Mining and geoconservation

Mining versus geoconservation is often addressed as a source of conflict. Frequently, misconceptions and misleading arguments are used to explain this apparently difficult relation. However, the two activities may coexist. The demystification of some preconceived ideas (see i-iv below) is thus necessary.

1. "Geoconservation wants mining activity to stop." Since the Stone Age, humans use all types of geological materials, either directly or after being modified by some type of industrial handling. The modern society needs huge amounts of geological resources to satisfy all sorts of growing consumer demands. Hence, our society depends on mining, and no one is willing to lower their living standards to avoid an intensive exploitation of Earth resources. Geoconservation does not require mining to stop; it just wants to save the most significant vestiges of the Earth's long history for the use of society.
2. "Mining is always negative regarding geoconservation." Worldwide examples show exactly the opposite: mining can promote geoconservation. Very often, mining activities enable access to rocky massifs where new geological occurrences with geoheritage relevance are identified. The mining of fossiliferous formations is a source of new fossils, and it may lead to eventual identification of new species. The same happens with mineralogical heritage. Many mineral specimens are only available to science due to mining exploitations. Without mining, many important mineral and fossil specimens would remain completely unknown for science and education.
3. "Mining is a threat to geoheritage." Mining activity can surely lead to the destruction of some geological features with potential scientific, educative, and touristic uses. Centuries of human exploitation of geological resources have led to the destruction of many fossils and minerals with geoheritage value. In fact, conflicts between mining and geoconservation may arise. For instance, a mining company may be interested in exploring a certain area where geoheritage has been already identified. Mining activities may also have significant impacts on geomorphologic features or may change the original landscape pattern of an area. It is unquestionable that almost all human activities have negative impacts on nature. The solution is to achieve a right balance between the exploitation of geological resources and geoconservation.
4. "Mining and geoconservation cannot match." There are interesting examples worldwide that show how it is possible to combine mining and geoconservation. For instance, agreements with owners of mines and quarries may open the door to the recovery of valuable specimens. Some quarrying and mining areas that do not have high economical revenues, as well as abandoned mining sites, may be left available for scientific, educational, and touristic purposes. Educational and touristic/recreation activities can be implemented in active mines and quarries, once it takes into account visitors' safety. In many European countries, the "European Minerals Day" is an example of a joint initiative by the mineral raw material industries where visits to active facilities are provided to students and general public. Mining companies ready to cooperate with geoconservation activities may acquire a positive public visibility and enhance their "environmental-friendly" image.

In certain EU countries, national regulations concerning mineral policies foresee the need to develop geoconservation (Tiess and Ruban 2013). Nevertheless, these regulations rarely clarify how relevant fossil and mineral specimens should be collected or how educational and recreation visits can be accomplished during regular mining activities.

Mining heritage is quite often associated with geoconservation. This type of heritage relates to whatever is involved in active and inactive mining exploitation, such as minerals and rocks that are being (or were) extracted from the underground, industrial facilities, historical documentation of old mines, exploitation processes and techniques, and even stories and traditions of mining communities. Old and inactive mining facilities and areas are sometimes considered undesirable assets due to environmental, visual, and social impacts. Nevertheless, this perspective is gradually changing, and the vestiges associated with mining activity are faced nowadays as a potential touristic/recreation and educational resources, which can bring economical revenues and social progress to local communities. For instance, there are some interesting examples concerning the use of mining heritage in the Iberian Peninsula. Las Médulas gold-mining area in Northern Spain is an outstanding example of the use of mining technology during the Roman Empire, where all the elements of the ancient landscape have survived to an exceptional degree. Las Médulas is inscribed in the UNESCO's World Heritage List for cultural reasons since 1997 and has received almost 70,000 visitors during 2013. In Southern Portugal, the Lousal mines exploited pyrite during almost the entire twentieth century. In 1988, the exploitation of

volcanic-hosted massive sulfides of the Iberian Pyrite Belt ended, and today, an ambitious touristic and educative project is changing the life of local communities in this quite isolated area of the country.

Cross-References

- Energy Production and Geoconservation
- Geoconservation Policy
- Geoconservation, Concept of
- Geoconservation, History of
- Geosites, Management of

Reference

- Tiess G, Ruban DA (2013) Geological heritage and mining legislation: a brief conceptual assessment of the principal legal acts of selected EU countries. Proc Geol Assoc 124:411-416