

NUCLEAR WASTES: BE WARY OF THE TRANQUILLITY PARADOX

Summary of the report on the assessment of the PNGMDR 2010-2012
made, on behalf of the OPECST, by Messrs. Christian Bataille and Claude Birraux, deputies

Set up by the programme Act of 28 June 2006, the *Plan national de gestion des matières et des déchets radioactifs (PNGMDR – National Plan for the Management of Radioactive Materials and Wastes)*¹, of which the second edition, for the period 2010-2012, was transmitted to Parliament in March 2010, must be the subject, pursuant to said Act, of an assessment by the OPECST. The assessment of this second edition, made by Messrs. Christian Bataille and Claude Birraux, deputies, was based on twenty hearings, two visits to the regions and three abroad, which allowed them to consult over one hundred people.

Apart from examining the PNGMDR 2010-2012 and the approach taken in its elaboration, the assessment led to studying the obstacles to research on separation-transmutation and the implementation of the disposal of long-lived wastes. It also involved taking an interest in how the public consultation was held and, last, taking a look at the general organisation of the nuclear industry.

The PNGMDR and the approach taken in its elaboration

Messrs. Christian Bataille and Claude Birraux feel that this second edition of the National Plan for the Management of Radioactive Materials and Wastes meets satisfactorily, by its content, the aims set by the Act of 28 June 2006. In this respect, they noted in particular the effort made to cover types of wastes barely or not at all taken into account in the previous edition: for instance, mining wastes or else high natural radioactivity.

Other progress in this direction nevertheless remains possible, some aspects being little or not at all addressed. For instance, the PNGMDR does not lay down in a comprehensive enough manner all the strategic options of evolution of the nuclear industry that may be adopted following a new political choice of the Nation.

Similarly, the PNGMDR should comprise a description of the financial issues involved in the management of radioactive materials and wastes, especially from the viewpoint of rough estimates, with indications on costs and funding procedures.

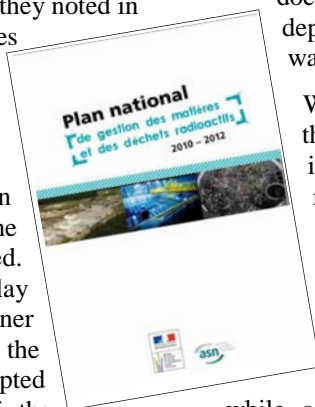
The rapporteurs also emphasised that the plan had gone beyond the institutional aims assigned by the Act of 28 June 2006. It has become, for associations

and the public, a reference as regards the management of radioactive materials and wastes. Citizens therefore expect to find in it all the relevant information in a form intelligible to all. The rapporteurs therefore express recommendations to transform the PNGMDR into a document that can be read on several levels, depending on the amount of detail readers want on the topic of interest to them.

While the rapporteurs also consider that the PNGMDR pluralistic working group is operating satisfactorily, several of their recommendations aim at improving the way in which associations participate: by avoiding the imbalances created by over-large delegations, or else by disseminating working documents sufficiently early before meetings.

Also, the rapporteurs consider that while seeking a consensus is essential, it is however in some cases preferable to take official note of disagreements by explaining them in the final document.

Last, while the issue of the renewing of skills is arising in the nuclear industry as a whole, the particularly worrisome situation, in this respect, of associations addressing nuclear issues, implies setting in place training courses for young members of associations wishing to take over from their retiring elders.



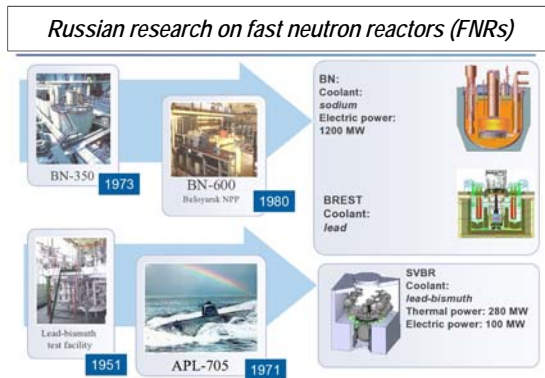
¹ The PNGMDR is available on the site of the Autorité de sûreté nucléaire (ASN): <http://www.asn.fr>

Aim of transmutation

Separation-transmutation is one of the three research aims defined by the 1991 Act, which aims are clarified in terms of their assessment and implementation, by the 2006 Act. This is no accident, as this solution is aimed at reducing the safety risk related to the use of nuclear energy, by directly eliminating the most dangerous radioelements.

The feasibility of transmutation is scientifically proven. But the rapporteurs recognise the practical difficulties raised by its large-scale roll-out. This adds to the complexity of the research on the future fourth generation reactors. Above all, it requires the development of a recycling process, which raises enormous safety problems.

