News, Views
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Global energy challenges and the contribution of the gas industry

Erik Gonder

Advisor

International Gas Union (IGU)

IGU Secretariat,Oslo,Norway

"Energy and Climate. New Priorities", 16 - 18 April 2008

St. Constantine and Helena Resort

Bulgaria

Agenda

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- The International Gas Union (IGU) and the Argentine Triennium
- Natural Gas in a Sustainable Environment
- IGU's projects and initiatives

IGU represents around 95% of all gas sales

Members Non Members

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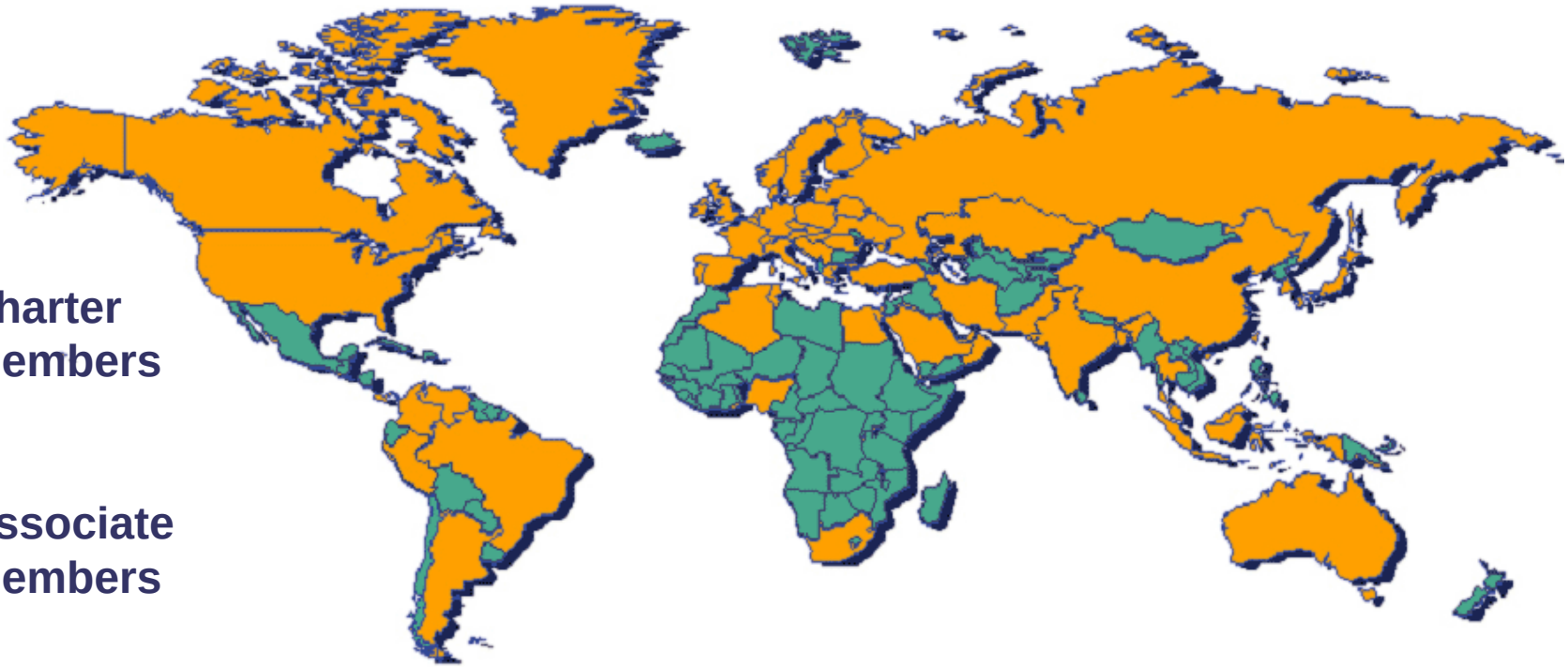

68 Charter members

31 Associate members

Associate membership for energy companies and organisations

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Gas as key to future growth..

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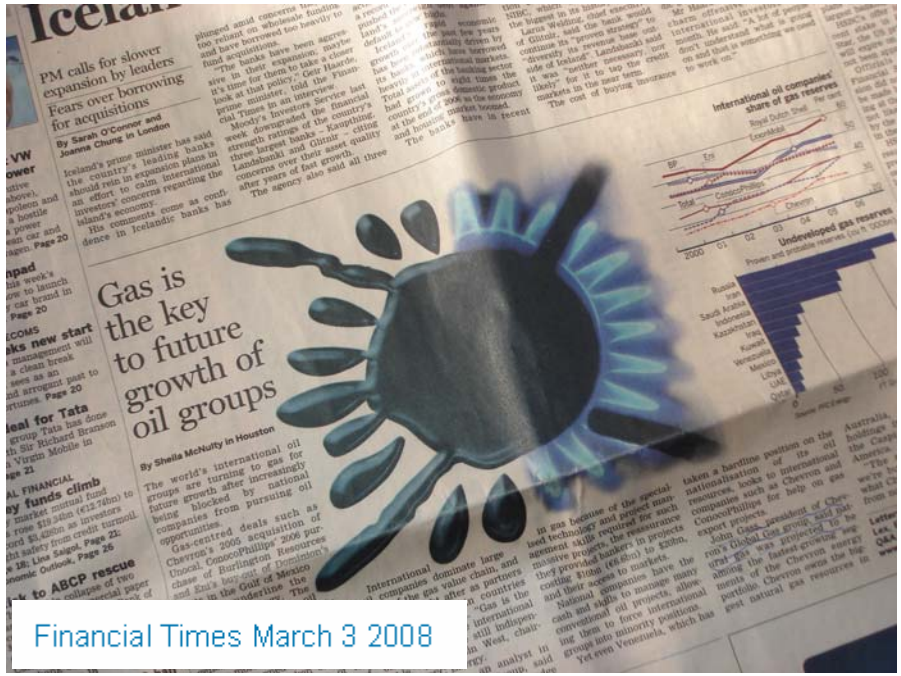
- **IGU promotes technical and economic progress of the gas industry**
- **Emphasising sound environmental performance**
- **The World Gas Conference every 3 years**
  - 2009: Buenos Aires, Argentina
- **Approx 750 experts in committee work**



