

# BALTIC SEA FORUM

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Russia and new Challenges in the  
Baltic Sea Region

## **Natural Gas, LNG and the Baltic Sea**

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Director

Turku, Finland, 24 May 2013



# The global energy future

## Impacting the global framework:

- Rising population – from ca. 7 to 9 billion in 2050
- Human strive for a better life
- Technological progress
- Air quality & climate change concerns



## The world needs:

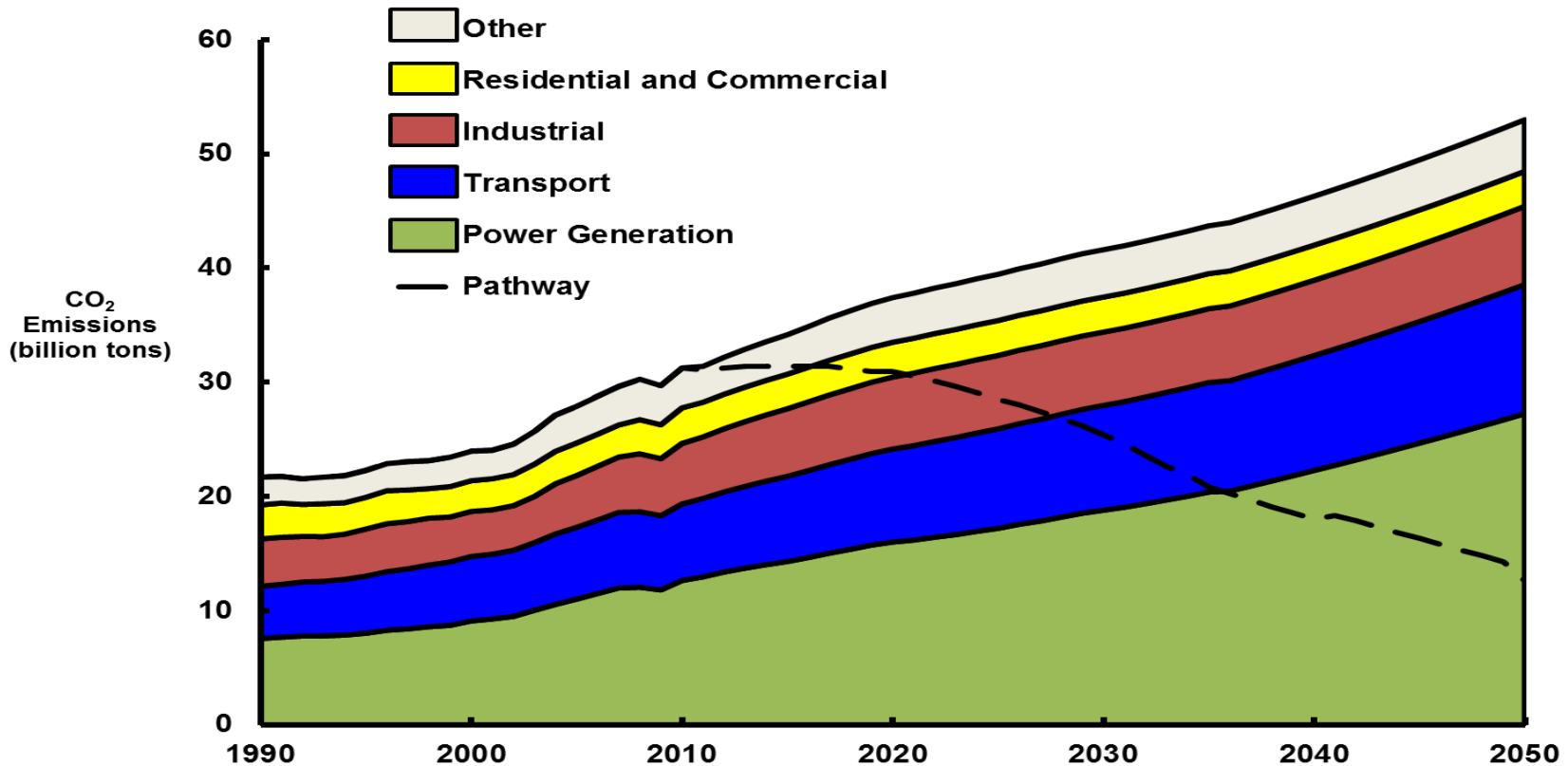
- More energy
- Cleaner energy
- Safe energy
- Affordable energy



