



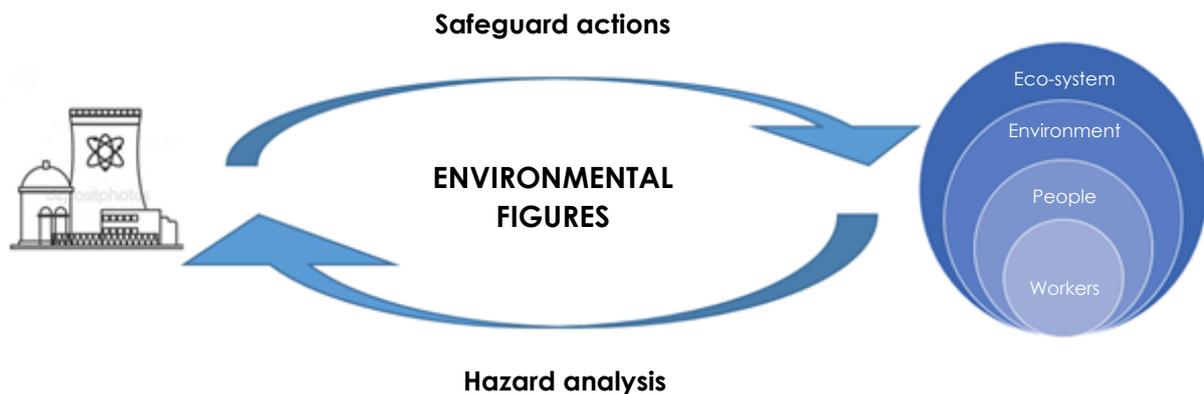
ENVIRONMENT
Report



ENVIRONMENT

Sogin carries out activities for the safe maintenance and decommissioning of Italian nuclear plants and it promotes the health of workers and people, and the protection of the environment.

Each industrial operation may have an impact on the eco-system, similarly, some serious natural phenomena may significantly affect the dismantling operations carried out by Sogin.



Italian nuclear sites are, in fact, located in complex and structured territorial and environmental settings. In many cases the lack of human presence on these areas, has led to a spontaneous regeneration of natural eco-systems that are now protected on a national and community level. Anyway, several specific natural elements (such as serious meteorological events, earthquakes, floods, etc.) may cause potentially negative impacts on the safety of decommissioning operations. For this reason, Sogin constantly monitors the eco-system of its sites to analyse the level of interference with operations; this strategy aims at adopting all preventive and safety measures to protect people, workers and the environment.

The more interactions exist between environment and industrial activities, the higher are the chances to have unbalance and alterations between the two systems. In its projects, Sogin commits in reducing and limiting the probability of risks, by ensuring the balance between the two systems is maintained. For this reason, Sogin designs specific safety measures according to external hazards and the confinement and limitation of sources of exposure within its sites.

More specifically, Sogin applies technical project standards to promote workers, people and environmental protection; for example, it adopts the principles of "defence in deep", by placing the defence systems as close as possible to the hazard, or, when possible, by using passive systems in place of active ones.

Managing environmental risks connected to the decommissioning of plants and to the safe handling of radioactive waste - resulted from such activities and stored in specific facilities - involves the adoption of high technical standards, as well as appropriate radioprotection and nuclear security measures.

Sogin puts the safety of workers, people and environment first; thus, it protects the eco-system by considering both radiological and traditional hazards.

- **Environmental figures**

Knowing the working environment (land, people and workers) is a prerequisite for any kind of assessment and action.

The knowledge of specific factors connected to the environment (natural, human, chemical, physical, climate-related, geological, landscape and economic), through specific analysis¹, allows a preliminary identification of the impacts of safe maintenance and decommissioning in each stage.

Through a multi-disciplinary approach, Sogin conducts compatibility analysis on the projects using the tools² approved on a national, regional and local level, to ensure they comply with the regulations of each site.

In addition to this, both in the preliminary assessment stage and in the design and implementation stage, monitoring plans³ and characterisation plans⁴ are defined. Such plans include studies and campaigns to highlight any environmental component - potential interferences, pollution levels and exposure to radiations – that may be used to implement safe operations.

- **Hazard analysis**

Hazard analysis identifies negative impacts of industrial activities due to serious natural events that naturally occur; it aims at assessing the feasibility of works, the safe planning and at identifying the best safety measures.

