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for the siting of a LILW repository"

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CIP Research Brief Theme 2: Belgian case study: local partnerships for the siting of a LILW repository

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0. Introduction

The objective of this research brief is to provide critical-analytical insight into the applicability of the partnership model as a 'tool' to organise local democracy for engagement in RWM Governance. The research concentrates as well on the methodology of the partnership model as such as on the socio-political context (historical and actual) and the legal frameworks in which the structuring of local communities and development of local democracy need to be 'embedded'. The research dwells on the Belgian case, but analytical insight is generated as 'decontextualised' reflections on aspects of public participation, compensation, local democracy in a national political context and the role of institutions, in a form that can be useful for RWM Governance processes in the participating CIP countries.

Although the involvement of local Belgian citizens in radioactive waste governance through the so-called partnership approach formally started only in 1999, the Belgian approach to 'finding solutions for radioactive waste disposal' has a longer history that can be dated back to the sixties of last century (see §1.5.). Where appropriate, this research brief will make reference to these 'pre-partnerships' events or situations. Although, in line with the envisaged contribution to the Cowam In Practice project, the focus will be on the partnership approach, the authors of this report would like to stress that this should not be understood as if the partnership approach would need to be considered as the only or most preferable tool to involve local civil society in governance of radioactive waste.

1. Description of the Belgian local partnership approach

1.1. Type of activity – scientific/technical features

The siting process that engaged the municipalities of Mol, Dessel and Fleurus-Farciennes in so-called 'partnerships' (called MONA in Mol, STOLA in Dessel, and PaLoFF in Fleurus-Farciennes) with the Belgian national nuclear waste management agency (NIRAS/ONDRAF) up till now only looked at so-called 'category A waste'. This is low- and intermediate-level short-lived radioactive waste (LILW). This waste has an average half-life of about 30 years, which will imply monitoring of the disposal site during 200 to 300 years.

1.2. Management structure of the activity

The next paragraphs describe the management structure of the partnerships as it was set up with their creation. After the government decision in 2006, in which Dessel got chosen as the host municipality, this structure changed only slightly.

The local partnerships were set up as a micro-level model of representative democracy. Overlooking the whole partnership activity is a ***general assembly (GA)*** uniting representatives of all participating organisations. These organisations (political, societal and economical) were initially identified by using a social mapping technique (see also 2.4, 2.5). NIRAS/ONDRAF has one seat in the GA (in all three partnerships this seat was taken by the director-general). This assembly decides on the main strategic course for the partnership discussions. It is the general assembly that finally decides if the integrated repository project (as developed by the partnership) will be presented to the municipal council, thereby effectively advising it to put the municipality forward as a candidate to host the LILW repository under the conditions stipulated in the partnership report (cf. section 2.1). The general assembly meets about twice a year on average, with a higher frequency towards the end of the partnership negotiations.

The general assembly appoints an ***executive committee (EC)*** in charge of the day-to-day management of the organisation. The members of the executive committee form a balanced representation of the organisations represented in the GA. NIRAS/ONDRAF also had one member in the executive committee of each partnership. In practice, they functioned as '*go-betweens*'. The executive committee is, amongst other things, responsible for the coordination of working group activities, decision-making on budget spending, intermediary decisions regarding the project development and the supervision of the project coordinators.

In several ***working groups*** all different aspects of the implantation of a LILW repository in the community were discussed. As suggested by the outset design from NIRAS and its university partners, in MONA and STOLA there were each three 'technical' working groups (“implementation and design”; “safety”; “public health and the environment”) and one group on “local development”. In PaLoFF there were only two 'technical working groups' (“implementation and design”; “public health and safety and the environment”), but each community had its proper working group on “local development”. At a later stage an additional joint group on local development was created (composed of the members of each separate working group), to discuss and develop proposals in the common interest of both municipalities. After one year the two technical working groups were regrouped and

mostly worked together. In MONA the technical working groups also operated regularly in joint sessions, albeit mainly in sessions particularly set up to gather information, rather than discuss options. All working groups were composed of both representatives of local organisations as well as individual citizens who expressed an interest to participate actively in this discussion forum. Each working group was attended by a permanent member representing NIRAS/ONDRAF and having a particular expertise regarding the topics discussed in that working group. The NIRAS/ONDRAF collaborators made the other working group members acquainted with their plans and views on how the repository should be set up. Consequently they entered into discussion about the reasons behind the (technical) options they proposed and about possible alternatives. In the working groups relevant existing research was taken into consideration, the need for additional studies evaluated and experts (of whatever type or orientation deemed relevant) invited to participate in the debate. The working groups reported regularly to the executive committee and drafted the different constituent parts of the integrated repository project.