# The Pathway towards a sustainable future

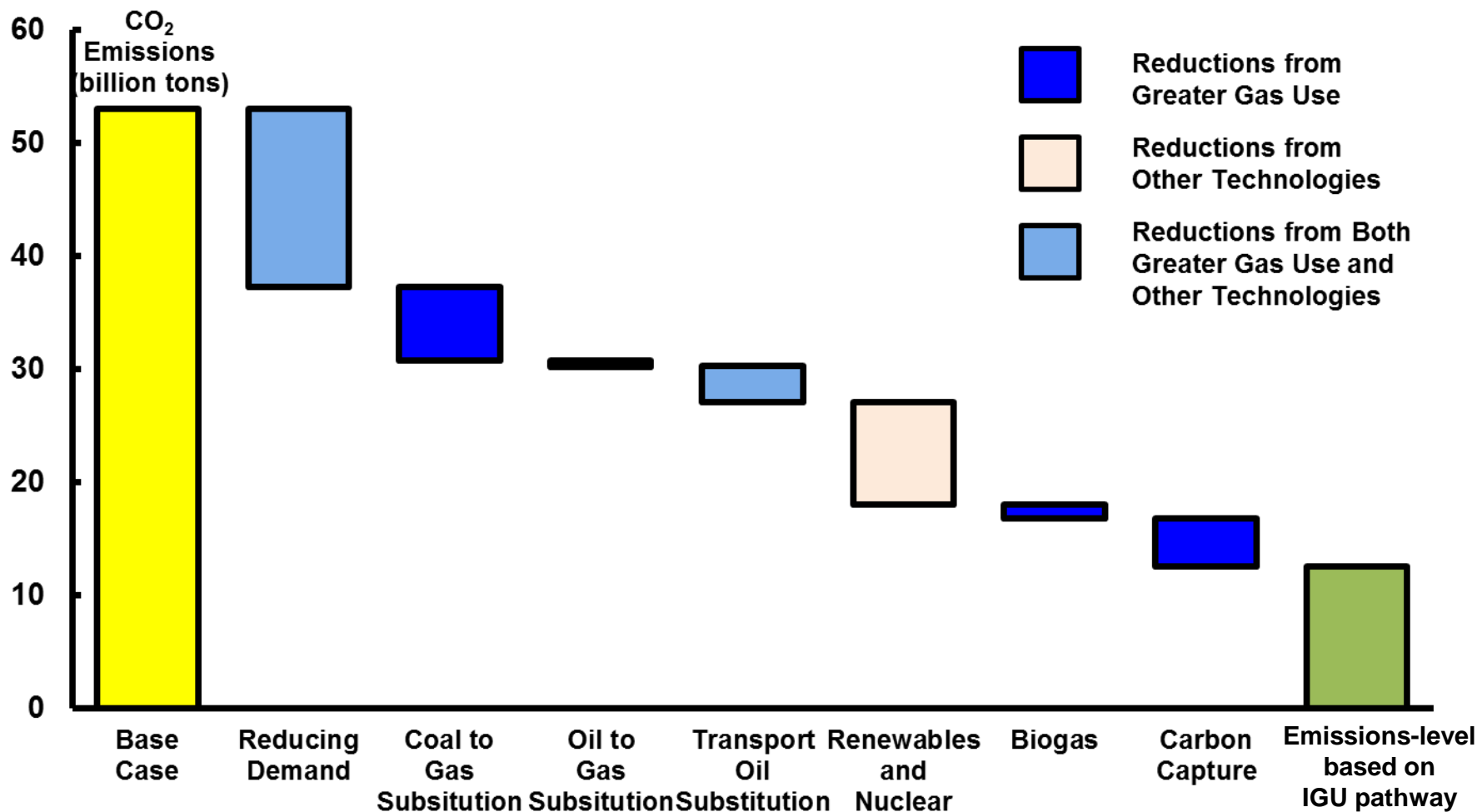
## Meeting future global energy needs – whilst addressing air quality and climate change concerns

