

Radioactive Waste Management and New Build – Problems and Policies

Introduction

The policy for the long-term management of solid highly active wastes was developed by the first Committee for Radioactive Waste Management (CoRWM, 2006) and broadly adopted by government in its White Paper (Defra, 2008). As envisaged by CoRWM, the policy related to legacy wastes (those already in store or anticipated from current operations). CoRWM produced a set of interrelated and interdependent recommendations which identified geological disposal as the best long-term method for managing wastes but in conjunction with interim storage and not ruling out the possibility of other options. The proposals were to be implemented through a voluntarist process.

CoRWM's proposals did not apply to new build. However, as the momentum for new build accelerated during the first decade of the century so the emphasis on finding a solution through disposal increased to the point where the new build programme was predicated on the development of a repository as soon as possible. The advent of new build has introduced a number of problems for the management of wastes and has shifted policy away from the objectives and recommendations of CoRWM1 which were reflected in the White Paper.

CoRWM's remit included the need to inspire public confidence in its proposals. In order to achieve this it undertook an extensive Public and Stakeholder Engagement (PSE) process and reached its conclusions on the basis of consensus. One of CoRWM's key proposals was that 'There should be continuing public and stakeholder engagement which will be essential to build trust and confidence in the proposed long-term management approach, including siting of facilities' (CoRWM, 2006, p.14).

This paper considers the issues for radioactive waste management raised by new build. **It concludes that current progress towards a solution is insufficient to legitimise proceeding with new build. The absence of a robust and acceptable long term solution is both a necessary and sufficient reason for the new build programme to be abandoned.**

MRWS – a policy process perverted

CoRWM's Approach

Following the collapse of the Sellafield RCF proposal there was effectively no policy for the long term management of the nation's legacy of solid intermediate and high level wastes. Consequently, the MRWS process was established and CoRWM was set up starting with a clean slate to make proposals to government. CoRWM undertook a thorough examination, based on guiding principles, integrating scientific, social and ethical concerns, informed by PSE as well as Multi Attribute Decision Analysis to reach consensus.

Three key points emerged from the CoRWM process.

One, was that its recommendations applied only to legacy wastes. CoRWM made its concerns about new build wastes quite clear:

'The main concern in the present context is that the proposals might be seen as providing a green light for new build. That is far from the case. New build wastes would extend the timescales for implementation, possibly for very long, but essentially unknowable, future periods. Further, the political and ethical issues raised by the creation of more wastes are quite different from those relating to committed – and therefore unavoidable – wastes. Should a new programme be introduced, in CoRWM's view it would require a quite separate process to test and validate proposals for the management of the wastes arising.' (CoRWM, 2006, p.15).

Legacy wastes are known; new build wastes are unknowable and, therefore, in CoRWM's view required a separate policy process.

The second key point is that CoRWM put forward a set of interdependent recommendations. The key ones for our present purpose were:

- 1. Within the present state of knowledge, CoRWM considers geological disposal to be the best available approach for the long-term management of all the material categorised as waste in the CoRWM inventory..'*
- 2. A robust programme of interim storage must play an integral role in the long-term management strategy.*
- 4. There should be a commitment to an intensified programme of research and development into the long-term safety of geological disposal aimed at reducing uncertainties at generic and site-specific levels.*
- 5. The commitment to ensuring flexibility in decision making should leave open the possibility that other long-term management options (for example, borehole disposal) could emerge as practical alternatives.*
- 6. At the time of inviting host communities to participate in the implementation process, the inventory of material destined for disposal must be clearly defined.'* (*Ibid.* p. 13).

Thus, geological disposal was the best approach 'within the present state of knowledge'. It was not the only approach and needed to be considered in relation to interim storage, an intensive R and D programme and the possibility of alternative options. The CoRWM legacy wastes related to a known inventory, not an open-ended commitment to an unknown one.

The third key point is the commitment to a voluntary process whereby communities express a willingness to participate in a process for the siting of long-term radioactive waste facilities. Two aspects may be noted. One, is the emphasis on 'facilities'; it does not focus exclusively on a geological disposal facility. The other is a process that seeks consensus on the basis of partnership, participation and packages of community benefits.

The Government's Response

Although CoRWM's proposals were broadly adopted by government, it is becoming clear that they are not being wholly implemented in practice. Each of the three key points outlined above have been interpreted in a way that leads away from the principles and proposals put forward by CoRWM1.