Financial Times March 3 2008

Experts from all over the world are represented in IGU

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President — Ernesto Lopez Anadón, Argentina

Secretary General — Torstein Indrebø, Norway

Vice President — Datuk Rahim Hashim, Malaysia

CC Chairman — Roberto Brandt, Argentina

CC Vice Chairman — Ho Sook Wah, Malaysia

CC Secretary — Andres Kidd, Argentina

PGC A	PGC B	PGC C	PGC D	WOC 1	WOC 2	WOC 3	WOC 4	WOC 5	TF	TF
Sustainable Development	Strategy, Economics & Regulation	Developing Markets	LNG	Exploration & Production	Storage	Transmission	Distribution	Utilisation	R&D	Gas Market Integration
Knut Barland, Norway	Pedro Moraleda, Spain	Mohd. Farid Amin, Malaysia	Seiichi Uchino, Japan	Vladimir Yakushev, Russia	Vladimir Onderka, Czech Rep.	Helge Wolf, Germany	Jeremy Bending, UK	Jean Schweitzer, Denmark	Marc Florette, France	Jorge Doumanian, Argentina

The present Triennium is under Argentine presidency (2006-09)

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- **24th World Gas Conference** in October 2009, in Buenos Aires, Argentina

- **Theme**
  The global energy challenge: „Reviewing the strategies for natural gas“

- **Objective**

  1. promote the exchange of knowledge and information
  2. provide solid and concrete reference tools for decision makers

Agenda

- About IGU and the Triennium 2006-09
- **Natural Gas in a Sustainable Environment**
- IGUs projects and initiatives

The world needs energy!

