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Supplement of

International Atomic Energy Agency (IAEA) support for the management of site investigations for radioactive waste disposal facilities

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IAEA
International Atomic Energy Agency

IAEA SUPPORT FOR THE MANAGEMENT OF SITE INVESTIGATIONS FOR RADIOACTIVE WASTE DISPOSAL FACILITIES

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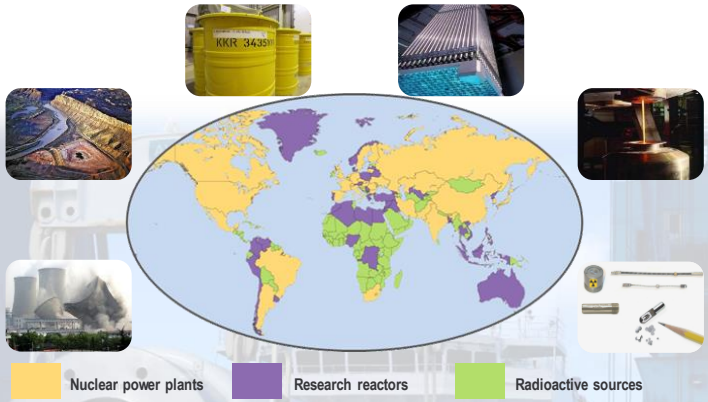
SAFE ND conference, Berlin, Germany, 14 September, 2023

IAEA Waste Technology Section Mission



Sustainable nuclear requires for all 177 IAEA Member States to implement safe, secure, safeguarded and efficient solutions

To support Member States in strengthening their infrastructure and capabilities, and in improving their practices in RWM, towards a comprehensive RWM programme, which addresses their entire current and future national inventory.

WTS Priorities:

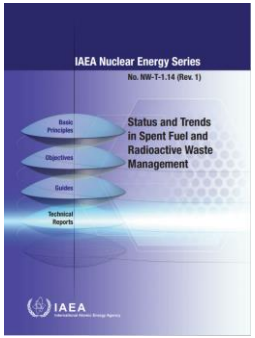
- Fix the future
- Address the past
- Small inventory solutions
- Share good practices
- Facilitate societal acceptance

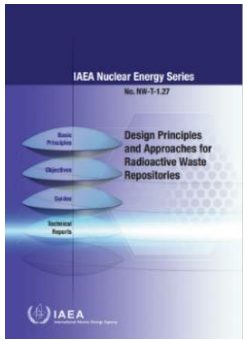
Radioactive Waste Management

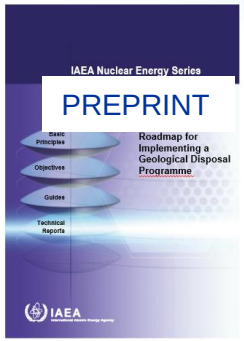
Structuring Knowledge, Guidance and Support → Topical examples

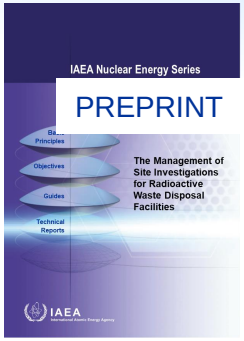
- **Radioactive waste**
  Inventory – Characterization – Waste Acceptance Criteria
  - Developing WAC
  - *Establishing a national Inventory**
  - *Waste minimization at NPP**
  - …
- **Waste processing**
  Treatment – Conditioning - Storage
  - Treatment of liquid RW
  - Storage
  - *Processing of hazardous waste**
  - …
- **Disposal**
  Disposal options – Siting - Programme
  - Generic DGR Roadmap
  - *Planning the DGR RD&D programme**
  - *Going underground at potential DGR site**
  - …
- **National programme**
  From local inventories to national management solutions
  - Global Status & Trends
  - Policy & Strategy
  - *Maintaining national inventory**
  - …

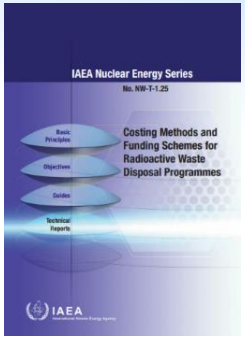
Focus on Disposal: A few fundamental topics

