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## **Cooperative Research on the Governance of Radioactive Waste Management (COWAM-2)**

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### **Final report**

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## **Project coordinator**

Gilles Hériard Dubreuil, Mutadis (FR)

*Contact person:* Serge Gadbois, Mutadis (FR) – [serge.gadbois@mutadis.fr](mailto:serge.gadbois@mutadis.fr)

## **Project partners**

Claire Mays (WP1), Symlog (FR)

Raul Espejo (WP2), Syncho (UK)

Thomas Flüeler (WP3) (CH)

Thierry Schneider (WP4), CEPN (FR)

Serge Gadbois (WP5), Mutadis (FR)

Anna Paixa (WP6), GMF (ES)



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# 1 Introduction

## 1.1 Governance as a core issue of radioactive waste management

It is only in the recent past that governance has come to be recognised as a core issue of radioactive waste management. This new view results from a gradual realisation that a strictly technical approach was not adequate to address the complexity of the questions raised by this particular type of waste.

### *Radioactive waste management: a scientific answer to a technical problem?*

For many years, the issue of radioactive waste management was approached as a mainly technical challenge, and remained an internal matter for the nuclear sector and national policy makers. From the 1970s the main effort was focused on research to develop safe technical solutions for managing radioactive waste over the long term. In this traditional approach, a technical concept, chosen by national decision makers on the basis of expert recommendations, is developed within a national policy framework. The first and key step for the implementation of this policy – besides research and demonstration – is to identify a host site which would allow the concept to be realised under reliable conditions of technical safety in the long term. The process goes from research to demonstration and implementation and from national policy to local siting. The decision made *now* is expected to provide a solution for the *near and distant future*.

In a large number of countries throughout Europe and worldwide, this path very often led to a dead end. Faced with repeated failures resulting from fierce public criticism, experts and policy makers gradually realised that the complexity of the issues called for a more open and inclusive management approach.

### *Recognising the several dimensions of waste management*

New dimensions were identified and came into play: the disciplines of risk communication, economics, ethics – to name but a few – were called upon for support. In this perspective, the introduction of the step-wise, or staged, concept made it possible to go back, correct and improve the process when it was stalled, and helped to review the issue and include new dimensions. Nevertheless, in most cases, the focus remained on the technical concept as the sole guarantee for long-term safety. In effect, however, the inclusion of other dimensions was accepted only to the extent that they were not seen as undermining the existing technical solutions. These first improvements were intended to avoid the difficulties inherent in managing a trans-disciplinary and complex problem, but did not succeed in overcoming or rising above them.

### *Framing the governance of radioactive waste management*

In the last three to five years, deeper changes were observed throughout Europe. The issue of radioactive waste management was decisively reframed. This evolution – still in process – is unfolding in three directions:

- (1) from a narrow *government*-owned issue to an inclusive *governance* perspective

- (2) from *ad hoc* public participation to local communities' continued engagement as collaborative actors in a transformation of the decision-making process
- (3) from governance as an *extra* layer in decision making to governance as a *core* element of safety.

### ***From government to governance***

Gerry Stoker<sup>1</sup> identifies five aspects of governance:

*“(1) - Governance refers to a set of organisations and actors which does not belong all to the government sphere (2) - It modifies the respective roles and responsibilities of public and private actors compared to traditional paradigms of policy making (3) - It involves interdependence between the organisations and actors engaged in collective action in contexts in which none of them has the resources and knowledge necessary to tackle the issue alone (4) - It involves autonomous networks of actors (5) - A key principle is the possibility of doing things without resorting to the power or the authority of the State.”*

This notion of governance suggests that the quality of a decision-making process does not depend strictly and solely on decision makers responsible for the issue. The starting point and focus are on the capacity of the process to include and integrate the wide range of actors concerned or impacted by radioactive waste management. In this respect, the process must give room to stakeholders and to the dimensions, questions, concerns and views they bring.

In the field of radioactive waste governance, policy makers and implementers acknowledged in the 1990s that while the public – in particular that in the communities concerned – pressed for greater involvement, the issue could no longer be tackled by technical experts and managers alone.

Radioactive waste management is a national issue that entails local solutions. However, national decision makers' accountability – public authorities, operators, waste producers – is not limited to the short-term decisions of choosing a technology and licensing a site. This cannot be a simple matter of implementing a national engineered design in a particular locality. Neither the central national level, nor the local community level, can shrug off its responsibility once a site for a long-term management facility has been agreed. There is indeed a responsibility shared between the local and the national communities to gain ownership of the problem and ensure that the wastes are managed safely now and in the long term. This implies an early involvement of local communities from the first stage of policy making, and a continuous long-term partnership approach between the local communities and national decision-makers.

### ***Local communities: co-actors in a transformed decision-making process***

Recently, the rationale for stakeholder involvement moved from the assumption that local people should be involved because they are affected by decisions taken at national level, to the view that local communities are a key player in the game (not

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<sup>1</sup> G. Stoker: Governance as a theory: five propositions, in *International Social Science Journal*, March 1998, N° 155, pp. 17-28.

just an additional lobby) to ensure the proper integration in the decision of the wide range of complex problems of radioactive waste management.

The development of a wide governance approach is associated with the characterisation and building of new relations between the different actors concerned. Stakeholder involvement does not lead to undermining decision makers' legitimacy and accountability. On the contrary, insofar as experts, operators and regulators act by delegation (formal or implicit) from the national and local communities to manage the waste, participation establishes a continuous and sustainable link between decision makers and the public on behalf of which they operate. Furthermore participation reinforces the capacity of the decision-making process to remain aligned with public expectations and thereby support robust and sustainable management.

***Governance: an essential element for the safety culture in radioactive waste management***

The expectation of local communities, and the public at large, is not to see 'proved' *now and forever* the scientific and technical feasibility and reliability of a safe long-term concept, but rather to *reach sustainable and reliable conditions for the safe management of radioactive waste*. These management provisions must take account of technical uncertainties and societal change and be able to adapt to them over time. Technical safety is and remains the basic non-negotiable condition sought by all actors. However other dimensions are also important, and have not benefited from as much concerted development: ethical, financial, environmental, legal, and social aspects are, together with science and engineering, different facets of a same problem. Because of its long-term dimension, the reliability of a waste management system depends strongly on its institutional resources and its ability to adapt to possible changes over time. It relies also on fair relations between the national and local communities. National solidarity with the hosting community provides guarantees that the locality will not be left alone, while community benefits recognise the role that it is playing on behalf of the rest of the country. The local communities play a key role in determining reliable governance conditions for radioactive waste management because they have the special ability to take a rounded view of the issues against the background of their local circumstances.

All these elements together make up the context within which the governance of radioactive waste management must take place. In summary, it is not enough simply to develop technical skills to manage the waste in the short term. The long-term dimension of radioactive waste demands a broader definition of safety, one encompassing the ability of societal actors to play their role over time. Safety entails scientific and technical aspects on the one hand and on the other hand governance arrangements: participatory institutions and decision mechanisms etc. involving a wide range of stakeholders and issues.

## 1.2 Guidance for readers

COWAM-2 is a research project<sup>2</sup> that brought together over the course of three years a diverse group of stakeholders, to investigate the range of governance issues in radioactive waste management. This is the summary report of their work together.

A major aspect of the COWAM-2 project is its “cooperative research” nature. A specific methodology was developed and tested as part of the project. This methodology is a core element and result of the project. It is described in **Section 2.1**.

The COWAM-2 project comprised four thematic cooperative research groups. Each group brought together some thirty local and national stakeholders six times over the course of the project, supported by research contractors with the task of documenting and developing the research outcomes. Each group provided specific analysis and recommendations:

- The “local democracy” group (Work Package 1) shared knowledge about local committee building, with the aim of identifying best practice in applying local democracy to nuclear related issues in Europe. Examples of best practice are proposed which reflect the diversity of experience found in different European contexts (**Section 2.2**)
- The group on “influence of local actors on the national decision-making process” (Work Package 2) clarified (i) effective mechanisms for local players to influencing national decision-making processes, (ii) key conditions for legitimate decision making in terms of the relationships and distribution of power between local and national players at different stages of the decision processes (**Section 2.3**)
- The group on “quality of the decision-making process” (Work Package 3) worked out recommendations for designing and implementing a robust decision-making process or for judging an existing decision-making process. The recommendations take the form of propositions to assist stakeholders in making decisions or evaluations (**Section 2.4**)
- The purpose of the “long-term governance” group (Work Package 4) was to identify, discuss and analyse the institutional, ethical, economic and legal considerations raised by the existence of a site for long-term waste storage or deep geological disposal. The main issues were: ethical stakes, continuity and sustainability of surveillance, and efficiency of financing schemes (**Section 2.5**).

Additionally, participants were involved in three annual national sessions where they had the opportunity to reflect on the meaning of the ongoing thematic governance research in their national and local contexts (**Section 2.6**).

The **key lessons and findings** of the project both in terms of methodology and research results are summarised in **Section 3**.

**Perspectives** for further cooperation and networking grounding on the results of COWAM-2 are presented in **Section 4**.

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<sup>2</sup> COWAM-2 comprised 19 institutional partners, 40 participating institutions, and some 150 participants from 14 countries.



This report provides an outline of the main results of the COWAM-2 project. The full work packages reports with relevant annexes are available from the COWAM-2 website: [www.cowam.org](http://www.cowam.org). The detailed list of available reports is reported in Appendix 2 to this report.

## **2 COWAM-2 outcomes: concrete tools and strategies for stakeholders**

### **2.1 Description of the COWAM-2 cooperative methodology**

COWAM-2 cooperative research consisted of regular interactions throughout three years between *stakeholders*, supported by *research contractors* to frame and produce *stakeholder-driven knowledge*<sup>3</sup>.

The stakeholders were representatives of local communities (local liaison committees, municipalities, or NGOs), waste management agencies, waste producers, regulators and expert institutions. Stakeholders originated from thirteen countries: Belgium, Czech Republic, France, Germany, Hungary, Japan, the Netherlands, Romania, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom.

Research contractors contributed knowledge resources (in decision sciences, sociology, psychology, ethics, radiation protection, geology, economics, and law) together with practical mediation skills and robust structured dialogue methodologies.

- Stakeholders cooperated with contractors both in the overall coordination of the project, and within thematic work packages.
- At the project level, a steering committee brought together seven lead research contractors and a representative set of ten stakeholders from different organisations and constituencies (local government and local communities, NGOs, waste operator, expert) and countries. Members of the steering committee reflected the plurality of actors and roles inside the COWAM-2 project. The steering committee specified the objectives of the project, and checked its progress against them.
- At work package level, a stakeholder reference group (SRG) interacted with the research contractors in the production of knowledge. Besides this participation as co-producer of knowledge, the SRG had the same role for the individual work package as the steering committee had for the whole project: it made explicit stakeholders' expectations for the work package, and monitored the evolution of work.

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<sup>3</sup> See Appendix 1 for the list of participants in the working groups.

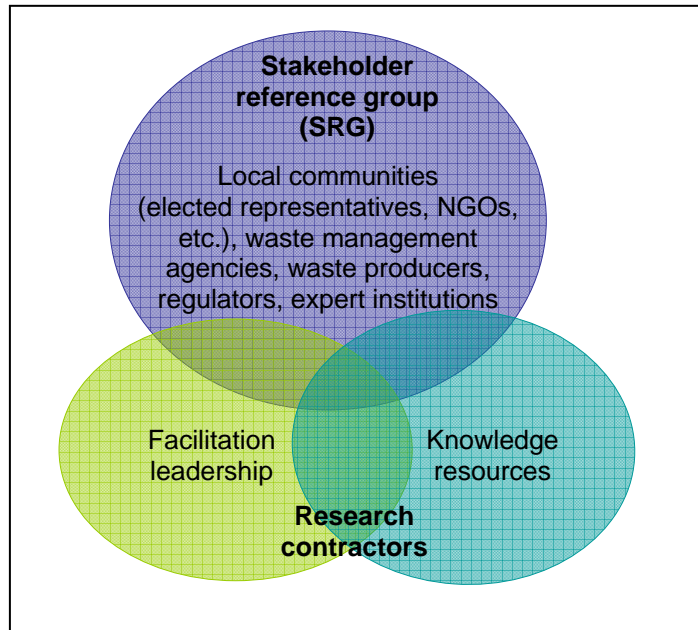


Figure 1: Cooperative research in COWAM-2 work packages

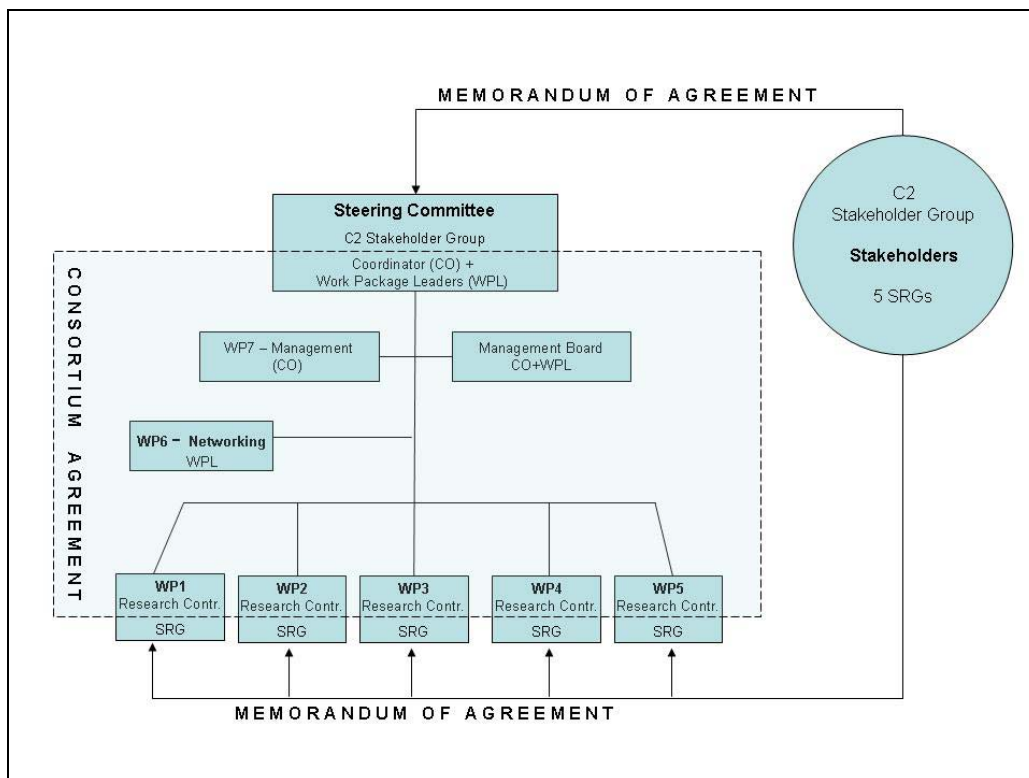


Figure 2: Cooperative research structure of the project

**SRG** – stakeholder reference group

**CO** – coordinator

**WPL** – work package leader

This cooperation developed in several ways:

- (1) The research proposal was made in response to the open call by the European Commission on governance and radioactive waste management. During the period of preparing the proposal, the lead research contractors extensively discussed *the objectives, general programme of work and methodology* with stakeholders involved in the previous COWAM-1 project<sup>4</sup>. This interaction extended over a ten-month period from December 2002 to September 2003. It included specific meetings at European and national levels, and regular exchanges by phone and emails, well before the selection of the project by the European Commission.
- (2) In the first months of the project in early 2004, stakeholders involved in the project signed a *memorandum of agreement* with the project coordinator. This document set the terms for the stakeholders' participation in COWAM-2, specifying their roles, their membership, their capacity and the associated influence mechanisms in the stakeholder reference groups and, when relevant, in the steering committee.
- (3) In its first meeting, the steering committee (SC) defined *success criteria* for the COWAM-2 project. These criteria described the expectations of the SC and its guidance for the implementation of the project (see Box 1). The stakeholder reference group and the research contractors developed similar success criteria for their joint activities in each work package. These criteria derived from answering the question: *what is the project expected to achieve in order to be considered a success?* The definition of success criteria was a key tool for the partners to agree on the direction of their work; to check, on an annual basis, the progress of work; and to make necessary decisions to improve or correct the cooperative research development.
- (4) The work programme was reviewed by the stakeholder reference groups (SRGs) in the work packages in the first six months of the project using the following method. In parallel to the discussion on the success criteria, the lead contractor for each work package held open discussions with its SRG to clarify the methodology and the research material that the SRG and the research contractors would use during their cooperative activities during the three years. Research contractors presented the proposed research activities, which were commented upon by, and discussed extensively with, the SRG. Stakeholders and research contractors then decided which projects should be implemented, and which proposals should be revised. Significant changes or some key decisions between different options were made in order more closely to meet stakeholders' expectations. This discussion resulted, several times, in significant changes in the research focus or the methodology. When the *jointly agreed programme of work* began, there was therefore a sound, agreed basis for cooperation.

