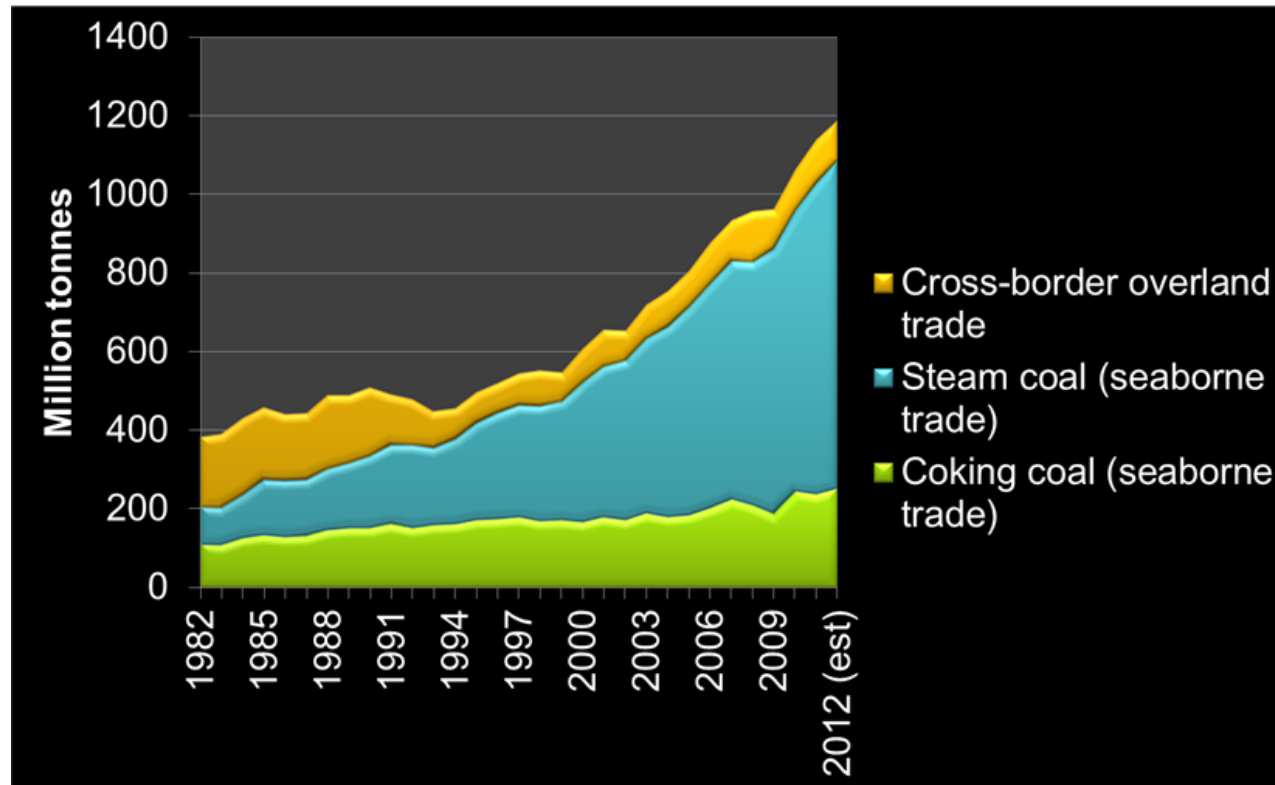
Most of the growth occurs in non-OECD countries (China, India and Indonesia), before 2020

Decline in OECD. (-0.6% over the period 2010-2035)

3. Le commerce international



UNE CROISSANCE RAPIDE DES ECHANGES



Source: IEA, VDKI, estimates

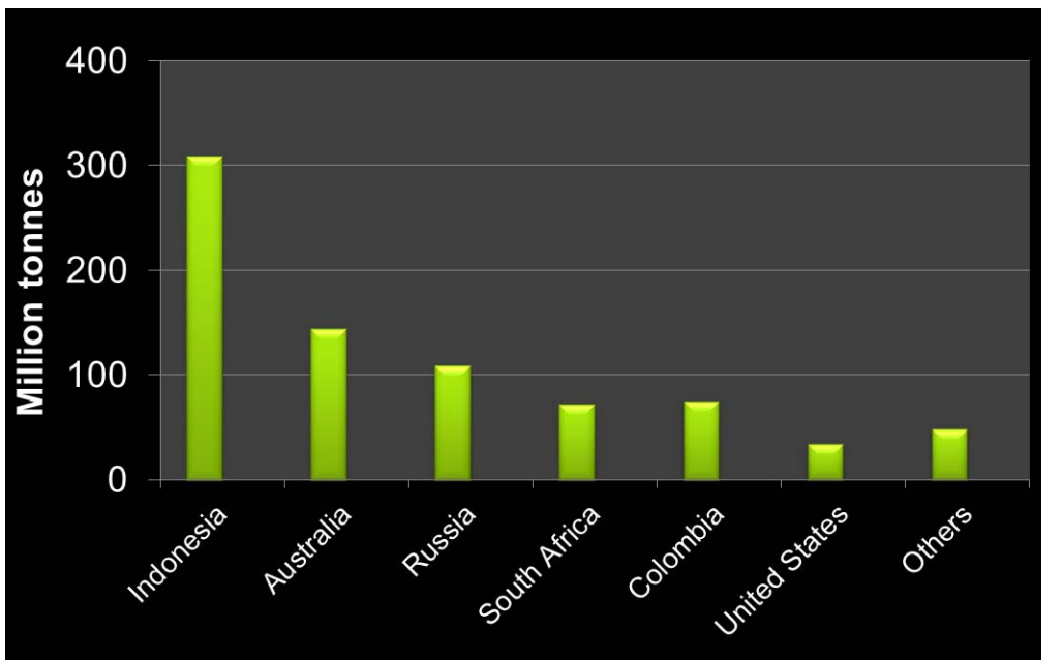
1.2 Gt traded in 2012 (of which 1.1 Gt by sea), 15% of global hard coal production

Rapid increase in seaborne steam coal trade (850 Mt in 2012)

