Pressures from quarrying activities on the environment

Akis Kikas
Senior Principal Auditor
Audit Office of the Republic of Cyprus
What is quarrying?

- process of removing rock, sand, gravel or other minerals from the ground
- working on the surface of the earth where minerals are extracted
- principally produces sand and gravel and crushed rock for construction
- normally associated with the use of opencast techniques that leave large holes in the ground.
What is quarrying?
(Ctd)

• produces substantial quantities of coal, chemical grade limestone, gypsum, common clays, china clay or kaolin, ball clays and silica sand. Thus, quarries are often associated with process plants the most important of which are ready-mixed-concrete plants, coating plants to produce asphalt and bituminous road-making materials, cement and lime burning kilns, concrete block and pipe works, brick works, pottery works and plaster/plasterboard factories.
Quarrying area inspected in Limassol
Why is quarrying necessary?

• The materials produced by quarrying are essential to our everyday lives, providing the construction materials to build roads and buildings, delivering vital minerals to agriculture and supporting the generation of electricity

💡 1km of motorway requires 125,000 tonnes of crushed stone
Threats to the environment

- Auditing mining – Guidance for SAI’s:
  “Mining is inherently a destructive activity involving the taking of a non-renewable resource. Some environmental damage is inevitable in any mine – the goal should be to minimize the extent of the effects.”
Threats to the environment

- Loss of natural landscape and biodiversity
- Loss of aesthetic value to the local landscape
- Noise pollution
- Air and water pollution (some waste is highly toxic)
- Dereliction
- Changes to local hydrology (water flow and quality)
- Erosion
What can be done?

• Insist on remedial work to restore damaged land after quarrying. This might involve filling in holes, levelling spoil heaps and reforestation.

• Insist on sufficient preventative measures to ensure that the damage is kept to a bare minimum, e.g. the water that drains off the spoil heaps and tailings should not contaminate local streams and rivers, monitor dust levels.

• Not allow quarrying in environmentally sensitive areas.

• Recycle minerals to reduce demand for new quarrying products.

• Encourage the use of new techniques, friendlier to the environment.
Taking into account country specific risks

Additional pressures/risks relating to Cyprus:

- Limited availability of suitable minerals
- Limited availability of boulders – most “suitable” locations are currently identified within “Natura 2000” sites!
- High demand for boulders due to the construction of major marine works (marinas, wave breakers etc)
- Very expensive to import minerals from abroad
Main aims of our audit

- Ensure proper coordination between all the Departments involved in the licensing and monitoring quarrying activities
- Ensure environmental impact assessments are carried out and evaluated.
- Compliance of quarries to their license terms, especially those aiming at minimizing environmental damage
- Depleted quarries are restored properly, according to the terms of their permits.
Inspection of a quarry restoration
Problems already identified

• Lack of proper communication / coordination between Departments involved in the licensing of quarries
• Major marine works approved for construction without ensuring that the increased demand, especially for boulders, can be met.
• Pressures to license quarrying in areas that have been designated as “Natura 2000” sites or nearby such sites.
• Non – adherence to protective measures imposed in the quarrying licenses (eg dust levels)
High dust levels observed during quarrying activities