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**Article**

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## ENERGY AND CLIMATE NEWS

MARC GRONWALD AND JANA LIPPELT\*

### Reserve-to-production ratio

How long will resources last? The Reserve-to-Production (R/P) ratio provides information on how long exhaustible reserves will last at current production rates. It is based on the reserves of a resource, i.e. the amount that can be produced under given technical and economic conditions.

There are some striking changes compared to the situation 3 years ago. The R/P ratio of both Libya and Canada, for instance, increased considerably – in both cases it now is greater than 100 years (see BP 2012). The causes of these developments, however, are entirely dif-

ferent from one to another. In the case of Libya, the main reason is the oil production collapse in the aftermath of the revolution. In Canada, however, this increase is based on an increase in the reserves that is related to the inclusion of oil sands. The development of the R/P ratio for coal in Germany is similar: lignite reserves grew significantly. According to BP (2012), oil production in Saudi Arabia, the United Arab Emirates and Qatar reached record levels in 2011. However, this affected the R/P ratios of these countries only marginally and is not reflected in the map (see Figure 2). These considerations show that the R/P ratio is a measure that generally provides some information on how long resources will last. Both the reserves themselves and current production, however, depend on various factors. A careful interpretation of this measure should take this into account.

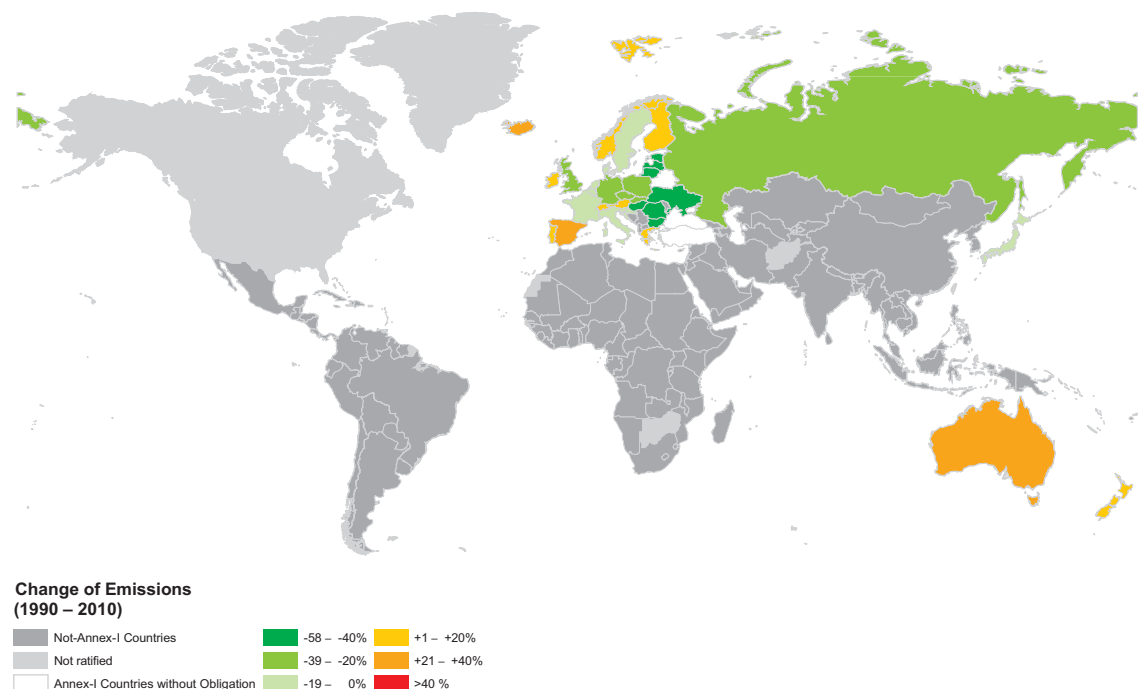
### Worldwide CO<sub>2</sub>-reduction

2012 is an important year for climate protection: both the first commitment period of the Kyoto protocol and