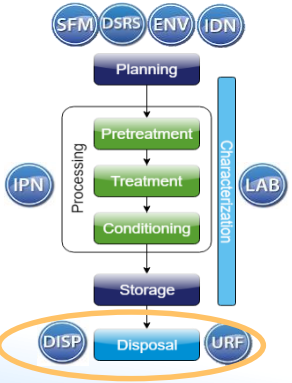


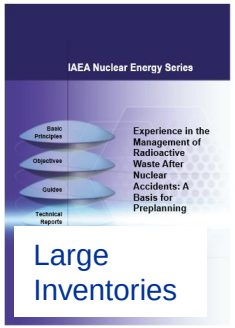


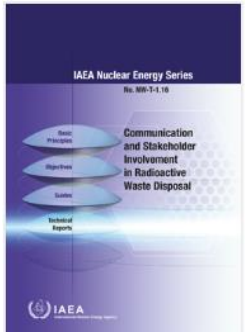


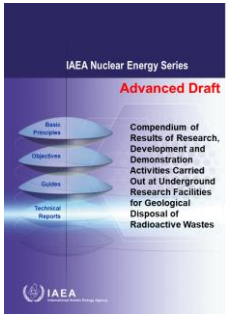












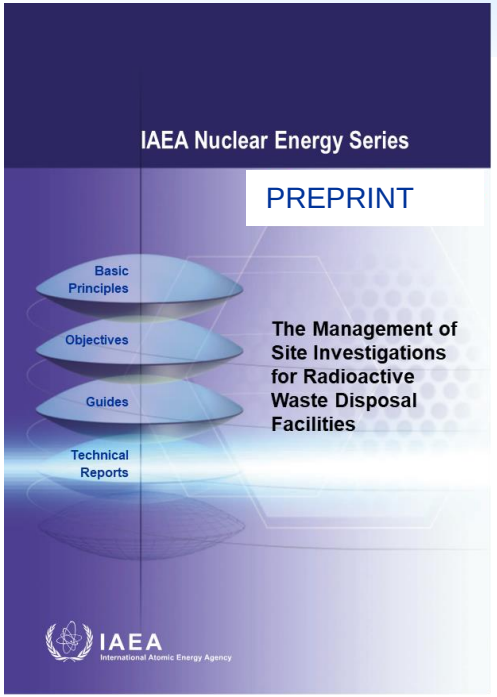
Published in 2020-July'23

Internal review process / publication process (2023)

These documents build upon international experiences and good practices on how spent fuel and radioactive waste management can be implemented. The knowledge captured is presented by way of guidance and examples.

Management of Site investigations for Radioactive Waste Disposal Facilities

This publication is primarily concerned with the **provision of technical guidance concerning the strategic and operational management of site investigation**s for radioactive waste disposal facilities.



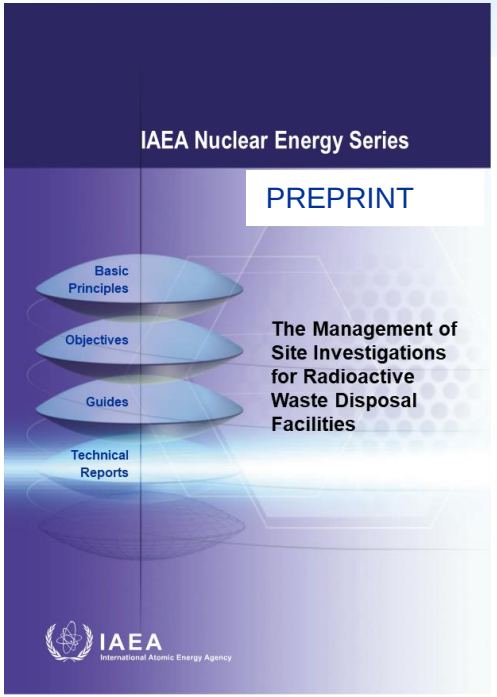
Audience

- senior decision makers, scientists and engineers working within organisations charged with the planning and implementation of site investigation projects
- professionals in technical support organisations and working within regulatory authorities
- decision makers in national and local governments, as well as academics and other stakeholder groups including students and interested members of the public.

