

**EUROPEAN REPOSITORY  
DEVELOPMENT ORGANISATION  
Model Structure and Plan**





## Summary

This document provides a **model** for the constitution, organisational structure, business plan and financing of the ERDO. It was developed during the period 2009-11 by the ERDO Working Group, with representatives from ten EU Members States.

The model structure and plan comprises:

- Articles of Incorporation that provide a model constitution for an ERDO and include its goals, membership and governance.
- Operational Guidelines that explain how the ERDO can operate, interact with its Members and with external organisations, and how it will derive its funding
- Draft Business Plan that explains how the management and financing of the ERDO, which are described in these documents, will be implemented practically for the first five years.

This model is intended to help potential ERDO founding members understand the fundamentals and implications of membership. It is fully expected that this model will be adapted to suit the specific requirements of the founding members



# Draft Articles of Incorporation (Model Constitution)

## 1 Name and Form of the Organisation

- 1.1 The organisation is called the European Repository Development Organisation (the ERDO).
- 1.2 ERDO is a not-for-profit, international co-operative organisation, established to work for the benefit of its Member Countries.

## 2 Domicile

- 2.1 The ERDO is domiciled in the county/district of .....
- 2.2 The head office of the ERDO is located at .....
- 2.3 The ERDO domicile does not prejudice the eventual location of the disposal facilities.

## 3 Aims and Objectives of the Organisation

- 3.1 The aim of the ERDO is to address the common challenges of safely disposing of radioactive wastes of its Member countries by the sharing of knowledge, technologies and geological disposal facilities in a timely fashion.
- 3.2 In collaboration with the national programmes of its Member countries, the ERDO will carry out all the preparatory work necessary to allow submission of a license application for one or more geological repositories, including the site selection, design, site characterisation, safety and environmental assessment, and strategic and economic planning for the facility or facilities.
- 3.3 Prior to submission of a license application and before the point of repository construction, the ERDO may decide to restructure itself as, or hand over responsibility to, a successor implementer organisation(s), domiciled at the chosen repository site(s), that will build and operate the requisite shared and commonly owned facilities for the storage, transport and ultimate geological disposal of radioactive wastes.
- 3.4 The facilities and solutions developed by the ERDO and any successor implementer organisation will be made available to all of the ERDO Member countries on mutually agreed timetables designed to optimise Members' economic and strategic needs.
- 3.5 In order to provide transparent oversight and ensure the use of the most appropriate technologies and internationally recognised standards (e.g. safety, quality and knowledge management), the ERDO will maintain close links with the IAEA, the EC and other European and international organisations, and the regulatory authorities of all Member Countries, including the use of peer reviews. In developing shared repositories and other facilities, the ERDO will also work closely with organisations in other countries that are developing separate solutions and with suppliers of technologies and services



that can support the shared facilities.

#### 4 Membership

- 4.1 Membership of the ERDO co-operative is open to European countries (of the European Union, the European Economic Area and Switzerland) that subscribe to its aims and objectives.
- 4.2 All Member Countries must have a national strategic plan for radioactive waste management that meets its obligations with respect to either the IAEA Joint Convention or any relevant Directives of the European Commission on radioactive waste management, or both. Member Countries with active or past nuclear power programmes (MC-NP) are expected to have an active parallel national programme for R&D, including siting studies, for a geological disposal facility (GDF) on their own territory in order to fulfil these obligations.
- 4.3 MC-NP agree to the siting programme of the ERDO and are prepared to accept ERDO representatives into their territory and to provide reasonable assistance to facilitate ERDO approaches to potential GDF host communities. MC-NP retain the right of veto to siting of facilities within their own territory.
- 4.4 The governments of Member Countries nominate one or more ministries and/or national organisations to represent them on the Board of Directors of the ERDO as the National Representative Group.
- 4.5 Each National Representative Group has an equal vote on the Board of Directors.
- 4.6 Countries wishing to join the ERDO co-operative after its foundation are accepted to membership by the unanimous approval of the National Representative Groups.
- 4.7 A Member Country may terminate its membership of the ERDO by giving one year's notice to the Board.
- 4.8 Member Countries that are in default of payment of working capital contributions (see Article 6.15) may have their membership of the ERDO terminated by agreement of the Board.
- 4.9 Member Countries resigning from the ERDO or having their membership terminated have no rights to repayment of share capital or working capital contributions.

#### 5 Governance

- 5.1 The ERDO is managed by a Board of Directors (the Board) and an Executive, and uses employees and/or delegated staff to carry out its work, under the direction of the Executive.
- 5.2 The Board establishes the policies, goals and annual budget of the ERDO. The Executive converts these policies and goals into a programme of work that can be achieved within the designated budget and ensures that this programme is carried out. In so doing, the Executive is answerable to the Board.

### The Board of Directors

- 5.3 The Board comprises the permanent National Representative Groups, with two Board Members nominated by each National Representative Group.
- 5.4 Additional, non-voting Board Members who are not necessarily from Member Countries or National Representative Groups may be appointed by the Board on the basis of their knowledge, expertise or experience.
- 5.5 The term of office of each Board Member is decided individually by their National Representative Group, or by the Board in the case of non-voting members, but will not be less than four years.
- 5.6 The Board elects a Chairperson and one or more Vice Chairpersons, whose terms of office are agreed by the Board but will not be less than three years, unless terminated earlier by either party.
- 5.7 The Chairperson and Vice Chairpersons shall be drawn from the National Representative Groups and shall not represent the same Member Countries.
- 5.8 Retiring Board Members shall give the Chairperson three month's notice of their departure from the Board.
- 5.9 National Representative Groups each have a single vote on any business of the Board that requires voting. Proxy voting is allowed and the intention to use a proxy must be communicated in advance of a meeting to the Chairperson.
- 5.10 The Board has a quorum when at least two thirds of its voting Members are present or represented by proxy.
- 5.11 The Board meets three or four times a year at Ordinary Meetings. Ordinary Board meetings are called at least six weeks in advance by the Chairperson, who issues an agenda and requests Board members to submit any other items of business within two weeks of the meeting.
- 5.12 Extraordinary Board Meetings can be called by the Chairperson or at the request of at least two National Representative Groups.
- 5.13 The secretariat for the Board is provided by the Executive.
- 5.14 The Board produces an Annual Report that is published.