### Global Emissions Trajectory Base Case



# Vision Pathway highlights various CO2 abatement options and technology choices

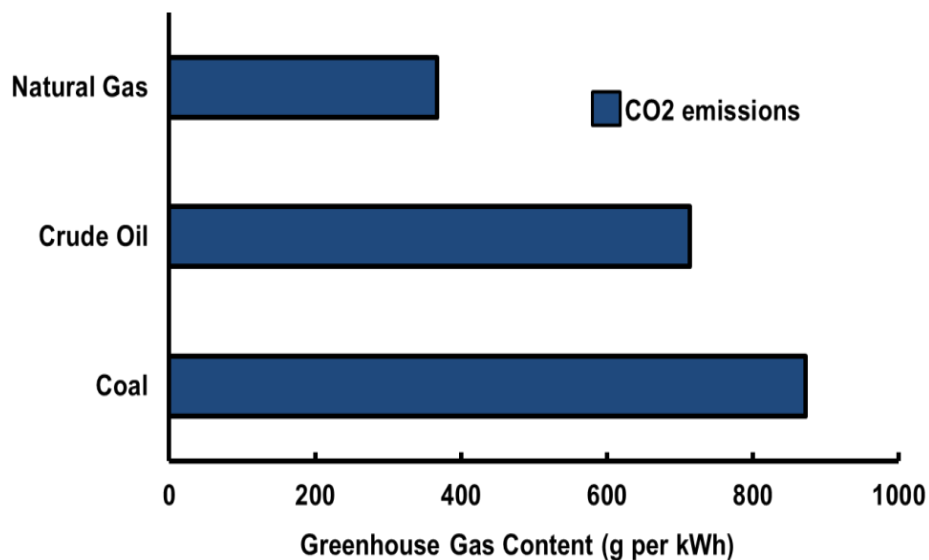
## Calculation for 2050



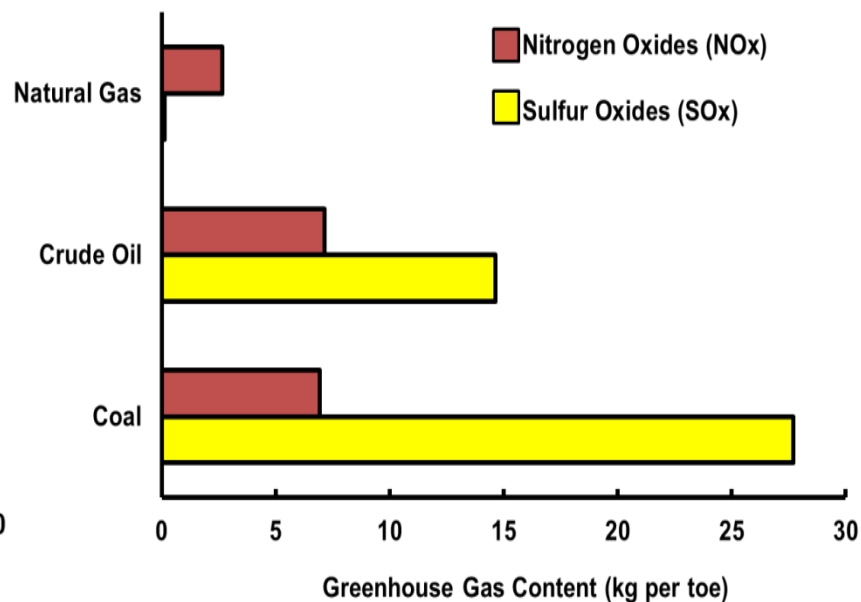
# Natural gas is a low carbon and clean-burning fuel

## Natural gas in the power sector

Carbon dioxide emitted during electricity generation by fuel\*



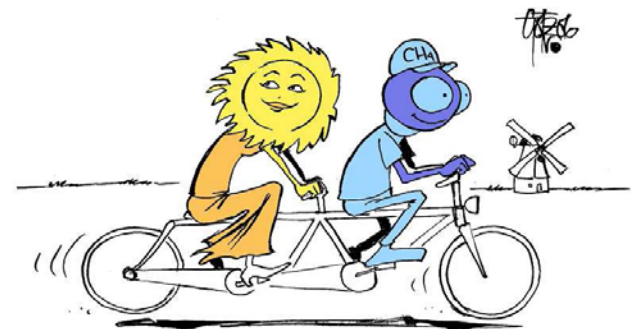
NOx and SOx content by fuel



Ad \*: Power generation efficiencies assumed: Natural gas 55%, crude oil 37%, coal 39%