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<sup>4</sup> See Section 3.1. Community Waste Management concerted action, coordinated by Mutadis (FR), was a networking activity grouping 230 stakeholders and experts from 10 countries in 2000-2003 – [www.cowam.com](http://www.cowam.com).

**Box 1: COWAM-2 steering committee's success criteria**

<p><b>A. Good project management</b></p> <ol style="list-style-type: none"><li>1. Respect timetable and validation procedures.</li></ol> <p><b>B. Quality of the process</b></p> <ol style="list-style-type: none"><li>2. Well introduced and prepared discussions; quality of dialogue</li><li>3. Exchange, interaction among work packages on related issues, transversal integration of COWAM-2 results</li><li>4. Use of the COWAM website for easy and quick communication among COWAM-2 participants</li><li>5. Mutual understanding and respect: providing a European platform without institutional constraints</li></ol> <p><b>C. Quality of the product</b></p> <ol style="list-style-type: none"><li>6. Advisory guidelines providing clear and practical principles to clear concerns with shared vocabulary<ul style="list-style-type: none"><li>- useful to everyone in each country</li><li>- respectful of the specificity of local and national contexts</li><li>- investigating the needs for European guidelines</li><li>- supported by a traceable knowledge base (examples of good practice and bad experience)</li><li>- sufficiently broad, accurate and robustly justified</li></ul></li><li>7. Providing room for stakeholders' comments (or dissent) in the reports</li></ol> <p><b>D. Quality of the participation</b></p> <ol style="list-style-type: none"><li>8. Sustainable and continuous participation</li><li>9. Balanced participation in terms of stakeholders' categories and countries</li><li>10. Increased interactions among participants (among others within national groups and beyond)</li></ol>
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- (1) The cooperation in work packages between the stakeholder reference group and research contractors progressed mainly on the basis of two annual meetings in the winter and summer of each year (for a total number of six meetings over three years for each SRG). Stakeholders made a direct contribution to the research activities by providing information through presentations, case studies, answers to questionnaires and in discussing material proposed by research contractors or other stakeholders. The research input usually took the form of discussion papers so that stakeholders could contribute directly to the analysis and enrich the conclusions with their own views and experience on governance issues. In the meantime, research contractors reported on the results of the discussions, developed research material for further discussion, and drafted the joint analysis and proposals elaborated with the SRG during the meetings. The minutes, research briefs and reports of the work packages were regularly submitted to participants for comments. The stakeholder reference groups reviewed the draft versions of the reports and validated the final conclusions and recommendations. These constant interactions ensured that the project took into account and responded to stakeholders' concerns.
- (2) At the end of meetings the lead contractor reviewed the progress of work with the stakeholder reference group against the success criteria defined at the beginning of the project. In some work packages evaluation forms were used.

This procedure increased the effectiveness and influence of stakeholders in implementation of and control over the work programme.

The involvement of stakeholders requires the means for their actual participation in the exchange of views and in the analysis of research material. With this in mind, simultaneous interpretation was used extensively to facilitate exchanges in the working group meetings, as well as in the annual conferences. Groups worked in two to four languages according to the needs of participants. Usually, research activities in Europe are conducted in a single language. Cooperative research builds on the plurality and authenticity of views, cultures, and experiences of participants, and must acknowledge the importance of linguistic diversity in Europe. At the same time, it was important to work in the most pragmatic way to avoid overburdening the research activities with translation requirements and to achieve as much direct contact between individuals and groups as possible. In some instances, groups were divided into discussion subgroups according to language.

The following sections describe each thematic work package.

## **2.2 Implementing local democracy and participatory assessment**

Work Package 1 “Implementing local democracy and participatory assessment” provided a forum for stakeholders from many countries to meet, exchange their experience, examine common problems, and trade advice. Two groups of people worked side by side in WP1: a stakeholder reference group (SRG) and research contractors. The SRG was composed of representatives from local communities, regulators, waste management agencies, expert institutions, and waste producers, from Belgium, Czech Republic, France, Hungary, Japan, Romania, Slovenia, and Spain. The research contractors, selected for their expertise in social democracy, represented universities, national research institutes and a research consultancy, from Belgium, France, Hungary, Switzerland, and the UK. A total of 70 persons attended WP1 meetings at least once. On average, 30 persons were present at each meeting.

### ***Cooperative research in Work Package 1***

The themes to structure WP1 were identified in extensive telephone consultation with stakeholders in the months following the final seminar of COWAM-1 (Cordoba, March 2003). These themes are described in the next subsection. Under COWAM-2, the agenda for each WP1 meeting was set according to SRG interests and the SRG effectively steered the resulting progress of the WP. Themes were discussed in plenary and then in detail by smaller groups led by the research contractors. At all times the principal focus of discussion was the “home” experience of the SRG members. Simultaneous interpretation (English, French, Hungarian, Spanish, and/or Romanian) at each meeting facilitated the exchanges. Several SRG members gave plenary presentations about their home context. Research contractors presented case studies or structured material or proposed activities to increase learning about the themes. These colleagues helped SRG participants find the common ground or the differences in their experience, added insight gathered from research or observation, and proposed methods for structuring the discussion inside the WP or addressing community issues at home.

The research contractors wrote up what happened and what was learned in each meeting and subjected the ensuing minutes to SRG scrutiny for approval<sup>5</sup>. The research contractors were also responsible for writing formal reports on research themes agreed and monitored by the SRG. Finally, the major output of WP1, the *road map for local committee construction*, was a highly collaborative effort. It condensed stakeholder experience and recommendations. The research contractors proposed written text and over the course of 18 months, this was constantly revised, illustrated and improved by SRG input.

### ***Guidance for implementing local democracy and participatory assessment***

Most actors agree that waste must be managed through a democratic process. People who may be affected by an installation must participate in making decisions about it. But exactly how is that achieved in the communities? And what are the best ways to achieve it? What is the experience of communities now dealing with waste management decisions? What do they recommend to those who may start to deal with it in the future? WP1 addressed such questions under three themes concerning the local committees (LC) that are typically formed to respond to the waste management question in a community.

Participants in WP1 included elected, volunteer or executive local committee personnel or community members from six countries. In the following, we describe the three WP1 themes, and the specific guidance that resulted from our work together.

#### *Local committee function: the road map for local committee construction*

The first WP1 theme was FUNCTION: how does a local committee (LC) operate, what are its rules, its composition? What legal texts determine its structure and organisation? How are its members chosen? Who presides over it? What is the role of, or relationship with, waste producers, implementers or regulators? Political questions are raised in this context: what about project veto power; is it formal or informal, necessary, desirable? Do politicians put their election at risk if they participate in waste management? Compensation was also discussed: what compensation might there be for participants in the LC? What compensation package could be right for a host community? Who negotiates? Who pays? (Such questions were vital particularly for stakeholder participants from Slovenia, Romania, and Spain, who are in the process of setting up their LC.)

The entire ‘function’ theme provided the basis for a *road map for local committee construction*. The *road map* is directed towards persons who may wish to set up a local committee in their own context, to deal with RWM governance or with other complex socio-technical decision making. The *road map* should also be useful for existing committees as it gives a panorama of actual practice as well as advice. Finally, the *road map* is also intended to be read by institutional stakeholders so that they can improve their understanding of the role local committees can usefully play and of the resources they require. The *road map* embraces nine chapters:

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<sup>5</sup> The minutes from each WP1 meeting were approved by the stakeholder participants for circulation. They are freely available on [www.cowam.org](http://www.cowam.org). A summary report (containing highlights from the meetings and from the additional topical research reports) can also be downloaded.

## 1. Your local context

*Provides checklists to help reflect about the features of your community that may affect how you engage in decision making*

## 2. Mission, mandate and role of the local committee

*Highlights the shift typically seen from “disseminating information from the top down” to “generating information, debate and deliberation”*

## 3. Questions of legitimacy: composition and representativeness

*Gives practical examples of how a committee may be built up to reflect the currents in your community, and how to help your committee keep or renew its members over time*

## 4. Funding and resources

*Provides real numbers to illustrate the budgets handled by local committees for different missions*

## 5. Organisation and procedures

*Shows organisational diagrams for three local committees and discusses rules for operation*

## 6. Information, expertise, knowledge building and transfer

*Reviews the different types of knowledge local committee members must handle and the training and resources you will need for this; considers dialogue with experts, as well as federations who can “mutualise” scientific investigations*

## 7. Product, output, added value

*Describes the contributions that local committees make to the decision-making process*

## 8. External communications: relation with other parties

*Recommends elements for your communication plan and points to your typical audiences*

## 9. Evaluation

*Describes the ways to evaluate your action, including self-evaluation by committee members, community consultation, and third-party evaluation requested by members or imposed by outside institutions*

The *road map* is intended to be an extremely accessible and useful handbook. It reproduces the questions that WP1 found to be important and provides wherever



possible direct advice and help in the answering of those questions at the local level. Throughout it is illustrated by examples taken from the three years of intensive discussion and the experience of WP1 participants. The *road map* exists in English and Hungarian versions, and at the time of this publication was being translated into Romanian.

*Checking: how the public responds to governance opportunities*

The second theme was CHECKING: How can local committees represent their community and verify the will of the people? How can they inform and interest the community? How do they receive suggestions? What methods can be used to check whether LC orientations are representative, or check local support and consent for LC actions? (These themes were particularly interesting to well-established LCs in France, Belgium, and Hungary.)

One ‘checking’ project provided insight on how the rising generation in Romania feels about radioactive waste governance. Seminar programmes and teaching materials were prepared to give secondary school students a chance to learn and deliberate about the issues.<sup>6</sup> The project took place in the towns of Cernavodă (hosting the nuclear power plant and the possible future RW storage facility host) and Pitesti (home to the Institute of Nuclear Research, but whose population is less knowledgeable about nuclear affairs). Three different formats were proposed for special lessons:

- A “classical” presentation followed by discussion moderated by the teacher.
- A “discovery” method where the problems and solutions related to radioactive waste are examined, based on an initial short presentation of the general aspects and followed by individual study.
- A “simulation” method where pupils simulate membership of a local committee to address the decision-making process in RWM. This method was requested by WP1 members, who felt it is important to test out the idea of participatory democracy.

It was found that the more passive “classical” classroom method could be used where students are less motivated to participate. The “discovery” method, in which students discover the issues using various individual study aids, is attractive and relatively easy to set up in contexts where motivation is high. With the “simulation” method, where enthusiastic participation occurred, considerable effort is needed to capture and maintain students’ interest and convince them to keep the LC alive. It was worth it, though, because youngsters were particularly enthusiastic about choosing leaders in the simulated LC and working through the issues. Although a priori the WP1 investigators and local teachers were pessimistic about the local committee simulation method, the youths’ enthusiastic participation, the pride in their achievements and the concrete results (a student-built website) proved that this is a very powerful method to learn technical, scientific, social and organisational aspects of RWM governance. (In this, it was compared to the “MONA game” developed by the Belgian local partnership to involve students.) According to “before and after” surveys, the LC simulation experience has produced real and stable knowledge in the young Romanian

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<sup>6</sup> Final report CHK-3: *Impact of RW information on young people* (M. Constantin & D. Diaconu, INR).

participants. At the same time, it may encourage the local community of Cernavodă to set up LCs or other specific organisations.

Another ‘checking’ project was initiated by WP1 to link public attitude research and siting methodology in Slovenia.<sup>7</sup> This country has been searching for a location for a low and intermediate waste (LILW) repository for a number of years. The highly-illustrated report recounts the efforts in this direction, scrutinizing all their diversity, weaknesses and successes. The main problem in the site search for this facility has been social acceptability; the most important development was the transition from a purely technical approach to an approach that involves local people in the decision processes. The report describes the critical changes in the siting process and also relates them to national changes in political regime. Public opinion closely reflected these changes, sometimes also generating them. Formerly highly negative attitudes toward RWM matters are slowly being substituted with less negative ones, whilst the participation of local people in the process is increasing.

#### *Participatory technology assessment: a toolbox and a lens*

The final theme was PARTICIPATORY TECHNOLOGY ASSESSMENT (PTA). This covered the existing tools that can be used to help resolve complex problems involving technical and social aspects. We asked what platforms could facilitate discussion between different players from the technical and the community sides. How can decisions be structured and clarified? The SRG mentioned a great variety of methods and events used to gather a plurality of views on how to handle radioactive waste management. In this context, a local committee is itself a tool for PTA. It was clear that participatory technology assessment in general corresponds to a vast process of choice and negotiation among different stakeholders. PTA can be helpful to all partners when it is well organised. Positive experiences result in new applications of PTA methods. Where there is discomfort or crisis, this may be a sign that PTA is not well organised, or that technological choices are not really being discussed in a participatory, inclusive way.

Two WP1 projects provided practical guidelines for choosing amongst participatory technology assessment methods and increasing the chances for productive dialogue among technical-scientific and community players. The first examined the challenges and benefits of selected PTA methods.<sup>8</sup> There are certain principles to be thought about before seeking a technique, and there are several criteria that can be used to judge what kind of technique to apply. The first PTA report lays out the principles and describes the criteria. It concludes with a recommendation of some common techniques.

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<sup>7</sup> Final report CHK-4: *Genesis of an approach: from public non- participation to its participation in LILW site selection process in Slovenia* (M. Polič, D. Kos, University of Ljubljana; N. Železnik, ARAO).

<sup>8</sup> Final report PTA-1: *Challenges and benefits of selected participatory technology assessment methods for WPI – On the way to a toolbox for local stakeholders* (T. Flüeler, P. Krütli, & M. Stauffacher, ETH Zurich). Two versions are available: a short advisory summary and a long version examining the scientific literature about PTA.

**From the PTA-1 final report (*toolbox*)**

“You may be overwhelmed by the sheer wealth of techniques, procedures, tips and tricks to choose from, but many of the methods presented are nothing more than adaptations from general research (surveys, interviews, Delphi technique, focus groups) or from group moderation and workshop techniques (policy workshops, panels). Only a few have been explicitly developed in the context of participatory approaches (citizen advisory group, consensus conference). First and foremost, be aware: Framing is more important than the technique chosen, and your assessment of the political context (and the chances you have to bring your local vision to the fore) is more important than any sophisticated technique a professional moderator might recommend you.”