### The Executive

- 5.15 The Executive is responsible for the management of the work and the functioning of the ERDO and for executing the programme approved by the Board, within the budget approved by the Board each year.
- 5.16 Taking account of the directives and policies of the Board, the Executive produces annual and three-year programmes of work and associated budgets for periodic approval by the Board.
- 5.17 The Executive comprises the Chief Executive Officer (CEO), the Chief Financial and Administrative Officer (CFAO), the Director of Science and Technology (DoST) and the Director of External Relations. The Executive members are appointed by the Board.

- 5.18 The CEO is directly responsible to the Board for the execution of the ERDO programme and the CEO and CFAO are together responsible to the Board for the financial management of the co-operative.
- 5.19 Members of the Executive may be employees of the ERDO or may be seconded on a full or part time basis by the organisations of the National Representative Groups.
- 5.20 The Executive is based at the ERDO domicile and meets as necessary to manage the business of the ERDO.
- 5.21 The Executive establishes its own working and decision-making procedures.
- 5.22 The Executive produces and publishes an Annual Report of ERDO Activities and Finances that is approved by the Board and includes the Annual Report of the Board.

#### Remuneration of Board and Executive Members

- 5.23 Non-voting Board Members and Executive Members are remunerated for their services according to guidelines that are established by a Remuneration Committee that is drawn from and elected by the voting Board Members.
- 5.24 The Board decides upon the period of service of members of the Remuneration Committee.

#### Staffing of the ERDO

- 5.25 Members of staff of the ERDO may be employees of the ERDO or may be seconded on a full or part time basis by the organisations of the National Representative Groups.
- 5.26 Staff members are recruited as required and appointed by decision of the Executive.
- 5.27 The general and individual terms and conditions of employment and remuneration of ERDO staff members are established by the Executive.

## 6 Financial Basis

- 6.1 The ERDO is a not-for-profit co-operative organisation that is funded by resources drawn from its Member Countries via the National Representative Groups.
- 6.2 Resources drawn from Member Countries are in the form of share capital and working capital.
- 6.3 Fee-earning projects can be proposed by the Executive and carried out by ERDO staff as services to external organisations, provided that involvement in these projects furthers the aims of the ERDO and the projects are approved by the Board.

#### Assets

- 6.4 The assets of the ERDO are its share capital, funds received from Member Countries and other sources and maintained in bank accounts or invested, property owned, items of infrastructure and accounts receivable.



### Share Capital

- 6.5 Each Member Country contributes initial share capital to the ERDO in the form of a share that remains with the ERDO until the co-operative is dissolved. The shares are non-transactable and non-transferable securities.
- 6.6 The purpose of the share capital is to cover the costs of establishing the basic organs and infrastructure of the co-operative.
- 6.7 Each founding Member Country and any Member Country joining subsequently pays the same share. All Member Countries are thus equal shareholders in the co-operative and have an equal vote on the Board.
- 6.8 The size of the share is 50,000 EUR.
- 6.9 Repayment of the share is not guaranteed by the assets of the ERDO.
- 6.10 The ERDO does not pay dividends to Member Countries holding share capital.

### Working Capital

- 6.11 The programme of work of the ERDO is funded by working capital drawn from the Member Countries on the basis of an annual budget and five-year financial plan drawn up by the Executive and approved by the Board.
- 6.12 Annual working capital requirements are divided into Basic Infrastructure Costs and Project Costs. The Basic Infrastructure Costs cover the costs of the Executive and the ERDO offices. Project Costs cover all other costs of carrying out the ERDO programme of work.
- 6.13 Annual contributions to the Basic Infrastructure Costs of the working capital are divided equally between Member Countries.
- 6.14 Annual contributions to the Project Costs of the working capital are scaled according to a formula based upon the inventory of wastes that a Member Country intends to dispose of in the shared disposal facilities. The formula will be agreed by the Board at its first meeting and thereafter reviewed annually.
- 6.15 A Member Country that is in default of payment of working capital may have its membership of the ERDO terminated by the Board with no financial redress or repayment of share capital. The share of that member Country is cancelled at that time.
- 6.16 At the time when the repository facilities becomes operational, the ERDO or its successor organisation may decide to set scaled disposal fees based upon the relative lifetime contributions made by Member Countries to the ERDO working capital.

### Financial Liabilities

- 6.17 As each Member Country is an equal shareholder in the ERDO each Member Country is equally liable for any financial liabilities that fall upon the co-operative.
- 6.1 In the event of dissolution of the co-operative (see Article 8.2), the assets remaining after all closure costs have been met will be distributed among the Member Countries holding shares at that time according to the ratio of their lifetime contributions to the share and working capital.

7 Applicable Laws

- 7.1 The ERDO co-operative is incorporated in the country of domicile and is operated in accordance with and subject to the laws of the country of domicile.

8 Constitutional Revisions and Dissolution of the Co-operative

- 8.1 The constitution of the ERDO can be amended by unanimous approval of the voting Members of the Board and must take place at a meeting of the Board.
- 8.2 Dissolution of the co-operative can take place after approval of a majority of two thirds of the voting Members of the Board and must take place at a meeting of the Board. Member Countries must be given 12 months notice of the intention to dissolve the co-operative.

# Proposed Operational Guidelines

These guidelines explain how the ERDO can operate, interact with its Members and with external organisations, and how it will derive its funding. It is anticipated that these guidelines will be adopted or modified by the ERDO Board when the ERDO is established. The guidelines should be read in parallel with the Articles of Incorporation, which formally define the structure and functioning of the ERDO as an international, not-for-profit co-operative.

