

Revegetation of mineral sand dunes © Rio Tinto

## Sustainable Development and Natural Resources

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Department of Enterprise, Trade and Investment  
Geological Survey of Northern Ireland

## What are Natural Resources?

Natural resources can be thought of in five overlapping ways. Each of these reflect values that we associate with them

1. Raw materials - **minerals** and biomass
2. Flow resources – **geothermal**, wind, tidal and solar energy
3. Environmental - **water, soil** and air
4. Space is required to produce or sustain all the above
5. Biological - species and genetic information



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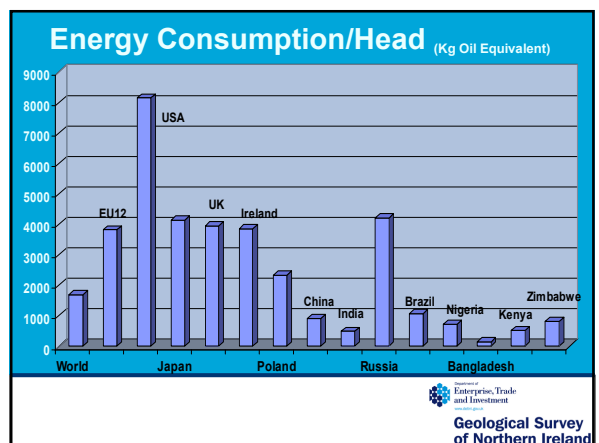
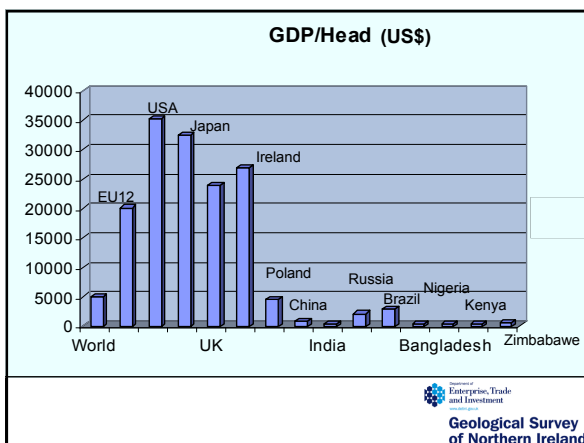


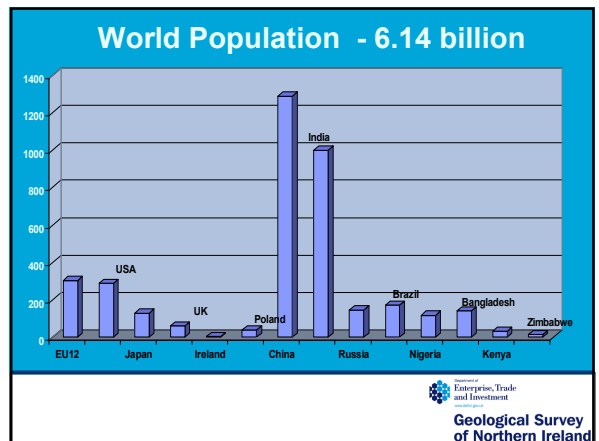
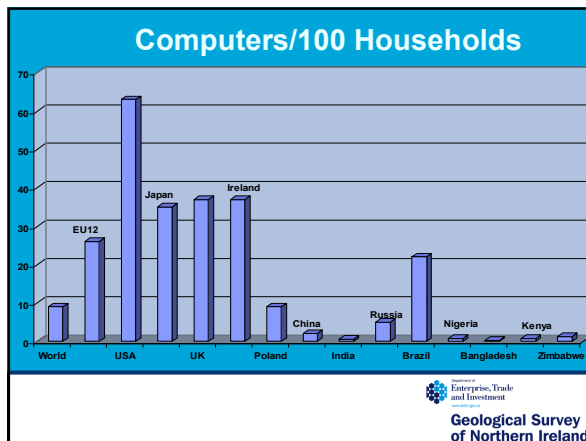
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## Sustainable Development

1. Has arisen because of population increase and land and many resources are finite
2. It is about getting a balance between development, government, society and environment by trying to equitably share development benefits
3. It is also about doing more with less, developing in a less consumer-intensive manner and reducing waste streams
4. *But.....there is a lot of rhetoric and hiding behind language rather than finding real solutions*

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### Sustainable Development

#### Some home truths

1. Evolution is development; all species are designed to develop and flourish, usually at the expense of other species. But growth is normally self-limiting - unsustainable populations will die back or become extinct
2. No development and no life-form has zero impact on the environment, but the environment on this planet has an extensive ability to absorb change

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### Sustainable Development

#### home truths cont...

3. The human population is projected to double by 2050 (from ~6 bn to ~12 bn). Is this sustainable? Why is no-one seriously addressing *this* question?
4. Newly mined materials will be essential to support this growing population. It is estimated that 5x the amount of metal mined in the world to date must be mined in the next 50 years to satisfy this growth
5. 5% of the world's population consumes 30% of the world's mineral wealth

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### Sustainable Development

#### home truths cont...

6. Laudable objectives of reducing poverty imply significant increases in raw materials usage to build infrastructure and meet new consumer demand in developing countries.
7. Per capita consumption rates in the developing world are growing fast, and would be huge if they matched US rates.
8. Recycling cannot satisfy this demand when population and per capita consumption are growing.

