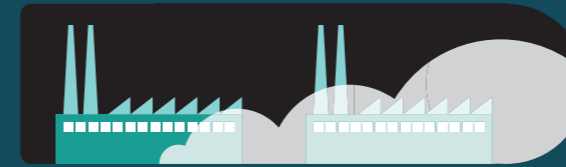


## Risks and Opportunities for Extractive and Primary Industries

Climate change is likely to affect many aspects of natural resource exploration and extraction, and the production of industrial commodities. Investments necessary for adaptation and mitigation measures are in many cases cost-effective.

Key Findings from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) For more information [cisl.cam.ac.uk/ipcc](http://cisl.cam.ac.uk/ipcc) and [bsr.org](http://bsr.org)



Greenhouse gas (GHG) emissions from industry almost doubled between 1970 and 2010. This reflects the steady growth in world production trends for extractive mineral industries and primary industries.



Primary industry accounts for around 30% of total global GHG emissions.

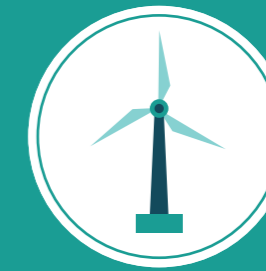


Most sector scenarios project that global demand for industrial products will increase by 45–60% by 2050 relative to 2010 production levels.

### CASE STUDIES



**EMISSION EFFICIENCY**  
Reduced emissions per unit of energy used



**MINING**  
Switching from diesel-powered machinery to low-carbon energy sources is an important GHG mitigation strategy for this sector.



**ENERGY EFFICIENCY**  
Improving the ratio of energy consumption to production of materials



**CEMENT**  
Carbon dioxide (CO<sub>2</sub>) savings of 40% have been reported on projects using 'ultra high-strength' concrete.



**MATERIAL EFFICIENCY**  
Reducing the amount of raw material needed to create a product



**CHEMICALS**  
In the Netherlands, material efficiency measures in plastics manufacture could halve emissions associated with plastic packaging.



**PRODUCT-SERVICE EFFICIENCY**  
Using a product for longer and more intensively



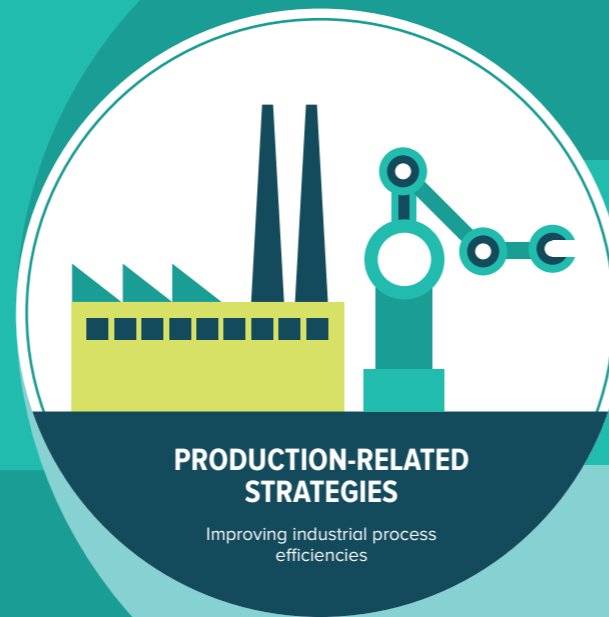
**METALS**  
Modular product designs within the aluminium sector allow longer product lives and so drive an overall reduction in demand for new material.



**DEMAND REDUCTION**  
Reducing overall demand for new product materials, by changing consumption patterns



**PULP AND PAPER**  
Reducing paper weight for newspaper and office use could cut paper demand by 37%. Increased recycling, printing on demand, removing print to re-use paper, and substitution by e-readers could also reduce demand.



#### RISKS TO INDUSTRY

Physical impacts of climate change, such as rising sea levels, higher temperatures and more extreme weather, could decrease energy supply security, reduce availability and accessibility of natural resources for production, damage industrial and transport infrastructure and reduce labour productivity.

#### MITIGATION

Absolute reductions in emissions from industry will require efficiency improvements in all parts of the life cycle. Emissions can also be reduced by curbing demand. The broad deployment of best available technologies could reduce emissions intensity by about 25%, with innovation delivering a further potential reduction of 20%.