Talking about radioactive waste management: feedback on France's experience and on the 2013 public debate on the Cigéo project (15202)

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ABSTRACT

Following a brief presentation of the legal and historical framework in France, the article will take a retrospective look at the debate, from its preparation and the running of the debate process to the French national commission for public debate's publication of the report and the conclusions of this debate. Finally, it will describe the experience of information and dialogue from Andra's point of view and will explain Andra's follow-up to the debate, giving a first glimpse of the implementation of this follow-up.

INTRODUCTION

Radioactive waste management was an issue that had been before the French Parliament since the late 1980s. On 30 December 1991 Parliament passed a law to manage the process of finding solutions for the long term management of high-level (HL) waste and long-lived intermediate-level waste (IL-LL). Aside from the scientific and technical aspects, the law of 1991 was based on three principles:

- Responsibility of the current generation for the long-term management of the radioactive waste it produces;
- Transparency, to cast off the traditionally secretive image of nuclear inherited from its military origins;
- Democracy, through constant parliamentary monitoring, the active involvement of the communities affected by the scientific studies, and recognition of the investment of these communities through financial support.

The 1991 law also set up Andra, until then a department within CEA but now a public body in its own right supervised by the ministries responsible for the environment, energy and research. Once independent from the waste producers, Andra could act in the public interest on the State's behalf.

Studies of three options were then planned: separation and transmutation, long-term storage (both given to CEA), and disposal in a deep geological formation (given to Andra). A date was set fifteen years after the date of the law for a briefing on progress with the studies and to enable a new law to be passed.

In 1998 Andra was given permission to build an underground laboratory in Bure in eastern France, the departments of Meuse and Haute-Marne having applied for it to be sited there. Construction started in 2000 and, in 2004, the deep geological formation to be used for the repository was reached. This clay formation, which is more than 150 million years old, at a depth of around 500 metres, seemed to offer all the characteristics required to contain the radioactivity of HL and IL-LL waste for several hundred thousand years.

In 2005, CEA and Andra presented their progress with the research and the assessors gave their opinions. They confirmed that separation and transmutation could not provide all the answers because it could not be used with the waste already produced – nearly 3000 m³ of HL waste and nearly 45,000 m³ of IL-LL waste – and it would not prevent more waste from being produced. As far as long-term disposal was concerned, they felt that this could not be a definitive solution because it would place a big burden on future generations. Finally, concerning deep geological disposal, the assessors confirmed Andra's results: the geological formation studied, particularly using the underground research laboratory, had all the required characteristics for disposing of the waste safely (geological stability, depth, thickness, physical and chemical characteristics, etc.).

In response to the French Parliament's desire for greater transparency and democracy, a national public debate was held in late 2005 and early 2006 on France's policy for the long-term management of radioactive waste (the first one ever to be held in France on a general policy matter). Two currents of opinion emerged from this

debate. The first, based on the principle of responsibility and action, saw the geological repository as the solution of choice, taking account of demands for reversibility that had emerged in the 1990s during discussions with the public. The second was based on the precautionary principle, and proposed that a dual programme of *in situ* trials be set up, one to test deep geological disposal, at the Meuse/Haute-Marne Centre, and the other to test long-term storage, at a site to be chosen, with the postponement of any decision until around 2020.
Based on this work, the assessments and the public debate, Parliament passed a new law in 2006. It opted for reversible geological disposal as the reference solution for the long-term management of HL and IL-LL waste and set out a timetable for Andra to carry out the studies, with the commissioning of the disposal facility in 2025. Parliament acknowledged the complementary role of storage as a means of managing waste safely before disposal. The law of 28 June 2006 stipulated among other things that a public debate was to be held about the planned geological disposal facility before its construction licence application could be submitted.
Andra then refined its plans for the disposal facility. In 2010 the disposal facility was named Cigéo (*Centre industriel de stockage géologique*, see www.cigéo.com/en/ for more details), and it gradually entered the industrial design phase. By early 2013 the industrial profile of the project was complete. Based on this detailed but unfinalised vision for the project, Andra decided to request the French National Public Debate Commission (CNDP in France) for organising the debate required by law. This seemed to be the right moment for holding the public debate : the project was sufficiently well defined to allow the debate to take place but still sufficiently open for the conclusions of the debate to be taken into account.
This article presents Andra's approach to the information and consultation process, particularly with reference to the 2006-2014 period.