Since all the local people participate on a voluntary basis, two full-time ***project coordinators*** were employed by each partnership, one with a more technical background and one with a background in social sciences or communications. The project coordinators were to take care of administrative and communication tasks and to support the working groups both logistically and scientifically. The final partnership report, describing the integrated project proposed and the conditions put forward by the partnership, was written by the project coordinators, with regular feedback from the working groups and the executive committee.

After Dessel got chosen as the host municipality in 2006, the management structure of the partnerships somewhat changed. Although Dessel got chosen as NIRAS/ONDRAF's 'privileged partner', the government decision prescribes the continued involvement of MONA in future project proceedings. On an operational level both partnerships continue to exist (with the same management structure but with 3 working groups, 2 directly connected to the concrete LILW repository, a third one to follow up the general nuclear issues in the region)[1], on an administrative level a joint steering committee came into life, to ensure integrated decision making and project steering (NIRAS – STORA – MONA, with an advising role for the mayors of both Dessel and Mol).

1.3. Legal / regulatory background

The basis for the Belgian legal framework regarding civil applications of radioactive materials and nuclear energy was a law dating back to 1958, regarding the protection of the public against dangers from ionising radiation[2]. The main order in pursuance of this law was issued by Royal Decree in 1963 and regulates the import, production, possession, transport, purchase, sale and use for commercial, technical, scientific, medical and other purposes of equipment, installations and materials that could spread ionising radiation[3]. The law of 1958 has been frequently adapted and modified, following scientific and technical progressions (e.g. the introduction of stricter standards on exposure to radiation by employees, on environmental protection or on public health), and was ultimately replaced

1 Working groups MONA: "General Nuclear Issues"; "Follow up Siting Project Category A-waste"; "Local Development". Working groups STORA: "Nuclear Issues"; Follow up Siting Project"; "Communication" (focusing on the Communication Centre, cf. 1.6).

2 Law of March 20, 1958 regarding the protection of the population against dangers from ionising radiation (Belgian Law Gazette, 30 April 1958).

3 Royal Decree of February 28, 1963 regarding a national code on the protection of the general population and employees against dangers from ionising radiation (Belgian Law Gazette, 16 May 1963).

by another law in 1994[4]. Changes in social and cultural values also led to adaptations in this legal framework. In general, it can be said that these adaptations pushed the nuclear sector towards higher levels of accountability and transparency (even though the law of 1994 does not contain any specific provisions on transparency and/or public participation, unlike for instance French legislation). Examples are the introduction of a law defining the financing mechanisms for the decommissioning of nuclear power plants and management of spent fuel[5]; and of laws (and their consequent implementing orders) establishing specific regulatory, advisory and executive agencies, like NIRAS/ONDRAF and FANC/AFCN (the Federal Agency for Nuclear Control).
The installation of the latter agencies, a '*governmental agency for the management of radioactive waste*' as an organisation of public interest, as well as the creation of a '*national controlling agency for all nuclear activity*' was already foreseen by a general law on budget proposals (in which just one article (art. 179) was consecrated to the nuclear issue) in 1980[6]. However, it took a long time for these agencies to become fully operational. This was the case especially for the 'Federal Agency for Nuclear Control' (FANC/AFCN), which was created on paper by law in 1994 (cf. supra), became operational 7 years later (in 2001, following the necessary implementing orders), and was long plagued by (political) controversies which to a certain extent impair its ability to function properly.

The 'National Institution for the Management of Radioactive Waste and Enriched Fissile Materials' (NIRAS/ONDRAF) was founded by Royal Decree in 1981 and became operational on paper in 1982. In practice however, the Belgian nuclear research centre (SCK•CEN) continued its historic role in the conditioning and management of radioactive waste during the 80ies. It took a much publicised waste scandal (the 'Transnuklear case', involving SCK•CEN's 'waste department' and the German firm Transnuklear) for NIRAS/ONDRAF to fully take up its responsibility as the sole organisation in charge of the management of radioactive waste at the end of the 80ies. Thereafter, NIRAS/ONDRAF's mandate was further updated by new laws and royal decrees. Today it incorporates the transport, processing and conditioning, temporary storage and final disposal of radioactive waste. In addition, more recent legislation has given NIRAS/ONDRAF a number of tasks related to decommissioning of nuclear facilities, as well as the obligation to prepare and keep up-to-date an inventory of all radioactive waste (including spent fuel) and an inventory of all potential radioactive wastes (the so-called nuclear liabilities) on Belgian territory.
Despite all legislative initiatives, NIRAS/ONDRAF remains caught in the fundamental ambivalence between its (legally enshrined) role of a public interest organisation and the (equally legally enshrined) obligation to negotiate with nuclear waste producers for the financing of its main activities (cf. 1.6, 1.8).