“The aim is to empower you on the local and regional level. Thus, we have to look carefully at the real frame (or context, setting) within which desirable involvement should take place. Seven framing principles are explained in the report:

1. *Consider level of decision (local ... supra-national)*
2. *Guarantee for integration into policy making*
3. *Consider phase of decision process (problem recognition ... implementation)*
4. *Respect degree of escalation (fact-finding phase ... type of ‘trench warfare’)*
5. *Prove commitment and accountability*
6. *Grant rights and resources*
7. *Ensure continuity and establish adequate mechanisms”.*

The second PTA study by WP1 included two major parts: a method or “lens” to allow stakeholders to select a PTA tool adapted to their context, and, a demonstration exercise to benefit the Slovenian local stakeholders.<sup>9</sup>

PTA can help communities and technical partners to engage in social learning. The PTA-2 report explains four different learning goals: enhancing the ability to justify your viewpoint, promoting the search for creative solutions, empowerment, and gaining access to scientific expertise. The report includes a simple comparative chart (called a “lens”) which allows stakeholders to choose a potentially promising PTA technique adapted to the particular combination of social learning goals that is sought. Using the lens, WP1 partners organised a “focus group” exercise in Slovenia, which the national agency for radioactive waste management ARAO proposed in July 2005 to members of communities that were voluntary siting candidates in the Slovenian LILW management process. Three out of five candidates accepted the invitation and discussion was free and lively. Participants were particularly interested to discuss information needs (how much information about RW, siting process, etc., from which source and to which citizens?). Many basic questions were still being asked about the decision-making process (selection procedure, compensation, local committee composition). Those choosing to attend the focus group represented communities who feel very new to the RWM issue. They needed to gain more information about the process in which they are engaged. This was an important lesson: even a carefully designed, open siting process may not be crystal clear to those who have the right to participate. Details of community rights and role should be worked out early in a participative way. Without this, trust among the partners may suffer.

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<sup>9</sup> Final report PTA-2: *Multi-criteria mapping of local initiatives on RWM* (E. Laes, SCK•CEN).

To conclude, COWAM-2 WP1 cooperative research on the implementation of local democracy was developed with the aims:

- to provide advice for organising and fortifying the local voice in decision-making
- to improve the local voice's chances to be heard
- to help clarify the relations between the different players in RWM governance (including relations between local citizens/residents and the people who represent them in the RWM process).

The *road map for local committee construction*, the main product of Work Package 1, is thus a practical tool to advise local actors on preparing, renewing or improving a local committee. It also provides useful insights for other actors – implementers, regulators at national level – to better understand their relations with local communities and help them fulfil their responsibilities in supporting the sustainable development of a genuine local democracy. It should be helpful not only within the area of radioactive waste governance, but also regarding other complex socio-technical decision processes with a local component.

### **2.3 Local influence on national decision-making processes**

Work Package 2 focused on the ways in which local stakeholders can influence national decision-making processes on radioactive waste management (RWM). The participants in WP2 were particularly interested in examining how local stakeholders could contribute to national debates.

#### ***Cooperative research in Work Package 2***

Participants' interest stemmed from the fact that they were engaged, as stakeholders, in decision-making processes that were under way in France, Spain and the United Kingdom. These processes were all due to conclude during 2006 and WP2 participants wanted to ensure that outputs from COWAM would be available to feed into those national discussions. For France, 2006 was the deadline for the revision of the research programmes set by the 1991 Act, and for the vote of a new law. For the UK, July 2006 was the deadline for the Committee on Radioactive Waste Management<sup>10</sup> to report to the government an option or combination of options for the long-term disposal of high-level waste. For Spain, COWAM-Spain, constituted by key local and national stakeholders, agreed to report the outcomes of their deliberations in early 2006. WP2 participants had these deadlines in mind since the beginning of their deliberations in 2004.

WP2 used a participatory approach throughout. A stakeholder reference group (SRG), constituted early in 2004, drove the process. The SRG agreed to support 6 case studies, two in each country: France, Spain and the UK. These cases were used to build up a picture of the ways in which decision making is influenced by different practices in each country. From this, WP2 participants were able to draw conclusions about good practice.

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<sup>10</sup> The Committee on Radioactive Waste Management (CoRWM) was set up in 2004 as an advisory body to UK ministers.

This work had the support of a group of research contractors, which provided a methodology for the case studies and identified the mechanisms that influenced the way decisions were made in each national setting. The research contractors produced discussion papers on ‘influence mechanisms’, ‘principles and good practices’ and an ‘empirical review of practices’ emerging from the case studies and also other European experience.

### *Case studies*

The six cases were instrumental to study policy processes in France, Spain and the UK. They looked for answers to a number of key questions, in particular:

- *What is the reality of local influence?* What is the experience of this influence in other industry-based policy processes? What is the reality of the national policy process? Is it well defined? How transparent is it? Do stakeholders have opportunities to influence the framing of policies? What specific influence mechanisms do they use? What relationships are appropriate between local actors and national players and how should power be distributed between them at different stages of the decision-making processes?
- *What are the main characteristics of local stakeholders?* Do they enjoy autonomy? What is their capacity for action? To what extent are local stakeholders able to present a cohesive local position in a national debate? Have all key stakeholders been represented and taken into account in the decision-making process? Are the solutions preferred by local people implemented? If not, are the reasons properly explained? Are there changes that can be attributed to local influence?
- *How easily can successful examples of local influence be transferred to other countries?* How do different forms of devolution within nations – for example, federal or regional government – influence the ease of this transfer?

The relevance and significance of these questions varied from country to country, but all were of interest to stakeholders.

The French case studies were constructed from the conclusions of two national stakeholders’ meetings, which were organised by the research contractors. These meetings helped not only to understand influence mechanisms on the ground but, more significantly, they were catalysts for other activities related to the development of policy in France. The first French case study, spearheaded by a meeting in Dunkirk on 24 November 2004, examined why and how various actors in the local community of Dunkirk developed a coherent strategy to influence the development of the Law of 30 July 2003 on the prevention of technological and natural risks. The second case study followed a meeting with the CLIS of Bure (local commission) in the Préfecture de la Meuse (Bar-le-Duc) on 14 April 2005. This meeting helped to assess the CLIS’s use of counter-expertise to examine and challenge ANDRA’s research and to influence the national debates during the preparation of the Law of 28 June 2006 on the sustainable management of radioactive waste and materials.

The Spanish case studies were produced in the context of COWAM-Spain, with the active participation of key stakeholders, such as ENRESA (waste management operator) and the municipalities. AMAC, the Association of Municipalities in Areas of Nuclear

Plants, wanted to play a significant catalytic role in the national debate about the selection of a centralised temporary storage facility in Spain. The first case was a study of AMAC itself and examined local stakeholders' and national actors' perceptions about AMAC's influence on the national arena on the part of local stakeholders and national actors. The report of this study had, and hopefully will continue to have, an influence on AMAC's participation in this arena. At the same time, COWAM-Spain produced, as a second case study, a mapping of institutions and institutional procedures related to RWM decision processes in Spain. This study recommended the formation of a national commission to steer the decision-making process.

The two UK case studies were focused on policy processes in progress. The first was focused on public and local stakeholders' engagement in the activities of the Committee on Radioactive Waste Management (CoRWM). The second considered the influence of Copeland and the Shetland Islands local communities on the nuclear decommissioning processes at Sellafield and Dounreay respectively. Some of the UK stakeholders of WP2 were actively involved in these processes. They made presentations to the SRG and wrote contributions for discussion in meetings. The focus of the local contributions was on participatory mechanisms and good practices for local stakeholders to influence national decision-making processes. Participation in this work assisted these local stakeholders in maintaining and developing their critical but constructive perspective on nuclear developments and in testing the proposals put forward by the nuclear industry.

### ***Principles and good practices for local stakeholders to influence RWM policy process in Europe***

The challenge for WP2 lay in identifying and understanding the mechanisms that enable influence in different settings. WP2 participants considered the principles that should guide the taking of decisions on radioactive waste and reflected on how well existing mechanisms took these principles into account. This raised further questions. For example, if local stakeholders are to have the capacity to put forward a case or present criticism of a policy, how are they provided with the resources they need in order to do that? In what circumstances, if any, should local stakeholders be able to exercise a veto over proposed developments? How can affected communities achieve economic and social compensation to guarantee their long-term viability? Should communities with nuclear installations be the main focus of siting decisions or should all communities be regarded as potential sites?

To tackle these questions, WP2 participants needed at the most basic level to clarify the meaning of terms such as what is *local* and who are *local stakeholders*, but more fundamentally they needed to identify key principles that should underpin local influences on national decision-making processes across Europe. They thought that the very act of documenting *principles* would stimulate debate about local practices. Beyond that, they wanted to use the principles to frame recommendations on *good practice*.

Thus, they recognised that the context of their work must include contemporary issues of human rights, justice, inclusion and governance. The right of local stakeholders to participate in, and influence, policy debates affecting present and future generations

has been the subject of international agreements (e.g. the Århus Convention<sup>11</sup>). WP2 members considered these issues to be fundamental and decided to set out certain key principles. These are the key principles they considered:

- The existence of an inclusive national framework for decision making;
- A co-operative approach to decision making;
- Respect for environmental justice and human rights;
- Participation of local communities;
- Rights of a community in the siting phase of a RWM programmes;
- Long-term community sustainability;
- Recognition of the need for transparency and good communication.

These principles provided the platform to discuss good practices. Stakeholders agreed on 39 good practices concerning policy and decision processes, local communities and NGOs, local authorities, local committees and local participation in national dialogues and consultations, and highlighted the following good practices:

- Policy and decision processes for radioactive waste management

Good practices identified under this heading include:

- The creation of a national forum involving stakeholders (in particular local communities) and having a statutory role in the decision-making process.
- The use of a stepwise decision-making processes (cf. WP3) with regular checkpoints where the participation of local stakeholders is provided for.
- The need for a body independent of the government and the nuclear industry as guardian of policy processes.

- Local communities and NGOs

A structured and inclusive character of the local democratic process is identified as a key factor for local influence on national decision-making processes, in particular:

- The democratic elaboration of a project of long-term sustainable development for the local community which preserves its autonomy;
- The development of an integrated and multidimensional view of local issues and stakes, which articulates issues of risk and RWM with issues of regional development (cf. WP4);
- The empowerment of local communities and stakeholders to represent their interests in national debates, with a right for local communities to withdraw from decision-making processes.

- Local authorities

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<sup>11</sup> Economic Commission for Europe: *Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters: the Århus Convention*, 25 June 1998.

Local authorities are identified as leading players articulating local views relevant to decision-making processes, in particular:

- They can increase their capacity of influence by co-ordinating their views and forming national or European associations or networks;
  - They are recognised as players with the resources to provide a local/regional long-term perspective to radioactive waste management policy (cf. WP4).
- Local committees

Local committees were recognised as efficient mechanisms to strengthen local democracy (cf. WP1) and to stretch radioactive waste management institutions. Good practices for local committees include:

- Independence and financial autonomy of local committees (from public decision makers and the nuclear industry);
  - Access to technical resources and expertise (including independent expertise or counter-expertise) and to appropriate funding to support the engagement of stakeholders;
- Local participation in national dialogues and consultations

Good practices for an effective local participation in national dialogues and consultations include:

- Dialogues need to be part of a decision-making process in which stakeholders are fully engaged (even if they are not responsible for making the ultimate decisions);
- Local-national dialogues about long-term RWM policies should involve the full range of local and national stakeholders to enable their different areas of expertise to be included in the process.

One outcome of this work package was the influence that case studies had on evolving policy processes at the national level. However, WP2 participants see, as the lasting legacy of their efforts over the three years of the project, their recommended set of principles and good practices, which have been formulated in the light of the participants' experience as stakeholders and the evidence provided by the case studies. Some of the practices illustrated in the case studies were felt to be good, whilst others were not; however, it is important to learn lessons from both the successful and the unsatisfactory processes.

In order to enhance the involvement in, and influence of local communities on, decisions relating to radioactive waste management each country will need to adjust the recommendations from WP2 to their particular national context. Each implementation will be unique, but it is expected that the principles and good practices outlined by this work package will usefully influence programmes going forward and to enable local communities to have a greater say in decisions that will affect them.



Moreover, although COWAM has focused on radioactive waste management it is recognised that the findings of this work package could be relevant to other policy areas.

## 2.4 Quality of the decision-making process

Work Package 3 (WP 3) set out to provide practical recommendations for the design and implementation of a “robust” decision-making process (DMP) in radioactive waste governance (RWG). To achieve this objective, WP 3 was to:

- investigate and evaluate ongoing DMPs and selected case studies (Task 1),
- identify and describe the key characteristics of a fair and equitable process and its procedural elements (Task 2), and
- explore the conditions of an improvement of DMPs as well as practical ways to involve stakeholders during all phases of the respective process (Task 3).

The analysis of case studies during COWAM-1 and WP3’s own work show that the interactions among the different stakeholders (e.g. implementers, national authorities, hosting communities) during the DMPs are as important as the technical design of a project. This was often not recognised in the past, and such a “democratic deficit” is commonly seen as a major reason for failure in the siting of radioactive waste management facilities (RISCOM 2004<sup>12</sup>). The insight has, nevertheless, not yet resulted in guidelines for a “robust” DMP that are jointly accepted by the different groups of stakeholders. WP 3 proposed such a document with their **“Insights and recommendations”**.

### *Cooperative research in Work Package 3*

The work of WP3 relied heavily on the experience of the wide spectrum of participants<sup>13</sup> and a country-wise analysis of DMPs in participating countries expressly carried out in COWAM-2. In line with the overall approach of COWAM-2, the focus was on potential benefits for local and regional stakeholders, *i.e.*, interested parties at the lower levels of decision making. Consequently, as the WP perspective was “from below” – a rather new approach in a field of decision making traditionally associated with a “top-down” view – the WP envisaged participation, deliberation and volunteerism on the local level as of prime importance. The core document, “Insights and Recommendations” (see below), was, however, elaborated collaboratively and consensually and does not look after special vested interests. It reflects Tasks 2 and 3. The second main product, based on Task 1, is the **“Synopsis of national decision-making processes”** of twelve countries and was largely carried out by members of the stakeholder reference group (SRG) under their own individual responsibility. In this sense WP 3 has capitalised upon existing material (COWAM-2003<sup>14</sup>, NEA<sup>15</sup>

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<sup>12</sup> RISCOM, Andersson, K. *et al.* (2004): Transparency and public participation in radioactive waste management. RISCOM II final report. SKI report 2004:08, p. 15. [www.karinta-konsult.se/RISCOM.htm](http://www.karinta-konsult.se/RISCOM.htm), [www.valdoc.org](http://www.valdoc.org), [www.ski.se](http://www.ski.se) (Euratom project in FP5, 2000-2003).

<sup>13</sup> The core group came from Belgium, France, Germany, Slovenia, Spain, Switzerland, United Kingdom, with support from the Czech Republic, Hungary, the Netherlands, Romania, and Sweden.

<sup>14</sup> COWAM [1], Community Waste Management (2003): Nuclear waste management from a local perspective. Reflections for a better governance. Final report. Mutadis (FR). [www.cowam.com](http://www.cowam.com).

2004, RISCUM 2004<sup>16</sup>) but stepped forward in the reflection on the issue by analysing “living” cases of own experience in a more detailed and systematic way, jointly with diverse stakeholders but from a “local” perspective throughout.

In the initial year, much time was devoted to the identification and discussion of the interests and expectations of the stakeholders to make sure that their needs with respect to the direction and pitch of work were met. The **involvement of stakeholders** was promoted through the emphasis on working groups, enabling all actors to express their views on the topics presented in detail in the plenary sessions. Stakeholders’ opinions on the progress of work were also periodically considered by means of formal evaluations and acted upon by the three mandated experts. As a consequence, the desk study originally planned was cancelled and replaced by a straightforward proposal for a DMP framework (WP3 2005<sup>17</sup>) to be the basis for a “template” for case studies elaborated by stakeholders themselves (hereafter named “synopsis”). Expert interviews were dropped as well.

The collaborative procedure itself should underscore the demand to provide practical recommendations for “robust” decision making. Generally speaking, a system is robust if it is insensitive to significant parameter changes, *e.g.*, due to external influence. The term is a key notion used in the nuclear community with regard to safety analysis. In the present context, it was amplified to recognise the complex socio-technical character of the issue by postulating that a system is “socially robust” if most arguments, evidence, social alignments, interests, and cultural values lead to a consistent option (Rip 1987<sup>18</sup>). Therefore, the concerned and deciding stakeholders will eventually have to achieve consent on some common interests. One of the requisites thereof is to identify some basic commonalities of a DMP. The **participatory approach** in formulating joint recommendations on decision making is **meant to add robustness** to the DMP *itself*.