TALKING ABOUT RADIOACTIVE WASTE

The general public in France viewed the issue of long-term radioactive waste management (RWM) as a battle between the opponents of nuclear and the forces of law and order. Not much was known about the subject and it was bound up in people's minds with France's nuclear policy, which many people felt had suffered from a lack of public debate.
A moratorium and the 1991 law allowed the debate on the subject of RWM to be reopened and dealt with as a topic in its own right: nuclear waste would not go away but did not always have to be viewed through the prism of France's energy policy. The general public knew little about the subject, and it was discussed in the media only polemically, for example in regular reports about the return of HL waste to Germany following the processing of German spent fuel at the Areva NC plant in La Hague. All these reports showed was the high tension between protesters and the forces of law and order; they never discussed the subject itself.
However, away from the cameras, buoyed by its new status as a public body, Andra managed to present its activities and carry out its projects (two disposal facilities were built in the early 1990s) with strong support from politicians. By developing close relationships with the communities around its facilities, Andra managed to start discussing the issue of radioactive waste. Although there was some opposition, it was clear that the public understood the need for a solution, though it emphasised that the issue raised questions about safety, security, the environment and health. It was at around this time that the demands for reversibility emerged, to leave open the possibility of recovering the waste if future generations found a better solution. There should still be some room for humility, despite the arguments that this was the definitive solution for waste.
The public debate in 2005-2006 provided the first proper opportunity for discussing radioactive waste management. Some 3000 people attended thirteen public meetings, which offered the two opposing camps the chance to put up arguments instead of the barricades...

ANDRA'S APPROACH TO INFORMATION AND CONSULTATION

In 2006 Andra began the task of drawing up plans for the geological disposal facility. Aware of the need for more information and debate about waste, it launched a process of information and consultation with stakeholders and citizens. Its aim was both to raise collective awareness of the existence of radioactive waste and to introduce some rationality to the subject so that it would no longer be dealt with in a purely polemical way. Ultimately the purpose was to get society to think about and take responsibility for the issue.
Andra's communication, in its widest sense, was an attempt to build greater links between society and the subject. To do this, it used five pilars: surprise, inform, explain, be visible and debate. This approach relied

especially on a communication team with a varied and robust combination of skills, particularly in journalism, education and scientific writing.

The purpose of surprising the public was to generate curiosity about the subject. First of all this meant accepting the existence of radioactive waste and making this known. Several actions were carried out with this aim, e.g. the design of a slightly provocative advertisement placing a drum of radioactive waste next to a household rubbish bin, with the question: "On average, each person in France generates 2 kg of radioactive waste each year. What should be done with it?"

Fig. 1. Examples of advertisements

Surprise was also generated with advertisements inviting the public to visit its sites: "Radioactive waste doesn't vanish as if by magic" and "Radioactive waste: challenge received wisdom" using graphics borrowed from the nuclear protest camp.

Informing meant communicating in an appropriate way with all sectors of the public, frequently, regularly, transparently, and with no taboos. All types of communications media were developed and used: educational and corporate brochures, periodical booklets, videos, websites, etc.

To create a greater sense of familiarity, Andra wrote a monthly newsletter that was distributed to all stakeholders in the vicinity of its sites to keep them informed as closely as possible about progress with its activities. Also, each Andra facility had its own website (www.andra.fr/andra-aube/, www.andra.fr/andra-manche/, www.andra.fr/andra-meusehautemarne/). Finally, a quarterly newspaper was produced, with more than 250,000 copies going to all sectors of the population concerned (local communities, local representatives, political decision-makers, economic players, etc.). There were four different editions, one for each site (Manche edition, Aube, edition, Meuse/Haute-Marne edition) plus a national edition, to explain what was happening on each of the sites, but also to show everything that Andra was doing and allow everyone involved to have a say, even those who did not share Andra's views.

