

Fostering a durable relationship between a waste management facility and its host community

Adding value through design and process

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Ensuring the safety of radioactive waste management over the long term has special challenges. The greatest challenge may be to create a local operating facility to fulfil that mission over generations. Several conditions are needed: scientific knowledge and technical competency, resources for implementing an agreed approach, and continued willingness to live with and maintain the facility. Both the ongoing quality of life in the host community and society's future capacity to watch over the waste depend on building a sustainable relationship between the host community and the site installation.

Because a radioactive waste management facility and site will be present in a host community for a very long time, a fruitful, positive relationship must be established with those residing there, now and in the future. Simply put, designers have to make the radioactive waste management facility and site to suit people's present needs, ambitions and likings, and to provide for evolutions to match at reasonable cost the needs and desires of future generations. A facility that upsets or repels residents or visitors will only be tolerated and will remain a stranger or an unwelcome presence in the community. The challenge is to design and implement a facility (with its surroundings) that is not only accepted, but in fact

becomes a part of the fabric of local life and even something of which the community can be proud.

The NEA Forum on Stakeholder Confidence (FSC) has issued a report exploring how a facility and its site may be better integrated with its host community, and be made attractive across generations. The FSC investigated design features that would provide added value to the community and region in both the short and long term.

Traditionally, local benefits to be drawn from a radioactive waste management facility are discussed in terms of hosting fees and socio-economic development packages (accompanying employment, infrastructure, etc.). Beyond traditional benefits and land use compensations, however, there has been little exploration of how else the presence of the installation may help increase local and regional quality of life. Yet this may be as straightforward and relatively inexpensive as providing a special coat of paint (as at the Vandellós I site in Spain in order to allow the facility to better blend into the landscape – see photo), or as complex and rich as engaging community processes to design an integrated radioactive waste management project (as in the “local partnership” approach created in Belgium).

Cultural and amenity value

In the 1st century BC, the classical Roman architect Vitruvius outlined what good architecture should achieve. He stated that a structure must exhibit the three qualities of *firmitas*, *utilitas* and *venustas*: it must be strong or durable, useful and beautiful. These are qualities that can also be sought for a radioactive

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waste management installation, for both the physical building structures and for what the installation can bring to the community.

The FSC has looked into designing and implementing facilities in ways that provide added cultural and amenity value to the local community and beyond. Cultural and amenity value has been interpreted here as meaning: agreeable additions to the quality of life, through such features as distinctiveness, aesthetic quality, convenience and meaningfulness; through providing opportunities for residents and visitors to meet, learn, relax and enjoy; and through fostering community improvements in areas such as educational level, image definition or problem-solving capacity.

A number of basic design elements to foster a durable relationship between the facility and its host community have been identified, based on the analysis of input from 32 stakeholder contexts (interviews, questionnaires) and FSC experience. Such design elements include functional, cultural and physical features. These features tend to maximise the potential of a facility to be “adopted” by the members of the host community, by fitting in, adapting to and, moreover, contributing directly to their preferred way of life. The report includes tables to summarise design features and characteristics, the value that each may add to the community, and possible strategies to achieve each feature.

Adding value through functional, cultural and physical design features

Functions concern the uses to which an installation may be put. The radioactive waste management facility must serve the primary purpose of ensuring the safe and secure long-term management of radioactive waste. Careful *multi-functional* design can then add value by allowing appropriate parallel uses that are of direct interest to residents and visitors (for example, public gardens with recreation opportunities). In the same vein, parallel uses of radioactive waste management installations may add scientific value. Zero-gravity experiments are being carried out at Japan’s Tono Mine underground laboratory. Laboratory facilities at Spain’s El Cabril and the US WIPP facilities are available for regional environmental analysis or monitoring. Additionally, when creating a new facility, it is necessary to foresee the end of its useful life. If future needs are not anticipated, there is a risk that the facility will become a liability for the community. An adaptable, flexible facility can provide service and enjoyment during its operation, and also make possible at reasonable cost the transition to a full community facility when its industrial use is no longer needed. Along with careful planning for radiological safety on-site, adaptability and flexibility will leave development pathways open.



ENRESA, Spain.

Spain’s Vandellós-I reactor was shut down in 1990 (the site now provides interim storage for contaminated graphite). Buildings were restructured and re-styled in order to be better integrated in the local landscape. The host city is a beach resort and it is important that the site not be intrusive to the view. The reactor building was reduced from 90 to 60 meters in height, and a special paint design was adopted that will allow it to blend into the natural setting by matching the green of the forest line, and the blue of the sea and the sky when viewed from afar.