Messrs. Christian Bataille and Claude Birraux nevertheless feel that these obstacles must not lead to calling into question the long term aim of transmutation. They therefore propose that the assessment on the industrial prospects of the fourth generation, scheduled for 2012, should include in an explicit manner a presentation of various scenarios - in terms of technical feasibility, safety constraint, and cost - corresponding to a more or less extensive transmutation.



Source : Rosatom

Faced with these difficulties, nuclear industry players are tempted to favour a certain form of economic realism, while forgetting that this could negatively impact the long term development of the industry. As this negative force results from a financial constraint, the rapporteurs recommend concentrating all the available means so as to try and preserve as much as possible the transmutation goal.

They consider that international cooperation forms an effective means of pooling research and therefore of reducing the cost for each country.

In this respect, they approve the initiatives taken by the CEA (French Atomic and Alternative Energies Commission) regarding international cooperation. OPECST's mission to Russia, for instance, showed that the exchanges between the CEA and Rosatom on fast neutron reactors (FNRs) were becoming more intense in Moscow, and that those in charge of the Russian nuclear industry were very open to scientific cooperation with France.

Disposal

France is one of the first countries to have set up disposal centres for its short-lived radioactive wastes. France also very soon became concerned, with the 1991 and 2006 Acts, about long-lived radioactive wastes. However the two corresponding projects have experienced, in the last two years, difficulties in being implemented.

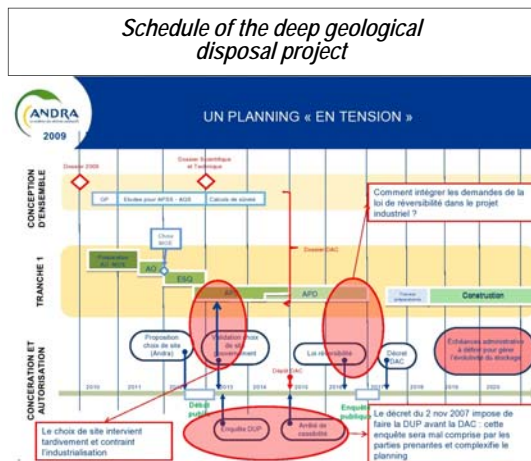
The first project concerns low-activity long-lived wastes. The Andra (French national agency for the management of radioactive wastes) launched it in 2008, by contacting more than three thousand district councils to ask them to authorise geological research in their subsoil. Despite the very short time period set by the Government, forty of these district councils became applicants. Unfortunately, after eight months of dithering on the part of the Government, the two selected district councils finally withdrew.

After hearing the main players, Messrs. Christian Bataille and Claude Birraux observed that this unjustifiable eight month period has been seized on by anti-nuclear activists, with questionable methods, to oblige the district councils to go back on their initial decision. They also noted that local authority members had not received sufficient support from the State, whereas it was an issue of national importance.

The rapporteurs recall the need to avoid any precipitation in preparing this type of project. While they do not present any kind of urgency, a failure can, however, prove extremely harmful. The rapporteurs therefore approve the DGEC's decision to extend the project's time period. They also insist on the need to rule out any compromise on nuclear safety. They emphasise that, once the consultation phase has been launched, the State will have to ensure it provides specific protection and support to local authority leaders. Last, they recommend that the consultation on the choice of a disposal site should be held in conjunction with the general councils and even the regional councils.

The second project concerns the deep geological disposal of high-activity and medium-activity long-lived wastes, the opening of which is scheduled for 2025. Thanks to the efficient action taken by the Andra, this project is advancing satisfactorily. Unfortunately, tensions have appeared in its respect between the Andra and the major producers of wastes, following the announcement by the Andra of an estimation of the cost of the future disposal, far higher than the previous one.

The major producers reacted by proposing new technical solutions and a radically different organisation of the project.



Source : Andra

The rapporteurs support the position of the DGEC which asked the Andra to study the technical improvements suggested by the producers, especially to check their consequences on the safety of disposal. As for the new organisation proposed, Messrs. Christian Bataille and Claude Birraux remind the producers that it breaches Article 14 of the Act of 28 June 2006 which entrusts the Andra with the task of 'Designing, locating, setting in place and ensuring the management of radioactive waste storage centres or disposal centres bearing in mind the long-term prospects of the production and management of these wastes, and carrying out for this purpose all the necessary studies'.

While they understand the fear of waste producers faced with a risk of an excessive inflation of costs, the rapporteurs also recall that the dialogue among stakeholders must take place in the institutional framework defined by the Act.

In this respect, they feel that the Government must, without delay, set in place the CNEF (National Committee for Financial Assessment) provided for by the Act of 28 June 2006.

Public consultation

The Act of 28 June 2006 lays down that the authorisation to build a deep geological site, scheduled for 2015, must be preceded by a public consultation process. Messrs. Christian Bataille and Claude Birraux therefore felt it was necessary to examine how such a debate could be organised.

