

Geoenvironmental Analysis of the Littoral of Portixeddu (Fluminimaggiore-Buggerru, Sw-Sardinia)

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The coastline between Portixeddu and Buggerru (SW-Sardinia) is characterised by a succession of beaches, dunes, rocky coasts and cliffs, generally in a natural state with limited human settlements.

This part of Sardinia is characterised by lithologies covering a lapse of time going from Palaeozoic to Quaternary: among these the Palaeozoic sequences are the most interesting, with metasandstones, dolostones and limestones (Lower-Middle Cambrian) followed by shales (Middle Cambrian-Lower Ordovician), conglomerates (*Puddinga*) (Ordovician) and injected by Hercynian granites. During Quaternary different sea-level oscillations have determined several ancient dune deposits, and at present the dune field has a surface of about 4 square kilometres.

The Cambrian calcareous sediments are the seats of several economic metal deposits that have been exploited since the 19th century. These mining activities, which stopped in the early 70's, have definitely changed the landscape with open pit and underground excavations, many waste deposits, constructions, and mine shafts but have also left an important industrial archaeological heritage.

Furthermore, the variability of habitats, with high cliffs, sandy beaches, dunes, karstic landscapes and caves, has enabled the establishment of a wide variety of plants and of animals, with many endemic species and unique biocenosis.

For all these reasons this coastal area has been chosen as a test site for the geoenvironmental analysis aiming to outline the naturalistic and cultural potential and the carrying capacity for a sustainable tourist development, obtainable through a careful and respectful planning in such sensible and delicate coastal areas.

In the framework of the European Project INTERREG II C "Modelos Territoriales sostenibles para los espacios litorales mediterraneos" and of the National Project "Bilancio sedimentario dei sistemi costieri italiani, processi naturali e influenze antropiche" many analysis have been undertaken in the Buggerru coastal system: besides a geological and geomorphological mapping, the evolution of the beach has been systematically monitored by extremely precise topographical methods and GPS, many samples of sands have been analysed for grain-size and erosion-corrosion and an extensive campaign of vegetation and land-use mapping has been set out.

All this information has been gathered in a Coastal Information System (CIS) which allows to draw several thematic maps representing and synthesising geology, land-use, geomorphology, exposure, vegetal cover, accesses to the sea, legal protection measures, slopes etc., which, after confronting, give birth to maps of synthesis (risk, land-use destination, coastal dynamics, environmental and cultural heritage, sensible areas, etc.).

It is thanks to all this information and to its elaboration that it can be possible to plan the tourist development of this area, respecting both the natural equilibrium of the beaches, the coastline and the entire area, and the local needs of social and economical development.