





THE NATIONAL REPOSITORY AND TECHNOLOGY PARK

The National Repository is a surface environmental infrastructure where radioactive waste can be safely disposed. Once constructed, the decommissioning of Italian nuclear plants can be completed and all radioactive waste, including that generated by nuclear medicine, industrial and research activities, will be appropriately managed.

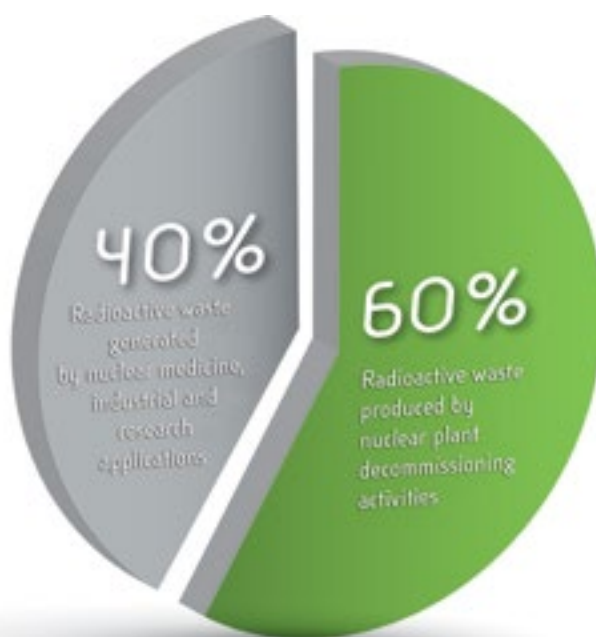
The Repository is equipped with engineered barriers and natural barriers arranged in series, designed on the basis of international best practice and according to the latest IAEA (International Atomic Energy Agency) standards. It will permanently accommodate approximately 75,000 cubic metres of low and intermediate level short-lived waste, and temporarily store some 15,000 cubic metres of intermediate long-lived and high level waste.

The National Repository is expected to receive progressively an overall amount of about 90,000 cubic metres of radioactive waste, 60% of which deriving from nuclear plant decommissioning and the remaining 40% from scientific research, medical and industrial applications, including waste produced to date and that which is estimated to be generated over the next 50 years.

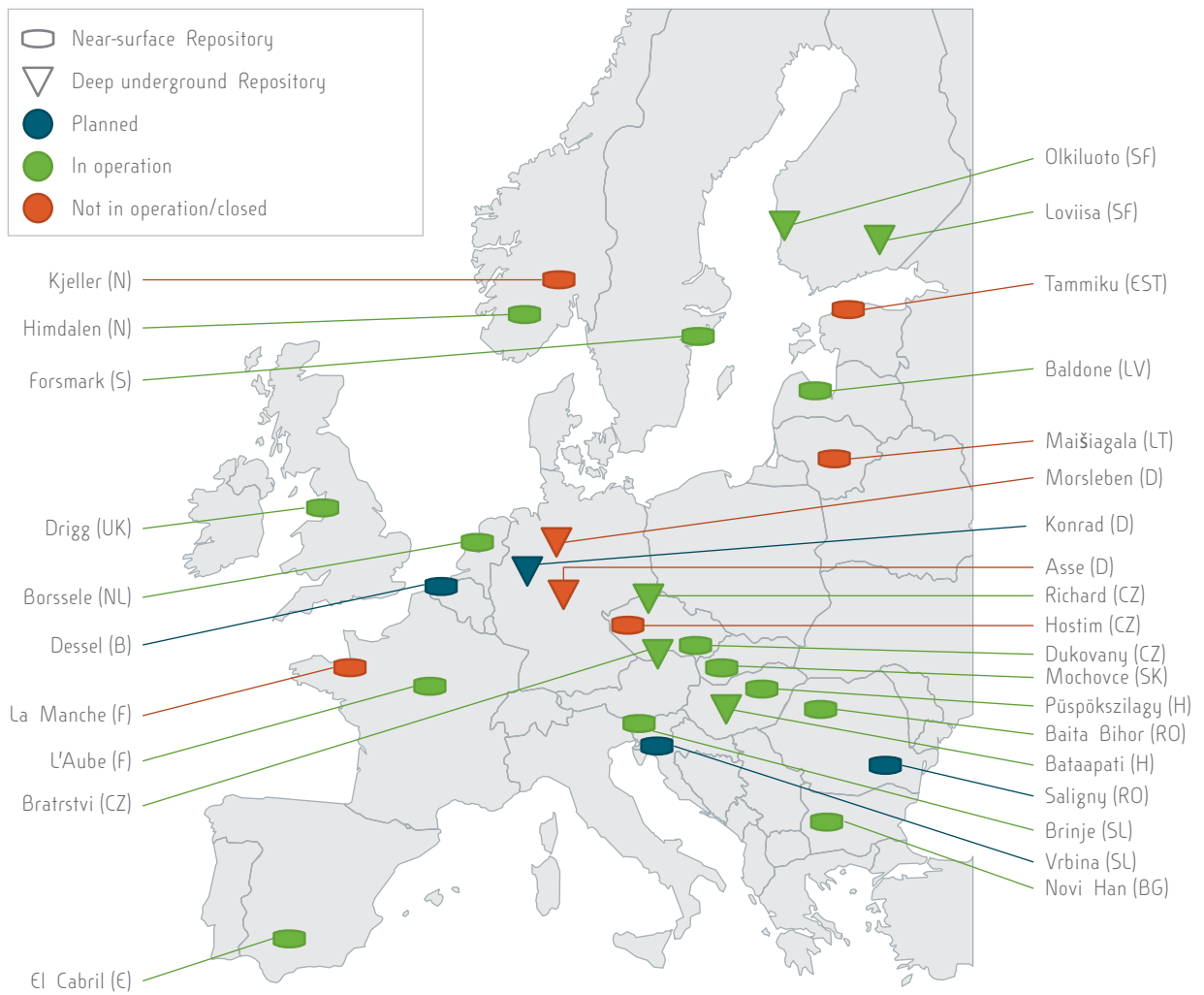
The transfer of radioactive waste to a national site will ensure safe, efficient and rational waste management, whilst enabling completion of nuclear plant decommissioning in compliance with European directives, as it will align Italy with countries that have had similar repositories in place for many years.