## 1 Background

- 1.1 The ERDO is a development organisation. It will not own or operate any waste management facilities. The objective of the ERDO is to carry out the necessary work to address the common challenges of safely disposing of the long-lived radioactive wastes in its Member Countries by the sharing of knowledge, technologies and facilities.
- 1.2 The ERDO will carry out all the preparatory work necessary to allow construction of one or more geological disposal facilities (GDF), including the siting, design, site characterisation, safety and environmental assessment, research and development, and strategic and economic planning for the facility or facilities.
- 1.3 The ERDO may also propose and plan for the development of associated, shared storage and/or waste handling (e.g. encapsulation) facilities.
- 1.4 Before submission of any license applications, the ERDO will take the necessary steps to establish the most appropriate and mutually agreed form of organisation to operate the GDF and any other facilities; here, nominally called the European Repository Organisation (ERO), which will be domiciled in the location of the GDF. The license application will be submitted by the ERO. When the preparatory work of the ERDO is completed and the ERO has been established, the ERDO can be dissolved. Control of the ERO will be in the hands of those ERDO Member Countries that decide to use the GDF.

## 2 Obligations and Rights of the ERDO Member Countries

- 2.1 The obligations and rights of ERDO Member Countries are different for countries with and without radioactive wastes from nuclear electricity generation programmes.
- 2.2 All Member Countries must have a national strategic plan for radioactive waste management that meets its obligations with respect to either the IAEA Joint Convention or any relevant Directives of the European Commission on radioactive waste management, or both.
- 2.3 Member Countries with wastes from nuclear electricity generation programmes (MC-NP) are expected to have an active parallel national programme for a geological disposal facility (GDF) on their own territory in order to fulfil their obligations under 2.2. MC-NP are expected to operate this programme in an interactive and complementary manner to the ERDO programme. In doing so, Member Countries will receive the benefit of shared R&D and technology development for all aspects of their national radioactive waste management programmes, as well as contributing to shared knowledge.

- 2.4 MC-NP should be prepared to work together with ERDO representatives in their territory and to provide reasonable assistance to facilitate ERDO approaches to potential GDF host communities. Part of the assistance provided could be the sharing of national site selection information databases with the ERDO to ensure technical consistency between the national and the ERDO programmes.
- 2.5 Member Countries with no radioactive wastes from nuclear electricity generation programmes (MC-NN) can choose, at any time, to opt in or out of the ERDO siting programme for the GDF.
- 2.6 All Member Countries agree to fund an agreed programme of work of the ERDO, proportionately to an estimate of their inventory of wastes for geological disposal. Funding can be provided as cash or as cash plus in-kind contributions of staff resources and facilities, as agreed by the ERDO Board.
- 2.7 All Member Countries have the right to withdraw from the ERDO if, at any time, their national programme decides to move independently towards siting a GDF, so that a shared facility is no longer required. Members must give at least one year's notice of withdrawal from the ERDO.

### 3 Obligations of the ERDO

- 3.1 The ERDO will operate solely for the benefit of its Member Countries on a not-for-profit, shared risk basis. When a successor ERO is established, this may decide to offer services to further users on a commercial basis.
- 3.2 The ERDO will carry out its work so that it does not interfere with or adversely affect national waste management plans in any of its Member Countries, including any parallel, national GDF development programmes. As described in 2.3, it is expected that the ERDO will work symbiotically with national programmes. By working closely with national programmes it will share R&D and technologies and produce cost-benefits for all parties during the development stages leading to a GDF.
- 3.3 Similarly, the ERDO will not operate in such a way as to adversely affect non-ERDO national waste management programmes in Europe. Indeed, ERDO expects to be able to work closely with these organisations, to the mutual benefit of all parties.
- 3.4 The ERDO will develop a GDF operational plan (including any associated storage and other facilities identified as necessary) that makes safe, secure and cost effective waste disposal facilities available to Member Countries, taking account of all actual development, operational and closure costs, including benefits to the host community, region and country.
- 3.5 In order to provide transparent oversight and ensure the use of the most appropriate technologies and internationally recognised safety standards, the ERDO will maintain close links with the IAEA and other European and international organisations, and the regulatory authorities of all Member Countries, including the use of peer reviews.
- 3.6 As described in 1.4, at an agreed time, the ERDO will ensure the establishment of the European Repository Organisation (ERO). This will take place before the GDF enters the licensing process, so that the license applicant will be the eventual operator of the facility. ERDO Member Countries will be guaranteed access to ERO facilities with

preferential charges, which will be agreed before the ERO is established by those ERDO Member Countries that will use the GDF.

#### Agreed use of ERO facilities by ERDO Members

- 3.7 This section deals with the transition from ERDO development work to the construction and operation of facilities that will be managed by the ERO. Although user countries will make contracts with the ERO for management of their wastes, ERDO member Countries will need to have guarantees drawn up by the ERDO for the terms of use; the transitional arrangements from ERDO to ERO will need to honour these guarantees.
- 3.8 ERDO will develop operational terms for the ERO that will provide the most cost-effective overall provision of guaranteed services. Based on these, ERDO Member Countries will agree to use ERO storage and disposal facilities in a timely fashion, on a joint and mutually beneficial timetable that will be negotiated and developed by the Members.
- 3.9 The ERDO will develop a scale of storage and disposal charges for its Members (and for any future users who may not have contributed to development by being part of the ERDO) that reflect the contributions to the ERDO working costs, the inventory of wastes involved and the date that wastes are moved to ERO facilities. The intention is that Member Countries should not unnecessarily postpone transfer of their wastes to the shared facility, if this delay would cause cost increases due to maintaining an under-used facility.
- 3.10 As an example, it is expected that making use of a GDF for spent fuel disposal as soon as it is available and when the time is appropriate (relative to the age and thermal characteristics of the spent fuel), would attract preferential charges compared to delayed disposal, unless a regular and balanced programme of throughput of wastes can be achieved by all Members.

#### 4 Programme of work, review, reporting and recording

- 4.1 The ERDO Executive will manage a programme of work that is agreed by the ERDO Board. The Executive will develop an annual programme and a rolling five-year programme. Programmes will be based on achieving both general and specific targets, with work packages designed to provide the information and tools necessary to meet them.
- 4.2 The ERDO work programme will be carried out by ERDO staff and by contractors. So far as procurement rules allow, R&D tasks will be contracted preferentially to National Representative organisations, provided they meet all the tendering requirements established by the Executive for specific tasks. This may not always be possible, as critical expertise will sometimes lie outside the Member Countries.
- 4.3 It is the intention of the ERDO that its work should be carried out to high professional standards. The ERDO will thus establish a review procedure for both its overall programme and for certain projects, work packages and documents. The Executive may thus decide to establish one or more expert advisory panels to assist it with the development or review of certain work areas. It will also develop review and approval



procedures for all documentation produced internally or by contractors. Critical documentation will be subject to external peer review.