The UNESCO Universal Declaration on Cultural Diversity defines culture as “the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, encompassing, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs”. In this way, culture may be assimilated to shared meaning and practices. Cultural value is found in arrangements that reflect and strengthen a given society’s knowledge, tastes, aspirations, ethical views or beliefs. It lies in all that is meant to help transmit an honoured legacy, to communicate symbolic meaning or to advance ideals. Amongst the cultural design features, distinctiveness may be mentioned, indicating that the facility or site is attractive and like no other, and has the potential of becoming an icon, lending a positive reputation and drawing visitors. Other cultural features include aesthetic quality and understandability, whereby the installation can be tied in with existing knowledge and related to everyday life. Memorialisation is another cultural feature, meaning that both physical and cultural markers identify the site and tell its story, so that people will grasp and remember what is there.

Technical features will provide the agreed level of protection (the primary condition set by the stakeholders consulted for the FSC study). Physical design elements will help create the feeling of security (another part of what community and regional stakeholders expect). Physical design features can be combined to create harmonious integration of the installation into its geographic setting, and increase overall amenity: enhancing attractiveness and overall satisfaction. Accessibility means that the site and facility are not barricaded, but are open and welcoming. Potential host communities have pointed out that if a site that is licensed to operate can be freely visited, walked through, or enjoyed for other uses, it clearly must be safe. It no longer seems to impose restraints on the user, nor shuts people out in an alarming way. It accomplishes its goal of protection without emphasising danger.

Certainly each and every area of a radioactive waste management facility cannot be made open to the public. Areas restricted for the necessities of safety and security need not benefit from the same degree of functional, cultural and physical design input. Still, the radioactive waste management facility and site should be considered in a holistic manner, in order to maximise the added value that it is possible to achieve with reasonable effort.

Adding value through the planning and implementation process

Local stakeholders who take an active role in site investigations, or who participate with implementers in formal partnerships, report that the very process of working out the desired features of a radioactive waste management facility and site can bring added value to the community. Social capital – networks, norms and trust – is built up, equipping the community to face other decisions and issues. Local stakeholders may also focus their work on community identity, image and profile. Even when not favourable to hosting a radioactive waste management facility, communities can use the opportunity to develop quality-of-life indicators and reflect on the direction they want to take in coming years. Other benefits that may be accrued are an enhanced educational level in the host community related to the influx of highly skilled workers. Not least important, when host communities demand training and participate in the monitoring of site development and operations, they are building their capacity to act as guardians and therefore ensure another layer of defence-in-depth (see the article on the next page).

Early reflection is best

It takes time to work out new ideas, new possibilities and where the communities' own interests lie. Integrative reflection on technical and socio-

economic aspects, and on cultural and amenity value that could be added by a radioactive waste management facility, is best started from the very first planning stages even before final siting agreement is reached. The information, concepts and ideas gained from this reflection will form a part of the basis on which a local community may agree to become a candidate and then actively engage in the final siting stages.

Institutions generally cannot commit to the final form of a radioactive waste management facility before a specific site is agreed, nor to the ultimate fate of the facility and site. In addition, the relationship between a community and a facility or site will depend in part upon external events (for instance, safety performance in the nuclear or radioactive waste management realm, attitudes and statements by political actors, etc.). Still, feasibility studies and social science investigations early in the decision-making process can provide meaningful preparation. Such an approach is coherent with the Aarhus Convention, which has given many European citizens formal rights to participate in decision making about their environment.

Conclusions

Different countries and regions are likely to have different socio-political realities and therefore best practices for one place may not be best for another. The exact definition of “added value” will be specific to each site, and more importantly to each community, and will have to be developed in consultation with local stakeholders. The FSC report hopes to provide input to that debate and provides many examples of initiatives from various countries and industrial contexts, but a “one-size-fits-all” solution cannot be offered.

Added cultural and amenity value brings direct improvement to the quality of life in the host community. It can foster socio-economic gains by making a place more attractive to visitors or future residents. In the best of cases, added cultural and amenity value will start a virtuous circle, bringing benefits now, encouraging an ongoing relationship with the facility, and strengthening the community such that in future years it can face challenges and continue to improve its quality of life. These benefits to the local quality of life also support the long-term safety of the facility by building the capacity and the commitment of the host community to remain invested in the facility and its site, and to act as its guardians for generations into the future.

The FSC report on *Fostering a Durable Relationship between a Waste Management Facility and its Host Community* can be downloaded at www.nea.fr/html/rwm/fsc.html, or a paper copy may be requested from claudio.pescatore@oecd.org. ■