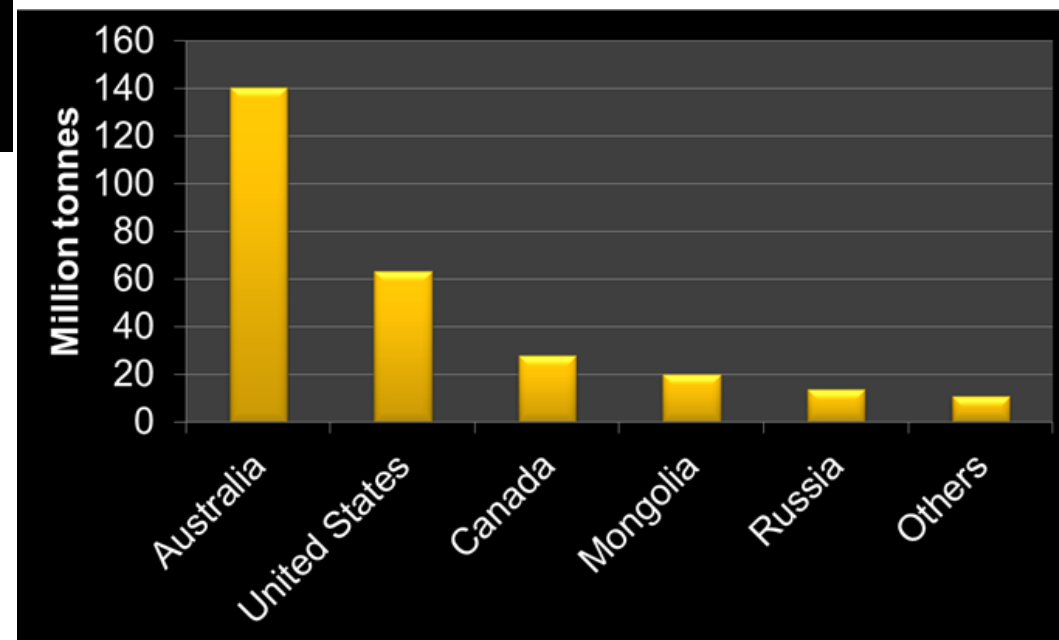
Seaborne coking coal trade: 254 Mt in 2012