- 4.4 Completed and approved reports will be placed on the open section of the ERDO web site in order to be available to all interested parties.
- 4.5 The working language of the ERDO will be English. However, it is anticipated that some documentation will be produced only in the language of the country to which it applies, whilst other documentation will need to be prepared in multi-lingual versions. The website will be eventually be developed in several languages, as the work programme begins to consider the siting of facilities.
- 4.6 Preservation, tracking and transmission of information collected and produced by the ERDO will be essential for future decision-making. A knowledge management system will be established within the first year of ERDO operations to facilitate this.

## 5 Voluntary siting of facilities

- 5.1 The most challenging aspect of the ERDO's work will arise within a few years of its foundation, when it begins to consider siting possibilities for a GDF and, possibly, for storage and other facilities. The intention of the ERDO is that finding an appropriate site should be a 'bottom-up' process that begins by identifying local and regional communities that may be interested in acting as hosts and develops into an inclusive partnership between the ERDO (and subsequently, the ERO) and the potential hosts. Consequently, the siting programme will entail making nationwide and then regional and local contacts to explain what is being sought and what the implications and potential benefits are for communities, so that potentially interested communities can come forward for consideration.
- 5.2 Potentially interested communities will be assessed in a preliminary technical analysis carried out by the ERDO, in close collaboration with national technical agencies in the countries concerned (e.g. the national Waste Disposal Organisation and Geological Survey) and with national decision makers being fully informed at all times. The ERDO will establish generic technical guidelines for establishing the suitability of a siting area before it begins the siting programme and potential volunteer communities will have to pass this qualification test to be considered further.
- 5.3 Defining the details of how this programme will develop will be an early task of the ERDO. An important aspect of the approach envisaged is that governments and national agencies will not be required to have to take an active lead in contacting and eventually negotiating with potentially interested communities, unless they wish to be so involved.
- 5.4 ERDO will keep national governments fully informed of developments in the siting programme and national governments will retain the right of veto over siting decisions (see 7.5).

## 6 Interaction with Member Countries

- 6.1 The ERDO is an independent organisation with shareholders (Member Countries) aiming at a common set of objectives. Much of its work will be generic. However, it will carry out some parts of its work using information and analysis that is specific to its Member Countries and must be able to develop independent views on such material. Whilst it will be important for Member Countries to influence work that is specific to their own territory, the results of the ERDO work should be impartial and allow unbiased decision-making. The ERDO project managers will thus need to ensure that all opinions are clearly recorded and any national bounding constraints identified, so as to allow fully informed decisions.
- 6.2 It is expected that each Member Country will provide assistance to the ERDO in its work, especially with respect to the siting programme. Whilst some Member Countries may decide to take an active role in promoting the volunteer siting process described in Section 6, others may prefer to take a passive role. In either case it is expected that the governments and the agencies of Member Countries would not stand in the way of any reasonable programme for publicising the ERDO project and contacting communities and regional authorities.
- 6.3 In all cases, it is expected that the governments of Member Countries will authorise national agencies holding technical information required by the ERDO to provide that information freely. Where necessary (for example where data analysis or processing is required) these agencies could be contracted by the ERDO to provide such information.
- 6.4 As potentially interested communities emerge and are found to meet the technical suitability criteria defined by the ERDO, national governments will be invited to endorse the continuation of negotiations and to become as actively involved in them as they wish, especially with respect to essential decisions that affect, for example, national infrastructure and strategic planning.
- 6.5 Notwithstanding the above, by acting through the Board of the ERDO, Member Countries are allowed to veto any decisions made with respect to their own country at any time, should this prove necessary to preserve their national interests.

## 7 Financial Management

- 7.1 The income of the ERDO is derived from contributions by Member Countries and any project work that is funded by external organisations. For example, it will be valuable, for strategic reasons, for the ERDO to be involved in projects and initiatives that are co-funded by the EC.
- 7.2 The share and working capital finance system of the ERDO is explained in the Articles of Incorporation. In the first five years of its activities, the ERDO will fund all of its work using working capital, with the share capital being held as a cash reserve and security. The share capital contribution is set at 50,000 EUR for each Member Country.
- 7.3 Annual working capital requirements are divided into Management Costs and Project Costs. The Management Costs cover the costs of the Executive, the secretariat, the ERDO offices, legal and accountancy and other infrastructure items. Project Costs cover all support staff costs (support staff will predominantly be assigned to project

work rather than management), external contracted-out project costs, internal travel and advertising/media costs and the contingency allowance, all of which are directly associated with carrying out the ERDO programme of work.

- 7.4 Annual contributions to the Management Costs of the working capital are divided equally between Member Countries.
- 7.5 Annual contributions to the Project Costs of the working capital are scaled according to the inventory of wastes that a Member Country intends to dispose of in the shared disposal facilities. To take into account differences in waste types, a formula has been proposed to obtain equivalent waste units (EWU). The exact formula will be agreed by the Board at its first meeting and thereafter reviewed every five years<sup>1</sup>. It is expected that the EWU scheme will assign practically no project costs to countries with only small amounts of ILW or disused radiation sources to dispose of.
- 7.6 The working capital requirements of the ERDO will be set for each year by the Executive and estimated in advance for each rolling five-year period and approved by the Board, when it approves the associated work programmes.
- 7.7 The finances of the ERDO will be subject to the national and regional accountancy and taxation requirements for a co-operative organisation in the country/region of domicile. Annual accounts will be independently and professionally audited and submitted to the Board for approval.

## 8 ERDO infrastructure and connections

- 8.1 The ERDO will have an office located in its country and region of domicile. This could be located within the premises of one of the National Representative organisations in order to benefit from professional interactions.

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<sup>1</sup> A more complicated model might be devised for use later in the ERDO's development, which could also include a Member Country's potential storage requirements or include time-discounting factors for when a Member Country intends to send waste to the ERO.