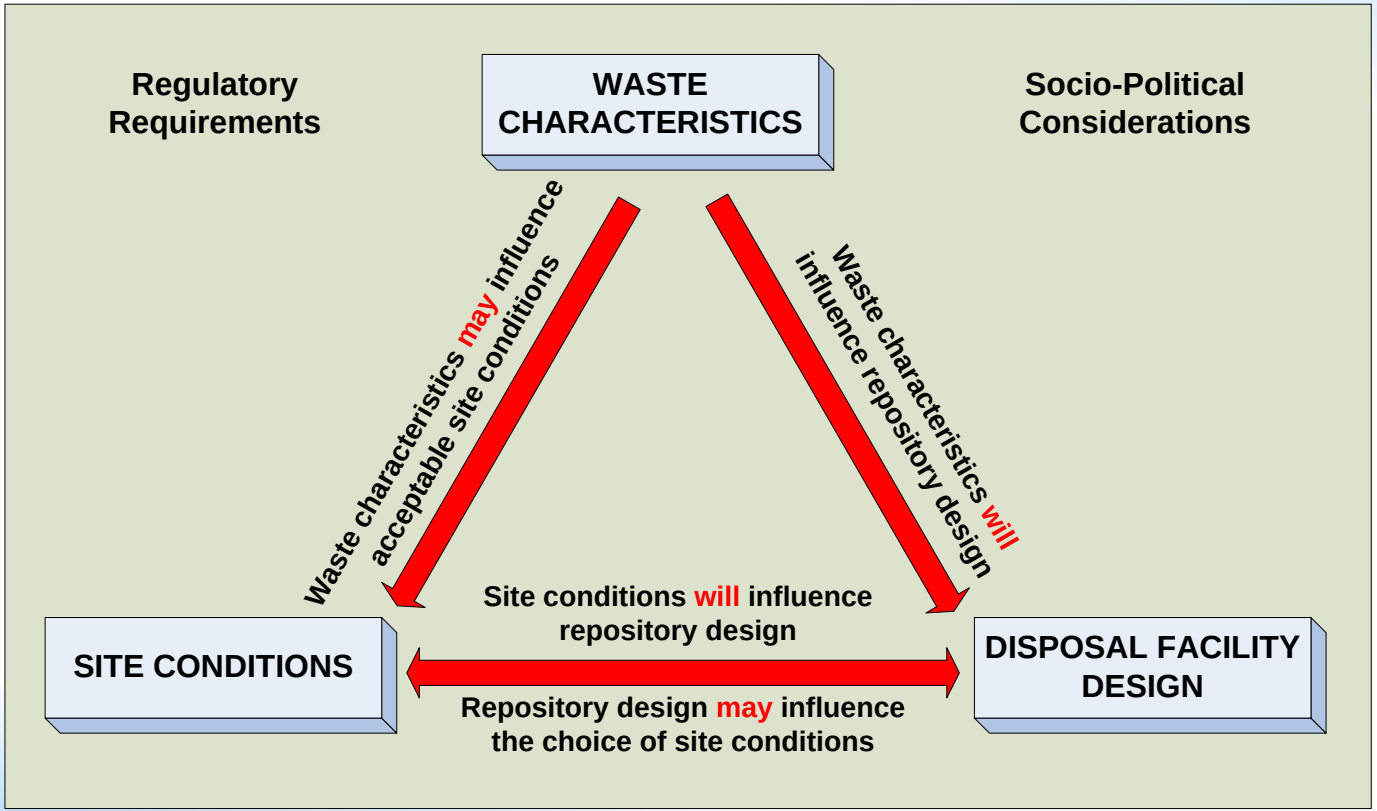
Topics covered in the publications

- Siting background
- Requirement management system
- Planning
- Data aquisition
- R&D in site investigation
- Data processing and analyses
- End of site investigations