PRINCIPAUX PAYS EXPORTATEURS EN 2011

Seaborne Steam coal exports: 791 Mt

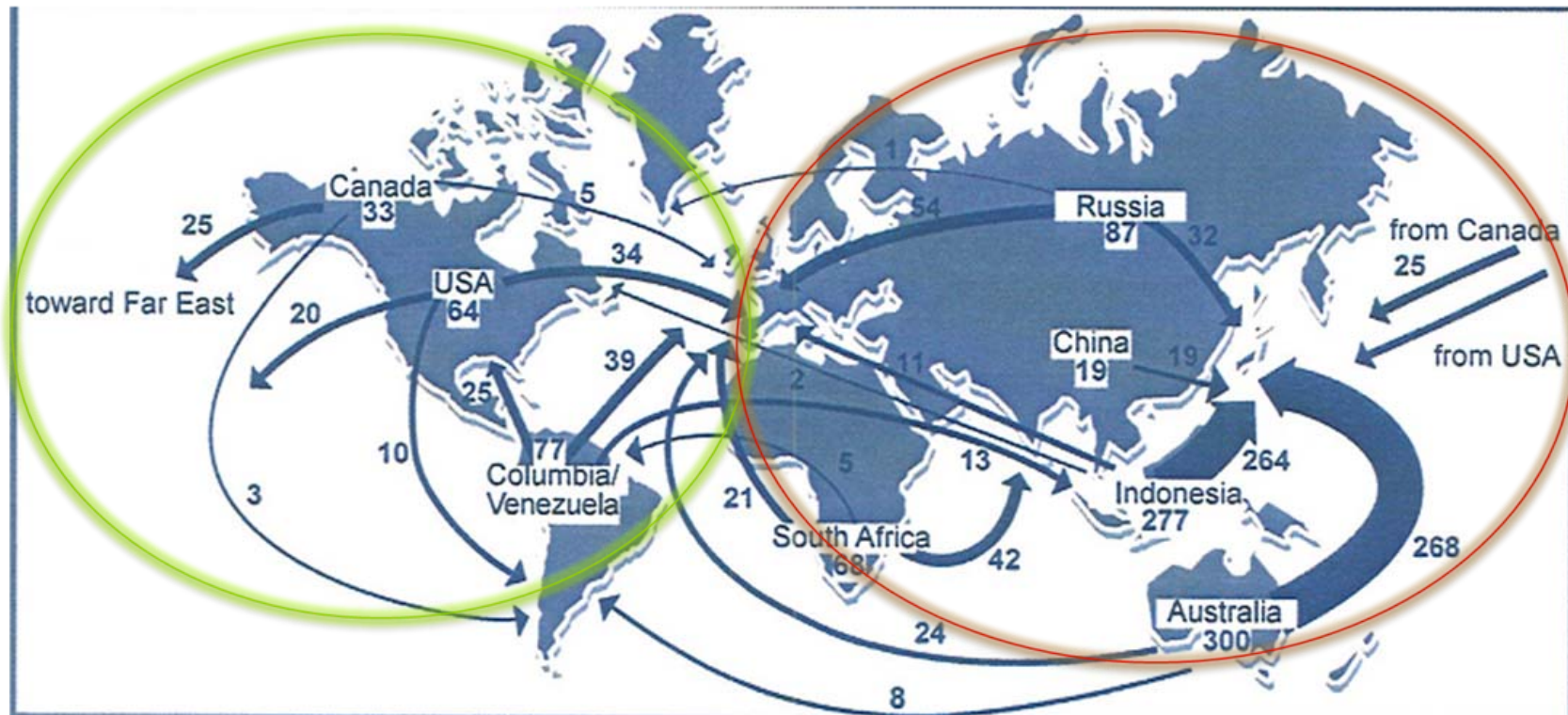


Coking coal exports: 238 Mt



Source: IEA

PRINCIPAUX COURANTS D'ÉCHANGE



Source: VDKI

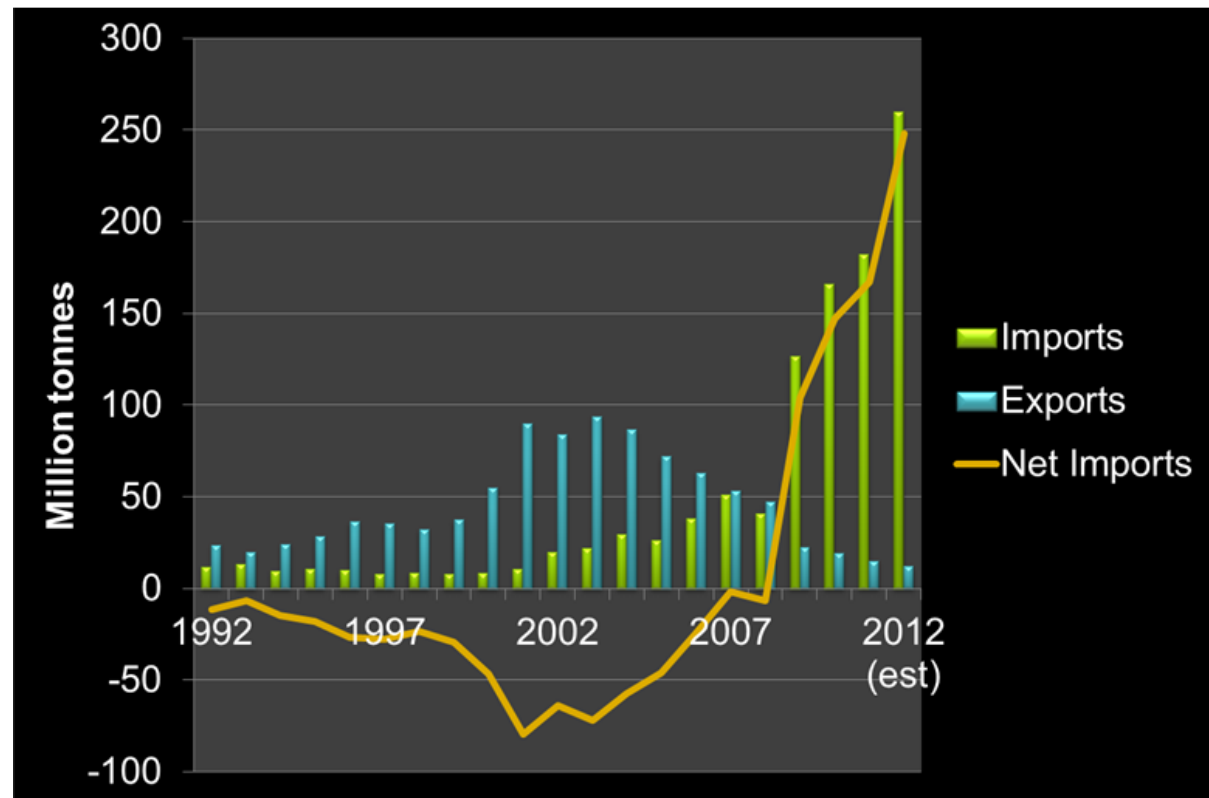
Steam coal, 2 basins: Pacific and Atlantic

Coking coal: a global market

CHANGEMENTS RÉCENTS DANS LE COMMERCE

- ❑ A huge change in 2007/2008:
- ❑ High increase in coal demand by the Pacific basin: Japan and Korea, but also China, and rising Indian imports
- ❑ The Pacific basin was no more balanced
- ❑ More imports from traditional Atlantic suppliers (South Africa)
- ...A very tight market
- ❑ 2008/2009: Shift in South African coal export patterns (India vs. Europe)
- ❑ 2009: China became a net importer to a large extent and almost withdrew from the export market.
- ❑ 2010 to 2012: Fast increase of China's imports
- ❑ 2011/2012: Large rise in US exports to traditional (Europe) and new customers (China, India)
- ...A supply glut!