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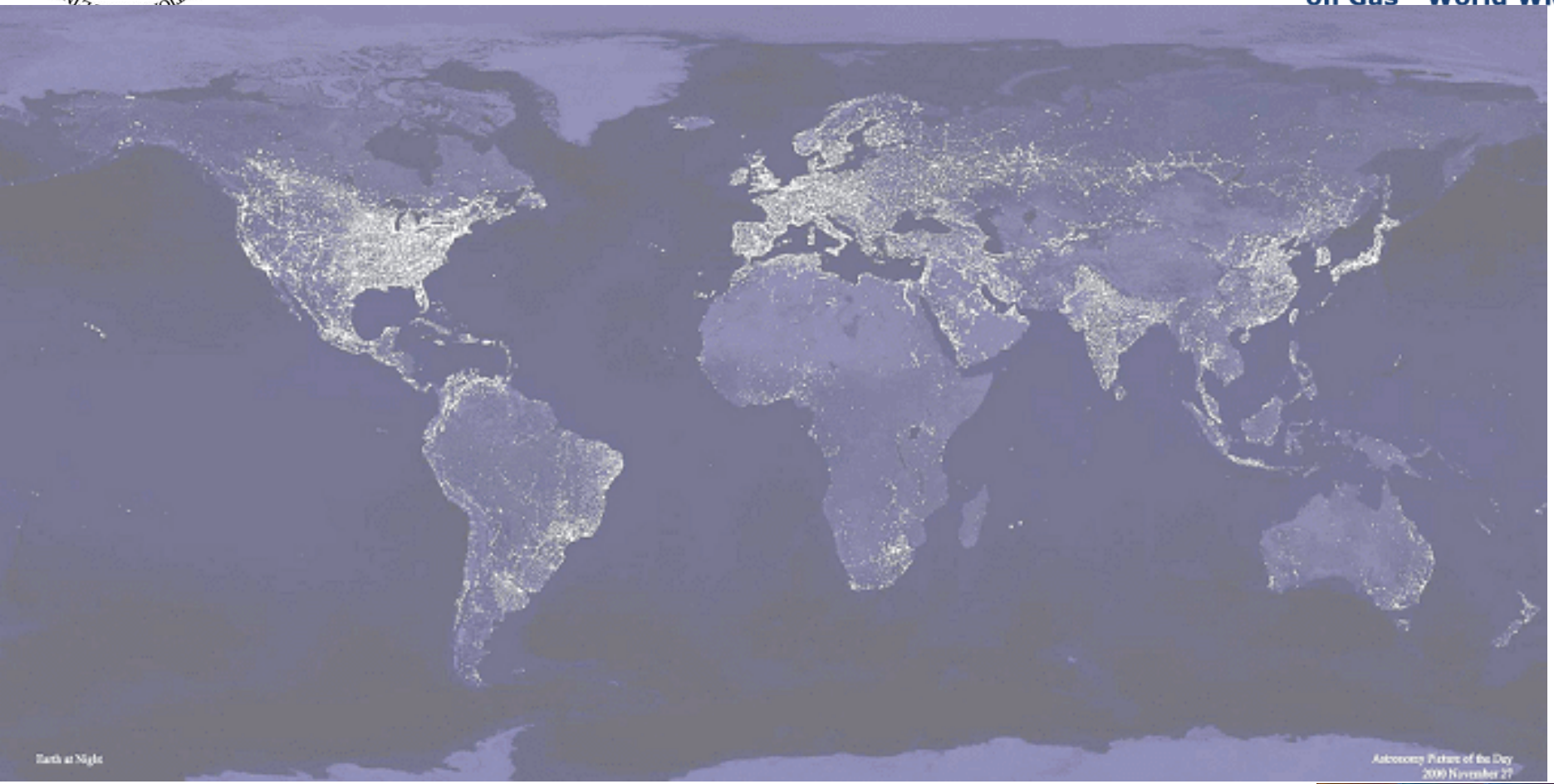
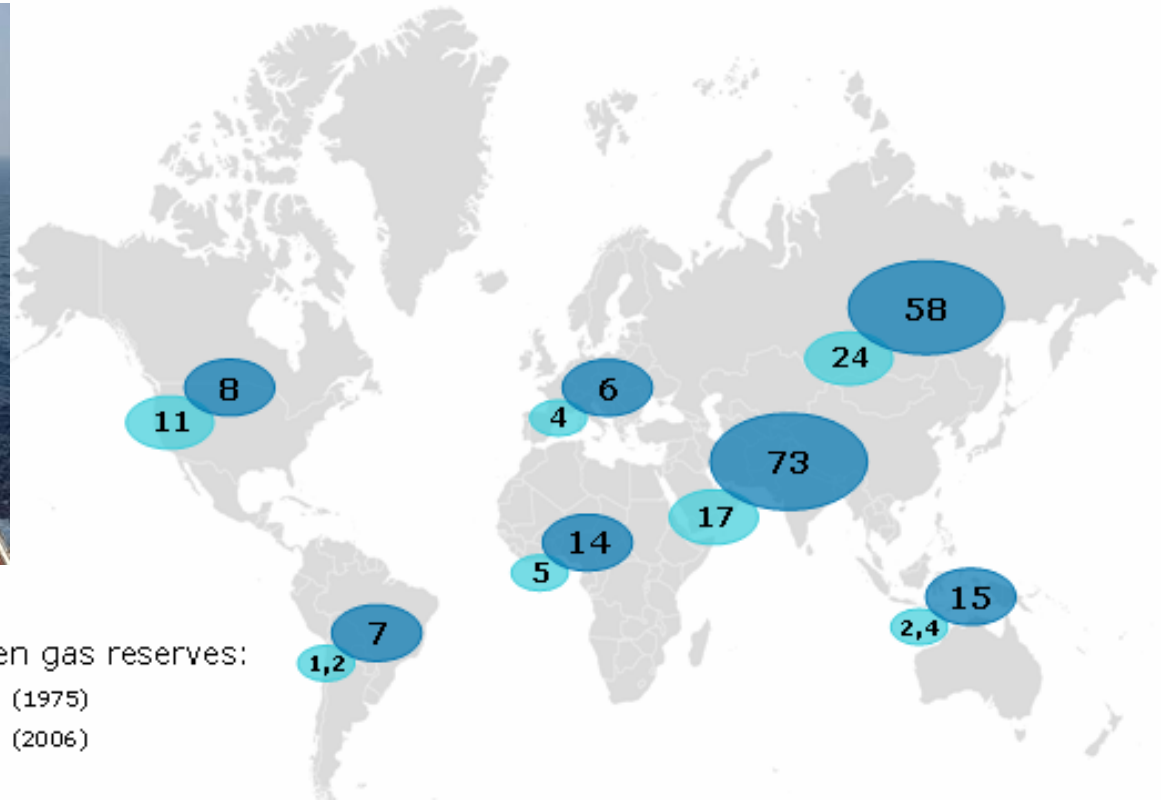