**Thus, we have no option but to continue mining**

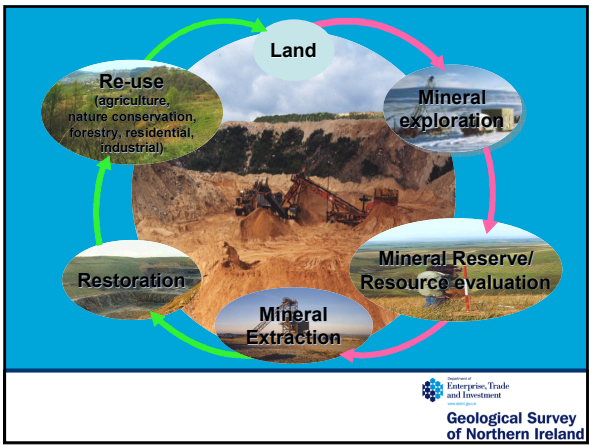
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### Living requires materials

**If you cannot grow it**

**You have to extract it**

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# What is 'Sustainable Minerals'?

- 1987 Brundtland Report:  
  
'Meeting the needs of the present without compromising the needs of future generations'
- Jonathan Porritt:  
  
'Sustainable Development is the only intellectually coherent, sufficiently inclusive, potentially mind-changing concept that gets even half-way close to capturing the true nature and urgency of the challenge that now confronts the world'

*GMI, 2002*



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**BHP Billiton**

Sustainable Development Policy States:  
 "At BHP Billiton, we are committed to sustainable development. Health, safety, environment and community responsibilities are integral to the way we do business..."

To find our more about Sustainable Development at BHP Billiton visit:

- [HSEC Governance](#)
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## How Can We Apply Sustainable Minerals in Practice?

Use Geoscience Data and Expertise to:

- Locate and quantify resources (of course)
- Assist in strategic planning (of land and resource usage)
- Provide solutions for decision makers
- Get to the heart of policy drafting
- Get the balance right between development, environment & community

Encourage Best Practice in:

- Minimising negative impacts on environment & communities
- Maximising resource usage & minimising waste
- Recycling / Re-usage
- Dialogue with all stakeholders, especially communities
- Lifecycle planning at pre-syn- & post-mining stages



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## Corporate Citizenship: A New Paradigm

### OLD

Polluter pays  
Tangential  
Regulation and compliance  
Crisis-management  
'Do no harm'  
Public Relations  
Description  
Regulatory Drivers

### NEW

Pollution prevention  
Strategic  
Rights and responsibilities  
Precautionary approaches  
'Guarantee positive good'  
Social Reporting  
Indicators  
Financial Drivers

Source: Alyson Warhurst, Warwick University



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## From Rights To Responsibilities

1. Gains emanating from the transformation of subsurface capital (e.g. minerals) contribute more positively to sustainable development
2. Pro-active interpretation of environmental and social responsibility beyond legal obligations to employees and shareholders
3. Products contribute to QoL and wellbeing
4. Sustainability Performance Management, Sustainability Indicators and Sustainability Reporting



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## Groups of Indicators

### 1. Economic Sustainability

- Sustainable economic performance
- Economic impacts of the industry
- Employment impacts of the industry

### 2. Environmental Sustainability

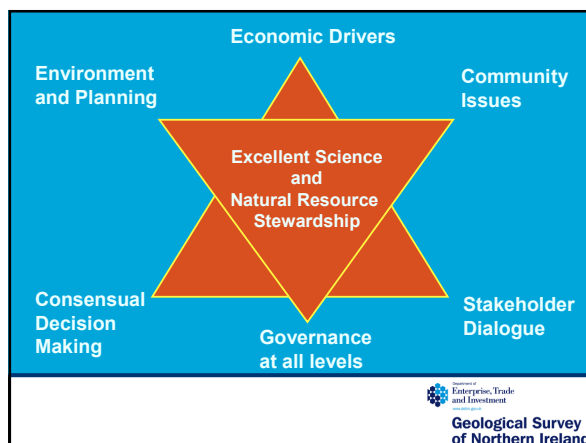
- Natural resource protection
- Environmental strategy
- Manage local environmental impacts

### 3. Social Sustainability

- Internal stakeholder relations
- External stakeholder relations



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