Link to the publication



Site conditions as part of the disposal system

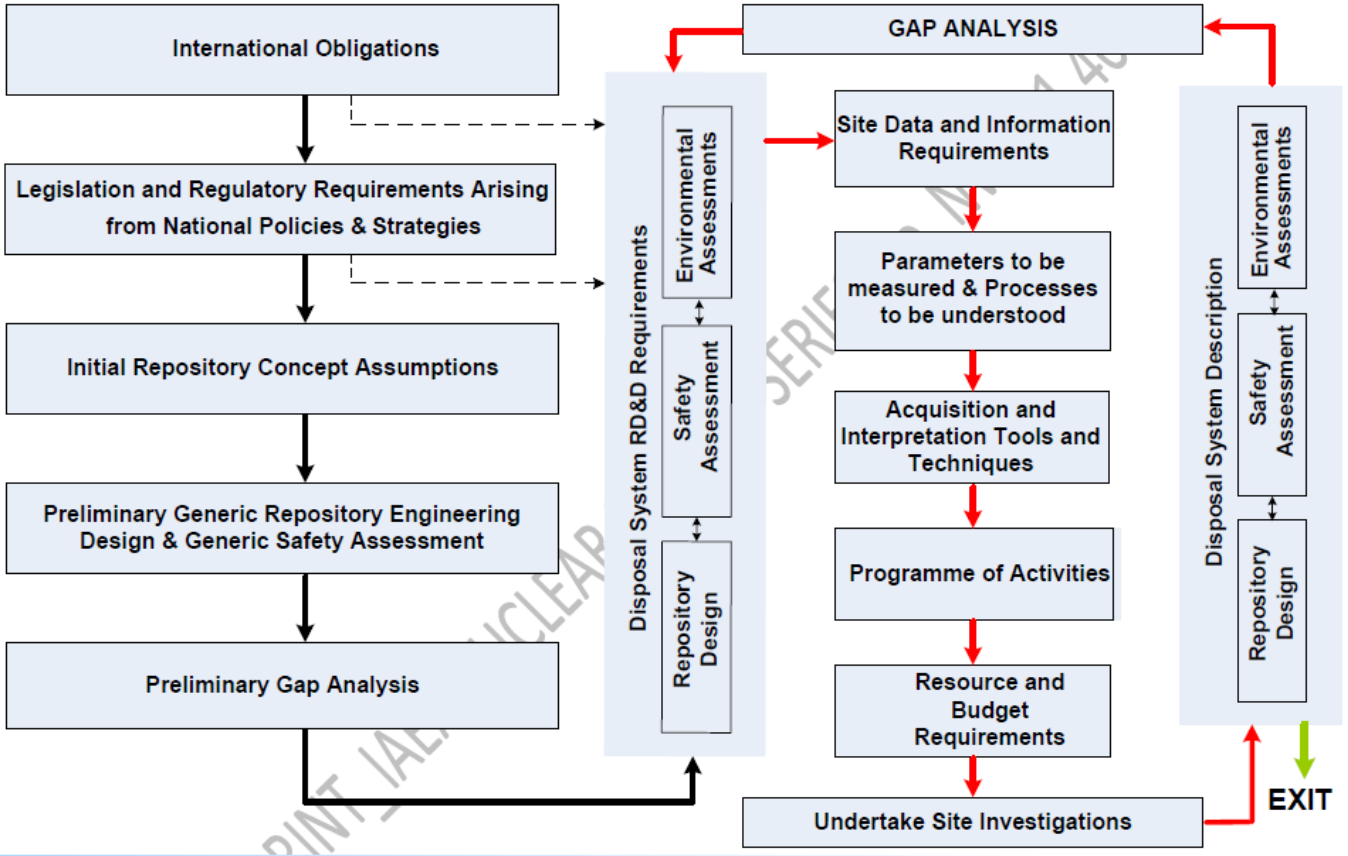


Site Investigation Data and Information address various needs for disposal development

- Early confidence that a site is potentially viable for disposal
- Identification of important features, events, and processes that form the basis for conceptual models of the site
- Assessment of the variability and uncertainty in the natural system
- Confirm predictions and assumptions
- Identify knowledge gaps as a basis for further site investigations
- Support confirmation of site suitability

Management of site investigation for radioactive waste repositories (2023 preprint)

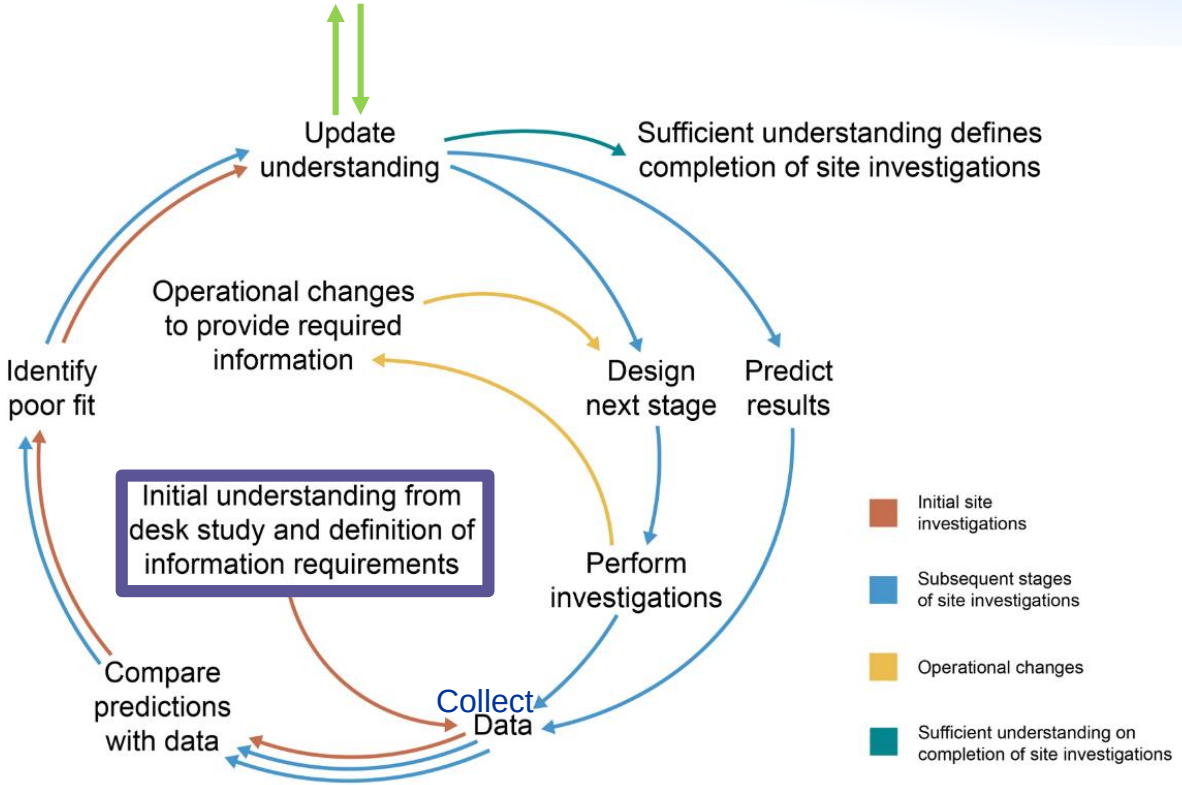
The overall needs are derived from a requirements chain



Management of site investigation for radioactive waste repositories (2023 preprint)