# Draft Business Plan for the first 5 years of operation

## 1 Background and Scope

- 1.1 The European Repository Development Organisation (ERDO) is a not-for-profit, international co-operative organisation, established to work for the benefit of its Member Countries.
- 1.2 The aim of the ERDO is to address the common challenges of safely disposing of radioactive wastes of its Member countries by the sharing of knowledge, technologies and geological disposal facilities in a timely fashion.
- 1.3 In collaboration with the national programmes of its Member countries, the ERDO will carry out all the preparatory work necessary to allow submission of a license application for one or more geological repositories, including the site selection, design, site characterisation, safety and environmental assessment, and strategic and economic planning for the facility or facilities.
- 1.4 The ERDO is a development organisation. It will not own or operate any waste management facilities. Prior to submission of a license application and before the point of repository construction, the ERDO may decide to restructure itself as, or hand over responsibility to a successor implementer organisation(s), domiciled at the chosen repository site(s), that will be the license holder and will build and operate the requisite shared and commonly owned facilities for the storage, transport and ultimate geological disposal of radioactive wastes.
- 1.5 The facilities and solutions developed by the ERDO and any successor implementer organisation will be made available to all of the ERDO Member countries on mutually agreed timetables designed to optimise Members' economic and strategic needs.
- 1.6 The constitution on the ERDO and its operational framework are described in detail in previous chapters of the model structure and plan.
- 1.7 This Business Plan explains how the management and financing of the ERDO, which are described in these documents, will be implemented practically. This Business Plan should thus be read in conjunction with these two documents.
- 1.8 The aim of this Business Plan is to provide ERDO Member Countries with specific information on the resources (staff and financing) that will need to be committed to the ERDO during its first five years of operation. It is anticipated that this Plan will need to be updated and ratified by the ERDO Board at the time that the ERDO is first constituted.
- 1.9 The Business Plan presents a Start-up Model for the ERDO, two additional Start-up Scenarios that address membership variants and a Financial Plan and Budget that address all resource issues for the Model and the Scenarios.

## 2 Aims of the ERDO in the Period of this Business Plan

- 2.1 During the first five years of operation, the ERDO will aim to achieve the following objectives, which will be a measure of the degree of success of the ERDO:

1. Establish a governance structure comprised of a Board of Directors, oversight and/or advisory bodies and a Management Executive.
  2. Establish a fully functional headquarters office in the country of domicile<sup>1</sup>, with high levels of quality control and management and staffed by well-motivated individuals.
  3. Agree on the target timescale for its repository development programme and on procedures for reviewing and updating its financing mechanisms.
  4. Establish open and responsive communications channels to all interested parties, including international and national nuclear organisations and publicise its objectives and its work widely.
  5. Carry out all necessary work and develop all necessary national and community contacts to make an initial identification of one or more potential GDF siting areas in its Member Countries.
  6. Perform – in close collaboration with relevant national organisations – the preliminary work necessary to allow eventual establishment of local siting task forces in one or more of the potential siting areas.
  7. Define and embark upon a programme of R&D work to support the ERDO aims such that information is provided to assist with all technical and non-technical aspects leading to shared disposal facilities in a timely fashion.
  8. Place the ERDO on the map as an active, operational implementing agency and become an acknowledged member of, or have representation on, appropriate European and international groupings of implementing agencies.
- 2.2 During the final year covered by this Plan, an updated Business Plan will be produced that sets out the goals, timescales and approach to the remaining activities of the ERDO, which will be to complete all the necessary work leading to identification of a preferred site for a shared GDF, production of all requisite documentation to support a license application for GDF construction and all the preparatory work needed to establish the successor implementing organisation that will own the license for and operate the GDF.

### 3 Stages in ERDO Development and the ERDO 1<sup>st</sup> 5-Year Work Programme

- 3.1 This section describes how the ERDO will establish itself and the programme of work that is proposed for the first 5 years of its operations. It is based upon a Plan Model in which five EU countries come together to establish the ERDO. The Financial Plan and Budget described in Section 3 also presents two additional Start-up Scenarios, where 3 or 7 founding Member Countries come together to form the ERDO.
- 3.2 The Stages described below consist of a 6-month Initiation Stage, a one-year Preliminary Operations Stage and the first 4 years of the Project Operations Stage.

#### Initiation Stage

- 3.3 The pre-cursor to the Initiation Stage is expected to take about two years and was described in Section 1 of this document, being presented in the form of a road-map.

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<sup>1</sup> The country of domicile for the ERDO in no way prejudices the country of domicile for a later implementing organisation.



It includes the making of an agreement between the founding Member Countries, the selection of a domicile for the ERDO and the selection of the appropriate legal form of the ERDO. This step overlaps with the final stage of the ERDO-WG activity (since additional input and responses may be required from the ERDO-WG in this phase) and lies before the start of the activities defined in this Business Plan.

- 3.4 The Initiation Stage begins as soon as the Board has been established by the Member Countries (towards the end of the pre-cursor stage) and has met to discuss and agree the Operational Guidelines and the Business Plan. The activities in this Stage will be dominated by:
- 3.5 Appointment of the Executive by the Board: the Chief Executive Officer (CEO), the Chief Financial and Administrative Officer (CFAO), the Director of Science and Technology (DoST) and the Director of External Relations (DoER). The Board will decide which (if any) Executive members are to be selected from the Member Countries and which members need to be recruited externally. It is expected that induction of individual members of the Executive might be staggered over the Initiation Stage. The Board, assisted by legal representatives from a National Representative Group within the country of domicile, will agree:
  - whether individuals on the Executive are to be ERDO employees or secondees of National Representative Groups;
  - remuneration and remuneration policy; benefits/pensions etc
  - other contractual terms and conditions of employment.
- 3.6 In this Plan, it is assumed for financial modelling that costs have to be fully met by the ERDO budget for all the staff of the ERDO (Executive and support staff) regardless of whether they are secondees or direct employees of the ERDO.
- 3.7 Establishing a legal entity in the form appropriate for the country of domicile (as decided in the pre-cursor stage); opening bank accounts; transfer of sufficient funding for the initiation phase.
- 3.8 Location and renting of office accommodation: identification of a small office suite in the country of domicile to accommodate the Executive and support staff. Contractual arrangements for rental will be made and the necessary infrastructure will be rented and purchased. In the event that a member Country offers shared space with one of its national organisations, some infrastructure items might be shared and this will be reflected in a contract with the providing organisation.
- 3.9 Recruitment of support staff: an Office Manager and a secretary will be recruited and part-time or call-down IT support will be contracted. This process will be facilitated by assistance from legal representatives from a National Representative Group within the country of domicile.
- 3.10 Establishment of office procedures: the Executive will establish working procedures for running the office, including document and data management, a preliminary quality system and rules for communications, record keeping, expenses payments and other routine activities that will involve the ERDO and its staff.
- 3.11 Opening of an ERDO website and initial contacts with the national and European media: to establish open communications with the public and all stakeholders and to

announce the establishment of the ERDO and its agenda.