There were several challenges to cope with. Apart from the general issues of representativeness and volunteerism in the SRG, the WP was to integrate three diverging demands:

- Allow a *platform for stakeholders* to express their respective needs and views (and, thus, get close insights into the actual situations of the countries),
- Provide a *jointly agreed generic framework* for criteria and advice to assess DMPs as well as to draw appropriate lessons, and
- Focus these lessons learned to *hands-on recommendations – useful for but not narrowing the respective national systems*.

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<sup>15</sup> NEA (2004): Stepwise approach to decision making for long-term radioactive waste management.

Experience, issues and guiding principles. OECD. [www.nea.fr](http://www.nea.fr).

<sup>16</sup> RISCUM, Andersson, K. *et al.* (2004).

<sup>17</sup> WP3 (2005): Proposed framework for decision-making processes. Nov. 2004, rev. July 2005.

<sup>18</sup> Rip, A. (1987): Controversies as informal technology assessment. Knowledge: Creation, Diffusion, Utilisation. Vol. 8. No 2, pp. 349-371, 359.

### ***Core document 1: “Insights and recommendations”***

The report is introduced with some warnings, some advice and definitions. Accordingly, decision making is the course of action leading to a decision. It consists of several phases:

1. Problem identification: situation analysis (what is?), problem recognition (what is to be changed?), goal definition (where to?), aim (what for?)
2. Problem solving and options development: design (which way?), options (which preference?)
3. Option selection: evaluation, choice, bargaining
4. Decision
5. Implementation (setting the decision in practice)
6. Evaluation (usually not included in decision making but essential for learning)

Normally, DMPs in radioactive waste governance (RWG) are complex and long lasting. As a consequence, the stable governance of DMPs and even the resulting decision are vulnerable to influences from outside the process itself. This may result in hindering its completion or even in an unfavourable decision. Therefore it is not sufficient just to have a “good” or high-quality DMP in a methodological sense (“good” meaning with respect to predefined goals). In fact, a politically and socially adequate “climate” or “environment” (context) is needed for a reasonably controlled continuation of the process over time.

With regard to DMPs, the terms “quality” and “good” refer to those characteristics of a DMP that make, or at least contribute to, a robust DMP (in the sense understood above). Good processes, however, do not *per se* entail good products: A decision-making process that incorporates features meeting the demands of many different actors and participants does not guarantee that they will necessarily reach their goal(s), for instance, “create a safer radioactive waste management solution”. Whilst good processes do not necessarily result in good decisions, in contrast, good decisions generally presume good processes.

The recommendations put forth by WP3 are generic but adaptable to context. The document is kept in a generic form for three reasons. Firstly, whilst there is no “one size fits all”, we assume that there are nevertheless some insights worth considering in any DMP. Secondly, the generic approach forces readers to adapt the recommendations to their specific needs and context as well as to reflect upon “their” strategies and customs (such as “In which way exactly are we different?” “Do we really comply with this and that?” “What actually is the reason why we do things differently?”). And thirdly, WP3 claims that their “view from below” may allow a fresh sight for readers holding different perspectives.

After an overview of the development of, and discourse on, DMPs in RWG in the section entitled “Insights: Background and setting” WP3 suggests an array of recommendations for consideration when designing, checking, and/or adapting DMPs. Hence, the audience is threefold:

- Local and regional stakeholders and publics;

- Decision makers to learn from the perspective “from below”;
- Others interested in reviewing decision-making processes.

The recommendations at a glance are the following:

**A - Define goals**

It is crucial to identify the problem and to define the goal of the decision-making process.

**B - Always provide alternatives**

Decisions need alternatives to decide between.

**C - Ensure weighing and balancing of values and interests**

Trading off and balancing options is common in decision making. Long-term radioactive waste management entails value aspects such as questions of distribution of burdens and the quality of knowledge.

**D - Be comprehensive**

It is essential to identify all factors relevant for the decision to be taken.

**E - Proceed stepwise**

A staged approach keeps options open, is more traceable, and improves control and political support.

**F - Ensure flexibility**

The process must allow opportunities for recourse and reversibility to a certain extent.

**G - Be transparent and open**

Transparency is the bottom line of understanding, openness, confidence and trust.

**H - Allow sufficient time**

It is inefficient and creates frustration if too many goals are pursued in too short a period of time.

**I - Stick to the “rules of the game”**

The rules and criteria have to be agreed on before the start and adhered to during the process.

**J - Define roles and responsibilities**

All actors have to know their own roles and those of others. Having a say goes hand in hand with assuming responsibility and a sense of ownership of the problem.

**K - Ensure early and inclusive participation**

Inclusive and upfront participation increases the chance that all relevant perspectives are raised.

**L - Establish control of the process**

The long-term dimension makes it inevitable to consider the process initiator, the owner and control. It is wise to establish an oversight body or “guardian of the process” to see to it that the programme is on target.

M - Adapt formats to tasks

Techniques (of participation, *etc.*) have to be matched with the goals and the context of the decision situation.

N - Allocate adequate resources

Adequate resources have to be provided to strengthen the stakeholders' expert capacity.

O - Ensure continuity of structure and awareness

The challenge is to ensure a continual process so that, once discussed and broadly agreed, goals can be understood, agreed on and followed by generations to come.

P - Secure influence of participants

The extent to which real participation is demonstrated depends on whether and how inputs are considered and actors are respected.

Q - Enhance well-being

Participating local communities must benefit from their participation. Such a benefit should emerge from measures to improve regional development rather than short-term compensation.

***Core document 2: "Synopsis of national decision-making processes"***

The country reports were prepared by WP 3 or other COWAM-2 members as an input, and direct empirical evidence, for its key document, the "Recommendations and Insights". They reflect personal analyses and not the full range of views. Given their uneven appearance, they are nevertheless reproduced in full length to document the variety of DMPs as well as that of their reception. The questionnaire (with 59 questions) follows the DMP framework discussed in the WP; the sections are listed below and the number of questions per section is indicated in parentheses:

- A. The past: experience, programme, involvement, "solved" issues (8);
- B. The context: framing (energy policy, process aspects) (5), official research strategy (5), legislation (4);
- C. Actors: roles and responsibilities (1), types of stakeholders and levels of involvement (12);
- D. Decision making: substantive principles and goals (5); procedural principles and rules (incl. authors, elements, learning, monitoring, evaluation) (15);
- E. Involvement of society: level, parties, equity issues, goals, formalisation, time frame, methods, knowledge generation (9).

The group on "quality of the decision-making process" worked out recommendations for designing and implementing a robust multi-level decision-making process or evaluating an existing decision-making process. The recommendations take the form of key principles proposed to assist stakeholders in making decisions or evaluations. While the recommendations provide direct advice to decision-makers, they are equally useful for other categories of stakeholders, including local communities, to analyse their local or national decision-making process and develop their own assessment of the governance situation.

Moreover, the principles outlined here can be used to support governance experimentations, which can in return provide feedback and inform about the ways these principles can be refined or specified according to real experience.

## **2.5 Long-term governance**

The purpose of COWAM-2 Work Package 4 on "long-term governance" was to identify, discuss and analyse the institutional, ethical, economic and legal considerations raised by long-term radioactive waste storage or disposal. Its aim was to propose guidelines in order to better address long-term issues in decision-making processes and start long-term governance.

### ***Cooperative research in Work Package 4***

The various issues were addressed within a dedicated working group made up of stakeholders from different European countries and a research team. About 20 participants, having an interest on long-term issues, regularly attended the meetings. They were members of local liaison committees, NGOs, operators, regulators and experts from research and public institutes. They originated from Belgium, France, Germany, the Netherlands, Romania, Spain, Sweden, Switzerland, and the United Kingdom. Although different countries and categories of stakeholders were involved, the driving force for their participation was their willingness to address the issues of long-term governance. The research team involved four different institutes from Belgium, France, and Switzerland and included expertise on ethics, radiation protection, economics, environmental assessment, and social sciences.

The approach adopted relied on the following steps: (i) establishment of the topics to be developed, (ii) preparation by the research team of topical documents ("definition" of long-term, ethical considerations) and case studies (sustainability of protection systems, long-term financing schemes) for discussion during the work package meetings, (iii) contribution of stakeholders (reflections on ethics, national and local contexts, financial mechanisms for long-term governance), (iv) preparation of a draft final report by the research team, (v) comments and validation of this report by the participants (including a dedicated meeting).

In an effort to establish a fair dialogue, participants in the work package on long-term governance set the boundaries of, and conditions for, their activity. At the beginning of the project, several participants in this work package stated that, for them, a pre-requisite to their involvement in the governance of radioactive waste management would be clearly to address the articulation between energy policy scenarios and long-term waste management scenarios. Although this was acknowledged to be an important issue, it considered that COWAM-2 was not the place to open this debate. It was considered that an adequate forum has to involve different local and national stakeholders and energy policy-makers. Therefore, it was agreed to quote this need clearly in the report. With this pre-requisite acknowledged, the concerned stakeholders engaged with all the participants of the work package in the reflections upon long-term governance.

## ***Main results***

The main topics investigated by the work package were the following: (i) meaning of long term, future generations and governance; (ii) ethical stakes regarding long-term issues for radioactive waste management; (iii) continuity and sustainability of surveillance and monitoring; and (iv) efficiency of financing schemes for the long-term management of radioactive waste. On the basis of these investigations, some guidelines were developed to provide stakeholders with an operational tool allowing a common technical and ethical elaboration of long-term radioactive waste governance devices.

### *Meaning of long term, future generations and governance*

There is no unitary definition of the long term. From the technical point of view, long term is a concern for the operators and the safety authorities in order to assess the performance of protection systems over periods of time on the order of several thousands of years and beyond (up to millions of years). Because of the various uncertainties associated with these timescales, there is no "absolute" guarantee of very long-term safety. Furthermore, this time dimension is far outside the current field usually considered for the prediction of the evolution of society. From the societal perspective, considering timescales on the order of several thousands of years is meaningless.

The current generation is however concerned by the possible future, even beyond several thousands of years. Initially, the ethical reflections led to the introduction of the principle of "undue burden on future generations" regarding radioactive waste management. Although the duty to protect future generations is of prime importance, the capability to really achieve this obligation is significantly affected by technical and scientific uncertainties, and depends also on the evolution of the society. Furthermore, the right to impose a behaviour upon future generations is questionable. In that perspective, a reasonable approach to cope with this concern is, for the current generation, to create governance processes favouring a continuous transmission to the next generation(s) of a "safety legacy" (know-how, protection options, procedures, resources) in order to ensure the continuation of waste management.

This approach implies that to cope with the past, the present and the future organisation of radioactive waste management, an open process, allowing the future generations to intervene, must be introduced. In that perspective, the concept of retrievability introduces flexibility in the decision-making process. Nevertheless, it has to be kept in mind that to be flexible does not mean to postpone the decision but rather to keep options open.

Notwithstanding the technical options to be adopted, it is necessary to combine the two main concerns for long-term issues (i.e. the technical one and the societal one). Indeed, from the safety point of view, flawless performance on the timescale considered cannot be demonstrated. The route to satisfactory waste management is via a transfer of responsibility between generations. Therefore, the current generation has to investigate the efficiency and feasibility of technical options, but in association with a governance system that meets the societal demand for transmission to succeeding generations of a "safety legacy".

*Guidelines for a common technical and ethical elaboration of long-term radioactive waste governance devices*

The investigation of the long-term relationship between the technical processes and the ethical stakes led to the idea of establishing guidelines that, through dialogue, would allow stakeholders to reach a shared understanding about devices for long-term radioactive waste governance. This can be applied in various situations in Europe. The aim was to develop guidelines relevant both for a global (European) prospect and for a local/national prospect. Another point was that such guidelines should link the technical process with the ethical stakes in taking into account the variety and the complexity of the institutional, financial and societal conditions. To develop the guidelines, the main topics to be considered by the stakeholders when elaborating long-term governance devices have been identified (see following Table), and some of these topics were investigated within the work package in order to propose a set of ethical criteria as well as recommendations for the sustainability of long-term surveillance and financing schemes (see following paragraphs).

<b>Technical processes</b>	<b>Institutional conditions</b>	<b>Financial conditions</b>	<b>Societal conditions</b>	<b>Ethical stakes</b>
<ul style="list-style-type: none"> <li>- Category of radioactive waste</li> <li>- Storage/ disposal/ transmutation</li> <li>- Combination of options over time</li> <li>- Development/ reduction of nuclear energy production</li> <li>- Sustainable energy programme and link to the nuclear energy policy</li> </ul>	<ul style="list-style-type: none"> <li>- International/ national agencies and programmes</li> <li>- Public/private ownership over time</li> <li>- Co-operative management of the waste</li> <li>- Robustness of institutions in charge of information transfer</li> <li>- Procedures of transparency and access of official information</li> </ul>	<ul style="list-style-type: none"> <li>- Specific fund for the long-term management of the waste</li> <li>- Provisions made by the operators or the state over time</li> <li>- Financial support for the local development of municipalities and districts</li> <li>- Financial control of the fund evolution and sustainability</li> </ul>	<ul style="list-style-type: none"> <li>- Intra-inter-trans generation relations</li> <li>- Networks of territories/ municipalities/ citizens</li> <li>- Involvement and empowerment of local people</li> <li>- International/ national/local expertise</li> <li>- Co-operative inquiry and management of waste</li> </ul>	<ul style="list-style-type: none"> <li>- Long-term protection of health/environment</li> <li>- Freedom of choice for the local people</li> <li>- Conservation of memory and transfer of information, knowledge and skills</li> <li>- Socio-economic benefit and development of local communities</li> <li>- Control of energy consumption and waste production</li> </ul>

The objective of the proposed guidelines is to promote a dialogue between the various categories of stakeholders so that they can establish the key principles for developing long-term governance devices relevant for their own context. Furthermore, it should be mentioned that the elaboration of these devices should be envisaged as a continuous process, largely influenced by the past and present situations. In that perspective, the devices should be regularly revisited and updated as circumstances change.



### *Ethical stakes regarding long-term issues for radioactive waste management*

The ethical, organisational or political dimensions have been explored within the radioactive waste management community (IAEA, OECD/NEA, KASAM, Seaborn Commission, etc.). One of the main conclusions is that the driving principle in developing waste management options is that an "undue burden" on future generations should be avoided. In COWAM-2, discussion focused on the creation of the best conditions for successful transfer of the whole waste management system to the next and following generations. This led to the identification of three major ethical principles as key issues for the long-term governance of radioactive waste: responsibility, justice and democracy. The analysis of these principles led to the elaboration of 20 ethical criteria, such as:

*Future generations should be provided with some appropriate sustainable means (processes, money, institutions, knowledge, know-how) for the implementation and the assessment of radioactive waste management systems (...).*

*Our generation should provide a contribution that takes into account our current advantages compared to the disadvantages of the future generations. This contribution should be proportionate to the efforts (research and development, etc) needed to manage the radioactive waste and to optimise the cost of the radioactive waste management systems (...).*

*The institutions in charge of the radioactive waste management should be subjected to a democratic control and be counter-balanced by the political empowerment of the citizens through generations.*

### *Continuity and sustainability of surveillance and monitoring*

Whatever the type of radioactive waste management facility (geological disposal, short-term or long-term storage), the generic term of "surveillance" can include several aspects of the protection system, which may also vary with time, such as: the surveillance of the site; the technical monitoring of the repository environment; the technical maintenance of the site; the management of any actions on site, including possible retrieval of waste; the preservation and transmission of know-how concerning waste management; and the training of the generations who will take over the radioactive waste management facility site and the organisation of a multi-level watchfulness.