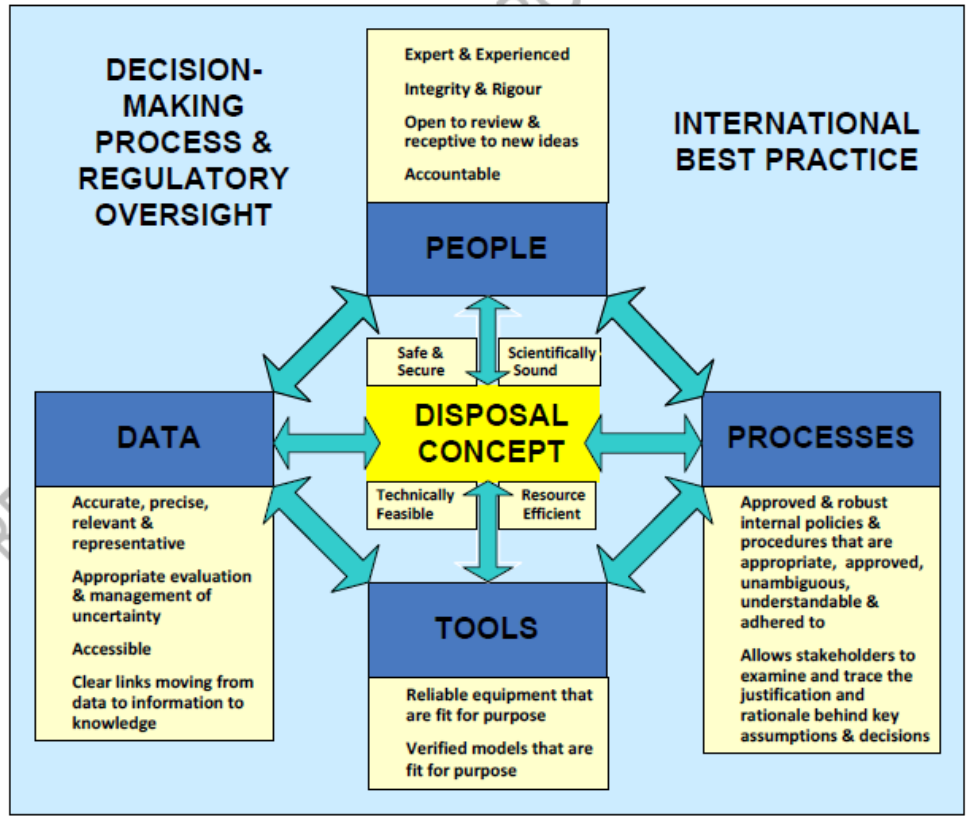
Site investigation: An interative process

Provide data and understanding to end-users and receive feedback to identify gaps in data and understanding



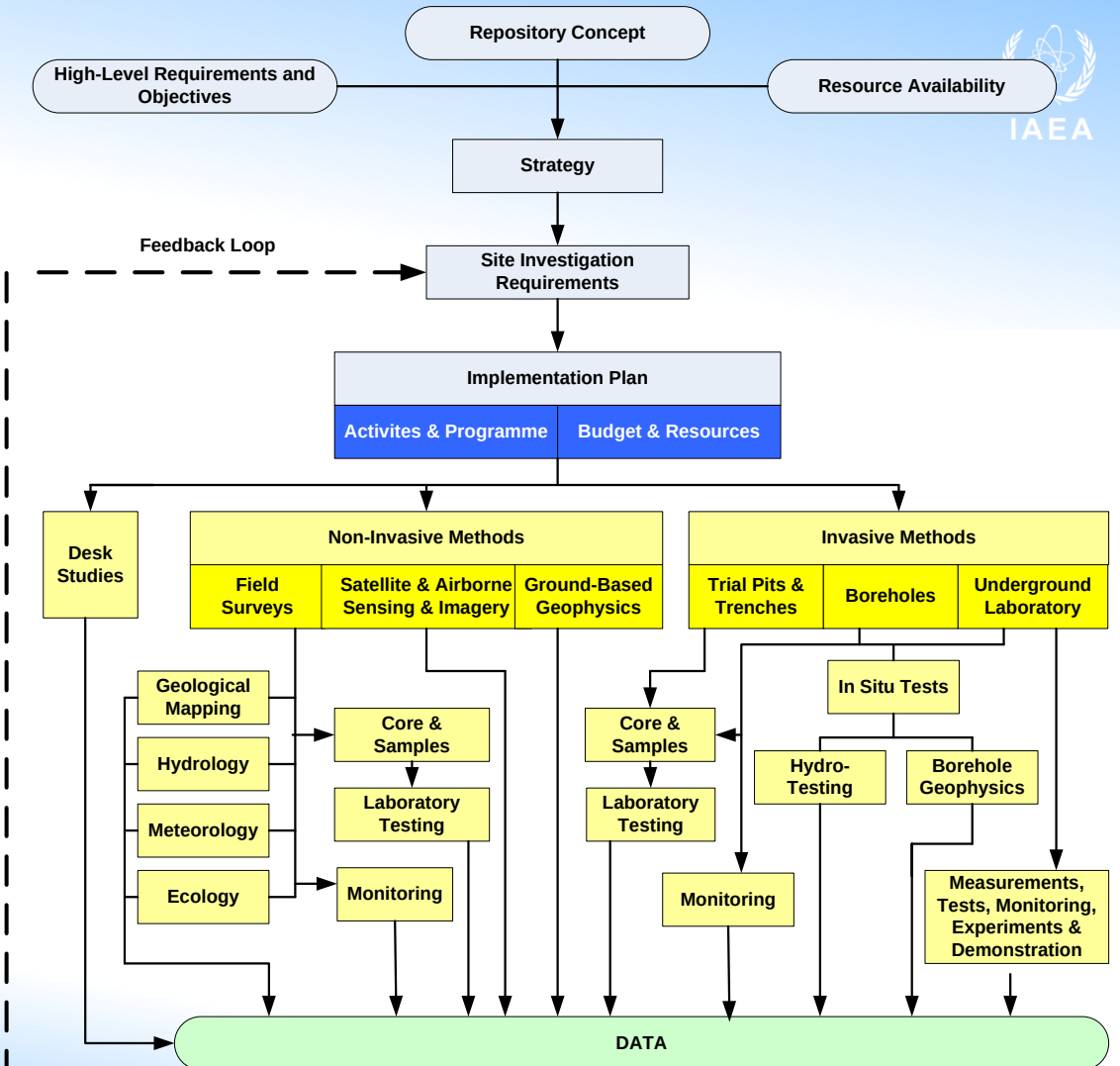
Management of site investigation for radioactive waste repositories (2023 preprint) with courtesy of NDA

