

# SUSTAINABLE DEVELOPMENT OF MINERALS

## □ What is 'sustainable development'?

Sustainable development is most commonly defined as '*meeting the needs of the present without compromising the needs of future generations.*' This is clearly a major challenge as development of any sort involves use of raw materials, energy and human resources. Sustainable development seeks to attain a balance between economic development, environmental protection, community benefits and government responsibilities. The fundamental aim is for the benefits of development to be maximised as widely as possible and for negative impacts on people and the environment to be minimised.

In 'unsustainable' development there is a narrow focus on commercial benefits alone. In the worst cases this may lead to serious environmental damage, exploitation of employees and local communities and increased poverty. Sustainable development recognises that development is usually driven by the market, but requires that the profit and benefits are not made without taking into account the environmental and social costs.



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□ **Minerals sustainability affects everyone**

Minerals are a vital resource on which the construction, manufacturing and energy industries depend. This demand should be met as far as is practicable at the least environmental cost and without creating environmental damage in other countries. Minerals sustainability issues affect everyone who uses mineral products. This includes anyone who lives in a house constructed of stone, brick or concrete, drives a car or rides a bicycle, uses a road or railway, or consumes electricity. It is individual consumption that ultimately creates the demand for mineral extraction. For example, in a 78 year lifespan the average UK resident consumes 300 tonnes of fossil fuels, 275 tonnes of aggregate minerals and 17 tonnes of steel. A large city in the developed world, such as London, relies on mineral products from many countries. The mineral development that supplies the raw materials to meet these needs creates wealth far from the communities and environments that experience the direct, often adverse, impacts of mining.



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□ **Sustainable minerals development in the UK**

In the UK mining and quarrying are regulated through the planning system that takes account of the national, regional and local legislation, policy and guidance that must be followed. The Planning and Compulsory Purchase Act (2004) places sustainable development at the heart of planning and require a sustainability appraisal of development documents. The system aims to meet the national requirement for minerals at the least social, economic and environmental cost, providing the raw materials essential for industry and needed to build the houses, schools and wider infrastructure required by sustainable communities.

The sustainable development objectives for minerals planning in England are to conserve minerals as far as possible, while maintaining an adequate supply, and to ensure that the environmental impacts caused by the mineral operations and the transport of minerals are minimised. The system also aims to minimise the production of waste and encourage recycling. Efficient use of materials is also important, especially the appropriate use of high-quality materials. Areas of designated landscape or nature conservation value are generally protected from mineral development, while mineral resources that are, or may become, of economic importance are safeguarded from unnecessary sterilisation caused by surface development such as house building.



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Before permission is granted for extraction all aspects of the proposed development are examined and stakeholders are consulted. The need for the mineral product and the location of the site are fundamental considerations, while plans for the management of the operation and for the monitoring and control of

impacts are also scrutinised. Sites with the least impact on the landscape, ecosystems and the quality of life of local communities are favoured. Particularly important are plans for land and community care once quarrying or mining has ended. After closure many sites are turned over to nature conservation and recreational use with associated benefits for biodiversity and local communities e.g. the Bluewater shopping centre in Kent and the National Water Sports Centre in Nottingham.

Economic instruments, such as the Aggregates Levy and Landfill Tax, are employed to encourage recycling and the use of waste and secondary materials thereby helping to conserve resources. Some of these revenues are returned to community-based environmental projects related to mineral development.

□ **A legacy of environmental damage**

Although it is unfair to judge the past by the standards of the present day, we can learn from former mining and quarrying practices which, both in the UK and globally, were not sustainable. The most obvious negative impact of mineral extraction is landscape damage. This may take the form of large, unsightly and hazardous holes in the ground or of vast piles of mining waste such as those produced by slate quarrying in Wales and the Lake District and by mining in the UK coalfields. Acid mine drainage from former coal and metal mines has, in some areas, polluted the landscape where acidic water charged with heavy metals has leaked from mine workings and waste piles.



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□ **Mining has not always helped communities**

Mining-generated wealth has the potential to improve the economy, infrastructure and quality of life of the host country, region and community. However, this has not always been the outcome and, for a variety of reasons, local communities dependent solely on a single industry do not always benefit in the longer term. Arguably, the UK coalfields provide an example of communities that have not enjoyed long-term, post-mining benefits from mineral extraction. They remain areas of relative poverty and unemployment in the UK despite over 200 years of coal mining that underpinned the industrialisation of Britain. The Durham coalfield alone employed over 160 000 people between 1913 and 1923, falling to 20 000 by 1979. Whilst the mines were working the communities thrived but inadequate planning for later diversification through restoration and afteruse contributed to their problems when the mines closed.



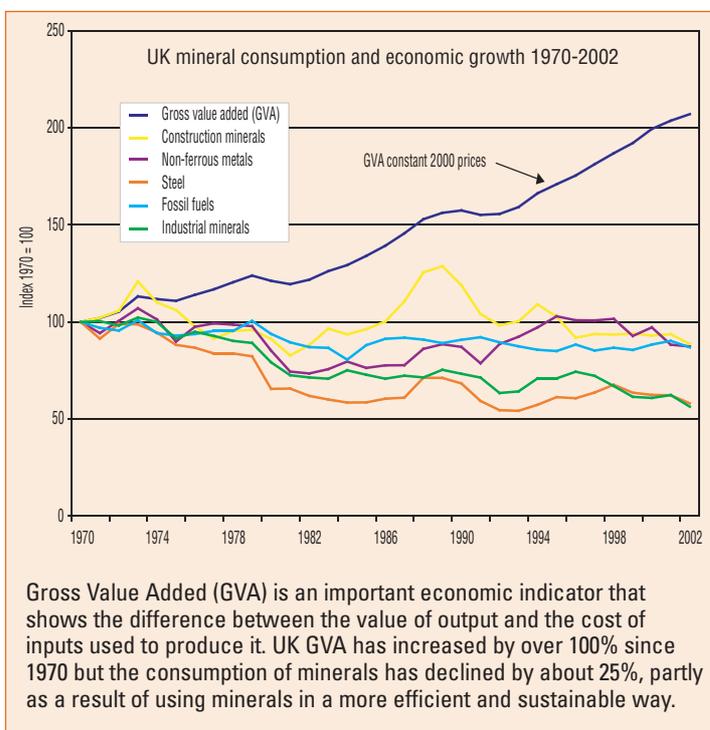
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**Sustainable development of minerals in practice**

- Applying the highest standards of environmental management
- Adopting an open, transparent and inclusive approach to development
- Communicating regularly with all interested parties
- Ensuring benefits are divided fairly
- Ensuring optimum use of raw materials
- Reducing energy use and waste generation
- Recycling and developing new products from 'waste' materials
- Early planning for mine/quarry closure

□ **Providing for the future**

Although the basic principles of sustainable development will remain valid, the ways in which they are applied will evolve with changing need. It is in both our present and future interests to strike the optimal balance between mining and quarrying, community needs and the environment to ensure that we maintain the supplies of minerals that are required for economic growth while leaving adequate resources without an accompanying burden of environmental damage.



**Proposed restoration of Torr Works limestone quarry, Somerset**



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