The Technology Park, to be built along with the National Repository, will be conceived as a research centre open to international partnerships and equipped to carry out activities in the area of radioactive waste management and sustainable development, in agreement with the local communities.

Sogin, the State owned Company responsible for the decommissioning of Italian nuclear plants and the management of radioactive waste, has been designed to site, design, build and operate the National Repository and Technology Park.



PERMANENT STORAGE OF LOW AND INTERMEDIATE RADIOACTIVE WASTE IN EUROPE



Most European countries either have in place or are building final repositories for low and intermediate (SL) level waste. Many of these (including France, Sweden, Germany, United Kingdom, Belgium, Finland and Czech Republic) have already begun the design or study of final (geological) repositories for high level and intermediate level (LL) waste. Countries with smaller amounts of high level waste participate in EU programmes for the implementation of the European Geological Repository.

THE NATIONAL REPOSITORY AND TECHNOLOGY PARK SITING PROCESS

The National Repository siting process requires the local community engagement and participation, alongside considerations from a technical and scientific perspective, as set out in Italian law. From a technical point of view, siting is the process through which a site is selected on the basis of a suitability assessment that takes into account the site's characteristics, engineering solutions and regional context. The siting process of a radioactive waste repository is crucial for tailoring the technical and design choices required to ensure the highest level of safety for people and the environment.

SITING CRITERIA

Sogin manages the siting of the National Repository on the basis of IAEA siting criteria and of the application criteria specifically set out by ISPRA (Institute for Environmental Protection and Research: the Italian Authority responsible for National Nuclear Safety).

The procedure requires two phases of territorial investigations:

- on a national scale, for progressively excluding areas that do not match ISPRA exclusion criteria based on technical and environmental issues (e.g. seismicity, hydrogeology, distance from sea, populated areas, natural parks);
- on a regional and local scale, to apply ISPRA's investigation criteria.

The **exclusion criteria** are necessary to exclude those areas of the national territory whose characteristics are unfit to meet the safety requirements for the National Repository. The exclusion criteria are applied through tests based on provisions, data and technical knowledge available in homogeneous form for the whole national territory.

On the other hand, the **investigation criteria** allow a consistent and systematic assessment of the areas which have not been excluded after application of the exclusion criteria. Investigation criteria are applied through specific investigations and assessments, in order to confirm the absence of any reasons for exclusion which could not be verified through the previously applied criteria.



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Non-excluded areas are grouped together in the proposed National Map of Potentially Suitable Areas (CNAPI: Carta Nazionale delle Aree Potenzialmente Idonee). Subsequently, the Regional and Local Institutions whose territories are located in the areas described in the CNAPI may notify their interest in hosting the National Repository and, once an agreement has been formalized, may initiate further investigations through the application of investigation criteria, on a detailed scale.