Sound processes and interfaces provide for confidence in data and site investigation results



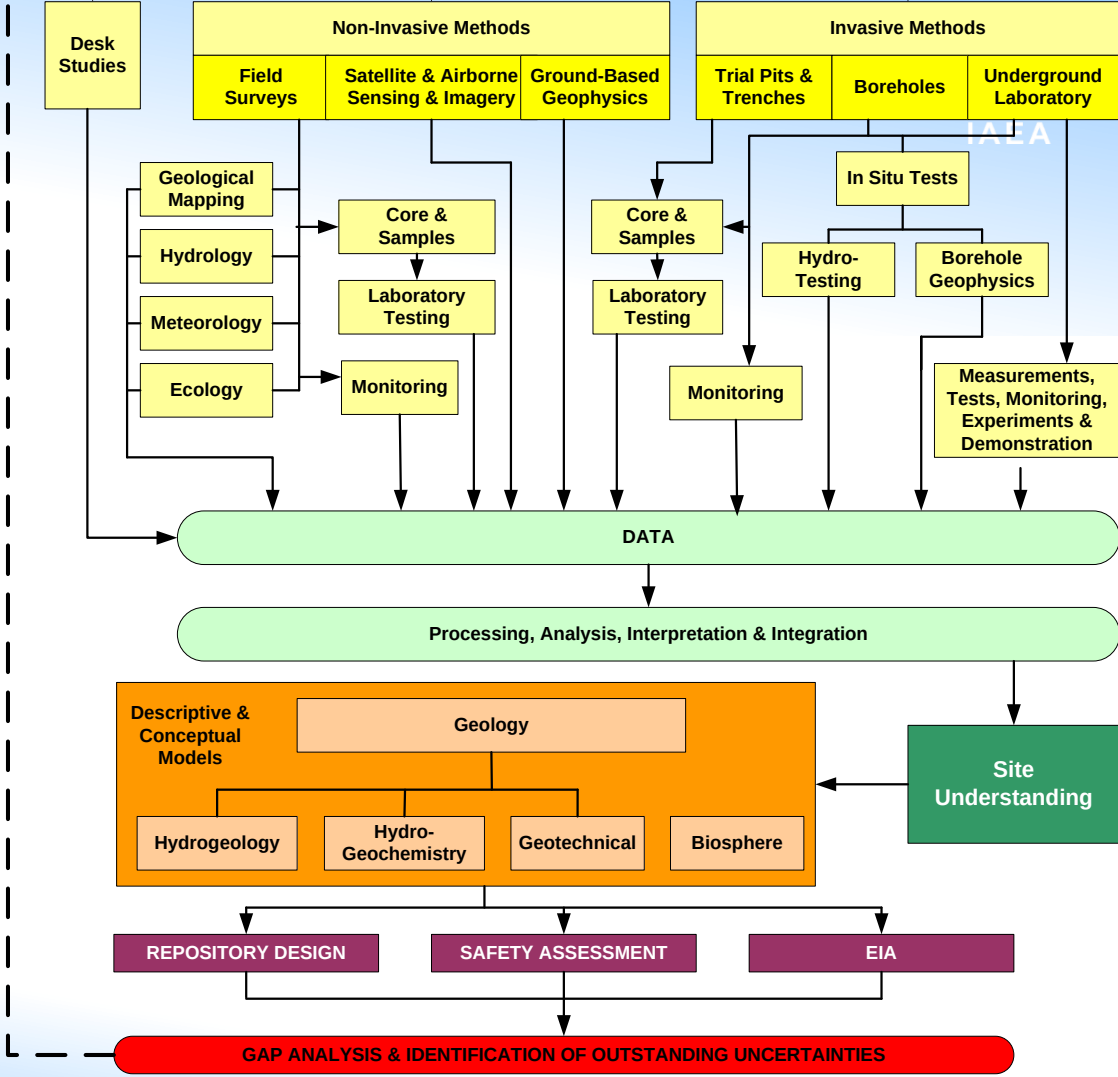
Management of site investigation for radioactive waste repositories (2023 preprint)