With the federalisation of the Belgian state, the legal and institutional framework regarding any activity in the nuclear sector (including research and development, waste management, etc.) remained with the federal (national) government. Regarding licensing for constructing and operating nuclear plants and installations, as well as the applicability of EIA-procedures, the general rule is to divide all activity into a nuclear and non-nuclear component, respectively assessed by the competent federal and regional authorities. Today, a procedure for EIA and SEA is in place for the Flemish, Walloon and Brussels-capital region. A federal law laying down procedures for plans (SEA) and programmes (EIA) concerning amongst others the long-term management of radioactive wastes, has been published in February 2006). These environmental laws, together with the ratification of the Aarhus convention by

4 Law of April 15, 1994 regarding the protection of man and the environment against potential hazards arising from ionising radiation and regarding the Federal Agency for Nuclear Control (Belgian Law Gazette, 29 July 1994).

5 Law of April 11, 2003 regarding provisions for the decommissioning of nuclear power plants and management of spent fuel (Belgian Law Gazette, 15 July 2003).

6 Law of August 8, 1980 regarding budget proposals 1979 – 1980 (Belgian Law Gazette, 15 August 1980).

the Belgian government and its subsequent implementation on federal and regional levels, will likely become an important impetus behind the 'participative turn' also in the nuclear field.

1.4. Political background (governance)

Key governance issues related to the management of radioactive wastes in Belgium:

- With regard to the management of high level waste, originally Belgium opted for the closed fuel cycle option (reprocessing of waste; no direct disposal). Later a moratorium on recycling and further use of MOX fuel was installed. It is unclear what the long term policy of the government will be. This is of course closely connected with the future of nuclear energy in Belgium as such. In general, the Belgian nuclear industry considers retrievability of spent fuel as a valuable option;
- In 2003, a law on the gradual phase out of nuclear energy in Belgium (in the period between 2015-2025, i.e. after a 40-year operational lifetime) was accepted by the parliament. However, the adoption of this law did not settle the debate on the future of nuclear energy in Belgium once and for all. The major political parties in Belgium are divided over the issue of keeping open the NPPs longer than foreseen in the referred law;
- As long as nothing is really 'happening' with the high-level waste, public and political attention remains low. Even the return of vitrified waste from La Hague was not really a 'hot' issue in the media, although there have been protest actions during the first and second transport. Meanwhile, several transports from La Hague (France) to Mol took place by railway and truck, and this with minor to no coverage in the press. At the beginning of 2007, the 13th and 14th transport – the last ones of the series – took place;
- At SCK•CEN, research on long term disposal in clay layers is progressing. The research concentrates as well on performance assessment studies as on in-situ experiments in an underground research lab. (info on http://www.euridice.be);
- Belgian research on partitioning and transmutation technologies could bring new insights and opportunities into RWM in general (http://www.sckcen.be/myrrha/). However, it has been suggested that the application of this technology will never completely eliminate the need for management of high level wastes ;
- On the agenda from 2007 onwards are the processes following the site selection (decision of the Federal Government to proceed with one integrated project in Dessel) and the working and future role of the local partnerships STORA (in Dessel) and MONA (in Mol);
- In line with the previous point: similar participation projects for the solution of a high level and long lived waste disposal site could start in the (not so distant) future. In this respect, MONA and STORA are considering their possible role in the long-term management and disposal of all types of waste.

1.5. Time frame – history (incl. alternatives) & outlook

Key milestones for radioactive waste management in Belgium:

1967 Start of systematic sea dumping of low level waste (organised by SCK•CEN);
1970 Sea dumping continues under supervision of OECD (NEA);