# Wide range of usage options of natural gas

- **Electricity generation**
- **Residential & commercial**
- **Industrial**
- **Transportation**
- **Ideal partner for variable renewables**



# Natural gas can form the link in a sustainable future energy system

- **Gas-fired generation technology directions:**
  - Capture carbon through retrofit technology
  - Partnership with renewables
  - Greater inclusion of carbon-neutral biogas
- **Gas pipeline and storage systems provide future options for:**
  - CO<sub>2</sub>
  - Biogas
  - Hydrogen

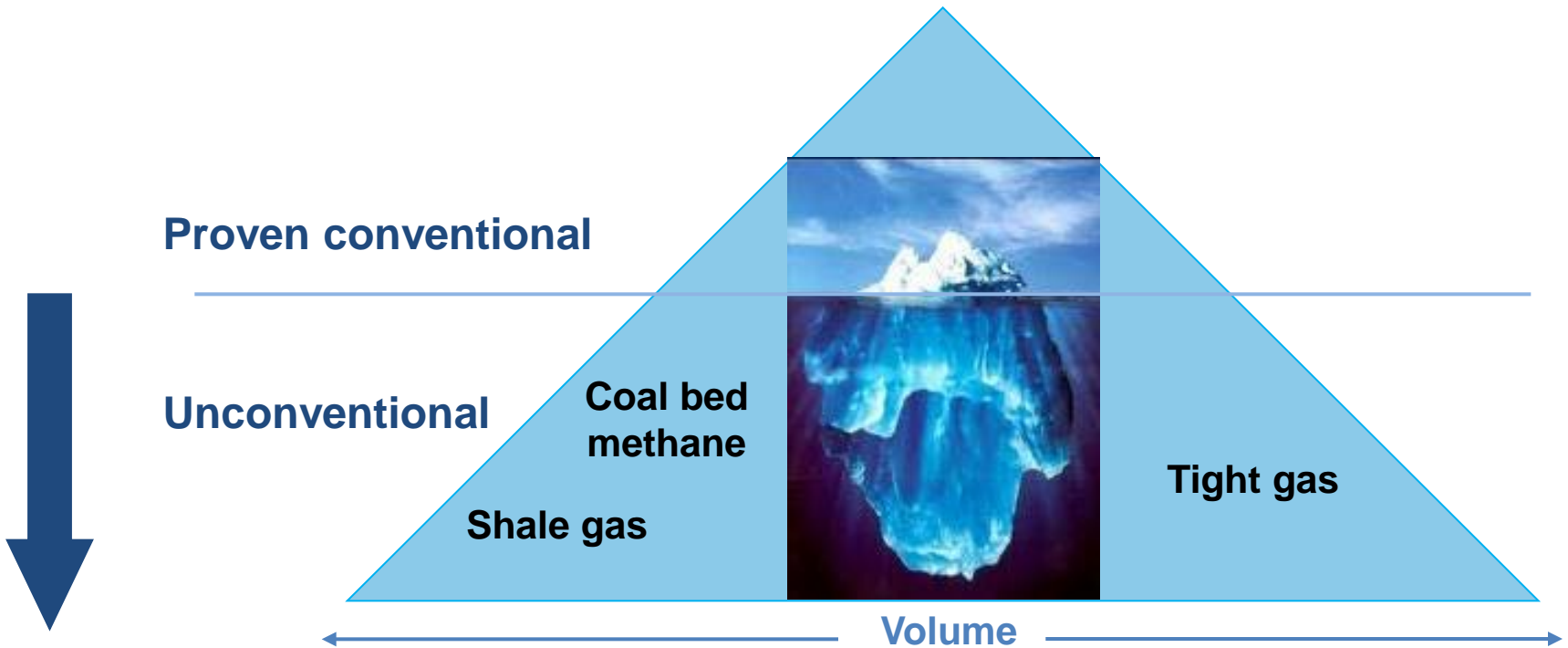