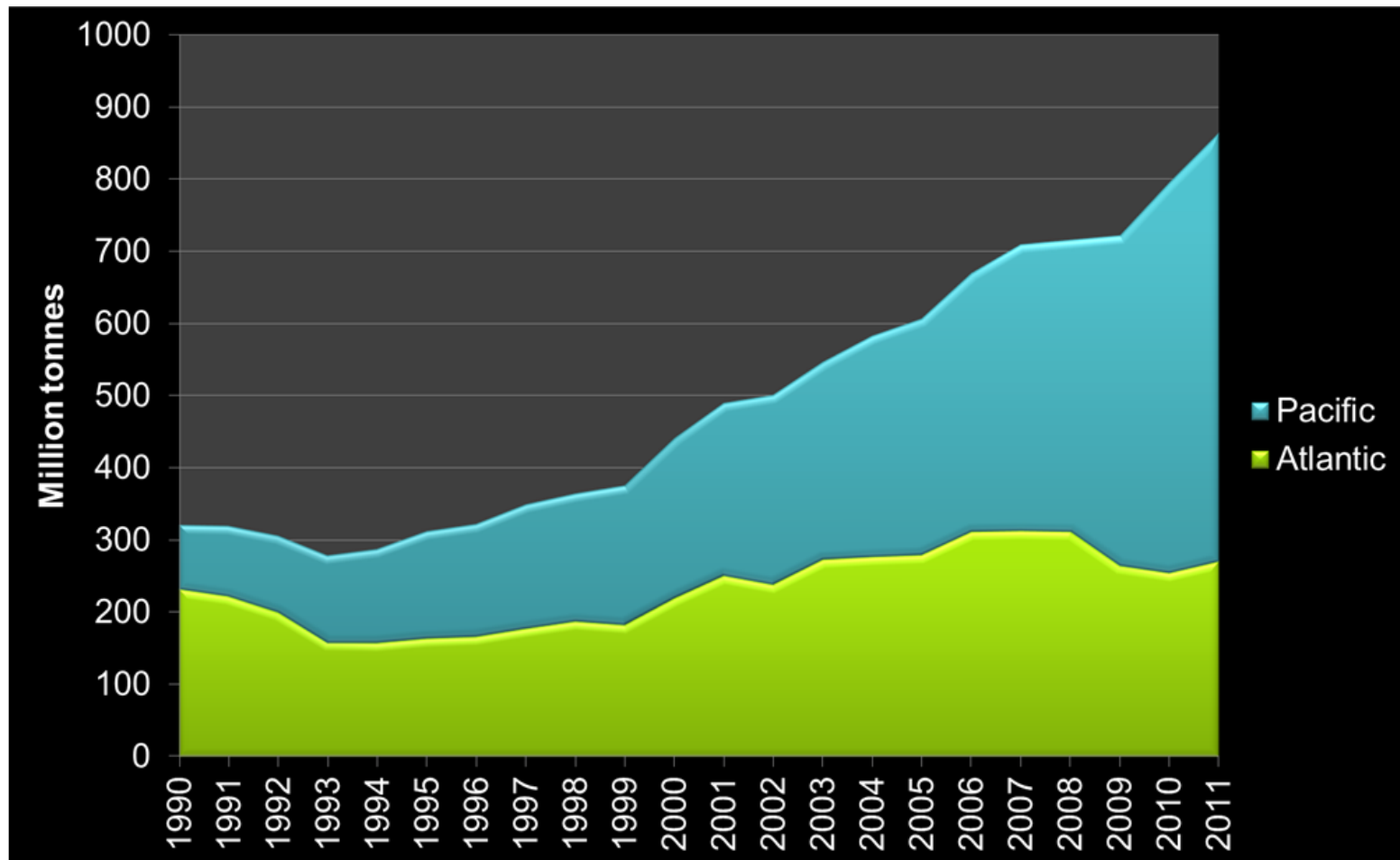
LA CHINE SUR LE MARCHÉ INTERNATIONAL



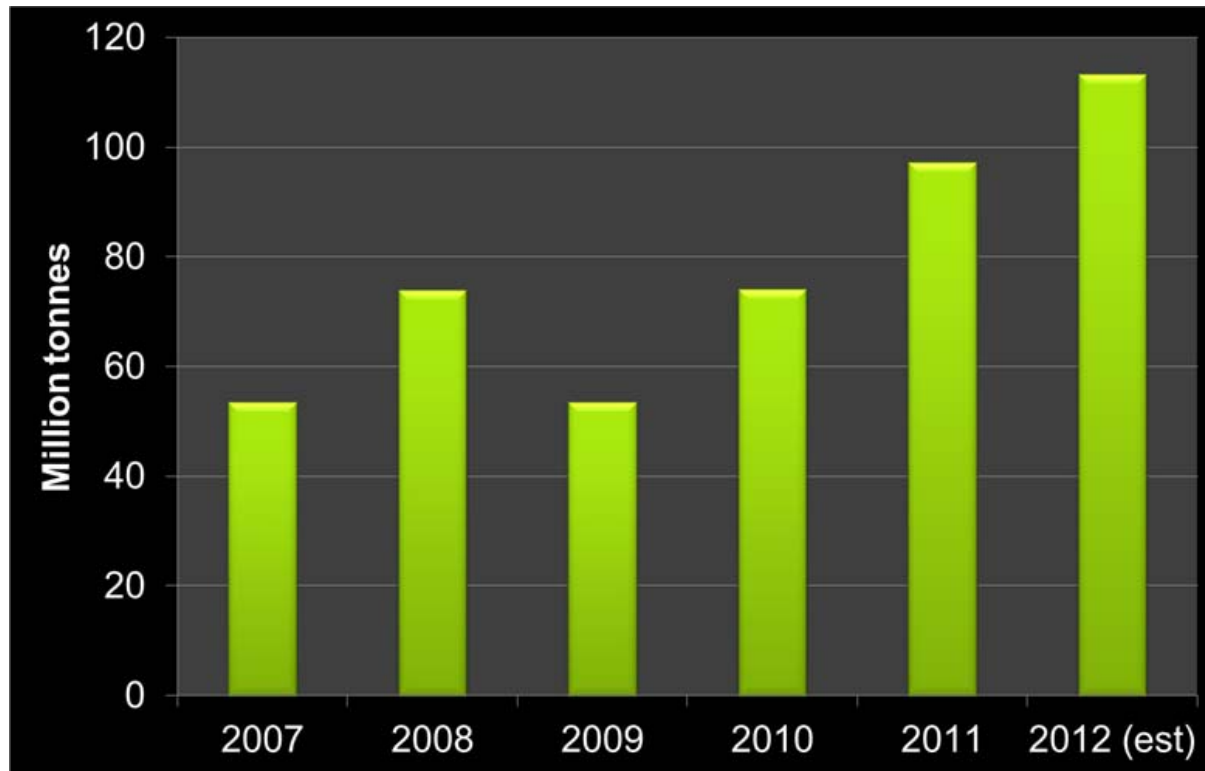
A major player.

A leading role in the past three years on global coal market and international coal prices