Fig. 2. The four editions of Andra's newspaper

Explaining meant making the subject understood by the many "intelligently", by welcoming the public on to our sites (within specially designed public areas) and at industrial and research facilities. With around 15,000 visitors

per year, including nearly 3000 to the underground facilities at Andra's Meuse/Haute-Marne Centre, Andra's centres became the primary showcase for what it was really doing. There's no better proof than showing someone what you're doing! Explaining also meant using educational media for all sectors of the public, from children to experts (www.dechetsradioactifs.com website, online tour of the underground laboratory: www.andra.fr/visite_virtuelle_laboratoire/, events and educational videos on a Dailymotion channel: www.dailymotion.com/andra, for example: www.dailymotion.com/video/xpuesk_dechets-radioactifs-evitez-les-idees-recues_tech ...). Explaining also meant communicating directly with those who would have to pick up the baton from the current generation, by organising lectures for students and educational workshops for younger children, in liaison with education managers from the French Education Ministry.

The aim of being visible was to demystify and "normalise" the subject, whether through exhibitions on different topics organised close to Andra sites, in Paris or anywhere else in France (www.andra.fr/laradioactivite, www.argiles-expo.org ...) or through Andra's participation in events held in the locality of its facilities (annual science fair, trade fairs…). Around the Meuse/Haute-Marne Centre, Andra even deployed an "infobus" designed to bring information straight to the heart of neighbouring towns and village, so that local communities did not have to travel to obtain information.