Increasing distance from source to market



Source: BP 2007

Major Inter-regional trade routes – 2010

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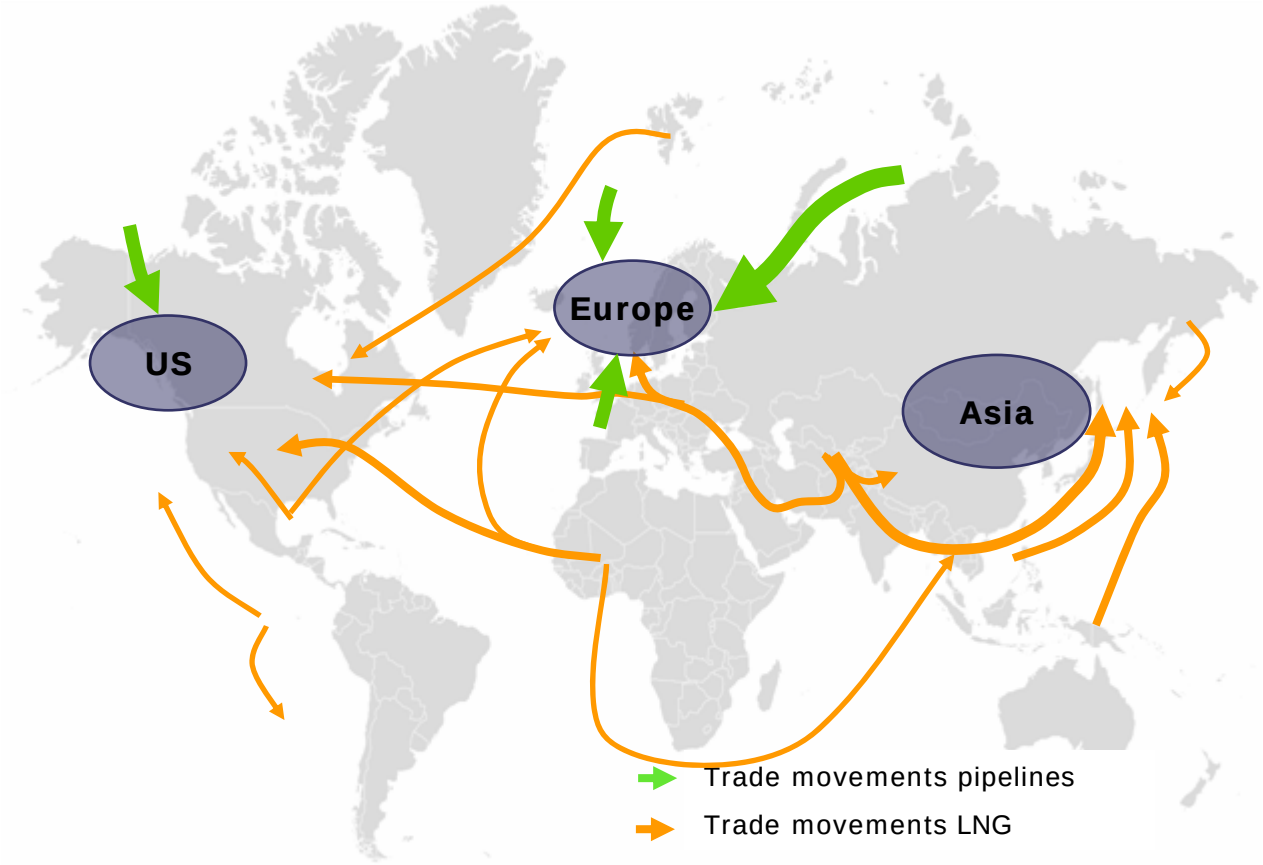

Sources: Industry information

The regulatory landscape and investment signals

Gas acquires new strategic importance as fuel of future

EU energy chief vows action to avoid future supply disruption

EU energy groups face antitrust crackdown

Kroes pledges tough line on 'market distortions'

Taxation can give the earth a chance

IEA forecasts growing gas demand in the future

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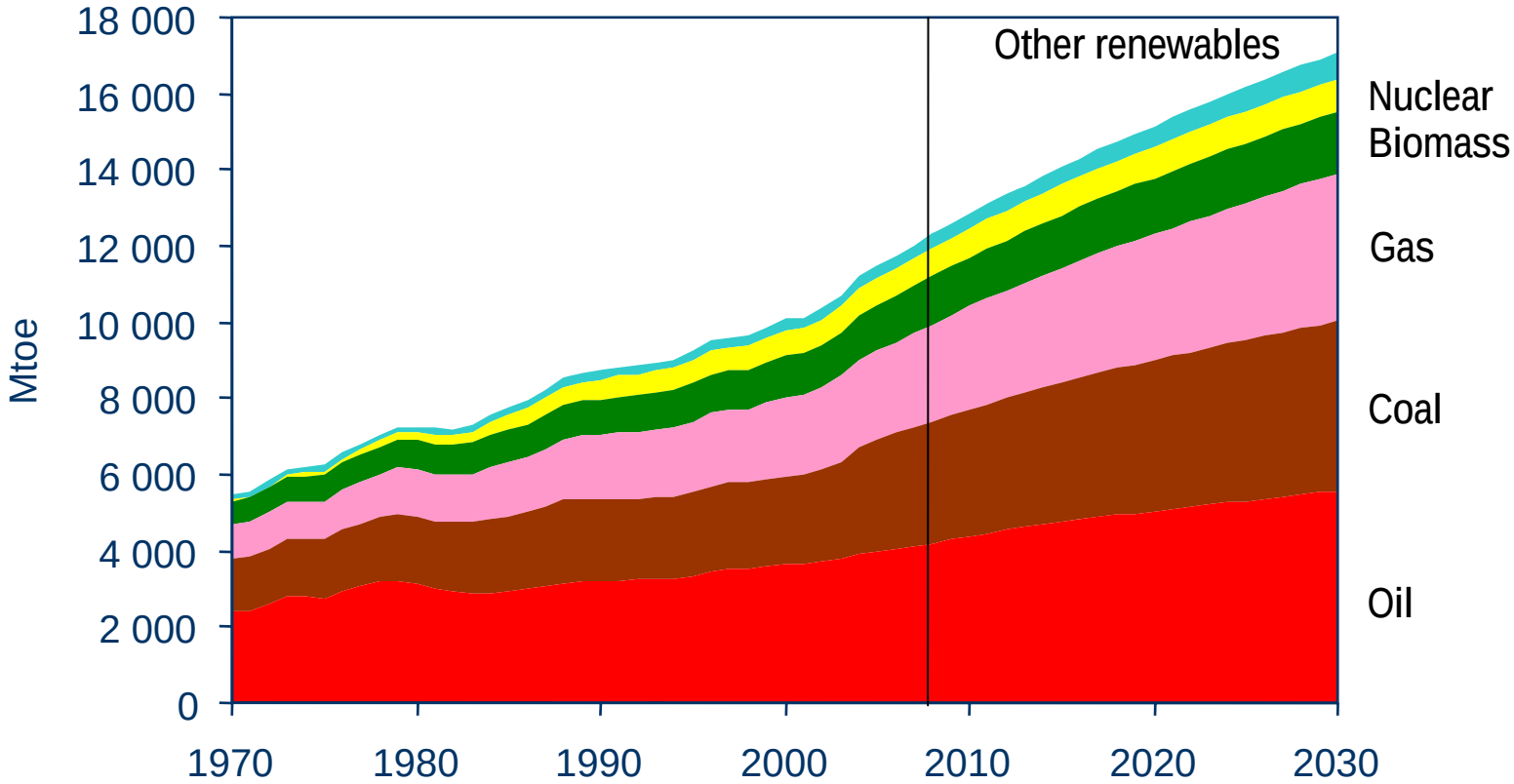