Generalised scope of site investigation activities - 1



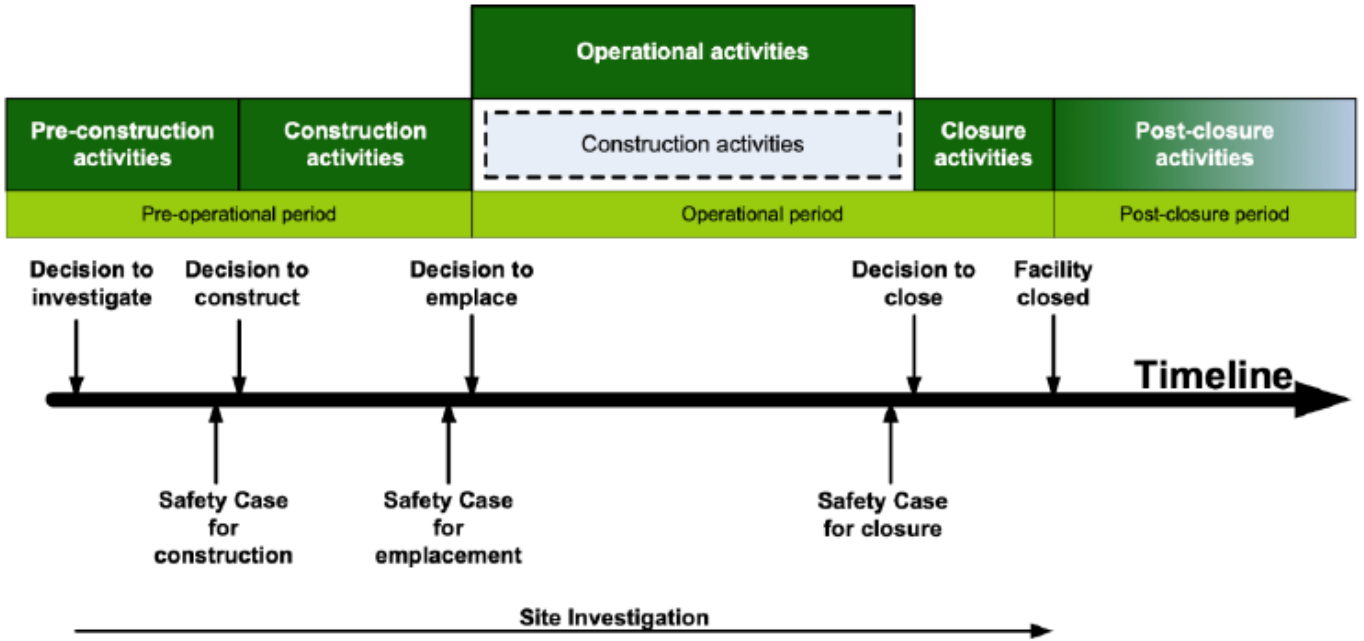
Management of site investigation for radioactive waste repositories (2023 preprint)

Generallised scope of site investigation activities - 2



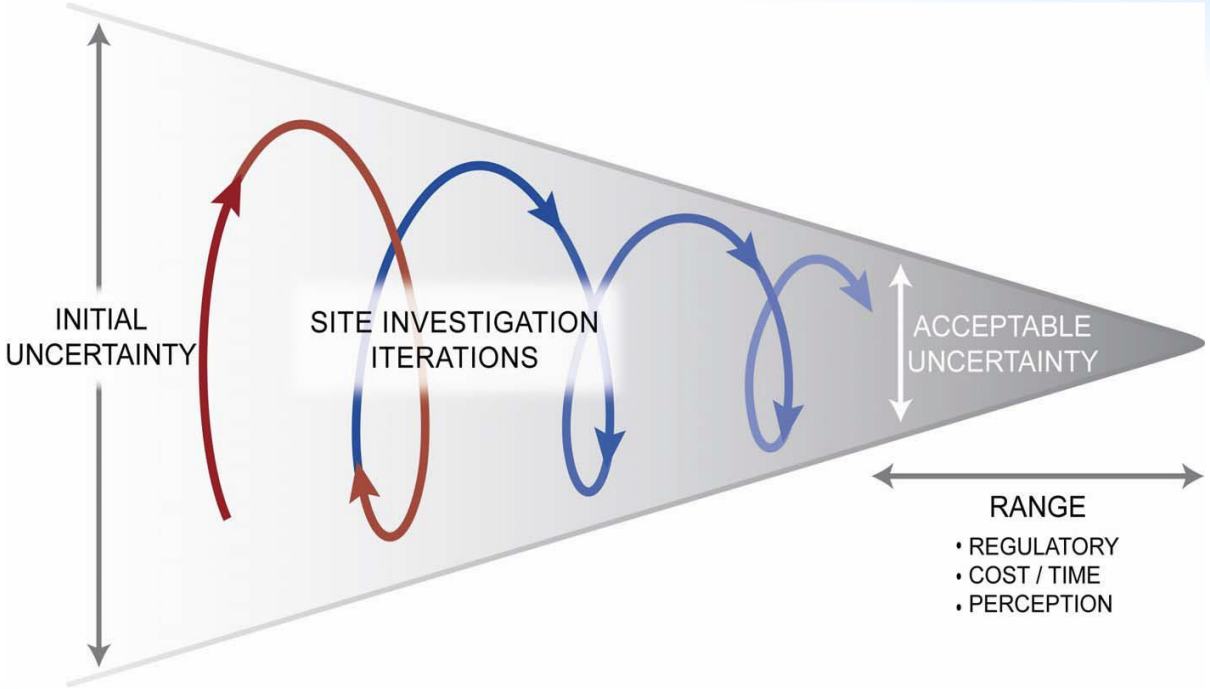
Management of site investigation for radioactive waste repositories (2023 preprint)