This initiative is the first case in Italy of the siting of a large project on the basis of a systematic search, on a national scale, of the most favorable local conditions aimed at environmental and territorial protection.

MAPPING THE TERRITORY: VALUE FOR THE COMMUNITY

The data and findings of the conducted investigations constitute a wealth of information on the territory available to the community.

A database has been created containing all the information concerning CNAPI areas with respect to aspects including: volcanic activity; seismic activity; geomorphology; hydrology; hydrogeology; soil and subsoil resources; human settlement; industrial activities; transport infrastructure; environmental, historic and archaeological heritage.

Along with the engineered barriers, the characteristics of the site where the National Repository will be built must ensure the isolation of radioactive waste for many centuries, until radioactivity decays to a safe level for people and the environment.





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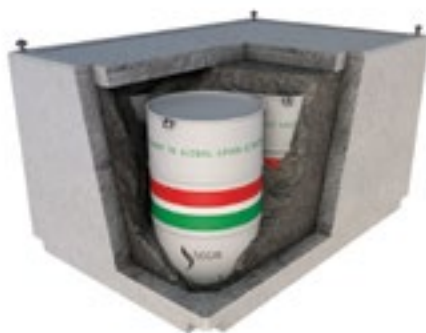
THE ENGINEERED PROTECTION BARRIERS OF THE NATIONAL REPOSITORY

The engineered protection barriers will be made of special materials guaranteed to confine waste radioactivity for the time required for its radioactive decay to a safe level.



1

FIRST BARRIER: radioactive waste, encapsulated by a cement mortar inside a metal container (waste package), is transferred to the National Repository



2

SECOND BARRIER: the waste packages are placed and grouted into special concrete modules (3 m x 2 m x 1.7 m) designed for 350 years of safe operational life



3

THIRD BARRIER: the modules are placed in reinforced concrete cells (27 m x 15.5 m x 10 m) designed for 350 years of safe operational life



4

Once filled, the cells are sealed and covered with several layers of material to prevent water seeping into the cells

Additionally, a drainage pipe system underneath each cell ensures the collection and control of any water seepage or possible condensation throughout all phases of the Repository operation life.

LEGEND:

CNAPI: Carta Nazionale delle Aree Potenzialmente Idonee (National Map of Potentially Suitable Areas)

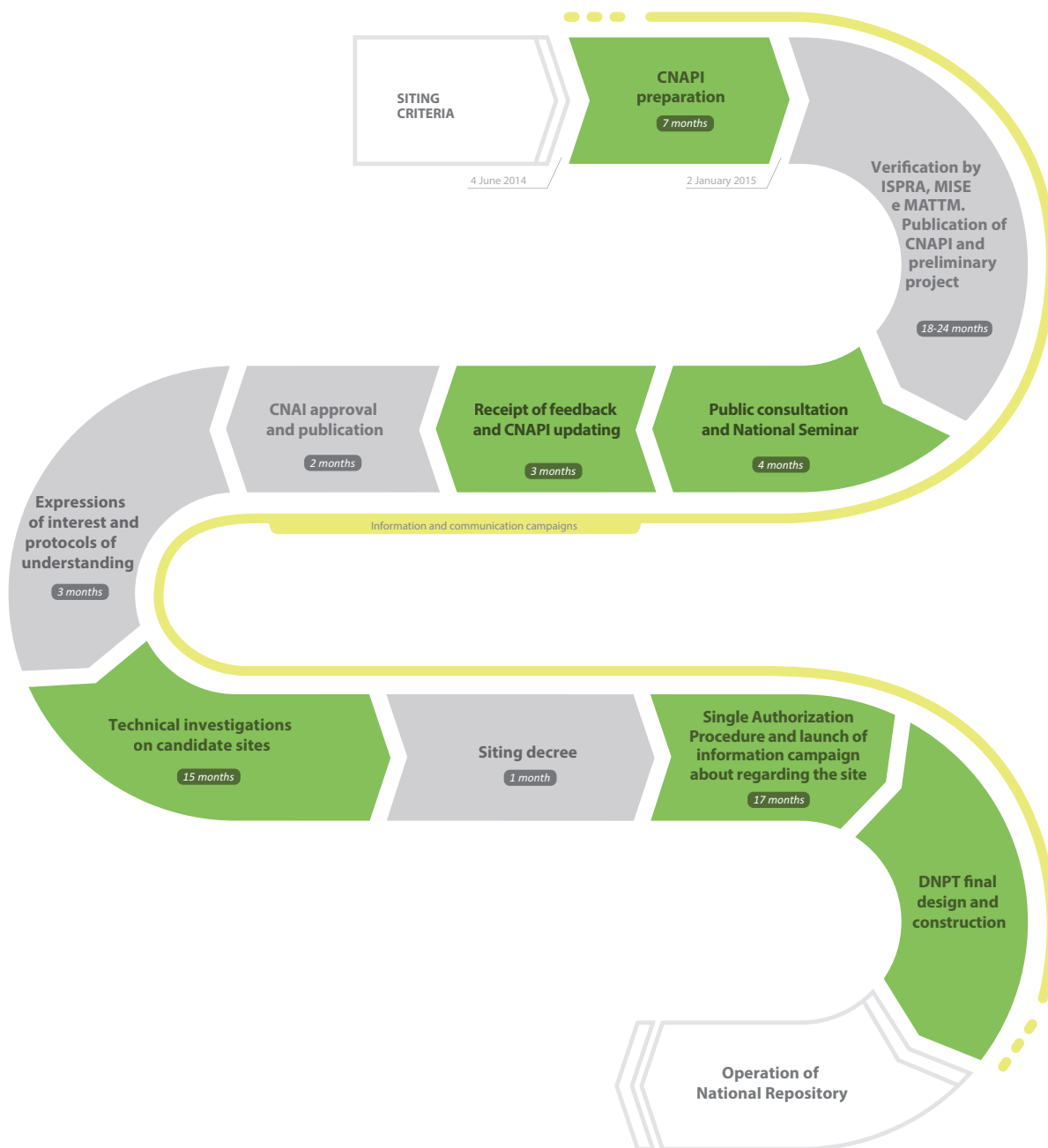
CNAI: Carta Nazionale delle Aree Idonee (National Map of Suitable Areas)