First, in terms of the inventory the distinction between legacy and new build wastes has become increasingly blurred. There has been an emphasis on the possibility of co-disposal, not only of intermediate and high level wastes but also of spent fuel and wastes from new build. The White Paper on Nuclear Energy stated, 'The Government considers that it would be technically possible and desirable to dispose of both new and legacy wastes in the same geological disposal facilities' (BERR, 2008, p.27). **Although, so far as can be ascertained, the separation of legacy and new build has not been explicitly abandoned, to all intents and purposes the policy of co-disposal has been intuitively adopted.** However, under the voluntary process potential host communities will have a say in defining the inventory to be managed.

Second, the carefully nuanced set of recommendations put forward by CoRWM appear to have been subverted by an increasing emphasis on geological disposal as the singular approach to waste management. Indeed, the MRWS White Paper (2008) was subtitled, 'A Framework for Implementing Geological Disposal'. More recently, the West Cumbrian MRWS Partnership has focused almost entirely on finding if there is anywhere suitable for a repository (see West Cumbria MRWS, 2012). And, there has been an increasing impetuosity confirmed by the previous Minister's request that the timing for opening a repository be brought forward from 2040 to 2029.

Consequently, the CoRWM emphasis on a balanced approach incorporating interim storage as an element in the management process and with an open mind towards other possible options has been cast aside. **It is palpably clear that geological disposal as quickly as possible is now perceived by government as the only option to be pursued in the effort to legitimise new build.**

Thirdly, this pell-mell pursuit of geological disposal is contrary to the more measured approach envisaged by CoRWM and puts pressure on West Cumbria, as the sole volunteer to date, to make a premature commitment to the next stage in the siting process (see the paper by Dr. Balogh). **The purpose of the MRWS process is to decide whether to participate further in a process that may lead to geological disposal. It is not a means to secure geological disposal as quickly as possible.**

The essence of voluntarism is to achieve participation and consent through building a consensus. As it stands there is evidence of lack of trust, opposition, reservation and caution – the antithesis of consensus. **In the absence of agreement it may be necessary to place greater emphasis on interim storage as the appropriate way forward leading ultimately, perhaps, to geological disposal.**

The prospect of new build introduces uncertainties that make it harder to achieve consensus on a method or a site for long term management. It also introduces problems of radioactive waste management to those locations identified as potentially suitable for new nuclear power stations.

New Build and Radioactive Waste – A Programme without a Policy

The new build policy was sanctified through a process of Strategic Siting Assessment (SSA) followed by the development of National Policy Statements (NPSs) for new energy infrastructures of which that for Nuclear Power Generation (EN-6) was the most elaborate (DECC, 2011). These were informed by public consultation, though of the traditional statement and response form rather than the more intensive Public and Stakeholder Engagement (PSE) process favoured by CoRWM and some other bodies. (The issue of appropriate means of public consultation or participation may be something the Forum wishes to discuss on some future occasion). The outcome was a set of detailed statements on a wide range of environmental, economic and other issues designed as guidance for the newly established fast track Infrastructure Planning Commission and its successor body.

While the NPSs were being consulted on, two other processes necessary to sanction new build were also proceeding. These were the Justification process to demonstrate that the benefits from new nuclear exceeded the health detriments, and the Generic Design Assessment (GDA) process undertaken by the regulatory authorities to assure the safety of the proposed reactor systems.

In respect of the management of radioactive wastes from new build these three convergent processes (NPSs, Justification and GDA) raise the following policy concerns:

1. *The emphasis on nuclear energy neglects the problem of nuclear waste.* The development of new nuclear power stations and the management of wastes are treated as contingent processes. The emphasis in all the policy documents has been on the development of reactors. Consequently, **most decision makers, stakeholders and the public at large are unaware that wastes, including spent fuel, will be stored at sites long after electricity generation has ceased and certainly well into the next century.**
2. *'Potentially suitable' sites unsuitable for long term management of wastes.* Eight, and only eight, sites have so far been identified as 'potentially suitable' for the location of new nuclear power stations. The SSA process was an elaborate exercise designed to demonstrate how, by progressive elimination, the choice of sites became restricted to eight. In fact, the chosen sites appear to have been selected for pragmatic reasons. They are each near existing (operating or closed) nuclear power stations or facilities and thereby in friendly ownership with some available infrastructure and in places where the local population might be deemed supportive of nuclear activities. However, each of these coastal sites is, in some respects, unsuitable on environmental grounds or vulnerable to flooding, storm surges and coastal processes. Although the adverse conditions at these sites are recognised in the NPSs the criterion of Imperative Reason of Overriding Public Interest (IROPI) is used to justify their inclusion in the list. **There is concern that the sites considered 'potentially suitable' for the deployment of new nuclear power stations are unsuitable especially for the long-term storage of radioactive wastes.**

3. *Uncertainty of conditions in the indefinite future.* In all the documentation very little is said about the long-term storage of radioactive wastes from new build. Indeed, it appears that there has been very little thinking about the implications for policy beyond 2100 beyond the belief that the effects of coastal change can be mitigated for the duration of the life of the station and the interim spent fuel store. This could be at least until a repository becomes available and this, on present estimates, will not be earlier than 2130 and will almost certainly be much later.