The continuity and sustainability of surveillance in the long term can neither be guaranteed nor decreed. However, some elements can be put in place which will favour the preservation of vigilance (on the local, national and international levels) and its transfer through generations. Four main fields of action have been identified:

- *The organisation of surveillance and vigilance:* A specific monitoring and surveillance programme has to integrate local and national actors and to clearly specify their fields of responsibility. Such a programme will be more robust if regular meeting points are prescribed with the Administration/State in order to

evaluate its efficiency and to identify the need for its evolution. A dedicated sustainable financing system needs to be associated with this programme. The capability to mobilize, when necessary, international resources should also be studied.

- *The development of a centre of competence:* The objectives of such a centre should be the development, use and transfer through generations of expertise and knowledge regarding the operation, maintenance and surveillance of a radioactive waste management facility. It should benefit from local, national and international expertise. The use of the centre's expertise in various places or in other fields should be favoured, as should the involvement of stakeholders in its management.
- *Integration of the radioactive waste management facility and its surveillance in a local/regional socio-economic development:* The surveillance function should be integrated within an overall strategy for the sustainable development of the locality or region. It is important that the community around the radioactive waste management facility should thrive because a stable, prosperous community is one of the keys to robust surveillance. The development of economic activities, linked for example to environmental surveillance and monitoring and to scientific and technological competence at the regional level, should also be studied.
- *Need for an equitable distribution of responsibilities between territories and generations:* An efficient protection system needs a clear distribution of responsibilities between local, national and international actors. Moreover, the notion of "safety legacy" should be developed in order to create a "safety link" between these actors, and between generations. Finally, the idea of an international convention on the "protection of radioactive waste management facilities" should also be developed.

#### *Efficiency of financing schemes for the long-term management of radioactive waste*

The capability of future generations to implement radioactive waste management options and to continue the control and monitoring rely notably on the financial resources which will be available in the future. The analysis of the financing schemes for the management of radioactive waste put in place in some European countries pointed out some of the main issues to be addressed to evaluate the performance of such a financing scheme in a long-term perspective:

- *Distribution of responsibilities regarding the management of radioactive waste:* These responsibilities include the ownership of the waste, the responsibility for financing, for implementing a radioactive waste management facility, for surveillance. Furthermore, the transfer of these responsibilities and liabilities over time should be planned in advance.
- *Transparency on cost estimates and use of the funds:* The decision-making process for deciding the level of the funds or provisions and its use should be explained, as well as the radioactive waste management scenario used to determine the level of the financial needs in the future. In particular, it is necessary to consider the costs associated with the long-term surveillance or the financial accompaniment for a sustainable development of the territories. The ability of the fund to evolve with time should be clarified. External audit of the funds or provisions should be done on a regular basis by the state in

- collaboration with national and local stakeholders, e.g. through the involvement of a local commission in the follow-up of the fund management.
- *Guarantees*: The financing schemes should integrate financial guarantees to be used if the cost of radioactive waste management is higher than expected or if a waste producer goes bankrupt. They should also comprise specific systems to ensure (as much as possible) that the money allocated will be available when necessary.

### ***Future prospects***

The perspectives opened up by this work concern: (i) the implementation of the guidelines in specific contexts to take into account the long-term dimensions in the elaboration of radioactive waste management systems, (ii) the need for further developments of practical mechanisms for the organisation of long-term governance, and (iii) the dissemination and sharing of feedback on the use of the guidelines.

### ***Implementation of the guidelines in specific contexts***

The aim of the proposed guidelines is to encourage the development of long-term radioactive waste governance devices by a set of stakeholders (local, national and/or European), taking into account technical and ethical considerations. The purpose is not to be prescriptive but to promote a shared reflection and elaboration on this issue in a specific context, based on a structured approach. Therefore, the next step concerns the implementation of the guidelines by different stakeholders to favour dialogue and the identification of common issues regarding long-term governance, and to point out the remaining disagreements.

### ***Proposals for future investigations***

Currently, the need for future investigations concerning the practical mechanisms for the organisation of long-term governance has been identified. This mainly refers to:

- Concrete monitoring programmes: definition of criteria for assessing the performance of the radioactive waste management facility over the long term; meaning of long-term monitoring of a radioactive waste management facility.
- Transmission of knowledge and know-how: identification of potential programmes and university research for dealing with long-term governance of radioactive waste management facilities; regular checking of the relevance of the knowledge and know-how to cope with the "safety missions".
- Territories' development projects and long-term vigilance: analysis of ways to integrate the vigilance and sustainable development objectives and to ensure the availability of expertise in the regions concerned.
- Elaboration of financing mechanisms dealing with long-term governance.

### ***Dissemination and sharing of feedback regarding the experience of long-term governance***

A key dimension regarding long-term governance relies on the existence of networks at local, national and European levels involving different categories of stakeholders. The dissemination and sharing of feedback experience on long-term governance could

play a key role in improving current governance systems. It could also contribute to ensuring continuity of the surveillance and solidarity between the different stakeholders and territories involved in the long-term management of radioactive waste. In that respect, the existence of European networks is crucial for addressing the issues of long-term governance and favouring the emergence of innovative approaches.

Finally, the promotion of the results of this work package, in specific contexts, might lead to the identification of other research needs. This would then make it possible to further refine the issues already investigated in this work package regarding long-term governance and to address them within a larger inclusive governance approach, integrating local democracy, the influence of local actors on the national decision-making processes and the quality of decision-making processes.

## **2.6 COWAM-2 in national contexts**

Activities within work packages took forward the analysis of topical issues, the identification of good practices and the promotion of recommendations. The direct participation of stakeholders ensured that these activities were properly informed by their experience of governance and met their requests and concerns.

COWAM-2 provides guidance on better governance processes. This guidance doesn't consist of universal solutions. It is a reference system for improved governance in RWM, from which principles and tools need to be adapted and translated, in return, in each national and local context by the relevant actors. This adaptation needs to take into account the specific cultural, historical, legal and administrative context as well as the different stages of progress in RWM at the national level. Participants expected that COWAM-2 results would lead to the improvement of local and national situations.

Because of the close connection of the research activities with end-users, this process of adaptation was experienced during the project, in particular through national sessions organised on an annual basis during the COWAM-2 July conferences. The purpose of these meetings was to give an opportunity to participants to consider COWAM-2 reflections – developed on separate issues in the work packages – in a more holistic way, taking account of the current concerns of their own country. Feedback from these sessions stressed the potential for integration of governance issues through national dialogues. Participants also emphasised the value of continued European forums to exchange and discuss experiences.

The National sessions were held for nine countries: Belgium, France, Germany, Hungary, Romania, Slovenia, Spain, Switzerland, and United Kingdom. The discussions were facilitated and reported by a national contact person (NCP) based upon a common list of questions, established with support resources. Throughout these sessions participants made an attempt to characterise the interest and value of their participation in a European project on RWM governance and the meaning of national discussions.

### ***Topical integration on a national basis***

The national discussions enabled the sharing of reflections about the four COWAM-2 themes of local democracy, the influence of local actors in the national decision-making process, the quality of the decision-making processes and the long-term governance, in each of the national groups. These groups paid special attention to making links between the different themes. This contributed to bringing out the coherence of the various research tasks.

More significantly, their discussion established relationships between COWAM-2 themes and the on-going situation in their countries. Thematic analyses and proposals were put into context and practical implications emerged. Project outcomes thereby became the more pertinent, as they took on meaning in the light of actual national experiences.

Furthermore, the work in COWAM-2 made it possible to give meaning to issues which had previously been less well understood. A common language was built up around the notions of governance within the field of waste management. Reflection was based on concrete examples of European cases studies, all the while making reference to middle range theoretical developments. These developments were essential for analytical purposes to compare and reflect on a variety of experiences and draw and share common lessons.

### ***National connections***

Very often, the relations between local stakeholders and national decision makers remain bilateral. There are few opportunities for “horizontal” links between local communities which are in fact often isolated one from the other. Participation in the project enabled local communities from the same country to realise that they had common concerns, and that they can exchange experience and advice. This was particularly the case for countries not involved in the previous COWAM project, but also for countries like Belgium, United Kingdom, or France, already involved in COWAM-1, where local communities had strengthened their relations. The fact that the project provided room for national sessions gave more opportunities for local stakeholders from the same country to cooperate. For local stakeholders of some countries, these ‘national meetings’ were the first opportunity to meet face-to-face, and share experiences about the same questions stemming from the same national context. This was a major step forward.

Meeting fellow country men and women with different roles, concerns and responsibilities was no less significant. As a matter of fact, as a European arena, COWAM-2 opened a dialogue for them that was usefully distant from national disputes and controversies. It created favourable conditions for stakeholders to share freely views and information about current national and local RWM governance affairs. In this “neutral” setting, they were able to listen to each other, put aside controversies, and learn about each other’s concerns and attitudes. These conditions were particularly important for relations between RWM specialists and non specialists, and for relations between local and national stakeholders. Personal contacts established through the three years facilitated discussions and understanding.

Participants recognised that personal communication and a greater awareness of each other were eventually reflected in the organisations they represented.

Finally the meetings and conferences were often the starting point of other exchanges outside the project. Participants established contacts, developed relations beyond COWAM-2, and in some cases, organised further meetings to address topical issues of RWM governance for their communities or countries.

***Political significance of COWAM-2: the example of Romania***

The meeting organised in Bucharest (March 2006, WP1) furnished the first occasion for Romanian stakeholders of every category to meet in a neutral forum. It was a chance for local and municipal stakeholders to debate with institutional representatives, and for all to get feedback from international counterparts. Thanks to the very inclusive invitation launched by Romania's Institute of Nuclear Research, and the determination of Cernavodă's local committee members, a significant delegation (20 Romanians) was present. All were active in discussion. The meeting was not a place for negotiation or official agreement, and important differences in vision subsisted among the Romanian stakeholders. However, by the end of the meeting, there was a sense that better understanding of the local concerns had been achieved. The post-meeting evaluation suggested that the opportunity for these stakeholders to discuss in the forum, learning from international colleagues about the diversity of situations in Europe and elsewhere, may have been a positive step in Romania's own process. This successful attempt at discussion and mutual learning gave Romanian stakeholders a strong motivation to continue the process in the context of "COWAM in Practice" (CIP) in 2007.

Other countries involved in COWAM-2 also had a similar experience, namely that discussion in a neutral European forum has facilitated awareness and contacts and stimulated perspectives of common progress at national level, according to the situation prevailing in each country.

### 3 Key lessons and findings of the COWAM-2 project

Most countries represented in COWAM-2 are now at a turning point of exploring new approaches in decision making around radioactive waste management (RWM). As the reports from each working group have shown (Section 2), COWAM-2 proposes tools and strategies for implementing inclusive governance in the RWM context.

Not least important is the fact that these results were achieved in a collaborative manner among participating actors. Indeed, COWAM-2 developed an innovative methodology of *cooperative research*, based on the structured involvement of stakeholders in the production of knowledge directly connected to their concerns and actions. The methodology is a valuable outcome of COWAM-2 in the same way that the tools and strategies worked out by participants are valuable. The cooperative research approach, like the concrete COWAM-2 work package offerings, can be used again in new contexts to improve the governance of RWM or other societal risk management.

Across three years of cooperative research to develop their tools and strategies, COWAM-2 participants identified the latest advances and best practices on three dimensions:

- Structuring local communities for engagement in RWM governance
- Legal and institutional frameworks and processes for inclusive governance of RWM
- Sustainable and reliable governance of long-term issues.

Indeed, the COWAM-2 research made it plain that RWM governance must be concerned with the *local dimension* (democratic structures and processes), with the *institutional dimension* (organisations and formal instruments and processes, often national), and with the *long-term dimension* (the special constraints introduced by the very long periods associated with RWM). These three dimensions, different in nature, are interrelated, and they are all essential. Governance of RWM is indeed multi-level governance, and whilst different actors may be more specifically concerned with one level or one element, all actors should be aware of the full extent of this three-dimensional governance "space".

In what follows, we analyse the COWAM-2 findings on these three dimensions. We show the articulations between the different levels or dimensions of RWM governance, how the different levels influence each other, and why it is important for each actor to understand and properly use these dynamics. Overall, this section draws out strategic implications for the quality of RWM governance.

#### 3.1 An innovative methodology of cooperative research

The cooperative research approach tried in COWAM-2 recognises that there is no sharp division between the production of knowledge and the making of decisions: decisions are actually being prepared as knowledge is developing. In this respect, late stakeholder consultation bearing simply upon the final results of research and

proposed solutions based on these results brings little, if any, progress in terms of governance. A genuine change demands inclusive governance in each phase of knowledge-building, from research to demonstration, through to decision.

Because local stakeholders possess an important body of knowledge about their local situation and because they are in the best position to integrate this knowledge – whatever its source – into the local context, COWAM-2 considers local stakeholders as key players. Their participation in research activities makes it possible to embed this knowledge in a strategic perspective of action and implementation.

### ***Participatory knowledge framing***

In 2000-2003 COWAM-1<sup>19</sup>, a plural network including a strong representation of local communities identified four strategic dimensions in the governance of radioactive waste management:

- the implementation of local democracy
- the influence of local actors on the national decision-making process
- the quality of decision making
- long-term governance.

On each of these key issues, COWAM-2 built a research partnership between stakeholders and research contractors. Within this partnership, stakeholders framed the production of knowledge so that it would better address the questions they identify as most relevant to improve the robustness of decision-making processes in radioactive waste management.

Such participatory framing of issues and knowledge, in which stakeholders guide enquiries into the topics of greatest interest for their context, requires as a prerequisite that rules of cooperation between participants are made clear. This is especially true when, as in COWAM-2, actors with very diverse roles and representing a wide range of countries and backgrounds come together.

### ***Cooperation framing***

COWAM-2's overall objective was to foster an improved dialogue between representatives of civil society and the traditional public and private actors of RWM, in order to identify good practices and develop guidance on innovative democratic governance of radioactive waste management. COWAM-2 defined its own primary goals in consultation with stakeholders at the phase of the European Commission's call for proposals in 2003. These goals are different from – although consistent with – the FP6 Euratom research programme. They focus on issues of governance. They reflect the need to develop the effective responsibility in current generations for safe and sustainable management of the nuclear legacy which respects the rights of today's local communities and of future generations to decide on their living conditions. COWAM-2 does not evaluate or promote any specific technical option.

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<sup>19</sup> Community Waste Management concerted action, coordinated by Mutadis (FR), was a networking activity grouping 230 stakeholders and experts from 10 countries, 2000-2003 (<http://www.cowam.com>). The themes that would be explored subsequently in COWAM-2 were identified here.



The research sought to develop a shared analysis and recommendations on governance, despite possible divergence of views among participants on waste management technical options or on the use of nuclear energy. Stakeholders and experts carried out joint fact-finding on key issues of governance and converged upon agreed conclusions. However, consensus was not mandatory. Plurality of views was respected and valued. Divergences and conflicting values were identified. They are accordingly reflected in the reports with a recommendation to carry out further analysis when necessary.

Stakeholders contributed actively to COWAM-2 research. A memorandum of agreement was signed between each participating organisation and the coordinator. The memorandum specifies that the involvement in the project is based on free and voluntary participation. In addition to their duty to contribute to, check and review the work programme, stakeholders have an essential right to withdraw from the project. This right was invoked once within the steering committee to mark the distance of one member's constituency from the EC sponsors' position on nuclear energy.