Source: IEA - 2007

Natural gas – lowest carbon content

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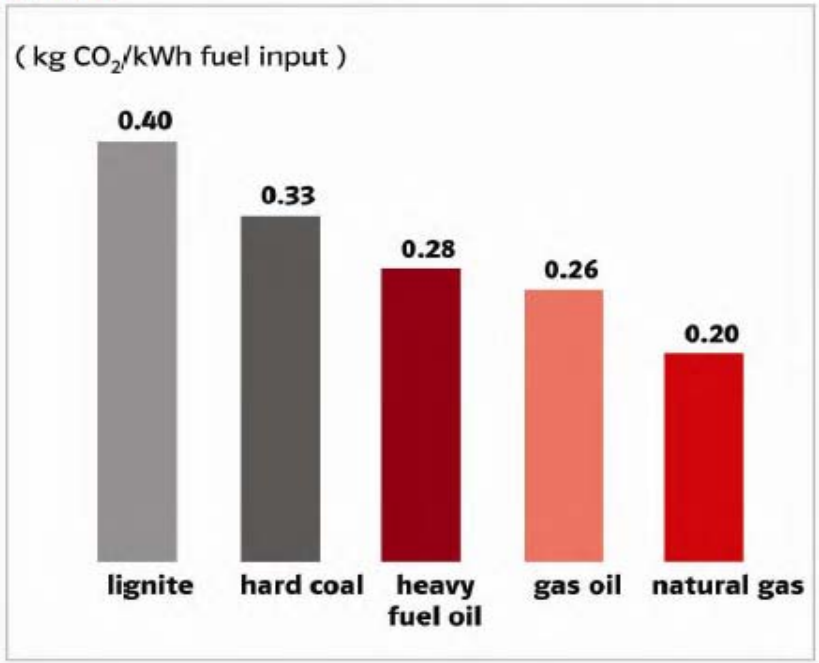
CO_2 formed by the combustion of fossil fuels:



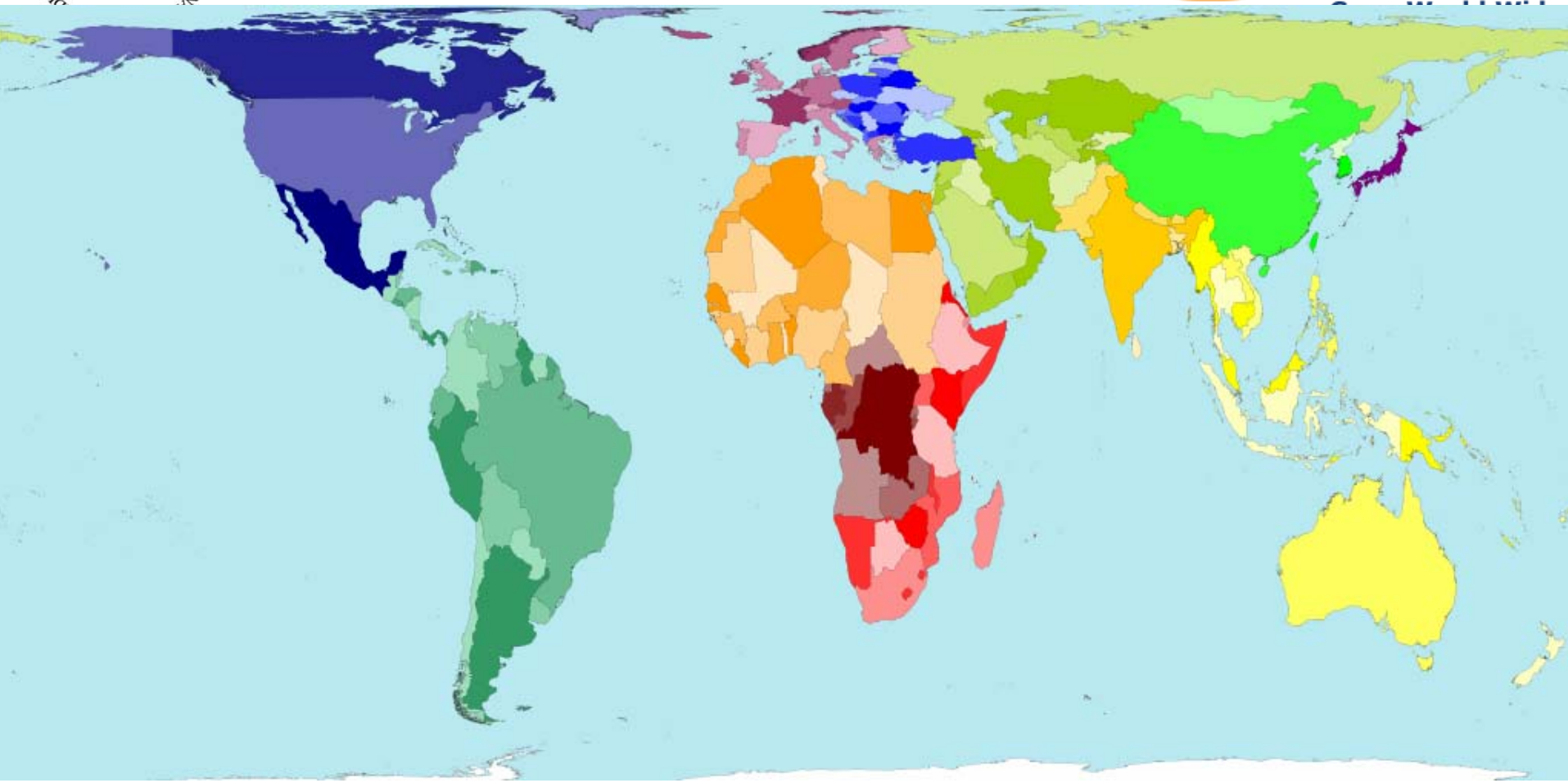
Source: E.ON Ruhrgas 2007

Key facts:

- Fossil fuels will be required to meet the world's energy demand well into the future
- Natural gas is the fossil fuel with the lowest carbon content
- Its extended use in existing and new application areas is a particularly good way of achieving a reduction in CO_2 emissions

World real proportions

News, Views and knowledge



Carbon Emissions Increases

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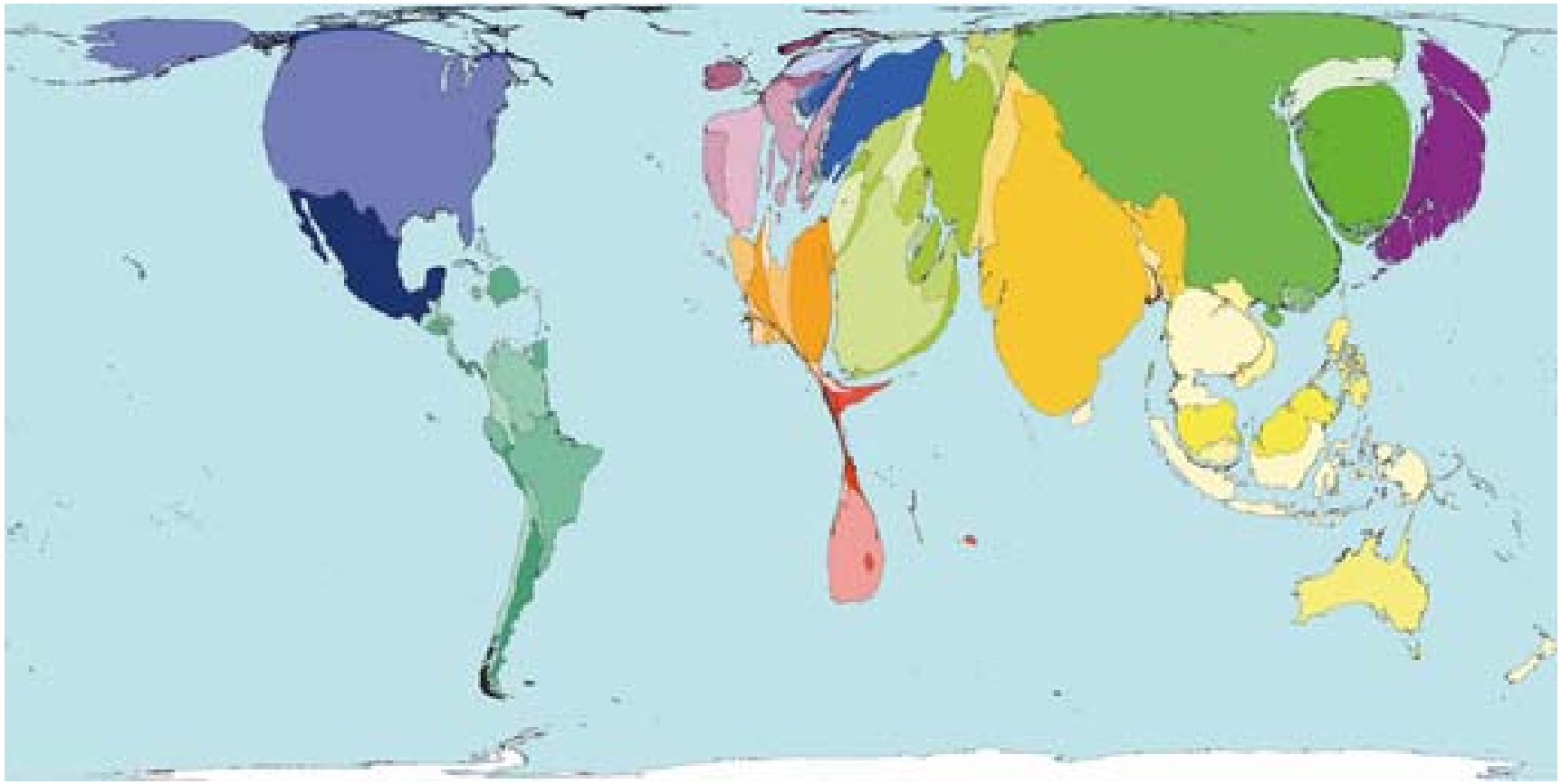