1980	Creation (on paper) of NIRAS/ONDRAF, the Belgian national waste agency. In practice, SCK•CEN continues to take care of most RWM activities during the 80s;
1982	Press conference on joint initiative of Belgian labour organisations and Greenpeace, calling to abandon sea dumping;
1983	Belgium joins the international moratorium on sea dumping (Convention of London, 1983);
1985-1987	First selection of 5 possible disposal sites by NIRAS/ONDRAF (the Belgian Agency for Radioactive Waste and Enriched Fissile Materials), based on (geological) criteria of the IAEA, NEA and US NRC;
1987	Transnuklear waste scandal;
1988-1990	NIRAS/ONDRAF becomes fully operational through its industrial subsidiary 'Belgoprocess';
1990	NIRAS/ONDRAF report stating that surface disposal is the most promising option (alternative techniques: old coalmines (drawback: unpredictable groundwater behaviour) and deep disposal in clay layers (more R&D needed - research was ongoing for B & C type waste);
1994	The Belgian government agrees with definitive ban on sea dumping (established internationally in 1993);
1994	Release of the NIRAS/ONDRAF report presenting 98 selected sites for surface disposal of LILW, unanimously rejected by the envisaged communities and also rejected by the Belgian government (a coalition of Christian-Democrats and Socialists);
1995	The Belgian government orders a new study on alternatives; three solutions were considered from now on: temporary surface storage, definite surface storage and deep disposal;
1996	The Belgian government orders a new study considering 25 old military sites;
1997	NIRAS/ONDRAF publishes the report on technical alternatives and on the old military sites, as requested by the government in 1995 and 1996;
1998	The federal government decided that by means of a long-term solution for short-lived intermediate and low-level waste, NIRAS/ONDRAF should opt for a final repository, or at least one that could progressively become 'final', whether that be on the surface or underground. The government decision furthermore stipulated that NIRAS/ONDRAF should start looking for a potential site first and foremost in the existing nuclear areas and additionally in any municipality that would be willing to volunteer. The agency also was to develop methods, including management and consultation structures, making it possible to integrate a project of this kind at a local level. In cooperation with two Belgian universities, the agency developed a partnership model and approached the municipalities of Mol and Dessel (who reacted positively). The municipalities of Fleurus & Farciennes joined three years later. The community of Beauraing, hosting an old military site, is candidate (because it hosts an old military site). The local referendum that was organised on this occasion resulted in the highest participation ever seen in Belgium (66%). Finally, the proposal was turned down by 95% of the people that participated in the referendum;
30/9/1999	Creation of the STOLA partnership (Dessel municipality)
09/2/2000	Creation of the MONA partnership (Mol municipality)
27/2/2003	Creation of the PaLoFF partnership (Fleurus-Farciennes municipalities)

STOLA/STORA

Sept 2004	Final report approved by the general assembly of the partnership;
Nov 2004	Final report presented to Dessel municipality council;
Jan 2005	Final report approved by municipal council;
April 2005	Dissolution of STOLA ('Study and Consultation group for Low-level waste); creation of STORA ('Study and Consultation group for Radioactive waste);
May 2005	STOLA Dossier forwarded to the competent Minister of the Belgian Government;

MONA

Jan 2005	Final report approved by the general assembly of the partnership and presented to Mol municipality council;
April 2005	Final report approved by municipality council; The name MONA (Mols Deliberation Nuclear Waste Cat.A) is kept, but the original "Cat. A" gets deleted in what the acronym stands for;
July 2005	MONA Dossier forwarded to the competent Minister of the Belgian Government;

PaLoFF

Dec 2005	Final report approved by the general assembly of the partnership;
Feb 2006	Final report rejected by the executive council of the municipality of Fleurus;

May 2006	NIRAS/ONDRAF presented a definitive report that should allow the government to make a properly informed decision concerning the follow-up program for the disposal of low and medium active short-lived waste;
June 2006	Based on the recommendation of NIRAS/ONDRAF, the council of ministers decided to opt for a surface disposal site for the disposal of low and medium level short-lived waste in the municipality of Dessel.
Nov. 2007	Signing of a 'declaration of intent' for cooperation between NIRAS/ONDRAF, MONA and STORA Start of the development phase of the siting project, including preparations on licensing procedures.
Beginning 2009:	Intermediary milestone: approval of the final "masterplan" (a detailed description of all aspects (technical and social) of the integrated design of the surface disposal, including a cost estimate and financing modalities) by NIRAS, STORA, MONA, the municipalities, and the financers.
2012 - 2015:	Building and realization phase of the repository and of the conditions set by the partnerships[7]
2016 - … :	Exploitation phase

1.6. Economy (how much, where)

In principle, NIRAS/ONDRAF does not receive any direct funding from the government. The agency's financing mechanism builds on the polluter pays principle, through which the radioactive waste producing companies (cf. Section 1.8) and the Belgian state have become the agency's main

7 In fact, the repository will consist of 2 tumuli that will be build separately over time.

sponsors. The contribution of the main electricity producing company Electrabel will be subject to review due to the change of ownership: in 2005 Electrabel was taken over by the French company Suez. The Belgian state is also considered a polluter that needs to contribute, as it owns an important fraction of the historic waste[8]. The agency's financing mechanism is based on conventions between NIRAS/ONDRAF and the waste producers. Roughly every five years, NIRAS/ONDRAF has to renegotiate its funding based on work programmes. Although the agency has an extensive autonomy with regard to the technological solutions it wants to deploy in order to manage the nuclear waste, for every major shift in NIRAS/ONDRAF's activities that entail financial implications, the agency has to negotiate with the producers for funding. This makes NIRAS/ONDRAF vulnerable to criticisms that the waste producers are provided with too much opportunity to influence the agency's activities.