IMPORTATIONS DE CHARBON VAPEUR POSITION DOMINANTE DU BASSIN PACIFIQUE

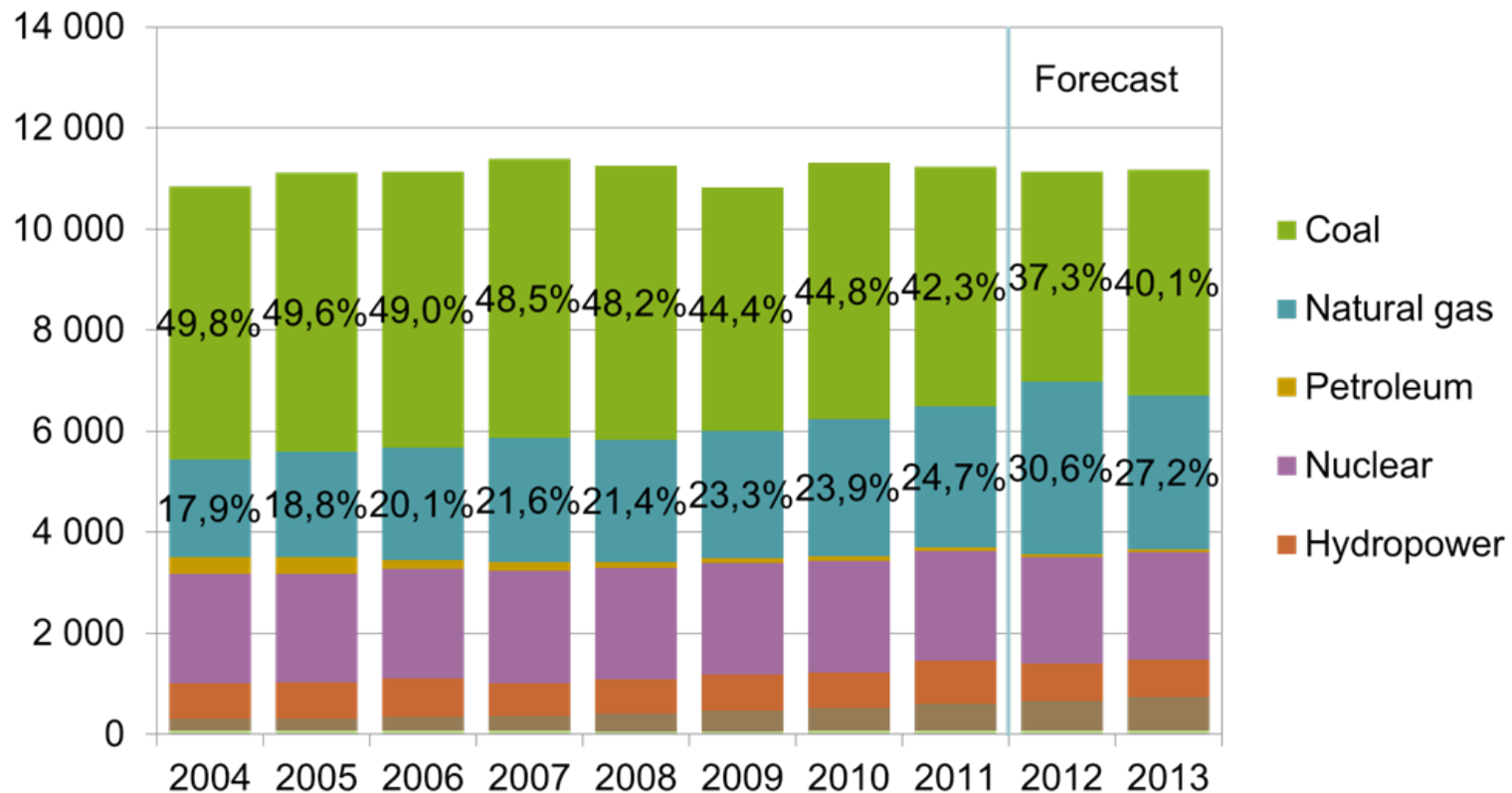


EXPORTATIONS DE CHARBON US



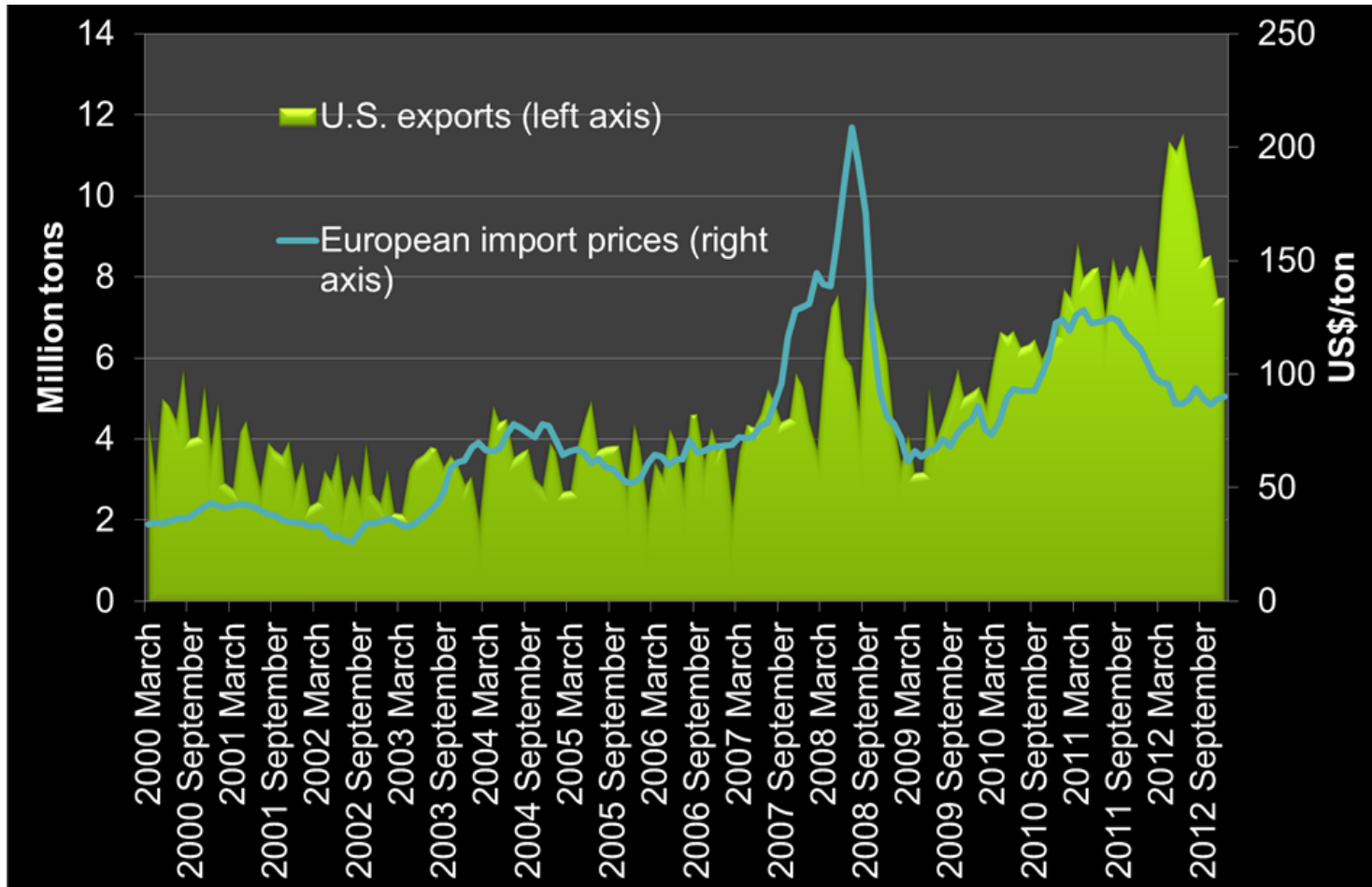
PRODUCTION D'ÉLECTRICITÉ AUX USA

U.S. Electricity Generation by Fuel, All Sectors
thousand megawatthours per day



USDOE/EIA, Source: Short-Term Energy Outlook, November 2012

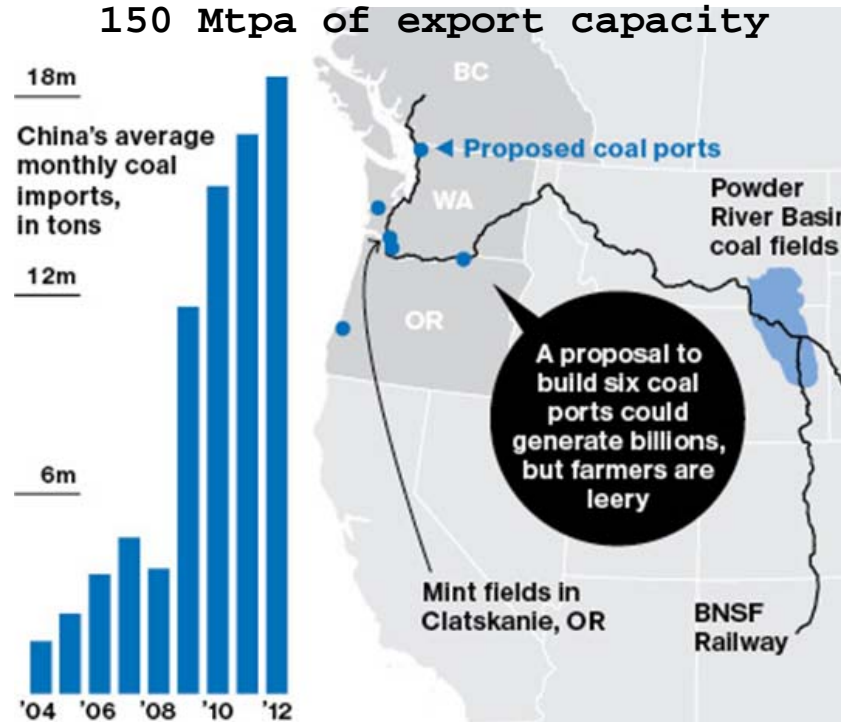