Unfortunately, the precedent of the public debate on nanotechnologies showed that a few dozen highly motivated people could prevent their fellow citizens, opponents included, from holding any dialogue.

Given the CNDP's experience of public debate, the rapporteurs propose that this difficulty could be overcome as follows. They feel that the failure of an open public debate process, hindered by a minority of individuals, should permit the implementation of a select process that would allow calm consultation of all the associations ready for discussion. This way, democratic debate on a topic engaging all society could no longer be prevented by the determination of a few. They also recommend, as a complementary measure, the organisation, in line with the Swedish model, of a specific legal framework for environmental law, which would avoid a plethora of pointless and lengthy proceedings.

Nuclear industry

Messrs. Christian Bataille and Claude Birraux consider that the conflict over this geological disposal project is symptomatic of a more general unrest in the nuclear industry. The tensions in this industry indeed go far beyond the management of wastes. They concern the group Areva, the NOME Act (on the new organisation of the electricity market) and potential export markets.

As for the Areva group, its creation in 2001 was aimed at setting up an internationally competitive company by grouping the service skills of the French nuclear industry. Anne Lauvergeon's efforts helped materialise this goal by making the Areva group world leader in its sector. However, rumours of her departure are constantly in the news and there are frequent announcements of a restructuring of the Areva

group. Messrs. Christian Bataille and Claude Birraux feel that the possible replacement of Anne Lauvergeon is counter-productive, and they also consider that a different grouping of the activities of the industry would be an obstacle to international development, rather than help.

As for the NOME Act, it forms an attempt to limit the negative outcomes of the opening up of the electricity market, particularly regarding tariffs. Unfortunately, it bases itself for that purpose on an ill-adapted model, that of activities depending on a network of which the usage cost is limited to maintenance costs, as for telecommunications and gas. This approach proves ill-adapted as it opens the door of nuclear power supply to 'free-riders' who would take advantage of the low costs of nuclear production, without making any reciprocal concessions in terms of the incurring of liability.

Messrs. Christian Bataille and Claude Birraux contrast this model with that of northern European countries, such as the Finnish consortiums (Fortum, TVO, Fennovoima), where companies group together to invest jointly in the construction of nuclear power plants and then share the production shares. This model can make 'access' to nuclear power supply and consumer-friendly tariffs compatible.

The last point of tension was highlighted by the loss of the Abu Dhabi market in 2010. This was due to the lack of coordination of French nuclear supply abroad. However, the extremely diverse expectations of international clients, including newly acceding countries, countries already equipped and operators, some of which are competitors of EDF in their markets, stands in the way of setting monolithic supply in place.

Hence the interest of keeping the independence of the various players of the French nuclear industry, especially Areva's independence from EDF. The quality of French supply must be based on multiparty cohesion and not on monopolistic supply. In this respect, Messrs. Christian Bataille and Claude Birraux suggest in particular strengthening the role of the CEA through the structure created in 2008 within it: the International French Nuclear Agency (AFNI).

Conclusions

At the end of this assessment, Messrs. Christian Bataille and Claude Birraux consider as rather positive the results of the implementation of the nuclear wastes management scheme and feel that the institutions set in place, including the PNGDMR working group, are operating suitably, especially regarding their dialogue with associations.

However, the correct operation of the transparency and dialogue bodies set in place by the Acts of 13 and 28 June 2006, seems to have made industrial players forget prudence and also all the previous steps that were necessary to progressively reach this stage of apparent 'tranquillity'.

This observation led the rapporteurs to refer to a theory put forward during an OPECST public hearing on 'the contributions of sciences and technologies to the evolution of financial markets', known as the 'tranquillity paradox' theory. According to this paradox, crises threaten when the situation becomes stable in the economy because favourable circumstances encourage operators to become unreasonably indebted.

The improvement of the context has indeed led the industry players, in the name of short term profitability, to call into question Andra's management of the geological disposal project, or the relevance of the reduction of waste activity by transmutation. The internal tensions in the nuclear industry, mentioned in the report, confirm in another manner their refocusing on short-sighted concerns. By doing so, these players run the risk of calling into question the entire credibility of the scheme.

Messrs. Christian Bataille and Claude Birraux call on the players of the nuclear industry to get a grip on themselves and not give in to the tranquillity paradox. They therefore invite them to take up again the idea that the future of the industry depends crucially on its capacity to show that it knows how to manage radioactive wastes in the best conditions of safety, through calm dialogue between the scientific and industrial partners and with associations.