Time line for development of repository programme



Management of site investigation for radioactive waste repositories (2023 preprint), based on IAEA SSG14

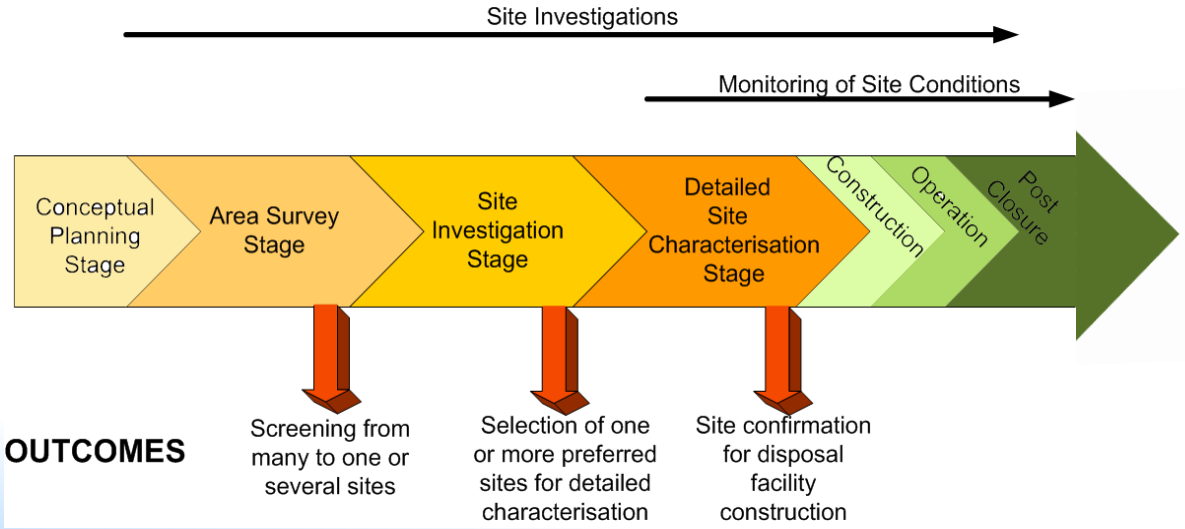
Where to end site investigations?



Interconnections with Site selection

- Site investigations provide data for graded approach to develop understanding of the area/site for selection of best suited site
- Site selection criteria reflect the requirements toward the site, based on different sources (legislation, stakeholder requirements, safety requirements etc.)
- Investigations can then bring the answer if the site meets the criteria or not; very closely conncected

IAEA launched a new project aiming to produce a technical document Site selection criteria and their succesive use in site selection process



Site selection criteria project (started 2023)

- The publication (NT series) will be dedicated to compile the best practise on site selection criteria set development and succesfull use in site selection process
- Aimed to help Member states planning effective process of site selection
- 10 programmes, representing these that either succesfully selected the site (Finland, Sweden, Switzerland, France), that are in the process (Czech Republic, Canada, Japan, Germany) or are planning (USA, UK) = core group
- **Technical meeting** in November 2023 (Member states representatives)
- **Consultancy meetings** (2x) in 2024
- Aim to have a preprint version in late2024/early 2025

Conclusions

- The IAEA publication Management of site investigations is based on **experiences** derived from a number of site investigation projects undertaken **over the past 20 to 30 years**; input from a number of RWMOs around the world.
- The **case studies in the Annex** provide good examples of more focussed best practise in several areas relevant to a site investigation project.
- Each Member State will have its own radioactive waste inventory for disposal and **every repository development programme will be unique** in terms of the geological settings available to host a repository, as well as legislation and regulatory requirements, stakeholder acceptance, the resources available and the range of disposal concept options available
- Constructive and regular **communications between the RWMO and the regulatory authorities** is highly recommended to be established early on and maintained over the duration of the repository development programme

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Thank you!

And Stay Connected !

Professional Networks – link

eLearning – link

Videos:

- Two minute - link
- Ten minute – link

Nuclear Communicators' Toolbox - link