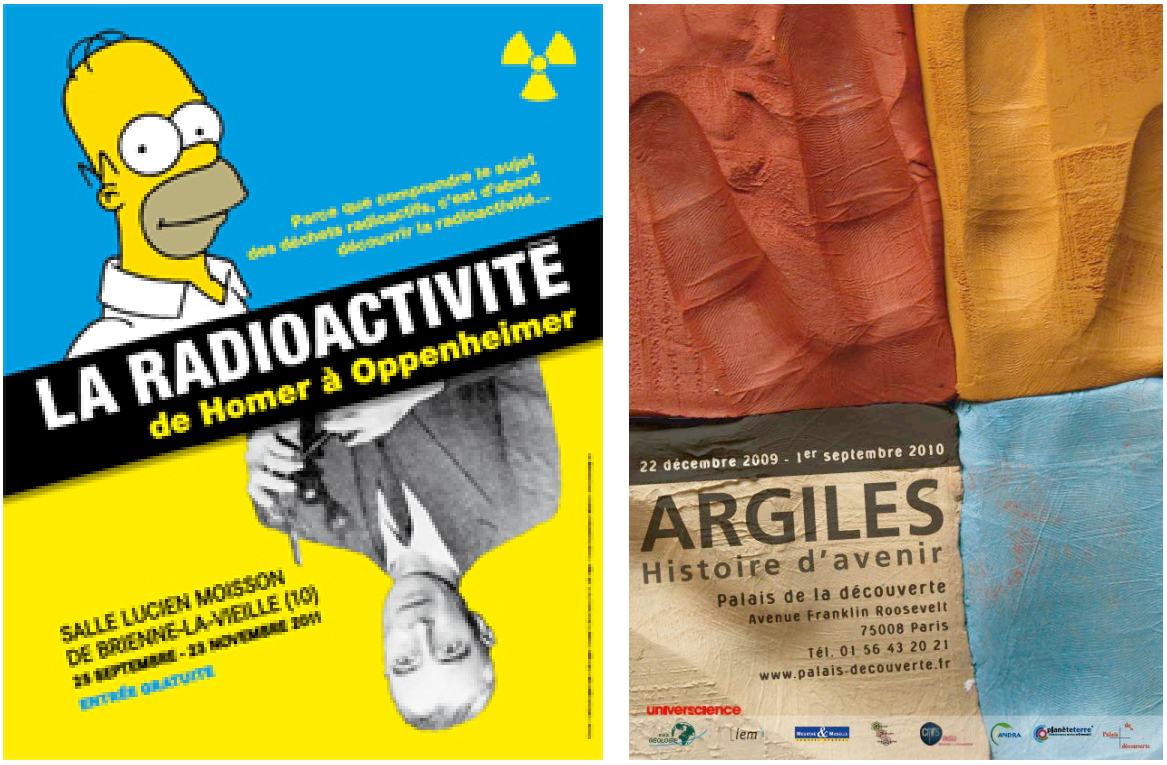

Fig. 3. Two examples of themed exhibitions: left, "Radioactivity from Homer to Oppenheimer", created and produced by Andra; right, "Clay, a history of the future", produced with Andra's support.

These days, being visible also means having a presence on social networks – Facebook, Twitter, Youtube – which have experienced a phenomenal rise in the last few years. These are all places where radioactive waste is talked about and where Andra should have a presence to answer internet users' questions and not allow untruths about radioactive waste or its activity to take root.

Finally, being visible also means taking part in the local life around its sites (talks, sponsorships, development of a local sponsorship policy, participation in local activities such as hunting, etc.), to make Andra a committed, recognised player in the cultural, economic, educational and social scene in the areas where it is located.

Fig. 4. Some of the opportunities for participating in local life in the Aube department

Discussion and debate meant creating opportunities for conversations with and consultation of local communities, the general public and experts, to present and weigh up our arguments, including with people who do not share our point of view. With this in mind, Andra offered stakeholders numerous opportunities to meet and responded to requests to appear in person (in debates, at round table discussions, etc.) and online (in forums, chats, etc.). Because the press is the leading relay for information, Andra developed its relations with journalists extensively to ensure they could cover all aspects of the subject of radioactive waste, and especially that they would not give voice only to polemical debate.

Fig. 5. Examples of debate or conversation with the press

THE 2013 PUBLIC DEBATE

In preparation for the public debate required by the 2006 law, in 2012 Andra began talking to all stakeholders to find out the issues they were interested in, ready for the debate in 2013. Apart from the aspects of direct concern to them (appropriateness of the plan, safety, memory, reversibility, etc.), stakeholders also mentioned more general topics such as France's energy policy and the transportation of radioactive waste (which is not Andra's responsibility, but that of the waste producers).

At the end of October 2012, a few months before the Cigéo project profile was finished, Andra contacted CNDP to organise the public debate. CNDP, an independent body, is responsible for organising debates for industrial or planning projects likely to have an impact on the environment. CNDP quickly decided to set up a special committee (CPDP) to prepare and run the public debate. It set aside a period from May to October 2013 for the consultations and launched an information campaign on the debate, based mainly on a document presenting the project plans (English version available here: www.andra.fr/download/andra-international-en/document/editions/504va.pdf). The chosen method for conducting the debate was around fifteen public meetings to be held mainly in the region affected by the project, but also elsewhere in France (Paris, Cherbourg, Marcoule), a dedicated website (http://cpdp.debatpublic.fr/cpdp-cigeo/) and press relations activities to help promote the debate.