- 1.1 The Initiation Stage is planned to take 6 months. Depending on the scope for sharing facilities with a National Representative Group within the country of domicile, this may be shorter.

#### Preliminary Operations Stage

- 3.12 The first year of operations will involve establishment and consolidation of the extensive external contacts network that will be required for the ERDO's work and planning for the main stages of project work aimed at the eventual identification of a GDF site. It is envisaged that the work of the Executive and the support staff will thus be partly inward looking (planning and setting in place the project approach) and partly outward looking, communicating widely with stakeholders and publicising the work of the ERDO. The activities in this Stage will be dominated by:

- 3.13 Programme development: the Executive will develop the first annual programme and a rolling five-year programme, each based on achieving both general and specific targets, with work packages designed to provide the information and tools necessary to meet them. The targets for the first year will be:

- production of a detailed inventory and waste arisings schedule for wastes destined for geological disposal in the ERDO Member Countries, with scenarios for alternative developments of national nuclear power and waste management strategies;
- identification of technical and non-technical GDF siting exclusion criteria for use in the subsequent siting programme;
- elaboration of the generic ERDO repository siting strategy to take account of the specific drivers, constraints and national infrastructures of the ERDO Member Countries and to place this before Member Country governments (via the ERDO Board) for approval the detailed approach to seeking and assessing volunteer communities;
- development of a model State and community benefits package for use in the next Stage initiation of the siting programme;
- production of the first five-year programme (which will begin in the Project Operations Stage) and initiation of contracting procedures for the initial work in that period.

- 3.14 In performing this work, the Executive will be supported as necessary by consultants engaged using interim contracting procedures to be agreed with the Board.

- 3.15 Main contracting procedures: the ERDO work programme will be carried out by ERDO staff and by contractors. So far as procurement rules allow, R&D tasks will be contracted preferentially to National Representative organisations, provided that they meet all the tendering requirements established by the Executive for specific tasks. This may not always be possible, as critical expertise will sometimes lie outside the Member Countries. The Executive will establish contracting procedures necessary for the main Project Operations Stage, developing them from the interim procedures being used for any contracts let during the Preliminary Operations Stage.

- 3.16 External relations: the Executive will begin a programme of meetings with decision-makers and representatives of international organisations (EC, ENSREG, IAEA etc), national organisations in the Member Countries (government ministries and government agencies; representatives of political parties and NGOs responsible for energy and environment policy etc), the media (Member Countries, European and worldwide) and commercial organisations that may wish to provide services to the ERDO and/or its successor implementer organisation. The aims of the meetings will be to establish working relationships and personal contacts, whilst explaining the objectives and work programme of ERDO to stakeholders.
- 3.17 Review procedure: the ERDO's work will be carried out to high professional standards, so the Executive will establish a review procedure for both its overall programme and for certain projects, work packages and documents. It will develop internal and external peer review and approval procedures for all documentation produced internally or by contractors. The Executive may decide to establish one or more expert advisory panels to assist it with the development or review of certain work areas and, in this Plan, it is assumed that one such Advisory Panel is established in this Stage of the work.
- 3.18 Knowledge Management and Quality Systems: Preservation, tracking and transmission of information collected and produced by the ERDO will be essential for future decision-making. A Knowledge Management System (KMS) will be designed and established within this Stage in order to facilitate this. The preliminary quality system utilised in the Initiation Stage will be fully developed into a Quality System that is linked to and integrated with the KMS.
- 3.19 The Plan assumes that the Executive will be joined by two additional technical staff members during this Stage: one junior and one middle-management level. The number of employees or secondees would thus be seven.

#### Project Operations Stage

- 3.20 This Stage covers the next four years of operation of the ERDO and the beginning of the main project work leading up to GDF siting. The detailed work schedule is not defined here, as this will be dependent on the specific possibilities that emerge during the Preliminary Operations Stage. For the purposes of this plan, however, it is possible to identify the main topics of work that will be required and these can be used to produce the financial model. The activities in this Stage will be dominated by:
- 3.21 The R&D Programme: this will have been designed in the previous Stage and will be implemented in the Project Operations Stage. The main areas of work will cover the following topics:
- legal requirements and constraints on waste movement, ownership and liabilities in the Member Countries;
  - continued updating of the ERDO inventory developed in the previous Stage;
  - development of a more detailed disposal financing and costing model;
  - initial review of GDF design concept options (towards the end of this period);
  - initial assessment of waste acceptance criteria for the shared GDF.

- 3.22 By collaboration between Members and by close cooperation within the EC frameworks, duplication of R&D efforts should be avoided.
- 3.23 GDF Siting Programme: this will be the main activity in this period and will involve intensive interactions between the Executive, the ERDO Outreach Team (which will be extended under the leadership of the Director of External Relations) and the technical programme, which will have the responsibility of carrying out initial desk evaluations of areas that begin to emerge as having potential. The activities in the siting programme will be:
- roll-out of the ERDO siting requirements, programme, benefits packages to communities to initiate the solicitation of volunteers;
  - publicising the siting programme and setting up procedures for interacting with potentially interested communities;
  - technical evaluation of potential volunteer areas against the exclusion criteria developed in the previous Stage, involving close collaboration with National Representative Organisations;
  - establishment of and close interaction with community liaison partnerships in potentially interested areas;
  - liaison with national governments and regulatory agencies;
  - liaison with European and international organisations.
- 3.24 The Plan assumes that the ERDO will be joined by three additional junior staff members during the first 2 years of this Stage (bringing the total number of staff to 10) and by a further 5 over the next 2 years. The number of employees or secondees by the end of this Stage would thus be 15.