### ***Increasing relevance and alignment of knowledge for better governance***

Stakeholders' direct participation in research discussions increases the meaningfulness and authenticity of the results. First, live exchanges enable them to *relate the knowledge being produced directly to their needs and concerns*. For instance, participants in the group on long-term governance in WP4 identified significant limitations in the financial management mechanisms currently proposed to face the novel time dimension of radioactive waste, and discussed this gap. The research cooperation has thus a *heuristic and reflective value*: it helped these actors to better understand their own environment. These research exchanges also contain a *strategic value*. Stakeholders characterised issues to put on the agenda in their region or country. They developed awareness and experience on these issues to support their own opinion (e.g. on the potential features of a national fund to manage resources for the long-term management of waste). Thus, they got the sense of how they can use this information in a strategic perspective; this helped them to identify questions and recommendations to fill the gaps in long-term governance with efficient and relevant knowledge.

Moreover, be they elected representatives or NGOs, local stakeholders are engaged in actual decision-making processes in real situations. They are aware of the complexity of making decisions and they have a special capacity to apply the knowledge produced in a specific, local domain in the wider circumstances in which RWM decisions are made.

Romanian colleagues provide an example of this in the discussion process that built up the COWAM-2 *road map for local committee construction* (from Work Package 1). They criticised an early draft for its focus on local committees recognised by the 'political establishment'. They pointed out that this is not the case in Romania, as participation in RWM governance was the result of spontaneous self-organisation of concerned citizens. In such a case, the Romanian colleagues argued, rather than looking for a 'representative' committee, one should look for people with enough management talent for running the interactions with the political representatives, the

national waste management organisation, the NPP operator, etc. The *road map* was therefore altered and improved by this exchange of experience.

***Box 2: Cooperation is a learning process***

The success of the COWAM-2 research cooperation depended very much on the capacity of stakeholders and research contractors to embark upon an unpredicted experience of cooperation, to trust each other, to adapt and find their bearings according to their expectations and resources. For both experts and stakeholders this has been a learning experience. Two key issues were identified during the process and were progressively improved: establishing the basis for a fair dialogue and cooperation between stakeholders and research contractors, and striking the right balance between theory and practice.

Cooperation implies a joint contribution and analysis by stakeholders and research contractors. A large number of stakeholders provided discussion material for the research activities, but very often faced a lack of time. While wishing to draw upon the direct experience of stakeholders in governance questions, research contractors had to solicit stakeholders more as discussants than as information providers. For this reason, most of the joint analysis was done during the meetings. Between meetings, research contractors prepared input and discussion papers, and reported the analysis carried out in the stakeholder reference group sessions. The initial agreement on the work programme, and the annual review procedures were all the more important to check the alignment of the activities with stakeholders' needs and expectations.

Throughout the three years of the project, participants learnt to understand each other despite national, professional and interest differences. They built a common language to discuss governance issues related to radioactive waste management. Theoretical concepts were sometimes considered difficult, but were helpful and necessary to develop a shared analysis beyond national and professional particularities. For instance, the elaboration of ethical criteria in the group on long-term governance required sharing some preliminary philosophical background among members of the group. Stakeholders insisted that the results and recommendations of the project be practical and illustrated with actual examples.

COWAM-2 showed the benefit of collaborative research for participatory and inclusive governance of complex and contentious issues such as radioactive waste. Challenges in future research relate first to the need to ensure the relevance of further investigations in line with stakeholders' expectations, as well as in the perspective of a common improvement of governance; second, they relate to the arrangements of fair conditions of participation for stakeholders in the research investigations, both in terms of financial support and in terms of a fact-finding methodology that is shared and is accessible to stakeholders.

In what follows, three essential dimensions of RWM governance (local, institutional and long term) are analysed on the basis of an overview of all the COWAM-2 reports. Elements from all the work packages are used to illustrate these essential levels. Best practices and governance recommendations are proposed.

### **3.2 Structuring local communities for engagement in RWM governance**

The engagement of local communities as permanent and influential players in the local and national decision-making processes is key to emergent RWM governance. The COWAM-2 cooperative research project investigated the conditions and means

for local communities to acquire this position. This section characterises the key conditions for the emergence and strengthening of structured local communities in the field of radioactive waste management.

### *A shift in the meaning of “local”*

In the former traditional decision-making processes of RWM, the mention of “local” was made with reference to potential or actual sites for RWM facilities. The meaning of “local” changed according to the stages and purpose of the decision-making process. Reference to “local” was made as opposed to a “national” policy in which some local communities would be invited or requested to participate at a later stage as potential hosting sites.

The COWAM-2 research highlighted the existence of a wider group of local communities that would consider themselves for various reasons as stakeholders in RWM. In the UK, for instance, the local government special advisory group on Nuclear Legacy Management (Nuleaf) is composed both of representatives of communities hosting nuclear activities and of the Nuclear Free Local Authorities group.

Local communities involved in many different types of nuclear activities (contributing therefore to nuclear waste production and management) would also consider themselves as stakeholders. “Local” may also mean larger regions that include more than the communities directly confronted with RWM, encompassing the wider geopolitical area in which particular communities may be situated. This may in particular vary according to the nature of territorial activities. In the wider sense “local” would therefore encompass any community that wishes to engage in any debate about the implications of any project concerned with managing radioactive waste.

It is important to note here that, as the definition of “local” changes, the nature of the “local engagement” shifts from an occasional participation to a sustainable engagement. Here, local actors appropriate the national issue of RWM and start developing strategies and means in order to become sustainable and influential players in the corresponding decision-making processes on the short, medium and long term. In this perspective the “local” dimension would be better characterised as a “territorial”, self-standing dimension. A parallel can be established here with the “territoriality-based communities” that are presented as emerging actors of inclusive governance processes by the recent conclusions of the TRUSTNET in Action Euratom research project (see Box 3).

### ***Box 3: The “territoriality-based communities” in TRUSTNET in Action***

The concept of territoriality-based communities (TBCs) characterising open, modern communities relying on territoriality, as new patterns of democratic action at the territorial level, was proposed by the *TRUSTNET in Action* Euratom project (2003-2006) on the basis of observation of nine innovative processes of inclusive governance of activities entailing risks and impacts for health and environment, in the EU. Territoriality-based communities are about individuals and their community regaining control of their life and future by integrating security, environment and economic issues in the context of a sustainable quality of life in their territory. Key features of TBCs are to:

- Create the conditions for a plurality of local actors to identify common objectives, especially where quality of life and well being issues come into play together with inherent consequences (risks, impacts) of the activities under consideration in the territory,
- Give the local actors the opportunity to shape their territorial entity so that it is suitable for producing meaningful action according to the nature of the issues and problems considered, in the perspective of a common project. In this perspective, territoriality goes beyond geographical or administrative characteristics. It involves a social construction that is problem or project oriented,
- Provide room for a plurality of views and perspectives, and contribute to bringing them together in a way that makes plurality and differences a strength and which gives local actors access to public and private expertise and, even more, to the capacity to build their own expertise and to contribute to informed decision-framing,
- Help articulate public participation within representative democracy in mutually beneficial ways, that reinforce the legitimacy of decision makers while promoting an effective contribution of participatory democracy to the quality of decisions,
- Help territoriality-based communities to connect with each other (within and among EU Members States) and to influence national, international and supra-national decision-making processes that affect them (vertical connectivity). All this however requires those involved to develop good and effective networking skills,
- Take advantage of factors such as common cultural memories and common traditions; the importance of retaining such memories and traditions as a heritage can be an important driver for the sustainability of the territorial development,
- Contribute to moving away from short term and one-off engagements (which are the frequent response by authorities to problems at the territorial level) to a longer term approach which enables problems to be set within a wider context and in particular offer an effective way of tackling complex issues involving government at multiple levels.

### ***The expected role of local communities in the governance of RWM***

The involvement of local citizens as co-actors in the decision-making processes implies the emergence and strengthening of active local communities. The emergence of local communities rooted in territoriality as permanent players in the governance of RWM necessitates appropriate structures and means in order to create the conditions for local stakeholders to gain ownership of the RWM problems. The purpose of the engagement of structured local communities is to:

- raise the local voice in the national debate and provide an integrated vision of the several dimensions of RWM at territorial level

- shape and monitor the RWM process, from the preparation of a national policy framework and to its implementation
- play an active role in the site selection process (design and implementation)
- monitor the local waste management facility now and in the long term (directly or indirectly)
- develop a strategy for local development now and in the long term (hosting communities)
- transmit to future generations the means, procedures and know-how they will need for long-term active participation in RWM.

Local stakeholders need building capacities and competencies in order to enter a fair dialogue with national decision makers. The COWAM-2 research investigated in greatest depth the implementation of local committees and participatory technology assessment as means to structure community action in RWM.

### ***A structure for capacity building and plural oversight at territorial level***

Local committees provide a forum for community discussion on how waste is to be managed and all associated issues – from local development to long-term vigilance. National, regional and local authorities all have, at their respective levels, a special responsibility to enhance local democracy and support the creation and operation of local committees at territorial level. The local authority is a leading player in the decision-making process. An effective leading role requires sufficient resources to be able to participate fully in the process, for example to appoint its own dedicated staff or engage its own independent expertise.

Independence is vital. Local committees must have access to adequate resources so that they can inform local inhabitants and develop a competence of their own that provides members with the tools for meaningful participation. This enables them to strengthen the capacity of stakeholders in using pluralistic expertise. Funding mechanisms should be constructed in a way that guarantees local committees' independence from the implementer. Independent financial funding is to be externally audited and transparently managed.

### ***Community development and long-term governance***

The permanent contribution of local stakeholders from local hosting communities to societal vigilance is foreseen as an important dimension of the oversight system of the RWM facility over the long term. This entails a transfer between successive generations. Over the long term, the reliability and sustainability of radioactive waste management governance are expected to depend significantly on the sustainable development of hosting communities. On that basis, local development is a key condition for the proper integration of the facility in its local environment in the short and long term. The community engages in a local dialogue to define a dynamic local development project that takes into consideration the facility but doesn't fully depend on it. A core objective of this development project is that it ensures community well-being. The development of economic activities linked for example with environmental surveillance and monitoring, and with the scientific and technological competence at the regional level, can be considered.

### *Community benefit*

As for other hazardous activities, there is an actual risk with radioactive waste management that the operation of a facility – given its dimension and impact – will monopolise local development perspectives, impede the local community's autonomy and undermine its identity. In this perspective, community benefit is a means of enabling the community to:

- Fully engage in the dialogue and decision-making process;
- Develop their local skills and long-term sustainability;
- Overcome the tangible economic and social disadvantages that it might otherwise experience and decrease dependency upon RWM;
- Support local capacity building and the monitoring vigilance of citizens in the long term.

Financial resources directly fund the activities of the local community related to the site, notably as regards oversight and vigilance. They also support a sustainable development of the community to ensure its capacity to keep playing an active role in the governance of radioactive waste management over the long term. These funding mechanisms are to be regulated within a national radioactive waste management framework and operated under transparent conditions.

### *Communities' influence on national and international decision making on RWM*

Another characteristic of emerging local communities in the governance of RWM is their capacity to establish links and strategies with other communities in order to influence higher levels of decision making. Several good practices have been identified by COWAM-2 in order to raise local influence on national decision-making processes. This capacity of connection with higher levels is very important, since organising local democratic debates while at the same time depriving local actors of influence on higher levels of decision making that may severely affect their life would create frustration and scepticism about democracy. The efficiency of community actions at upper levels is connected with the community capacity to bring together the various local players (local elected representatives, local NGOs, lay people, professionals, workers, trade unions, local administrations, etc.) in a position of steady dialogue and mutual respect. The objective of the participation of local actors in higher levels of decision making is to ensure continuous alignment of an emerging multi-level governance system with the complex and changing lives of actual citizens. Local actors provide RWM governance with their capacity to integrate the various dimensions at stake (e.g. economy, health, environment, safety, etc.), beyond the inherent fragmentation introduced by the different public and private decision makers' remits and interests.

### **3.3 Legal and institutional frameworks and processes for inclusive governance of RWM**

For local communities and stakeholders to be actually engaged in the governance of RWM on a sustainable, permanent and influential basis, institutional and regulatory frameworks need to change. One must acknowledge the intense trend of innovation

and experimentation characterising RWM public policy development in the past few years, both at national and local levels. Recent decades of RWM have tested different unsuccessful approaches and this experience has gradually led to a substantial reframing of the problem. An important dimension here has been the return of experience from past practices of decision making on RWM that has been generated by local, national and international players. A significant knowledge basis of case studies has been gathered and analysed by COWAM-2. Good practices and principles were extracted.

### ***Institutional experimentation***

Several EU countries have recently developed national policies for RWM that include a participatory dimension. Participation may occur both upstream, during the *framing* process of definition of the laws or regulations, and downstream, in the assessment of experimental phases of the decision-making process or in the *implementation* of the regulations. Reference to the Århus Convention has been in many cases introduced as a legal ground for public participation. However the introduction of participation in decision-making processes has necessitated the introduction of specific legal and regulatory mechanisms in the RWM legal frameworks in order to articulate the stakeholder participation with the decision-making processes as well as to provide them with the necessary resources and means (capacity building, funding, access to knowledge building).

It is also worth noting that the participatory dimension of public policy framing processes has significantly improved the practicability of the outcomes, although in several countries the actual impact of local actors' recommendations has not yet met citizens' expectations. It is also interesting to mention that in several countries local actors and local communities have directly engaged in the debates on the preparation of a national policy framing, sometimes outside any particular request or mandate, providing autonomous contributions to the democratic debate. This trend of experimentation is expected to continue in the next decades since the framing of robust long-term participatory processes on sustainable RWM will necessitate the invention and testing of new features of governance through participatory elaboration, implementation and evaluation.

### ***Framing: an inclusive approach to policy making***

Among the good practices identified by COWAM-2 is the existence of a national framework establishing the decision-making process and the governance architecture of radioactive waste management (see Sections 2.3 and 2.4). The preparation of this framework corresponds to a phase of policy *framing*. It is a first and essential step in which all concerned parties at local and national levels are to be involved.

The national framework sets principles and objectives that will support research, demonstration and management activities. The framework explains the respective roles and duties of the decision makers and other stakeholders for the various local, regional, and national levels and for the different aspects of RWM governance: safety and environmental protection, public information and participation, local community development, monitoring, long-term funding, decision mechanisms, regular policy

reviews. The framework establishes clear terms of reference to enable stakeholder involvement from the start of the process.

In this perspective, national decision makers build on EU and national regulations deriving from the Århus Convention.

***Implementation: securing stakeholders' influence and decision makers' accountability and legitimacy***

Decisions are more and more based on political and institutional processes that are the result of balanced procedures that include *democratic representation* and *societal participation* at national and local levels. Decision makers remain decision makers but their accountability is reinforced. Institutional competences and legitimacy are respected. Appropriate practices and a progressive adaptation of institutional and regulatory settings are requested.

Identifying and integrating the components of the complex issues of radioactive waste management implies structured cooperation of national actors and local stakeholders. The format and nature of cooperation varies according to circumstances and from country to country, depending on national culture, as well as on political and institutional settings. They are developed by the actors in each local and national context on the basis of experimentation. Renewed relations respect the responsibilities and independence of involved actors.

On some aspects, like local development or local vigilance, these relations take the form of a partnership between national authorities, local authorities and local citizens. The partnership approach promotes positive engagement, rather than relying on rigid procedural mechanisms which often end in confrontation, judicial review and formal enquiries<sup>20</sup>. For example, a partnership enables joint fact finding on safety and environmental issues and avoids stagnation in expert controversies, by identifying points of agreement, points of disagreement and the need for further investigations. Partnerships support the development of a management concept that is both safe and acceptable to all parties, particularly to the communities who will host the installation over generations. It can lead to an agreement between national implementers and local communities based on the needs of both being met.

***Emerging criteria of quality for RWM decision-making processes***

The result of available experience has led to the definition of criteria to guide and assess the development of RWM decision-making processes (see Section 2.4).

These criteria relate first of all to the capacity of the process to run in a *clear and transparent manner*: the process should define goals at its very beginning, as well as provide a definition of the roles and responsibilities of the various actors involved. Understanding and openness are key elements in the development of a high-quality process. Mutual trust and confidence are reached by sticking to the “rules of the game” throughout the different steps of the process.