What will the future hold?

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Source: Point Carbon

Climate Changes on the agenda!

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The Nobel Peace Prize 2007

"for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change"

IPCC
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

WMO UNEP

Benefits of Natural Gas

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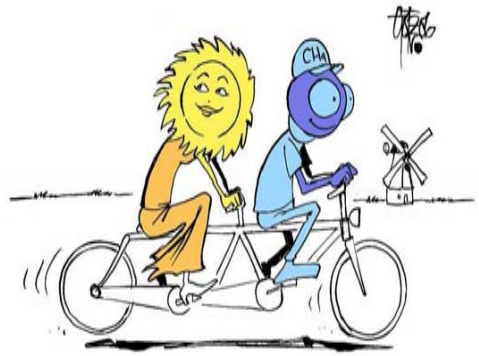
- Low carbon dioxide releases



Source: With courtesy of E.ON Ruhrgas

- Gas – transition fuel in a sustainable world of energy
- Natural Gas complements renewables

Carbon Capture and Storage

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Suche nach unterirdischen Speichern für CO_2

RWE Dea will bald mit seismischen Messungen beginnen – 60 Millionen Euro an Investitionen

Klimaforscher warnen immer massiver vor ansteigender Erderwärmung mit globalen Schäden. Aufgeschreckt suchen Wirtschaft und Politik nach Möglichkeiten, um drohende Katastrophen zu vermeiden. Als Klimakiller Nummer eins ist Kohlendioxid ausgemacht, das vor allem bei der Verbrennung fossiler Energieträger entsteht. Da sich CO_2-Gas bei der Stromerzeugung nicht vermeiden lässt, wird verstärkt nach technischen Verfahren gesucht, Kohlendioxid statt der Freisetzung in die Atmosphäre unterirdisch sicher zu speichern. Die schleswig-holsteinische Landesregierung hat gestern gemeinsam mit dem Energiekonzern RWE Dea und der Bundesanstalt für Geowissenschaften ein Erfolg versprechendes Speicherprojekt vorgestellt.

Geologische Analysen haben ergeben, dass sich der norddeutsche Raum möglicherweise für die CO_2-Speicherung eignet. Der Untergrund in Schleswig-Holstein lässt dabei bessere Bedingungen erwarten als in anderen Bundesländern. Daher hat RWE Dea beim Landesamt für Bergbau, Energie und Geologie entsprechende Untersuchungen beantragt. Wenn die erwartete positive Entscheidung vorliegt, will das Unternehmen in Nordfriesland, Ostholstein sowie vor der Nordseeküste außerhalb der Zwölf-Meilen-Zone mit seismischen Messungen den Untergrund ab etwa 800 Meter Tiefe nach geeigneten CO_2-Speichern erforschen. Mit einem vergleichbaren Verfahren wurde auch das ausgedehnte Erdöllager Mittelplate vor Friedrichskoog erkundet.

Umweltminister Christian von Boetticher versicherte, Lösungen für die Speicherung würden nur in umweltverträglicher Form akzeptiert. Georg Schöning, Chef von RWE Dea, sagte: „Über Millionen von Jahren gespeicherte Erdgasvorkommen zeigen, dass Gase langfristig geologisch sicher eingeschlossen werden können." Er rechnet mit Investitionen von etwa 60 Millionen Euro für einen Speicher. *D.G.*

DIE WELT

13 March 2008

Carbon Capture and Storage

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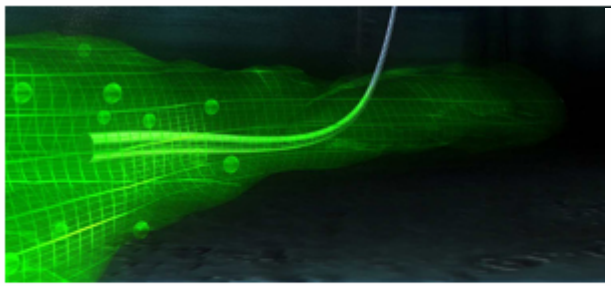
EU interest in Norwegian carbon storage

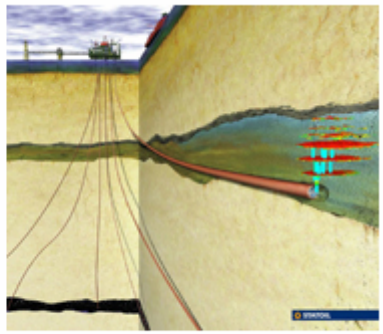
StatoilHydro's carbon management skills and experience attracted great interest when the UK ambassador to Norway organised a seminar on carbon capture and storage in Trondheim on 13 March.