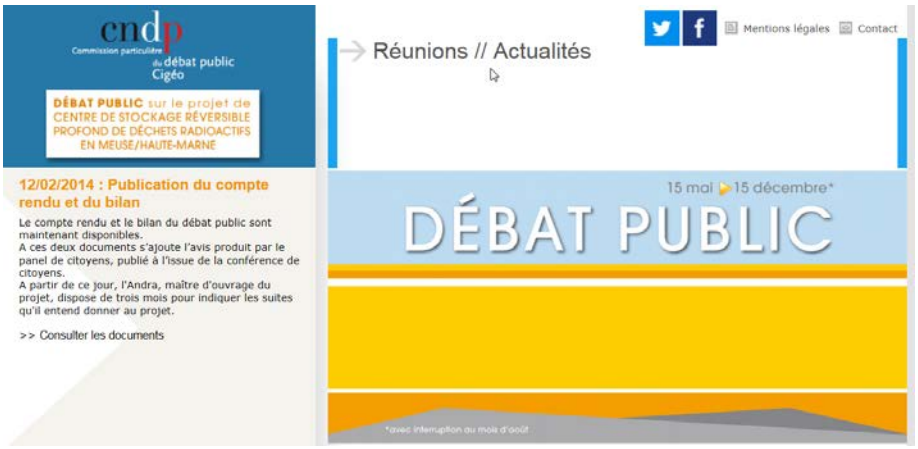

Fig. 6. Homepage of the public debate website

On 23 May 2013 the debate began with a first public meeting in Bure, the site of Andra's underground research laboratory, at the heart of the area where the disposal facility might be located. Approximately 400 people attended the meeting, plus a few dozen protesters outside the room. Following a word of welcome by the mayor of Bure, the chair of the CPDP opened the meeting. A few protesters inside the room very quickly took over the floor to prevent the meeting from being held. After fifteen minutes or so, with tensions rising and finding it impossible to run the meeting, the chair of the CPDP decided to suspend the meeting, and soon afterwards to cancel it, such was the level of noise of the protesters. This was the first failure.

The CPDP decided to hold a meeting for stakeholders to find a way of running the meetings. The decision was then made to let all parties speak on the stage rather than let Andra present its plans.

On 17 June a second meeting was held at Bar-le-Duc, the nearest large town to the Meuse/Haute-Marne Centre. Some 300 people attended, who seemed at first to be quite calm. The same scenario as on 23 May was repeated, though this time with even greater levels of hostility linked to the presence of protesters from outside the area. Despite insistent requests from a local elected ecology party representative, who is opposed to the project but supported the holding of a debate, the meeting had to be cancelled and the Andra personnel present had to be escorted out with protection. This was the second failure.

CNDP then decided to change the method of holding the debate. Besides the website and press relations, the decision was made to extend the public debate by two months until December 2013, to organise debates between the two opposing sides without an audience, which would be broadcast live on the internet, and to set up a citizens' panel.

Eight debates were planned and all were able to be held, to discuss the main topics linked to the issue: "the management solutions: disposal, storage, separation and transmutation"; "a comparison of international experiences (Sweden, Finland, United States, Canada, Germany)"; "the precautionary principle and reversibility"; "risks and security for employees on the site, the public and the environment"; "transporting waste"; "local changes (population, jobs, education, commerce) and planning issues"; "costs and finance"; "governance". Technical experts and members of the public in France and abroad took part in these debates. Members of the public could submit questions online or via social networks and the experts would respond live.

The citizens' panel was held on two weekends in December 2012 and one weekend in February 2013. It involved around fifteen members of the public, who were volunteers, mainly from the departments directly affected by the location of Cigéo. They were given two weekends of training to familiarise them with the subject through discussions between supporters and opponents of disposal. A final weekend was spent in discussion with speakers chosen by the citizens' panel (members of parliament, journalists, assessors, Andra engineers, a sociologist and some opponents) and drafting an opinion, which was published in February 2014 (http://cpdp.debatpublic.fr/cpdp-cigeo/docs/cr-bilan/presentation-avis-panel-citoyens-cpdp-cigeo.pdf, in French). In this opinion, the citizens' panel emphasised that "*waste will not go away*" and that it "*is hazardous*" and stressed that "*burying it would, under certain conditions, make it safe in the longer term. But its burial should*

not be permanent from the outset because scientific progress could partially or entirely resolve the hazardous nature of the radioactive waste or enable it to be used […]"

The chairman of CNDP drew the following conclusion concerning this panel: *"The citizens' panel organised by CNDP demonstrated that people with no particular expertise who receive pluralistic training can deliver a pertinent, detailed opinion worthy of interest from decision-makers on a particularly complex subject. It is also notable that their opinion is very similar to the conclusions of the public debate. This offers food for thought and a very positive message for the future."*

In February 2013, at the end of the public debate, the CPDP published a report and the chairman of CNDP published his assessment of the debate ((http://www.debatpublic-cigeo.org/, documents in French). The quantitative assessment of the debate by the chairman of CNDP was very positive:

"A summary of the project owner documentation and the public debate newsletters were sent to 180,00 households. At the end of the debate, the CPDP had 794 people signed up to its Facebook page and 297 followers of its Twitter account.