LES ETATS-UNIS SONT LE SWING SUPPLIER



UN NOUVEAU HUB CHARBONNIER SUR LA CÔTE PACIFIQUE?

Ports proposed in Washington and Oregon States could add

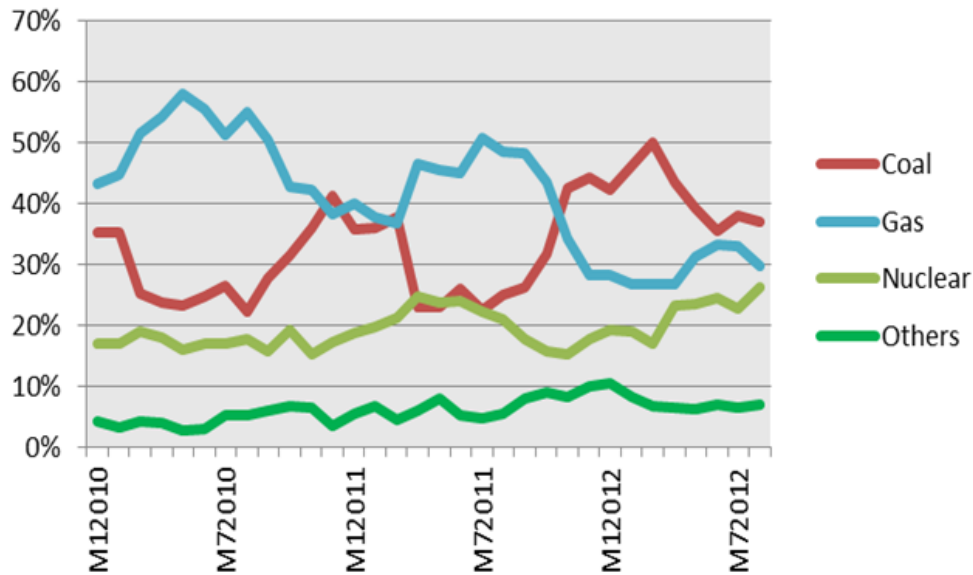
150 Mtpa of export capacity



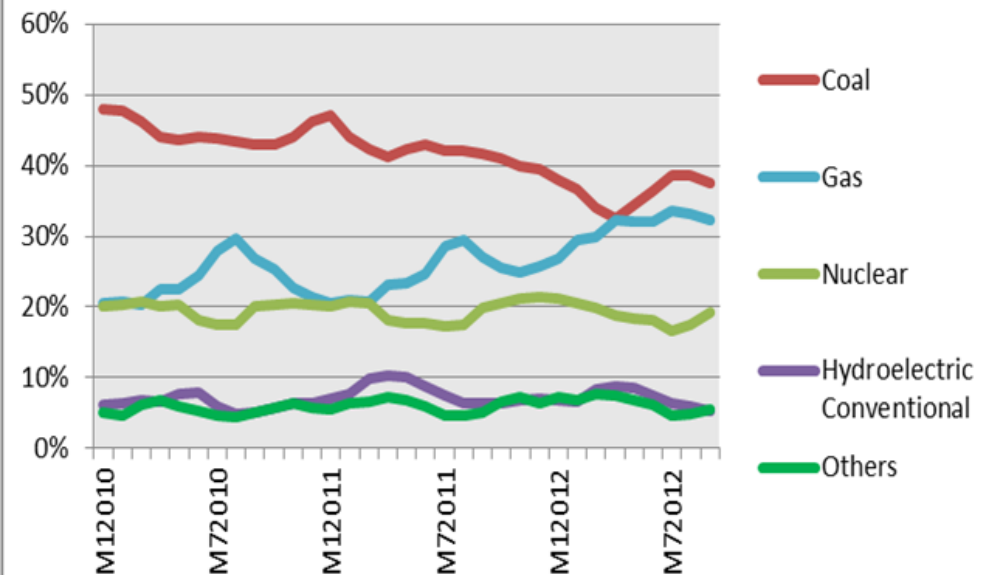
GRAPHIC BY BLOOMBERG BUSINESSWEEK. DATA: CENTER FOR TRANSPORTATION ANALYSIS, FRIENDS OF THE COLUMBIA GORGE, CHINA CUSTOMS GENERAL ADMINISTRATION