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<sup>20</sup> However, these formal, adversarial mechanisms should be available in case they are needed.



A second set of criteria concern inclusiveness, regarded as a core element of *robustness*. The decision-making process should ensure the weighing and balancing of values and interests. In this respect it should ensure early and inclusive participation of stakeholders. It should also be comprehensive in identifying all factors relevant for the decision to be taken.

As regards *effectiveness*, core qualities of the decision-making process are: a capacity to provide alternatives to avoid dead-end or de facto situations; a step-wise progression to keep traceability and enable adherence, control; continuity and flexibility. While the process must remain consistent with the initial goals and agreed steps, flexibility is needed to allow adjustment and, to a certain extent, reversibility.

Putting appropriate means against these objectives is essential to make sure that these are genuine commitments. The process should allow sufficient time and adequate resources, notably to strengthen the stakeholders' expert capacity and to secure the influence of participants. The process needs to demonstrate how inputs are considered and actors are respected.

### ***Standing national bodies for RWM governance***

The review of past practices as well as of more recent experiences of participatory processes in the area of RWM has led the COWAM-2 participants to identify the need for a permanent dialogue forum of local, national, public and private actors engaged in RWM beyond occasional participatory processes. Such forum is expected to be explicitly linked with the decision-making process at national level in order to provide local actors with a capacity to influence the national decision process as the national RWM strategy is developed. The need for permanent dialogue is associated with the emergence of local actors as sustainable players beyond the national level of decision. The identification of good practices and criteria characterising the local and national decision-making processes (such as transparency, step-wise process, inclusiveness, definition of roles and responsibilities, continuity and flexibility, funding, effective influence of stakeholders) has also led the COWAM-2 participants to identify the need for a specific national body acting as a "guardian" of the process to check its quality. Such a body is expected to be independent from the government and from the radioactive waste producers and operators in order to be in a position objectively to assess the extent of adherence to the principles set out in the national policy. The credibility of such a "guardian" body depends on its legal and political ability to enforce these principles. Institutional links with national Parliaments can be suggested here.

### **3.4 Towards a sustainable and reliable governance of long-term issues**

The focus in the 1990s on technical solutions for managing radioactive waste put the emphasis on the capacity of the decision-making process to deliver a reliable final option. Ethical aspects were then considered to analyse the appropriate time and process for decision to strike a fair balance between the current generations producing the waste and the future ones. It was considered that there would be a time when future generations would be fully relieved of the burden of waste management and this would correspond to the time when a safe and final solution would be reached.

Within COWAM-2, the issue of radioactive waste was studied within a wider approach, considering not only the technical aspect of a waste facility, but also the involvement of the whole society in the decision-making process in order to create the best conditions to favour the transfer of the waste management system to the next and succeeding generations.

***Decision-making process in the face of the long term: What is decided when and by whom?***

When looking at past and current experiences through the lens of governance, one notes that decisions are actually not limited to finding a technical concept and a site. Decisions are also about monitoring the facility and its environment for decades and centuries, and about making sure that the local and national communities have the capacity to maintain constant vigilance on site and are resourced to address possible difficulties. Major decisions are expected in the next decades, but for the above mentioned reasons, it is likely that decisions will be regularly made on radioactive waste in the next centuries.

Hence, the issue of nuclear waste remains a permanent topic of the democratic debate. It will be scheduled regularly on the political agenda of governmental and non governmental organisations at local, national and international levels. Regular statutory check points at the different steps of the process in which local and national stakeholders are fully engaged provide opportunities for them to express their views about the progress, and ensure their influence on the decisions.

Obviously we cannot dictate the form of tomorrow's society. The only way to cope with the long-term duration of waste is, for the current generation, to create management and governance processes favouring a continuous transmission to the next generation(s) of a "safety legacy" (know-how, protection options, procedures, resources) in order to ensure the continuation of waste management. This legacy should equip the next generation (and onwards in turn) to continue managing the waste. The processes we invent today may well change with time. It is the responsibility of future generations to take them forward or reconsider and adapt them to their circumstances.

The local committees play an important role in creating and transmitting part of this legacy. The transmission starts right away, through disseminating knowledge in the community and also, renewing committee membership over time. The role of national decision makers is not the least important to ensure this transfer of capacity from one generation to the other. Connections with international and local authorities can help them to fulfil this responsibility and notably provide support in situations where national authorities would temporarily face difficulties.

***Sustainability of governance***

There is a wide range of tools and processes to develop stakeholder involvement in decision making on radioactive waste. These tools and processes are necessarily limited in time (a few weeks or months for a national debate or a national commission; a few years for the implementation of a site characterisation phase), or in

space (local commissions are usually limited to discussing local or regional issues; a consultation for a site would focus on a district). These processes are set with precise but limited objectives, a start point, and in most cases an ending time, and the engagement of stakeholders for specific purposes. Nonetheless, they take place in a continuous governance process, and their success can be assessed according to their contribution to the quality of this wider governance process: Did they constitute only a means to solve problems or to overcome a crisis – and then return to traditional governance – or did they entail a deeper and more sustainable transformation towards inclusive RWM governance?

COWAM-2's review of current European practices stressed several conditions for securing a tangible contribution of inclusive processes to a genuine change and progress in governance, as for instance:

- the actual influence of local actors on the national decision-making process;
- a capacity for the local communities to establish links with national decision makers on a continuous basis (not only at the limited time of public consultation);
- a capacity for the local communities to develop their own understanding and investigation on a continuous basis. This is essential when considering the need for the current generation to transfer knowledge and oversight skills to the next generation;
- the step-wise character of the process, including a function of control ('guardian') and a function of review to update the roles and responsibilities of the various institutions engaged according to the evolution of the context.

Beyond these conditions, guidelines are proposed to analyse specifically the various dimensions which support long-term sustainable governance in the field of radioactive waste management (see Section 2.5). These dimensions relate to technical processes, institutional conditions, and financial conditions, as well as social conditions and ethical stakes. It appears that a waste management facility should not be designed with regard only to its technical performance, but should be considered as one element contributing to a full protection system integrating considerations like the transfer of knowledge and know-how between generations, the organisation of the surveillance and its evolution with time, the integration of the waste facility within a sustainable socio-economic development of the territories, etc. This clearly necessitates the organisation of long-term governance for radioactive waste, based on an involvement at several levels (local, national, international) of the various categories of actors (authorities, experts, citizens, locally elected people, and associations).

## 4 Perspectives

In 2000-2003 the first COWAM project created a European network on radioactive waste governance. The first interest of the initiative was to establish connections between territories concerned by radioactive waste in Europe. Local actors have long been isolated in these issues. The COWAM seminars were a novel opportunity to exchange views, issues and good practices among local communities, all facing similar concerns. Local communities have a genuine interest in governance because they consider the issue of radioactive waste management not only as a technical problem, but also as a key challenge for the development of their territories, the vitality and the life equilibrium of the population. While giving room and time to specific exchanges among local communities, the network also included experts, implementers and regulators in order to elaborate a common understanding of the issues at stake, and to propose as far as possible a joint analysis by the major stakeholders concerned. The practical outcome of this first project was to come up with a research framing of radioactive waste governance. The plural COWAM network identified four strategic dimensions in the governance of radioactive waste management:

- the implementation of local democracy
- the influence of local actors on the national decision-making process
- the quality of decision making
- long-term governance.

The second COWAM project (2004-2006) was proposed both to build a research partnership between stakeholders and research contractors on each of these four key issues and to support continued networking efforts. With this partnership, stakeholders have had the opportunity to frame and feed the production of knowledge so that it better addresses the questions they identified as the most relevant to improving the robustness of decision-making processes in radioactive waste management.

### *European networking*

The participation of new countries in COWAM-2 has confirmed the great importance of networking activities on RWM governance to all stakeholders, be they decision makers at national level or concerned local communities. The examination of other countries made them realise that the governance of RWM is a large and complex issue: while decisions are regularly prepared by national regulators and operators and taken at upper levels, the decision-making process does not lie exclusively in the hands of national actors. The reliability and sustainability of RWM governance implies a participation of all concerned players throughout the process. It was a major acknowledgement for some, and a useful and significant confirmation to others, that inclusive governance is the essential and unavoidable frame for managing radioactive waste.

Through these cross-country exchanges, delegates identified approaches developed in Europe that provoked reflection on, or could be adapted to update and improve governance processes, in one's own country. By standing back from their own national situations and considering these alternative approaches, delegates could

consider their own situations and their own roles in a new light. This encouraged a better understanding of the distribution of stakeholders' responsibilities in RWM governance, especially when the processes are constantly evolving.

Overall, beside the major results on the four issues addressed in the project (local democracy, local influence on the national decision-making processes, quality of the decision-making process, long-term governance), the major contribution of COWAM projects has been to increase stakeholders' self-awareness through networking and make them realise they have a role to play in improving the decision-making process, either as a decision maker or as a stakeholder informing the decision, and following up its implementation and development.

Local communities have made and strengthened mutual contacts and in several countries have decided to join forces in an effort to increase their contribution to the national RWM policy. They established links, sometimes in the form of a national group, to develop a joint position on RWM governance and discuss it with regulators, operators and other concerned parties.

Likewise, local communities realised the importance of creating links at European level. For instance, while the project participants shared the various experiences of local committees developed throughout Europe, an initiative was taken to set up a European association of local liaison committees (EUROCLI). The aim of this initiative is to promote greater participatory democracy in the governance of nuclear activities; to voice, at the European level, questions, concerns, comments and contributions of local commissions and similar bodies engaged in plural dialogue; and to demonstrate that local commissions and local authorities had a capacity for vigilance and oversight that would help increase the quality of decision-making processes.

As stressed by the results of the COWAM-2 cooperative research, the involvement of local actors in the governance of radioactive waste requires significant efforts: the issue has a strong potential impact on their daily life and development, but often they don't have the matching resources to contribute on a continuous basis in the preparation and oversight of research, demonstration and decisions. At the end of the COWAM-2 project, the demand from stakeholders for continued networking efforts remains strong. While they network at European levels within official associations, local communities need to be fully acknowledged as a partner at European level in the governance of radioactive waste management, and nuclear activities in general.

Moreover, experimentation with inclusive governance in the EU Member States has been developing and will develop for several years and decades. There is an interest in following the processes initiated in the different countries, and to benefit from a continued gathering of experience. It will take some considerable time to come to conclusions on these matters, let alone find enduring RWM solutions. The diversity of EU-27 is a key asset for the radioactive waste governance community with respect to the pool of experience and knowledge gained. Currently, Member States are at different steps in the process: policy framing, site selection, oversight, review of regulation, or governance arrangements. The discussion of experiences on the ground is of major interest to all actors involved in these issues as a means to understand the problems faced in the phase of implementation, and identify the merits and possible

pitfalls of the new governance paths being tried out in different places. Stakeholders are also keen on receiving advice from other countries about their contemporary experience as it develops – especially during some critical phases. Through a continued plural European network, local communities, NGOs, implementers, regulators and experts all can learn from the steps taken in the various Member States.

### ***Cooperative research: a tool for experimentation***

The methodology set up in COWAM-2 is innovative because of the original cooperation between stakeholders and research contractors both in defining and carrying out the research programme. The principles of this cooperation were agreed from the start of the project and benefited from the experience of the previous COWAM project and other cooperative research projects like TRUSTNET. This methodology is a demonstration of a new approach which differs significantly from the production of knowledge through traditional academic research. The emphasis of the activities is focussed on the co-building of knowledge with end users, taking into account both their experience and their expectations.

This type of cooperative research is an efficient tool to test and develop new governance approaches. Interestingly it was used in COWAM-2, but has also been used at national levels in several countries or has inspired similar experimentation in parallel to and independently from the European project, although links were established in most cases.

In Spain, AMAC, the association of municipalities with nuclear facilities, set up COWAM Spain, a dialogue bringing the municipalities, experts, the regulator, political parties, the implementer and others into a discussion on issues proposed at the European level by COWAM-2. This initiative came up with recommendations supported by studies on particular aspects of the Spanish institutional context, and by discussions between all stakeholders. In France, the national association of local commissions, ANCLI, commissioned a working group of local actors to draft a white paper, “Radioactive Waste and Material – Local Territories”. The paper presents the understanding of the governance issues in radioactive waste management by local commissions, and proposes recommendations. Both COWAM Spain and the ANCLI White Paper were elaborated during the preparation of a national policy framework and were useful to inform the governments and parliaments of both countries about governance issues from a local perspective.

In the United Kingdom, an independent committee was appointed by the UK government on radioactive waste management (CoRWM) in 2004. Its task was to review the options for managing those UK radioactive wastes for which there is no agreed long-term solution. CoRWM has been asked to work in an open, transparent and inclusive manner, to provide an opportunity for members of the UK public and other key stakeholder groups to participate. CoRWM notably consulted local communities, such as NuLeaf, an association of municipalities concerned by the nuclear legacy. CoRWM made recommendations to the UK government in 2006.

In Romania, participation in COWAM-2 brought together for the first time in the same forum stakeholders concerned by nuclear waste management: the local communities in Cernavodă region, the implementer ANDRAD, the nuclear power

plant as the main waste producer, and NGOs. The focus of the Romanian process is to enquire about local committees as a best practice in Europe to support local democracy. The eventual objective is to set up local committees in the Romanian context.

### ***Sustainable multi-level governance: European networking and national integration***

The COWAM-2 project finally made it possible to demonstrate that democracy in the technical field is a difficult exercise wherever it takes place in Europe, and requires constant attention. Citizenship advances step by step. Above all, dialogue is vital and should be sustained. A common point of the latest experimentations in Europe is that they are not merely additional tools to develop stakeholder involvement in decision making on radioactive waste. With recommendations calling for the creation of local or national plural commissions, several of them emphasise the need for – and somehow prefigure – suitable mechanisms for a continuous, reliable and efficient governance of radioactive waste management. They try to overcome a frequent weakness of governance processes which are set only to solve a crisis in the short term, while the major challenge remains to build a deeper and more sustainable improvement of RWM governance. Promoting networking among stakeholders is essential in this respect to share learning and experience, develop mutual understanding and keep being aware of latest developments in governance and experimentation in EU-27.

Reflections and proposals on questions of governance require translation into each particular context. Furthermore, they require the appropriation by and support from actors who have identified that giving consideration to these questions is essential for the responsible and sustainable management of existing waste. The proper integration of the results of COWAM-2 in the Member States would require specific dialogues. The COWAM in Practice project (2007-2009) will build on the experience of national sessions in COWAM-2 so as to develop a cooperative research in five countries in parallel to support the exploring of these new modes of governance in the field of radioactive waste. These results will be disseminated to inform the radioactive waste governance community on the lessons and perspectives of this European-national experimentation. Other initiatives might be taken to translate European research on governance into national and local practice.

Taking societal concerns into account in RWM is not a simple matter of better understanding public concerns within unchanged decision-making processes. It is rather creating new features of governance empowering new, concerned components of society so that they can actually enter deliberative decision making, work out their views and concerns and have them taken into account along with other considerations. Through the various initiatives developed afterwards by participants in the project, at local, national or European levels, there is a strong expectation that this contribution to governance awareness and improvement will carry on.