In total, there were more than 76,000 visits to the website, and 1508 questions were submitted and 497 opinions. In addition, 154 "cahiers d'acteurs" were received, 24 contributions and 5 local council resolutions. 19% of questions and 25% of opinions came from the departments of Meuse and Haute-Marne.

Obviously the lack of public meetings, which are seen as the high points of a debate, is regrettable, but it would be wrong to think that the debate on the Cigéo project had not taken place, which is what those who did their best to prevent the meetings from being held are saying. CNDP and the CPDP strove to introduce innovative methods for taking part that would involve as many members of the public as possible."

The qualitative assessment by the chairman of CNDP highlighted 12 points concerning in particular:

- the timetable for the project, which was considered to be "much too tight",
- the idea that having a "pilot repository" stage to provide a full-scale demonstration of the repository "would be a significant improvement",
- besides the development of information and consultation, the need to assemble "pluralistic expertise".

Andra had put a lot of time and effort into the preparations for this public debate since 2007/2008. It had prepared to debate and to present its arguments, on the basis of a strong conviction of the value of the debate. Spokespeople had actively prepared and a special team had been set up to cope with all the requirements of the debate (relations with CNDP, answers to questions from the public, the actual debates, etc.). Because it was impossible to hold the meetings, Andra was regrettably unable to debate face-to-face with members of the public, but the activities run by CNDP and the CPDP during the public debate gave it a unique basis on which to decide how to pursue its project taking account of public opinion through these measures and some changes to its plans.

FOLLOW-UP TO THE PUBLIC DEBATE

At the end of the public debate, Andra published details of how it would follow up the debate. As required by law, it published these details in the Official Journal of the French Republic (an explanation in English of the follow-up is available here: www.andra.fr/download/site-principal/document/dossiers-de-presse/andra-mai-2014-v13_en-der_web.pdf). This follow-up covers both the technical aspects and the social aspects.

From a technical point of view, it was announced that changes would be made to the project timetable to prepare the construction licence application for the repository more thoroughly before it was submitted in 2017, with the publication of several key technical documents from 2015 (safety options report for operation and following closure, technical options reports on recoverability, operational master plan for Cigéo). The follow-up also included the introduction of a pilot industrial phase when the repository was started (if a licence was granted), enabling Andra's assessors and Parliament to decide whether the disposal facility should go into regular operation. This pilot industrial phase was Andra's response to pressure from stakeholders to proceed gradually, bearing in mind that it was essential for the current generation to undertake this pilot phase in order to offer

future generations a choice. Andra's follow-up actions also concerned the social aspects of its activity, with commitments to:

- Expand its process of information and dialogue;
- Increase consultation with stakeholders as plans evolve;
- Set up a multidisciplinary committee to advise Andra's governing board on how to deal with societal challenges in our activities and projects;
- Develop links with civil society on topics and issues linked to radioactive waste (memory, reversibility, CSR, ethics, future generations, etc.);
- Contribute to the development of pluralistic expertise in radioactive waste management.

WHAT ABOUT TOMORROW?

Over the course of 20 years, a change of paradigm has taken place: most stakeholders, including members of the public who are aware of the subject, have realised that the issue of radioactive waste is not directly dependent on France's energy policy. New plants will obviously create new waste, but whether we halt energy production at nuclear plants or not, we need to address the issue of developing long-term solutions for managing the radioactive waste we have already produced and are contributing to producing, through our responsibility and duty towards future generations. There's still a long way to go, but some important steps have already been achieved. By being exacting, humble and willing to conduct dialogue, Andra intends to demonstrate that the waste management solutions it is using or proposing are respectful of humankind, and our environment, both today and tomorrow.