EU politicians, researchers, public authorities and international at StatoilHydro's research and development centre in Trondhei more about carbon management.

The global energy demand will increase by 50 percent by 2030, and 80 percent of the energy supply will still come from fossil energy sources. Carbon capture and storage will therefore be one of several important measures taken to cut greenhouse gas emissions.

"Norway has valuable experience in this area, and hopes to inspire others," Bjørn Tore Godal said in his opening speech. He is the Ministry of Foreign Affairs' special adviser on climate and energy issues.



Sleipner CO2 illustration.

Source: StatoilHydro 14.3.08

Agenda

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- About IGU and the Triennium 2006-09
- Natural Gas in a Sustainable Environment
- **IGU projects and initiatives**

IGU offers various benefits to its members

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Networking

Promotion

Knowledge

Information

IGU supports “masterminds”

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THE IGU GAS EFFICIENCY AWARD

„Conservation and efficiency are the cheapest forms of new energy“

- **Development, realisation and promotion of gas efficiency related projects**
- **Members can nominate candidates**
- **2 x EUR 10,000 in 2008 and 2009**

->Deadline: End of May 2008

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secrigu@statoilhydro.com

IGU is a strong supporter of natural gas in transportation

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Concerted initiative towards authorities and CEOs

IANGV International Association for Natural Gas Vehicles

marcogaz TECHNICAL ASSOCIATION OF THE EUROPEAN NATURAL GAS INDUSTRY

IANGV marcogaz

24 Oct 2007

Message to National and Local Governments

NGVs (natural gas vehicles) – an Opportunity for National Benefits

This message is intended to make Governments aware of the energy, economic and environmental benefits associated with a growing NGV industry.

The **International Gas Union** (IGU[1]) has the objective of promoting the technical and economic growth of the gas industry. The **International Association for Natural Gas Vehicles** (IANGV) provides the NGV industry with an international forum, and aims to foster growth, safety, product development, standardisation and policy formation. The objective of **Marcogaz** is to serve its members by promoting appropriate technical conditions required for the market success of natural gas.

Growth of NGVs

At present there are 7.1 million NGVs around the World. The growth has been 30% per year over the last 3 years. There are 11,000 refuelling stations. These NGVs are estimated to annually use up to 22 Bcm (770 Bcf) of natural gas. In addition there are about 30,000 other vehicles powered by methane (eg tractors, airport service vehicles, marine terminal vehicles). Methane is also used as a fuel in ships, ferries and locomotives.

Between 1991 and today NGV growth has averaged 18% per year. In this time, NGVs have contributed greatly to improvement of local air quality, particularly in heavily polluted cities, e.g. Delhi. With growth continuing at 18% per year, there will be up to 65 million NGVs by 2020[2] replacing up to 3.5 million barrels of oil per day.

NGV Technology

NGV and refuelling station technology is mature, safe and reliable. The majority of NGVs on the road today are after-market conversions; however, most vehicle manufacturers have natural gas versions of popular models of cars, trucks and buses. Some vehicle manufacturers certify off-line conversion of their vehicles to natural gas. Technology for the filling of NGVs is safe and reliable and is often integrated into conventional petroleum stations. Natural gas cars can now also refuel at home.

NGV markets are technically and commercially mature. NGVs have significant environmental benefits with lower emission of substances which cause local air pollution, and with lower greenhouse gas emissions. Natural gas is the safest motor fuel available on the commercial market.

International Support

In July 2006 world leaders at the G8 summit, and in May 2007 the Energy Ministers of APEC[3], supported enhancement of global energy security through actions to promote energy efficiency in transportation and to diversify the fuel mix. In December 2003 the European Union endorsed the concept of natural gas replacing 10% of the petroleum in the transportation sector by 2020[4].

[1] See Appendix
[2] Source: IANGV
[3] Asia-Pacific Economic Cooperation (APEC) - is the forum for a group of 21 Pacific Rim countries
[4] Market Development of Alternative Fuels, Report of the Alternative Fuels Contact Group, European Commission, DG Tren, December 2003

Reduction of

- Greenhouse gas emissions
- Air pollutants
- Noise

IGU Information exchange

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- Organises conferences and supports information exchange among members

  - IGU Gas Research Conferences

  - Co-sponsor for LNG Conferences (LNG 16 in Oran, Algeria 2010)

- Liaison with international energy organisations

International Energy Agency
Agence Internationale de l'Energie

IGU Guiding Principles for Sustainable Development

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- Minimise environmental impact
- Adopt a precautionary approach
- Emergency preparedness
- Efficient gas utilisation
- Support research
- Transparent and objective communication

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Thank you
for your attention!

See you in Buenos Aires!

24th World Gas Conference
and Exhibition

October 5 – 9 2009

WWW.IGU.ORG.

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