**Investment in gas infrastructure does not predetermine future energy landscape**



# Natural gas resources are abundant

## Technology – driving supplies

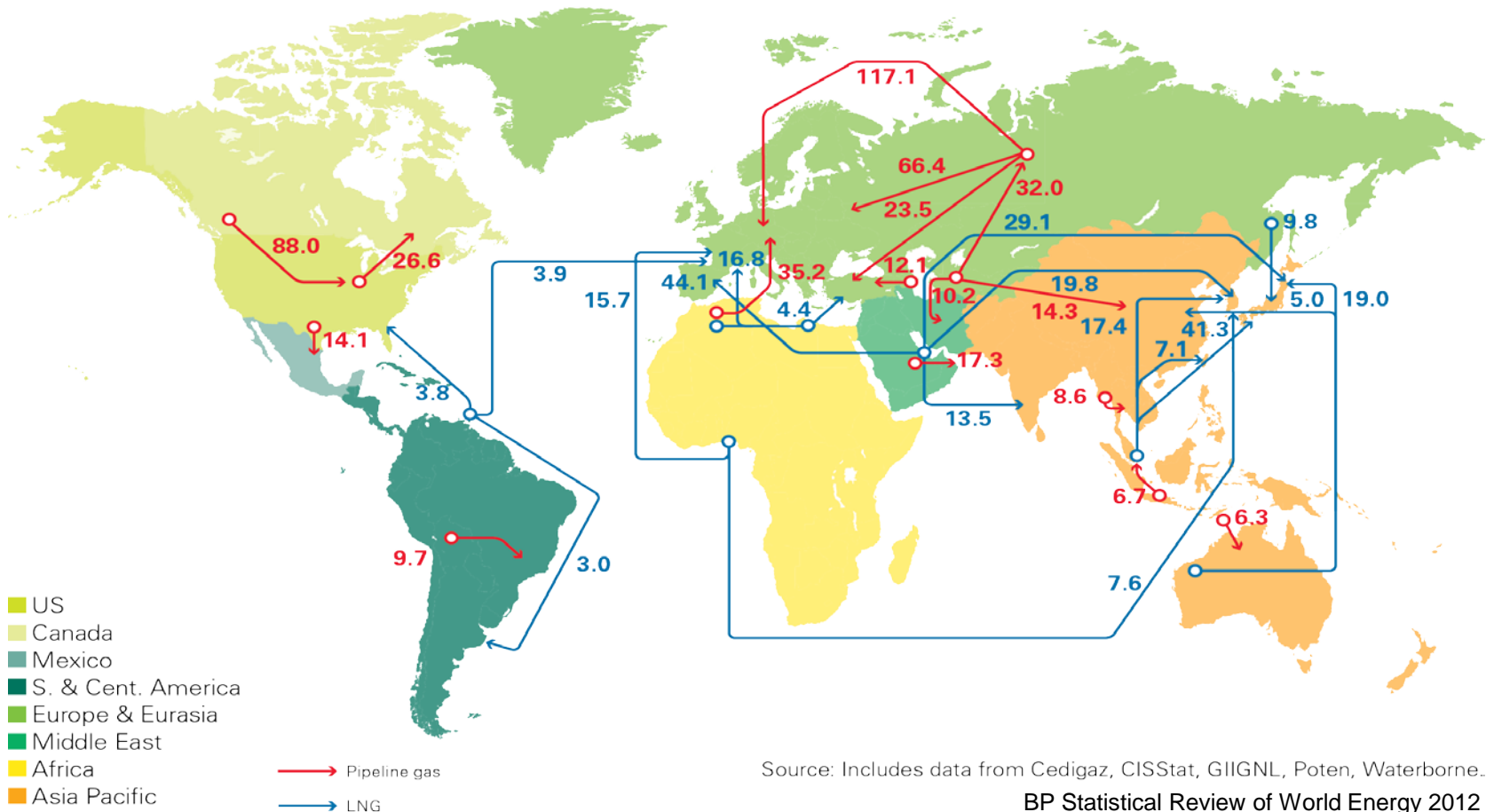


**Gas resources for more than 250 years (IEA)**

# Major gas trade movements- Pipeline & LNG

## Major trade movements 2011

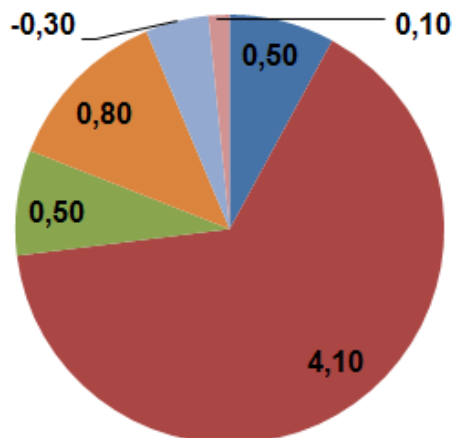
Trade flows worldwide (billion cubic metres)



Source: Includes data from Cedigaz, CISStat, GIIGNL, Poten, Waterborne.  
BP Statistical Review of World Energy 2012

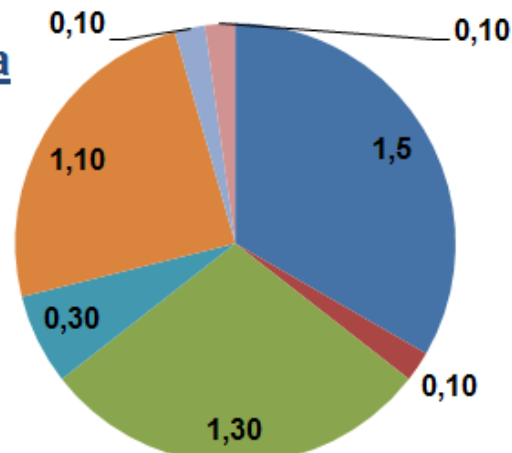
# Baltic Sea region: Primary Energy Consumption Mix 2011 (MTOE)

Estonia