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Figure 1

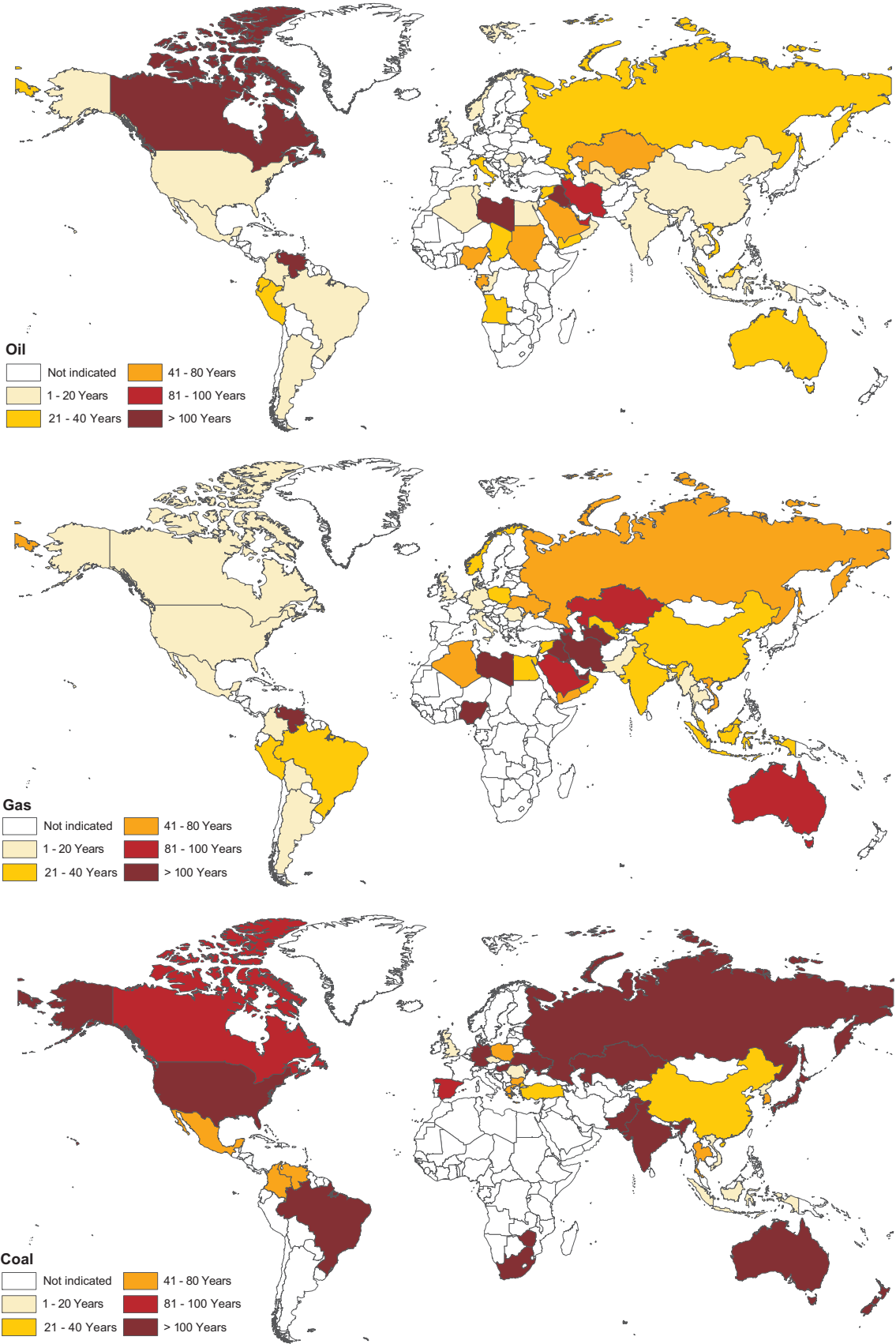
### REDUCTION OF GREENHOUSE GASES UNDER THE KYOTO-PROTOCOL



Source: UNFCCC database.

Figure 2

RESERVE-TO-PRODUCTION RATIO 2011



Source: BP (2012).

the second trading period of the European Union Emission Trading Scheme (EU ETS) are due to end in December 2012. Since the beginning of January the aviation industry has been covered by the EU ETS (see BMU 2011). Moreover, the one-billionth certified emission reduction (CER) was issued to a project at a manufacturing plant in India that switched its fuel source from coal and oil to locally gathered biomass in September (see UNEP 2012).

By 2012 the EU member states will have exceeded their emissions reduction targets set out in the 1997 Kyoto protocol by 8.8 percent. Compared to 1990, overall greenhouse gas emissions in the EU27 have decreased by about 18 percent, which is 10 percent higher than the figure agreed (see European Commission 2012). Unlike 2008, additional countries have also reached their reduction targets, including Belgium, Portugal and Ireland. Other countries are also close to reaching these goals, either through their own reductions or thanks to their purchase of emission certificates (Luxembourg, the Netherlands and Spain). Figure 1 shows that, other than in 2008, no Kyoto-country emitted 40 percent of greenhouse gases compared to the base year of 1990.

In the wake of the climate conference in Durban 2011, however, Canada resigned from the Kyoto Protocol and had little chance of meeting its targets. Moreover, Japan, New Zealand and Russia are opposed to continuing the Kyoto Protocol and will not sign the protocol in the future. Alarming, global CO<sub>2</sub> emissions also increased by 51 percent between 1990 and 2011, and soared by 286 percent and 198 percent in China and India respectively (see Joint Research Centre 2012).

During the climate conference in Durban a new binding global framework for all countries was concluded, which is not due to come into force until 2020. In addition to the developed countries, this framework should also include emerging and developing countries. Furthermore, a second EU-wide commitment period starting in 2013 has been agreed upon, which will (in addition to the EU27 countries) also include Croatia and Iceland (see European Commission 2012). Besides electricity and heat production, the largest emitters include road transport and the cement industry. Emissions from road transport have increased by 16 percent in recent years (20 percent in the EU27). In order to achieve the targets set for the future, it will also be necessary to achieve reductions in non-EU ETS sectors, e.g. waste management, agri-

culture and the construction sector. The most recent climate conference in Doha, however, only achieved a minimal degree of consensus.

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