#### 4 Budget

- 4.1 The budget required to carry out the programme of work described in Section 3 is shown in the Table below. This budget has been developed making conservative assumptions on costs based on mid- to high-end figures for infrastructure and salaries/benefits. Depending on the domicile of the ERDO, some of these costs may thus be lower than indicated here.
- 4.2 This budget is the current estimate for the purposes of planning. It will be updated each year by the Executive and estimated in advance for each rolling five-year period. Each year, and every five-years, these budgets will be approved by the Board, when it approves the associated annual and five-year work programmes.

ERDO 1st Five-Year BUDGET (kEUR)						
Stage	Initiation	Preliminary	Project			
	6 months	1st year	2nd Year	3rd Year	4th Year	5th Year
<i>Employment costs</i>						
CEO	95	190	200	209	220	231
CFAO	80	160	168	176	185	194
DoST	80	160	168	176	185	194
DoER	80	160	168	176	185	194
Office Manager	35	70	74	77	81	85
Secretary	25	50	53	110	116	122
Support Staff	0	220	336	458	733	1179
<i>Support staff numbers</i>	0	2	3	4	6	9
<i>Infrastructure</i>						
Office rental	35	70	74	77	85	100
IT systems	30	15	16	25	30	40
Consumables	10	20	35	40	40	50
Utilities (phone, electric)	5	10	11	15	20	25
<i>Representation</i>						
Travel expenses	30	50	150	150	120	120
Advertising & Media	0	25	200	200	100	40
ERDO Board meetings	10	20	30	35	40	40
<i>Legal and Accountancy</i>						
	45	40	70	80	50	50
<i>Projects (contracted out)</i>						
	50	350	500	700	900	1000
<i>Advisory Panels</i>						
	0	20	30	35	40	45
<i>Tax</i>						
	0	5	20	25	30	30
<i>Contingency</i>						
	61	164	230	277	317	375
<b>Annual Totals</b>	<b>671</b>	<b>1799</b>	<b>2531</b>	<b>3043</b>	<b>3477</b>	<b>4115</b>
<i>Costs division</i>						
Managements Costs	530	990	1114	1258	1307	1401
Project Costs	141	809	1416	1785	2169	2714

## 5 Financial Plan

5.1 Annual working capital requirements are divided into Management Costs and Project Costs. The Management Costs cover the costs of the Executive, the secretariat, the ERDO offices, legal and accountancy and other infrastructure items. Project Costs cover all support staff costs (support staff will predominantly be assigned to project work rather than management), external contracted-out project costs, internal travel and advertising/media costs and the contingency allowance, all of which are directly associated with carrying out the ERDO programme of work.

5.2 Annual contributions to the Management Costs of the working capital are divided equally between Member Countries. For the basic Plan Model with 5 Member Countries and the two scenarios with 3 or 7 member countries, the annual contributions required will thus be as shown below:

Annual Contributions (kEUR) to Management Costs for Each Member Country						
Stage	Initiation	Preliminary	Project			
	6 months	1st year	2nd Year	3rd Year	4th Year	5th Year
Plan Model (5 Members)	106	198	223	252	261	280
Scenario 1 (3 Members)	177	330	371	419	436	467
Scenario 2 (7 Members)	76	141	159	180	187	200



5.3 Annual contributions to the Project Costs of the working capital are scaled according to a formula based upon the inventory of wastes that a Member Country intends to dispose of in the shared disposal facilities in order to obtain equivalent waste units (EWU). The exact formula will be agreed by the Board at its first meeting and thereafter reviewed every five years<sup>2</sup>. This Business Plan uses the following model to derive EWUs and to assign costs for the three Member Country scenarios for the first 5 years:

- annual contributions are scaled according to EWUs for three categories of waste (a) SF, (b) HLW and (c) any other wastes identified as being routed for geological disposal;
- the EWUs for SF and HLW are calculated on the basis of their space requirements in a GDF, on the basis that one package of either material costs the same to dispose of, using waste packaging assumptions derived from the SAPIERR II Work Package 3 Economics Study;
- the EWU for ILW is derived by normalising the disposal cost for one container of HLW to the disposal cost of ILW, allowing the equivalent volume (m<sup>3</sup>) of ILW that has the same disposal cost as the SF/HLW container to be calculated
- the ILW to SF/HLW normalisation is based on a scenario where there are separate GDFs for SF/HLW and for ILW, as separate GDFs are a 'fairer' basis than the using the incremental cost of ILW on a SF/HLW GDF, which is small and does not reflect the true cost of, for example, having large amounts of ILW to dispose of on its own<sup>3</sup>;
- for Member Countries with only small amounts of ILW or only spent sources to dispose of, a flat percentage rate contribution to working capital of 1% is set, which is not scaled on the actual amount of waste.

5.4 The calculations for establishing the EWUs are shown in the Table below:

1. One disposal container of HLW occupies the same space as one disposal container of spent fuel	2. Spent fuel containers contain an average of 1.9 tHM, which, for these calculations, is rounded to 2 tHM	3. HLW containers hold about 0.15 m <sup>3</sup> of HLW glass, so 2 tHM SF is equivalent to 0.15 m <sup>3</sup> HLW glass
4. Disposal costs per container of HLW or SF from the SAPIERR model are 0.58 million EUR	5. Disposal costs per m <sup>3</sup> of ILW from the SAPIERR model are 0.046 million EUR	6. 12.68 m <sup>3</sup> of ILW thus costs the same to dispose of as one container of HLW/SF
The rounded EWU is thus: 2 tonnes SF = 0.15 m <sup>3</sup> HLW = 12.5 m <sup>3</sup> ILW		

5.5 The next table shows how the Project Costs for the first five years would be divided among the Plan Model assumption of five Member Countries and for two scenarios with 3 and 7 Members. The waste inventories used in this example are based upon actual EU countries but are obviously indicative, as the distribution of costs among Members will depend upon which countries found the ERDO and/or join in subsequent years.