## **Appendix 1 – List of participants**

### **Steering committee**

#### ***Stakeholder reference group***

- Matej Drobnič, Krsko municipality, Slovenia
- Mark Dutton, CoRWM, United Kingdom
- Jérôme Goellner, DGSNR, France
- Alastair Hamilton, Planning Department, Shetland Islands Council
- Olov Holmstrand, the Waste Network, Sweden
- Eckhard Kruse, Gartow Church, Germany
- Jorge Lang Lenton, ENRESA, Spain
- François Rollinger, IRSN, France
- Luc Smeyers, Mona partnership, Belgium
- Mariano Vila d’Abadal, general secretary of AMAC (Spanish Municipalities with Nuclear Facilities), Spain

#### ***Research contractors***

- Gilles Hériard Dubreuil, Mutadis, project coordinator
- Claire Mays, Symlog, leader of WP1 “Implementing Local democracy”
- Raul Espejo, Syncho, leader of WP2 “Local influence on the national decision-making process”
- Thomas Flüeler, ETH-Zurich, leader of WP3 “Quality of the decision-making process”
- Thierry Schneider, CEPN, leader of WP4 “Long-term governance”
- Serge Gadbois, Mutadis, leader of WP5 “Project Integration and National Sessions”
- Anna Paixa, GMF, leader of WP6 “Networking”
- Detlef Appel, Pangeo, co-leader of WP3, freelance expert

### **Work Package 1 “Implementing local democracy and participatory assessment methods”**

#### ***Stakeholder reference group***

The following people attended at least one stakeholder reference group meeting

##### *Belgium*

Jadoul, Ludo - FANC  
Smeyers, Luc - MONA  
Vanhoof, Liesbeth - MONA

##### *Czech Republic*

Steinerová, Lucie - RAWRA

##### *France*

Bardy, Jean-Christophe - Andra  
Ben Slimane, Karim - IRSN  
Charron, Sylvie – Ministère de l’Ecologie et du Développement Durable



Chaussade, Jean-Pierre - EDF  
Collignon, Albert - CSPI  
Dubien, Isabelle - EDF  
Guillaume, Bertrand - UTT  
Jaquet, Benoît - CLIS de Bure  
Le Bars, Yves - Andra  
Mazallon, Frédéric - EDF  
Ngalli, Stéphane - EDF  
Pierlot, Sandrine - EDF  
Ramos, Gérald - EDF  
Rollinger, François - IRSN  
Sené, Monique – CSPI

*Hungary*

Kovács, Gyözö - Boda Municipality  
Puskas, Brigitta - "For Boda" Fndn.

*Japan*

Tagima, Masao - JGC

*Romania*

Angheloescu, Anton - AGIA  
Carciumarscu, Victor - Cernavoda  
Catalin, Stroe - Nuclear Agency  
Constantin, Marin - INR  
Diaconu, Daniela - INR  
Diaconu, Stela - ANDRAD  
Dumitru, Carmen - Cernavoda  
Gheorghe, Ionita - ANDRAD  
Hansa, Gheorghe - Mayor of Cernavoda  
Lojnita, Claudia Mihaela - AGIA  
Mircea, Mariana - Cernavoda LC  
Mocanu, Horea - AGIA  
Nedelcu, Codruta - ARIN  
Nitulescu, Mirela - AGIA  
Soresc, Antonius - ANDRAD  
Stiopol, Mihaela - SNN  
Tatulescu, Gabriel - Mayor of Saligny  
Teodorescu, Valentin - AGIA  
Traicu, Rodin - RAAN  
Turcu, Ilie - INR

*Slovenia*

Brence Mateja, Susin - Obcina Brezice  
Dacinger, Renata - RTV  
Drobnič, Matej - Obcina Krsko  
Kos, Drago - U. Ljubljana  
Kovacič, Marko - Obcina Sevnica  
Polic, Marko - Faculty of Arts  
Racič, Davor - Obcina Brezice  
Zeleznik, Nadja (consortium) - ARAO  
Zorko, Samo - Obcina Brezice

*Spain*

Armada, Ramiro - Enresa

Castellnou, Josep - AMAC (Vandellos)  
Muñoz Martinez, Natalia - AMAC  
Ramon, José - Enresa  
Retamosa, Tomas - AMAC (Amaraz)

***Research contractors***

Allen, Peter	U. Liège & Lancaster	Belgium & UK
Cornélis, Bernard	U. Liège	Belgium
Laes, Erik	SCK-CEN	Belgium
Bourgoignon, Frédéric	IRNS	France
Mays, Claire (WP1 Leader)	Symlog	France
Vári, Anna	Institute of Sociology	Hungary
Ferencz, Zoltan	Institute of Sociology	Hungary
Flüeler, Thomas (WP3 Leader)	ETH	Switzerland
Krütli, Pius	ETH	Switzerland
Hunt, Jane	U. Lancaster	UK

**Work Package 2 “Local influence on national decision making”**

***Stakeholder reference group***

The following people attended at least one stakeholder reference group meeting

*Belgium*

Jan Claes, Mona  
Jaques Helsen, Mona  
Jef Verrees, Mona  
Gilbert Eggermont, SCK-CEN

*France*

Jerome Goellner, DGSNR-DRIRE Lorraine  
Philippe Bodénez, DGSNR-DRIRE Lorraine  
Michel Demet, CLI de Gravelines  
Fanny Jotter, CLIS Bure (Attaché Parlementaire du Deputé de la Meuse Mr F. Dosé)  
Catherine Saut, ANCLI / SEIVA  
André Mourot, CLIS Bure  
Eric Chagneau, G.I.P. Objectif Meuse  
Robert Fernbach, CLIS Bure  
Gerard Bruno, IRSN  
Nadège Buquet, IRSN  
Sylvie Malfait-Benni, CLIS Bure  
J. Paul Lheritier, CLIS Bure

*Germany*

Lueder Rosenhagen, KLAR

*Romania*

Codruta Nedelcu, Asociata ARIN

*Slovenia*

Franc Bogovic, Mayor Krsko

### *Spain*

Antonio Casanova, Major of Ascó, area of Ascó NPP  
Juan Pablo Sanchez, Major of Pastrana, area of Zorita NPP  
Jorge Lang-Lenton, ENRESA  
Anna Garcia, Universidad Autónoma de Barcelona  
Meritxell Martell, Enviro  
Gabriel Ruiz del Olmo, Alcalde de Almonacid de Zorita  
Gloria Rocamora i Merce, Generalitat de Catalunya  
Enric Batalla i Colomer, Generalitat de Catalunya  
Josep Suñe, Alcalde de la Fatarella  
Lourdes Martinez, AMAC  
Julio Santos Leton, AMAC Spain

### *UK*

Alastair Hamilton, Shetland Islands Council  
Hawkins Iris, Shetland Islands Council  
Elizabeth Atherton, NIREX  
Mike Marshall, Harwell Local Liaison Comm.  
John Dalton, Nirex  
Samantha Watson, Health Protection Agency  
Mark Dutton, CoRWM  
Norman Williams, Copeland Borough Council  
Fergus McMorro, Copeland Borough Council  
John Hetherington, Cumbria County Council

### ***Research contractors***

Raul Espejo, Syncho, UK (WP leader)  
Mariano Vila d'Abadal, AMAC, Spain  
Stéphane Baudé, Mutadis  
Gilles Hériard Dubreuil, Mutadis  
Mike Egan, Quintessa, UK

## **Work Package 3 “Quality of the decision-making process”**

### ***Stakeholder reference group***

#### *Belgium*

Jacques Maudoux, FANC  
Luc Smeyers\*°, MONA (local committee, LC)

#### *France*

Sylvie Malfait-Benni\*, CLIS de Bure (LC)  
François Rollinger\*°, IRSN/DSDRE (research institution)

#### *Germany*

Wilhelm Bollingerfehr\*, DBE Technology (engineering)

#### *Slovenia*

Renata Dacinger\*°, TV Slovenia (media)  
Matej Drobnič\*°, Community of Krško (LC)  
Marko Kovačič\*, Community of Sevnica (LC)  
Davor Račič\*, Community of Brežice (LC), for Samo Zorko

Nadja Železnik\*<sup>o</sup>, ARAO (waste implementer)

#### *Spain*

Adolf Barceló\*<sup>o</sup>, UAM (Univ. Madrid)

Antoni Casanova\*<sup>o</sup>, AMAC (Spanish association of communities)

Miquel Ferrús\*<sup>o</sup>, GMF (intern. assoc. of communities)

Jorge Lang-Lenton<sup>o</sup>, ENRESA (waste implementer)

Gabriel Ruiz de Olmo\*, AMAC, Almonacid de Zorita, Guad. (LC)

Joán M. Sabanza\*, AMAC, Mora la Nova, Tarragona (LC)

#### *United Kingdom*

Andrew Blowers\*<sup>o</sup>, CoWRM (natl. advisory committee)

#### *Additional*

Serge Gadbois\*<sup>o</sup>, Mutadis, France (project co-ordination)

Pius Krütli, ETH Zurich, Switzerland (assistant)

Michael Stauffacher, ETH Zurich, Switzerland (assistant)

#### **Research contractors**

Thomas Flüeler* <sup>o</sup>	Switzerland	ETH Zurich, WPL (univ., consultant)
Detlef Appel* <sup>o</sup>	Germany	PANGEO, ERP (consultant)
Nicolas Buclet*	France	UTT, ERP (Univ. Troyes)

\* Regular participation.

<sup>o</sup> Authoring the country reports (synopses), also authoring: Herman Damveld, Daniela Diaconu, Zoltán Ferencz, Olov Homstrand, Benoît Jaquet, Gaston Meskens, Lucie Steinerová, Anna Vári.

### **Work Package 4 “Long-term governance”**

#### ***Stakeholder reference group***

##### *Belgium*

Hugo Ceulemans                      MONA-MOL

Jacques Helsen                      MONA-MOL

Joss Prost                              MONA-MOL

##### *Europe*

Laurent Furedi                      FORATOM

Mark O' Donovan                      FORATOM

##### *France*

Geneviève Baumont                      IRSN

Eric Chagneau                      GIP Objectif Meuse

Joël Chupeau                      EDF

Robert Granier                      Local Liaison Committee – CLI du Gard

Benoit Jaquet                      Local Liaison Committee – CLIS de Bure

Olivier Laffitte                      Local Liaison Committee – CSPI La Hague

Alain Marvy                      CEA - French Atomic Energy Commission

Chantal Rigal                      ANCLI

Wolf Seidler                      ESDRED Project - ANDRA

Jérôme Sterpenich                      Local Liaison Committee – CLIS de Bure

<i>Germany</i>	
Eckhard Kruse	Gartow Church representative – <i>Coordinator of SRG</i>
Jürgen Wollrath	BfS – Federal Office for Radiation Protection – Department Safety of Nuclear Waste Management
<i>The Netherlands</i>	
Herman Damveld	Independent researcher and publicist
<i>Romania</i>	
Stela Diaconu	ANDRAD
<i>Spain</i>	
Felisa Garcia	ENRESA
Miquel Ferrús Serar	GMF
Fernando Garcia	Mayor of Jarafuel
Jose Luis Gomez	Mayor of Frias
Hernandez	Mayor de Almaraz
Merixell Martel	ENVIROS Spain
Alfredo Navaro	Mayor de Valencia
Alfredo Romero	Mayor of Mesas de Ibor
<i>Sweden</i>	
Olov Holmstrand	Avfallskedjan (The Waste Network)
<i>Switzerland</i>	
Pius Krütli	ETH
<i>United Kingdom</i>	
Shelly Mobbs	HPA

### ***Research contractors***

Thierry Schneider, CEPN, France (work package leader)  
 Caroline Schieber, CEPN, France  
 Michel Bovy, SCK-CEN, Belgium  
 Gunter Bombaerts, SCK-CEN, Belgium  
 Gaston Meskens, SCK-CEN, Belgium  
 Sylvain Lavelle, ICAM, France  
 Thomas Flüeler, ETH Zürich, Switzerland

### **Work Package 5 – National contact persons**

Gaston Meskens (Belgium)  
 Serge Gadbois (France)  
 Detlef Appel (Germany)  
 Zoltan Ferencz (Hungary)  
 Daniela Diaconu (Romania)  
 Nadja Zeleznik (Slovenia)  
 Mariano Vila d'Abadal (Spain)  
 Thomas Flüeler (Switzerland)  
 Shelly Mobbs (UK)

National contact persons managed the national sessions for their countries, prepared the report of these discussions in the form of national insights, and played a key role in organising and making possible stakeholders' participation in the whole COWAM-2 programme.

## Appendix 2 – List of reports

All the reports mentioned below – and the present synthesis report – can be downloaded from <http://www.cowam.org>.

### Work Package 1

- ✧ **Final report, “Road map for local committee construction”**
- ✧ PTA1 report, “Tools for Local Stakeholders in radioactive Waste Governance” (short version)
- ✧ PTA1 report, “Tools for Local Stakeholders in radioactive Waste Governance” (long version)
- ✧ PTA2 report, “Guidance on the Selection of PTA Tools”
- ✧ CHK3 report, “Impact of Nuclear Information on Young People’s Knowledge and Attitudes in Romania”
- ✧ CHK4 report, “Genesis of an approach : from public non-participation to participation in LILW site selection process in Slovenia”

### Work Package 2

- ✧ **Final report, “Influence of local actors on national decision-making processes”**
- ✧ Appendix 1, *List of WP2 stakeholders*
- ✧ Appendix 2, First French case study, “The influence of the local community of Dunkirk on the process of elaboration of the 30th July 2003 Law for the prevention of natural and technological risks”
- ✧ Appendix 3, Second French case study, “Local independent expertise as a mechanism of influence on national policy processes: the independent assessment of ANDRA’s research programme led by the IEER on request of the CLIS of Bure”
- ✧ Appendix 4, First Spanish case study, “Estudio Sociológico sobre la A.M.A.C. y el Hecho Nuclear en España”
- ✧ Appendix 5, Second Spanish case study, “Participación Institucional De Los Municipios En El Proceso De Toma De Decisiones Para El Emplazamiento De Un Almacenamiento De Residuos Radiactivos”
- ✧ Appendix 6, First UK case study, “Public and Stakeholders Engagement in the Decision processes of the Committee on Radioactive Waste Management (CoRWM) »
- ✧ Appendix 7, Second UK case study, “Influence of Local Communities on Decision Processes: Experience of Copeland and Shetland Islands”
- ✧ Appendix 8, “Mechanisms for Local Influence on National Decision-making Processes in Radioactive Waste Management »
- ✧ Appendix 9, “Principles and Good Practices for Local Actors to Influence National Decision-Making Processes »
- ✧ Appendix 10, “Balance of Power: Principles and Good Practices for Local Stakeholders to Influence National Decision-Making Processes”

### Work Package 3

- ✧ **Final report, “Decision-making processes in radioactive waste governance, insights and recommendations”**
- ✧ Annex to the final report, “Synopsis of national decision-making processes” (covering the following countries : Belgium, Czech Republic, Germany, France, Hungary, Netherlands, Romania, Slovenia, Spain, Sweden, Switzerland, United Kingdom)

## Work Package 4

- ✧ **Final report, “Long-term governance for radioactive waste management”**
- ✧ Annex to the final report :
  - *Ethical guidelines: point of view of Herman Damveld* - Independent researcher and publicist - The Netherlands
  - *Ethical guidelines: point of view of Eckhard Kruse* – Gartow church representative – Germany
  - *Nuclear waste management and long-term considerations in Sweden* - contribution from Olov Holmstrand - The Waste Network – Sweden
  - *Radioactive waste management in Germany - overview of current status* - Jürgen Wollrath - BfS – Germany
  - *Recommendations by MONA regarding the socio-economic aspects associated with the installation of a nuclear waste disposal in Mol* - H. Ceulemans, B. Meus, L. Vanhoof - MONA – Belgium
  - *ESDRED & technology development* - Contribution to Final COWAM II Report, Wolf Seidler - ANDRA – France
  - *Commission Particulière du débat public sur la gestion des déchets radioactifs* - Extract from the Summary of the Final Minutes - January 2006
  - *What is “long term”? Definitions and implications*, T. Flüeler - ETH – Switzerland
  - *Ethics of compensation and funding: which governance for the long term?*, M. Bovy - SCK-CEN – Belgium
  - *Strengths and weaknesses of ethical values and principles*, G. Bombaerts, SCK•CEN

## Work Package 5

- ✧ **Final report, *National insights*** (covering the following countries: Belgium, France, Germany, Hungary, Romania, Slovenia, Spain, Switzerland, United Kingdom).