Climate change effects are only modelled up to 2100 and it is conceded that 'Prediction of potential climate change effects become increasingly less certain the further into the future they extend' (DECC, 2010, Annex C, p.27). Predictions of sea level rise vary very considerably with worst case scenarios in the region of 5-6 metres though the Environment Agency (EA) reckons a rise of 2 metres to be a reasonable prediction. In any event it does not seem reasonable to conclude as the EA has done, that a nuclear power station, let alone a waste store 'could potentially be protected against flood risks throughout its lifetime, including the potential effects of climate change, storm surge and tsunami, taking into account possible countermeasures' (Ibid, p.27). This presupposes societal stability and institutional continuity able to sustain a viable, committed and skilful workforce able to provide continuous protection in quite unforeseeable circumstances. **The uncertainty about natural and social conditions in the far future suggests it would be imprudent and irresponsible to store wastes indefinitely at the sites identified for new build.**

4. *The absence of policy for the long-term management of wastes.* The Government claims that 'effective arrangements will exist to manage and dispose of the waste that will be produced by new nuclear power stations' (DECC, 2011, Vol.2, Annex B, p.15). As yet neither an agreed concept nor a site exists for the management of the various waste streams destined for a geological repository. It is conceivable that there will never be a repository and that wastes will have to be managed in other ways. In any case there needs to be consideration of what facilities may be needed and where. These may include waste stores, encapsulation plants and transfer and transport infrastructures. These will either be needed at each site or some regional or central storage capability will be required. There is virtually no information on these issues in any of the NPSs or GDA documents. **In the absence of information or agreed policy about the long-term management of wastes in the far future it must be considered imprudent to proceed with the development of any new nuclear facility.**
5. *Lack of adequate public participation and consensus.* The voluntarist process was conceived for the identification of a method and site(s) for the long term disposal of radioactive wastes. By implication voluntarism was to be applied to alternative methods should they be preferred in future. Voluntarism also applies to siting long term interim stores insofar as they are an integral part of the repository siting process. I have commented earlier on the neglect of this aspect in the current discussions in West Cumbria.

CoRWM envisaged voluntarism possibly being applied to the siting of regional or central stores for waste:

'It is clear from the views of some stakeholders that the recommendations on implementation must be applied to at least new central or major regional stores at new locations if CoRWM's recommendations are to inspire public confidence. The extent to which they may be applicable to other new stores and changes to existing stores is a matter for further consideration' (CoRWM, 2006, p. 166).

To my knowledge no such consideration has been undertaken. No separate consultation or engagement specifically on the management of new build wastes has been contemplated. Already communities at existing waste sites face the prospect of intermediate level wastes such as fuel element debris and the graphite cores of shut down reactors from the earlier nuclear programmes being stored on site until the end of this century. With new build there is the prospect of spent fuel as well as other wastes remaining on site indefinitely. Local public, stakeholders and even local authorities and MPs appear unaware that the new build sites are putative long term, possibly permanent, locations for the management of highly active wastes. It may appear perverse and unfair that communities which are hosting new build reactors are not being extended the opportunity to participate in a voluntarist process. **Communities at new build sites should be fully informed about the proposals for managing wastes and be given the opportunity to consider whether they are willing to host such facilities.**

Conclusion

In summary, the following comments and proposals are put forward for consideration by the Forum:

- **The inventory of wastes destined for long term management should be clearly defined before communities are invited to participate in a siting process. For the current MRWS siting process the inventory should be confined to legacy wastes only.**
- **The siting process should encompass proposals for the long-term storage of radioactive waste. This process should provide both for interim storage as an integral element in a repository siting programme as well as for long-term storage as an alternative management option in the event that the repository does not proceed.**
- **The siting process should continue to keep alternative management options open.**
- **There should be a separate process for determining policy for the long-term management of any wastes from new build. The policy should include the principles of voluntarism, that is, a willingness to participate and the right to withdraw.**

- **Given that the physical and social conditions in the far future are unknowable, indefinite storage of wastes on coasts vulnerable to the impacts of climate change should be avoided.**
- **The absence at the present time of a robust, credible and acceptable long term solution for radioactive waste management is both a necessary and sufficient reason for the new build programme not to proceed.**

Professor Andrew Blowers
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