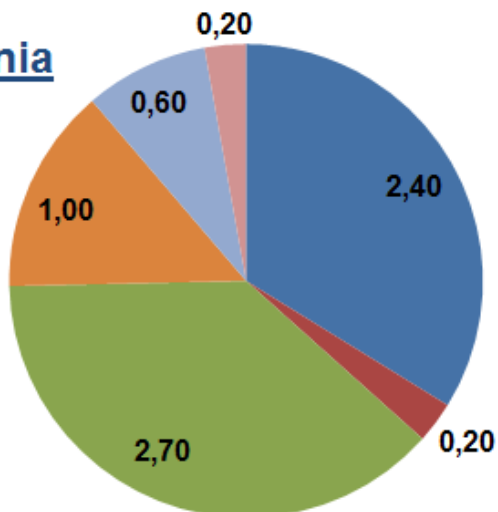
Total: 5,6

Latvia



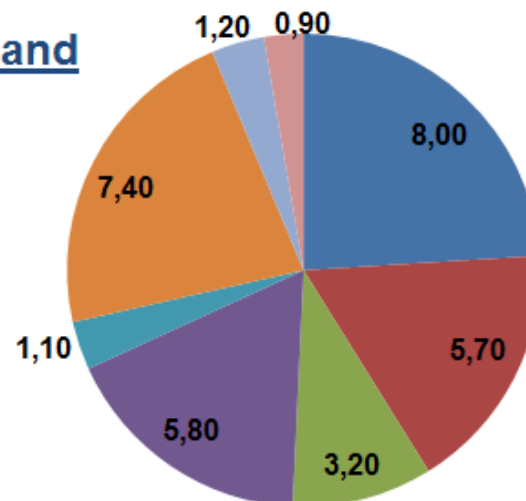
Total: 4,5

Lithuania



Total: 7,3

Finland



Total: 33,2

- Oil
- Solid Fossil Fuels
- Natural Gas
- Nuclear Electricity
- Hydro
- Other Renewables
- Electricity net imports
- Others

## Requirements

- Energy efficiency & savings
- Use more gas in power generation and transportation
- Renewable energy and gas as partners
- Develop Carbon Capture and Storage & utilisation technology
- Support innovation – without predetermining future technologies
- Realise synergies of integrated energy concepts