ISPRA: Istituto Superiore per la Protezione e la Ricerca Ambientale (Institute for Environmental Protection and Research)

MISE: Ministero dello Sviluppo Economico (Ministry of Economic Development)

MATTM: Ministero dell'Ambiente e della Tutela del Territorio e del Mare (Ministry of the Environment and the Protection of Land and Sea)

DNPT: Deposito Nazionale e Parco Tecnologico (National Repository and Technology Park)



SITING TIME FRAME

According to Italian law, Sogin is responsible for drawing up a proposed National Map of Potentially Suitable Areas (CNAPI), describing the areas that are suitable to host the National Repository.

The term "potentially suitable areas" refers to areas whose characteristics meet the requirements to identify them as suitable sites for the National Repository, and will subsequently be the subject of more detailed investigations.

Sogin has transmitted the proposed CNAPI to ISPRA which has completed its validation and has transmitted its results to the Ministry of Economic Development and the Ministry of the Environment for their authorization. Once authorized Sogin will proceed with the publication of the CNAPI as well as the preliminary design.

In the next phase, consultations are conducted and technical solutions applied by Sogin are shared during a National Seminar in which all the parties concerned are invited to participate.

On the basis of feedback received, the law also requires Sogin to draw up an updated version of the proposed National Map of Suitable Areas (Carta Nazionale delle Aree Idonee - CNAI) within 90 days from the Seminar. The Map is then transmitted to the Ministry of Economic Development for approval by Ministerial Decree, subject to the technical opinion of ISPRA. Once the CNAI is approved, Sogin starts the following consultation phase for the collection of expressions of interest from the Regional and Local Institutions in whose territories are located the suitable areas.



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COMMUNICATING THE REPOSITORY

As with other projects that significantly affect local communities, the National Repository siting process requires extensive communication and the engagement of the public and the concerned stakeholders.

These activities are explicitly contemplated in Italian law, which incorporates the provisions of a wide range of international guidelines (including specific IAEA guidelines) and of EU and national regulations governing access to information and participation in environmental decision making (to quote but one example, the Århus Convention of 1998, implemented in Italy by Law no. 108/2001).

The siting process for the National Repository and Technological Park is based on three fundamental principles: information, transparency, engagement.

On the basis of these principles, Sogin is developing channels through which the local communities can express their needs and proposals, as well as activities to promote expressions of interest from the Public Bodies of the areas identified in the CNAPI as potential locations of the National Repository.



deposito
nazionale 

Shaping a safer future together

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