Each environmental component is, thus, identified and modelled to detect its impact on Sogin's Plants and Facilities. Each site collects information and data related to natural environmental and current radioactivity level, expected seismic activity, typical and extreme climate conditions, possible landslide and volcanic phenomena, hazards resulting from floods with long breakeven periods, and the potential natural impact on animals, plants and natural habitats.

- **Safeguard actions**

Safeguard actions include any activity aimed at ensuring the safeguard of environment, people and workers.

¹ The term specific analysis means land surveys, structure monitoring; geological, geo-technical and hydrogeological characterisations (with surveys, drills, measurements and samplings); geo-physical investigations; noise surveys; hydraulics modelling; meteorological and climate characterisation; demographic and landscape studies and general surveys on the environmental radioactivity.

² Among national tools there are: Town planning, Municipal Planning, Regional Planning, territorial regulations, municipality noise zoning, land-use plans etc.

³ Each nuclear site has an RSA (Environmental Surveillance Network) which guarantees constant control on the radioactivity levels of air, water, soil and food in the areas close to the site. During the implementation of decommissioning operations, both the RSA and the RMA (Environmental Monitoring Network) are implemented; the latter monitors any traditional aspect and activity (noise, release of pollutant substances to air, soil and water) that may affect the environment. A new seismic monitoring network to evaluate possible earthquake events on the main structures is currently under development.

⁴ A characterisation plan is a document that must be drafted by law, and it includes all the aspects of contamination that justify the decisions made to implement the safe maintenance and/or final reclamation of the site.

Natural phenomena that are potentially dangerous for the safety of operations are constantly integrated, according to the current legislation⁵, within the design projects to ensure the safest conditions in terms of environmental and radiological protection are applied.

In the framework of its projects, Sogin analyses all the existing interactions with the environment, it identifies the best measures to guarantee safety for workers and people, environmental protection and the reduction of negative impacts.

The safe management of activities and the environmental compatibility are ensured in the light of the technical provisions provided by the Control Authority; other factors ensuring safety can be seen in the continuous monitoring of working sites, channels of radioactive exposure and other environmental components.

In case of anomalous events associated with the potential contamination of soil and ground waters (exceeding the contamination threshold⁶), reclamation⁷ procedures are applied on the site.

Special attention is also paid to the monitoring of environmental radioactivity, which is ensured by a solid and constant work of sampling and evaluation of the site environmental and food compartments; this work is carried out by the "Environmental Surveillance Network"⁸.

The environmental monitoring programme involves using the reference operational levels⁹ which refer to the concentration of specific radionuclides in a given compartment; these levels are calculated assuming the existence of effective doses¹⁰ per person, equal to the portions of specific limits required by law.

Since it is fundamental to constantly ensure environmental sustainability and the safe management of sites, Sogin fosters and implements all measures to reduce risks and negative impacts.

Moreover, Sogin voluntarily adopts the instruments of the Environmental Management Systems (EMAS Regulation and ISO14001 Certification), which guarantee the mapping of any corporate activity, foster continuous developments and promote efficient communication and informed participation.

⁵ There are several legislations ruling Sogin's activity both in the radiological and traditional field. Projects with a greater impact on the environment must comply with the following procedures: VA (Environmental-Impact Assessment – Strategic Environmental Assessment SEA), VINCA (Environmental Impact Study) and landscape authorisations.

⁶ Threshold contamination (in Italian CSC – Concentrazione Soglia di Contaminazione): level of contamination in the environmental compartments; above this level, the characterisation of the site and the specific risk analysis are compulsory.

⁷ All actions aimed at removing polluting sources and polluting substances, or at reducing the concentration of such substances in the soil, subsoil and ground waters at a level which is equal or lower than the risk threshold concentration.

⁸ Under the Legislative Decree 230/95 and following amendments, each site is provided with an Environmental Surveillance Network which ensures the continuous monitoring of the radioactivity levels in the atmosphere, water, soil and food in close areas.

⁹ Reference levels are the following: recording level – each concentration above the minimum detectable concentration (MDC); inspection level – activity concentration level in a specific compartment above which a notification must be sent to the Control authorities to adopt prevention measures or implement protection actions.

¹⁰ Value relating the quantity of radiation doses received and the risk for the individual.