RECOMMENDATIONS

Content of the next PNGMDR

1. The ASN (Nuclear Safety Authority) and the DGEC (Directorate General for Energy and Climate) shall take into consideration the fact that the plan has become a reference document, including for the general public, giving a comprehensive description of the operation of the radioactive materials and wastes management sector.
2. Consequently, the presentation of the PNGMDR (National Plan for the Management of Nuclear Materials and Wastes) shall cater for several types of reader in a single document: summary, reference in the summary to parts of the body of the PNGMDR, referral in the body of the PNGMDR to Internet links.
3. In the body of the PNGMDR, information on any given type of waste shall be grouped and set in its historic perspective.
4. The PNGMDR shall plan in a more comprehensive manner for all the strategic options of evolution of the nuclear industry that may be adopted following a new political choice of the Nation.
5. The PNGMDR shall comprise a description of the financial issues of the management of materials and wastes, especially from the viewpoint of rough estimates, with indications on costs and funding procedures. **(the DGEC shall present a preparatory paper at a meeting before end 2012).**

Organisation of the PNGMDR working group

6. The ASN and the DGEC shall ensure, as of **September 2011**, that the size of delegations does not form an obstacle to the participation of all the members of the working group.

7. In order to improve the conditions in which discussions are prepared, the ASN and the DGEC shall, **as of September 2011**, impose the transmission, at least a week beforehand, of documents that are to be discussed.

8. When, after a lengthy search for consensus, fundamental disagreements remain on any given point, such points shall be mentioned in the PNGMDR (**immediate effect**).

9. The ASN and the DGEC shall set in place, **by 2013**, in liaison with the IRSN (Radioprotection and Nuclear Safety Institute), the CEA (French Atomic and Alternative Energies Commission) and the Andra (French national agency for the management of radioactive wastes), facilities for the training of representatives of the associations participating in the PNGMDR.

10. Improving the efficiency of the working group shall be a constant concern for the DGEC and the ASN.

Transmutation

11. Transmutation shall remain at the heart of the discussions on the design of fourth generation reactors.

12. The assessment, **scheduled for 2012**, of the industrial prospects of fourth generation designs shall present a spacing out of the possible transmutation solutions in terms of the expected benefits and estimated difficulties.

13. The possible transmutation solutions forecast by this assessment shall accommodate innovatory industrial designs for the recycling of high-activity wastes.

14. Research on fourth generation reactors shall **resolutely** take best advantage of international cooperation, to pool costs and preserve the goal of transmutation.

Disposal

- 15.** The implementation of disposal solutions shall continue in the institutional framework laid down by the Act of 28 June 2006.
- 16.** As ignorance of the law is no excuse and as nobody is above the law, the players of the nuclear industry shall respect the consultation procedures set in place by the afore-mentioned Birraux Act.
- 17.** The Government shall ensure, without delay, the effective setting up of the National committee for the assessment of the funding of the costs of the dismantling of basic nuclear facilities and the management of spent fuels and radioactive wastes, laid down in point IV of Article 20 of said Act.
- 18.** The approach involving a redefinition and spacing out, which is being rolled out to overcome the difficulties encountered in setting in place the low-activity long-lived project, shall be pursued.
- 19.** The political difficulties encountered in the setting in place of a disposal centre for low-activity long-lived wastes shall not lead to compromising over the scientific criteria for the choice of the future site(s).
- 20.** The consultation on the choice of a disposal site for low-activity long-lived wastes shall be held in conjunction with the general councils and even the regional councils.
- 21.** The State owes specific protection and support to local authority leaders making their contribution to the national wastes management policy.

Public consultation

- 22.** The National Public Debate Board (CNDP) shall include, in the preparation of the forthcoming national debates on the management of radioactive materials and wastes, the associations participating in the PNGMDR.

23. The CNDP shall assess the contribution of the new means of communication, such as social networks, to inform the public, especially its youngest members, and encourage it as a whole to participate in the debate.

24. In the event of a serious obstruction of the holding of a debate, the Government shall bring the matter before the CNDP to organise a select consultation convening all associations meeting objective criteria of more than two years of existence, financial transparency, and fair operation laid down by Article 11 of EC Regulation no. 1367 of 6 September 2006 on the application of the Aarhus Convention (**Parliament shall have the right to initiate legislation, should the Government fail to do so - Art. 39 of the Constitution**).

25. The Government shall create, at each administrative court of appeal, an 'environmental court' empowered to judge, in the first instance, disputes related to administrative decisions on environmental issues. The administrative judge presiding the court shall sit between two non-presiding judges with professional competence and experience in these matters.

Nuclear industry

26. The field of action of the companies of the French nuclear sector shall be stabilised on the bases that, to date, have shown their relevance.

27. The holding of an ownership interest shall form the preferred way of obtaining the right to sell a share of French nuclear power supply (**in the event of a revision of the NOME Act on the new organisation of the electricity market**).

28. The Government shall coordinate the players of the French nuclear industry with respect to international invitations to tender for the equipment of emerging countries.