LE PARADOXE CHARBONNIER

UK electricity generation by fuel, shares in %



US electricity generation by fuel, shares in %

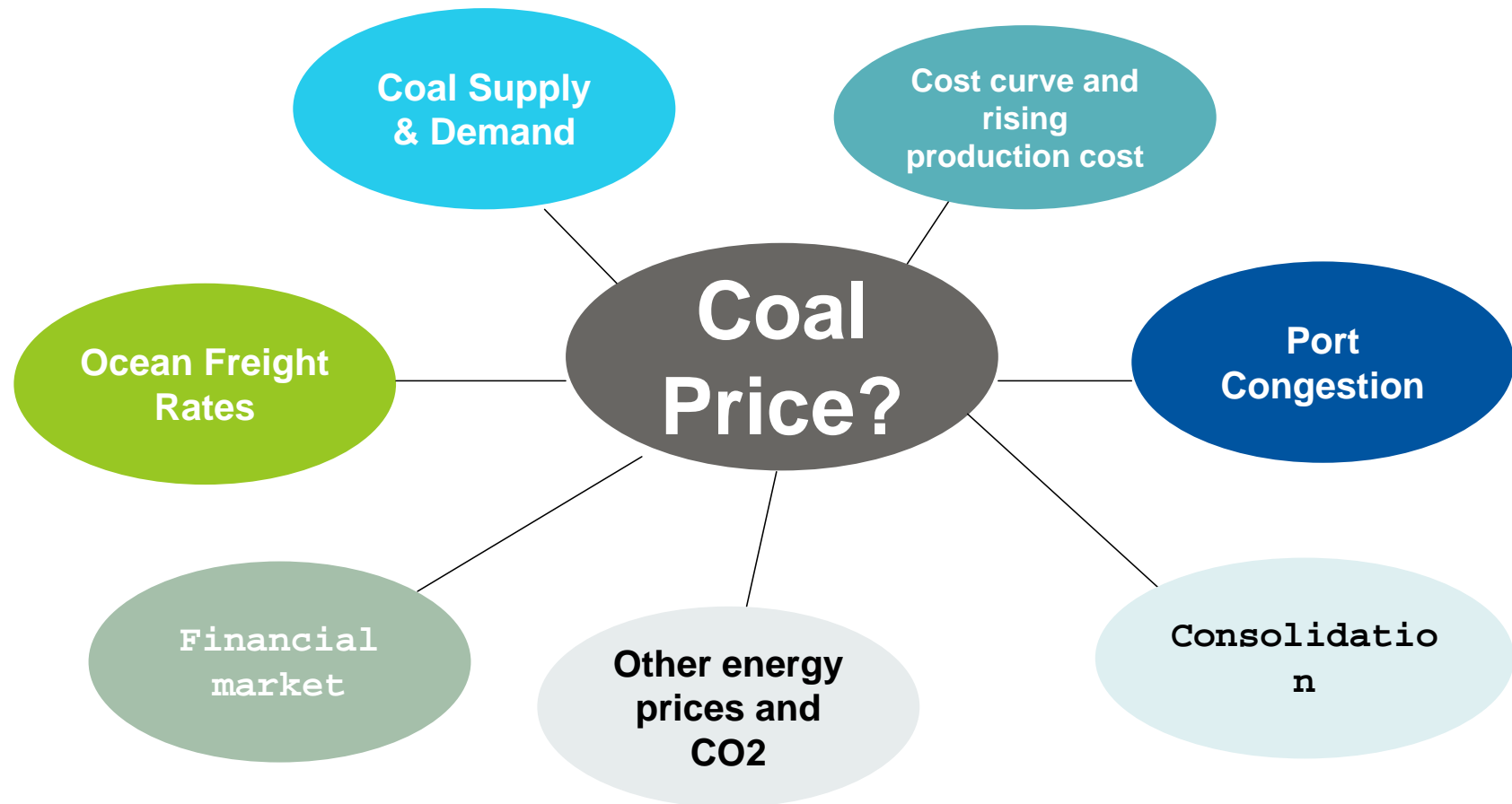


4. Les prix du charbon



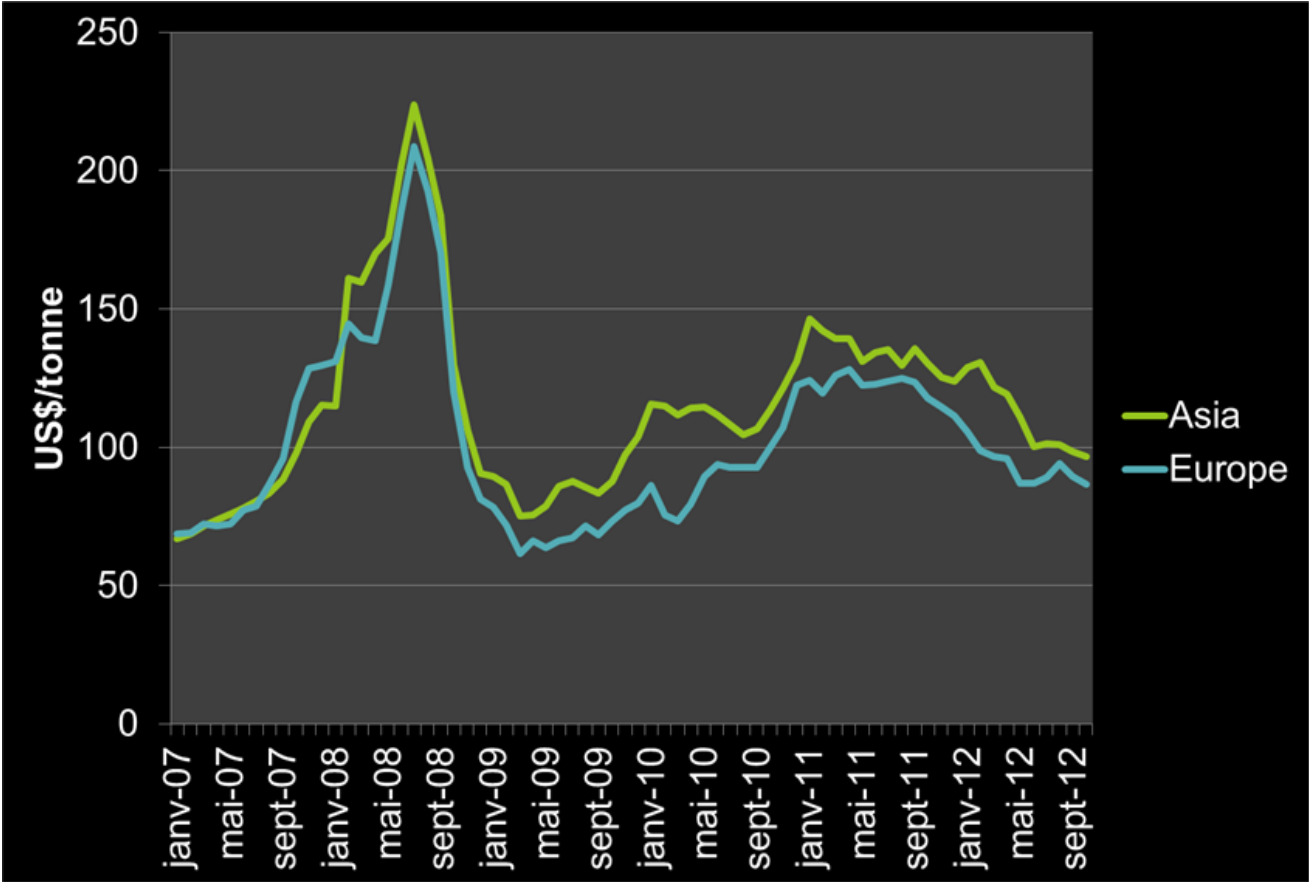
LES PRIX DU CHARBON SONT INFLUENCÉS PAR DE NOMBREUX FACTEURS

Underlying Market S/D balance sets the trend on LT



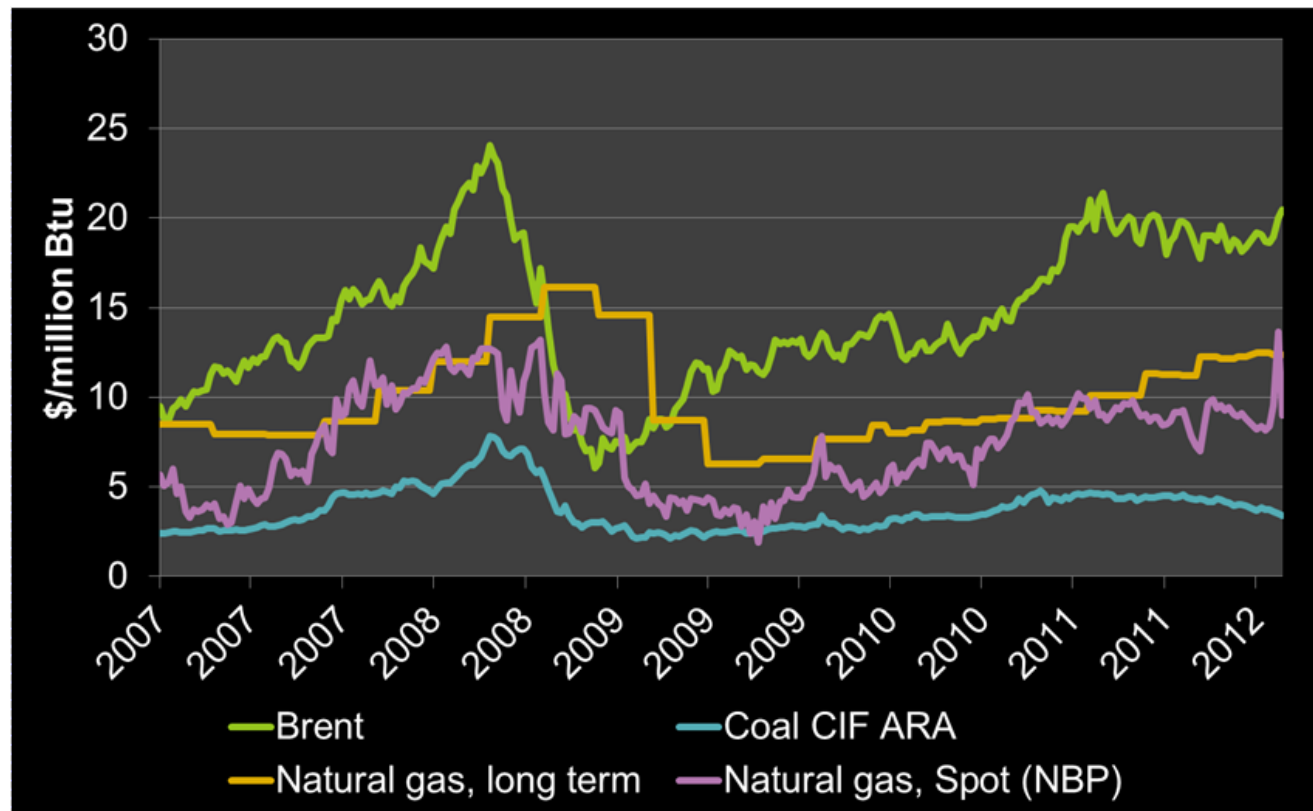
Speculation and other energy prices impact on short term

PRIX DES CHARBONS VAPEURS



LA COMPÉTITIVITÉ DU CHARBON EN EUROPE

Comparison of fossil fuel prices in Europe



Coal is very competitive vs. natural gas.

CONCLUSION

Coal will remain a vital part of the global energy (and electricity) balances in the short and medium term. Long-term is uncertain

The situation may differ markedly between developed and developing countries

Four points to be scrutinized in the future:

Environmental policies

Deployment of CCS technologies

Coal prices vs. natural gas prices (and development of shale gas)

China