<sup>2</sup> A more complicated model might be devised for use later in the ERDO's development, which could also include a Member Country's potential storage requirements or include time-discounting factors for when a Member Country intends to send waste to the ERO.

<sup>3</sup> However, for the share of disposal costs, it may eventually be regarded as more appropriate to use the actual incremental cost of disposing of ILW in a co-disposal repository. This will need to be studied as part of the Project operations Stage work programme.

Plan Model: 5 Member Countries					Project Cost Allocation (kEUR)					
National Programme 'Type'	SF tonnes	HLW m3	ILW m3	EWU	Initiation Stage: 6 months	Preliminary Stage: Year 1	Project Stage: Year 2	Project Stage: Year 3	Project Stage: Year 4	Project Stage: Year 5
Only ILW	0	0	300	24	1	7	12	15	18	22
Research/medical	0	0	10	1	0	0	0	0	1	1
Complex historic	299	10	4000	536	26	149	261	329	400	501
Large SF amount	2504	0	1500	1372	67	382	669	843	1024	1281
HLW; no SF	0	110	3000	973	47	271	474	598	727	909
<b>Totals</b>	<b>2803</b>	<b>120</b>	<b>8810</b>	<b>2906</b>	<b>141</b>	<b>809</b>	<b>1416</b>	<b>1785</b>	<b>2169</b>	<b>2714</b>

Scenario 1: 3 Member Countries					Project Cost Allocation (kEUR)					
National Programme 'Type'	SF tonnes	HLW m3	ILW m3	EWU	Initiation Stage: 6 months	Preliminary Stage: Year 1	Project Stage: Year 2	Project Stage: Year 3	Project Stage: Year 4	Project Stage: Year 5
Only ILW	0	0	300	24	2	13	22	28	34	42
Complex historic	299	10	4000	536	49	283	495	624	758	949
HLW; no SF	0	110	3000	973	89	513	899	1133	1377	1722
<b>Totals</b>	<b>299</b>	<b>120</b>	<b>7300</b>	<b>1534</b>	<b>141</b>	<b>809</b>	<b>1416</b>	<b>1785</b>	<b>2169</b>	<b>2714</b>

Scenario 2: 7 Member Countries					Project Cost Allocation (kEUR)					
National Programme 'Type'	SF tonnes	HLW m3	ILW m3	EWU	Initiation Stage: 6 months	Preliminary Stage: Year 1	Project Stage: Year 2	Project Stage: Year 3	Project Stage: Year 4	Project Stage: Year 5
Only ILW	0	0	300	24	1	4	7	9	11	14
Research/medical	0	0	10	1	0	0	0	0	0	0
Complex historic	299	10	4000	536	16	94	165	207	252	315
Large SF amount	2504	0	1500	1372	42	241	421	531	645	807
Large SF amount	2504	0	1500	1372	42	241	421	531	645	807
Small SF amount	620	0	300	334	10	59	103	129	157	197
HLW; no SF	0	110	3000	973	30	171	299	377	458	573
<b>Totals</b>	<b>5927</b>	<b>120</b>	<b>10610</b>	<b>4612</b>	<b>141</b>	<b>809</b>	<b>1416</b>	<b>1785</b>	<b>2169</b>	<b>2714</b>

5.6 It can be seen that the EWU scheme assigns practically no costs to countries with only small amounts of ILW or disused radiation sources to dispose of, so the 1% rule (see 5.5) would be invoked, which means that such a Member Country would contribute 1400, 8100, 14200, 17800, 21700 and 27100 EUR to Project Costs in successive years, in any of the scenarios (as well as its contribution to Management Costs, as defined in 5.4).

## 6 Risks and Mitigation Measures

6.1 The risks to achievement of the objectives of this business plan are associated with the timescale of the work, which itself will be subject to political forces at both a European and a national level. Other risks concern the number of ERDO Members and the rate of growth of the ERDO. These are discussed in the following paragraphs.

6.2 ERDO Membership: the Plan Model assumes that five Member Countries found the ERDO, from among the ten countries currently active in the ERDO Working Group. The risks associated with a smaller number of founding members (Scenario 1) are largely the higher costs that would be assigned to each Member Country. This could be mitigated by a reduced (effectively, extended) programme of work in the first five years until such time as additional Members join the ERDO. Nevertheless, there are irreducible costs of establishing the legal entity and the office of the ERDO in the first 18 months that would have to be borne by the founding Members.

6.3 There are also risks associated with a larger number of Members or with geographically large Member Countries, in that the public outreach programme would need to have wider coverage. In the first instance, this would be accommodated by the increased ERDO income from more Members.

- 6.4 Programme slowdown: the programme presented here has the relatively limited objective of identifying one or more prospective sites that appear likely to enter the volunteer process based upon dialogue with communities and which also meet simple technical exclusion criteria. Nevertheless, political constraints may limit the rate at which work can take place. Slow adoption of the EU Waste Directive or strong opposition from the larger nuclear power EU Member States could make this objective unachievable. However, the existence of the ERDO as a strong legal entity and representative of smaller nuclear power programmes, even with a slowed work programme, will ensure that shared solutions are eventually achieved. Naturally, Project Costs would be significantly reduced if this slowdown were to occur.
- 6.5 EU legal requirements: A conceivable risk is that the EC will (despite the recently finalised proposed Waste Directive) be pressurised by some large countries to insist that wastes may not be transferred, even between countries that make formal agreements. By speaking with a united voice, the countries participating in an ERDO can counteract any such pressures.
- 6.6 Failure to find a Host Community and Country: The most obvious risk is that none of the participating countries will ultimately agree to hosting a repository that accepts wastes from other countries. This risk will be minimised by seeking declarations of willingness only after benefits have been agreed and documented, basic feasibility of hosting a safe facility has been established, local communities at potential sites have expressed agreement and the alternative option of being compelled to prematurely develop expensive national facilities has been transparently laid out.

## 7 Legal Aspects of Chosen Domicile

- 7.1 The ERDO will be domiciled in ..... with its offices located in .....
- 7.2 The legal form of the ERDO is defined in national legislation as ..... and the ERDO will be formally registered in .....
- 7.3 Company and employment law in ..... require that.....
- 7.4 .....this section cannot be completed until a domicile is identified.