Two separate financing mechanisms have been set in place for the management of radioactive wastes. The first serves for the long-term management of the waste, mainly to be understood as final disposal (the so-called 'long-term fund' or LTF). This fund is established through conventions with the main producers of radioactive waste. The second provides for the future funding of the decommissioning of nuclear power plants and for the management of spent fuel. This fund is established by law (since 2003 – before that a convention was in place) which ensures a controlling mechanism on the amount of funds set aside, as well as on their financial management.

Regarding the financial aspects related to the management of LILW, there are two categories linked to the integrated project developed by the partnerships: the technical projected costs and socio-economical projected costs (cf. section 2.1). Up till now, only the technical cost (of one central surface disposal site) is budgeted and covered. The technical projected cost contains the construction, exploitation, closure, institutional monitoring and controls of the site and also the waste transports. To cover these technical costs, NIRAS/ONDRAF is building up provisions in the LTF, according to the 'polluter pays' principle. Every waste producer has to provide the agency with a projection of the total amount of waste that will be produced in the producers' 'operational lifetime' and has to pay a certain financial contribution in the fund for every collected amount of waste (from that moment on, the agency becomes the 'owner' of the waste, as the responsibilities are transferred from the producer to NIRAS/ONDRAF).
The costs of the partnership approach so far (NIRAS research and the budgets of both partnerships) (also see 2.3) have been covered by NIRAS drawing on resources gathered through ‘study agreements” (arranged by Royal Decree) with the waste producers (including the Belgian State as owner of the historical waste).
The socio-economic 'compensation' is another important topic of the negotiations among the involved actors in the decision making process. In their respective 'pre-selection' reports, the three partnerships put forward what they call '*socio-economic added value*' or '*local development projects*' for their community as a precondition for acceptance (the word '*compensation*' is anxiously avoided in all official communications). Among other requests both MONA and STOLA suggested the establishment of a 'fund structure' that could cover local social, economical, cultural, environmental … projects over the longer term, keeping in mind future generations. None of them has (officially) put forward a suggested total amount this fund structure should contain[9] nor an indication on possible

8 Mainly waste from the former pilot reprocessing plant 'Eurochemic' (1966-1975), and the former 'Waste' department of SCK•CEN.

9 It is generally accepted that there is no clear and rational way to link an economical value to a 'disadvantage' that comes with the disposal site. In this context, ONDRAF/NIRAS says that "it is rather difficult to stick an exact budget to the socio-economic component of the integrated project" (NIRAS/ONDRAF 2005, p. 44), but refers as an example to the European EXTERNE study in this sense. EXTERNE budgets 'external costs' through an estimation of the 'damage due to radiological impact' as 4,8.10-6 € per kWh installed nuclear capacity (a critique to this approach is that the estimation does not take into account the regional characteristics of the site, like population density). Assuming that all LILW would origin from nuclear electricity production and that all

distribution. STOLA also asked for a communication centre, comprising a contact- and meeting centre for all nuclear matters, a digital, interactive network and a scientific theme park.
In its report on the partnership proposals, NIRAS/ONDRAF (2005, p. 45) made some suggestions concerning the sources for the additional conditions of the integrated project. According to NIRAS/ONDRAF, the funding could be based on a revision of the 'technical' LTF, but also a system of taxes (e.g. on the kWh produced) could be considered. The agency stated that relying on the LTF alone could be dangerous, as this system generates no money in times without actual collection of waste. At this moment, it is not clear who should collect the money going into the socio-economic fund(s) and possibly the communication centre as such (according to the report, this could be NIRAS/ONDRAF itself, but also the Belgian State, the producers, the electricity producers, the regions or the municipalities). In a later document the establishment of a 'middle long-term fund' is announced. Both the mechanisms providing the resources as well as the size, legal structure (corporate personality), management and distribution of the fund(s) are under investigation.

1.7. Local aspects – culture

In both Dessel and Mol, the main reason to engage in the programme was the presence of the temporary storage facility at Belgoprocess, the nuclear companies and the nuclear research centre. This justification was given by just about anybody interviewed in the exploratory study before setting up the partnerships STOLA and MONA (Bergmans 2005). However, according to Bergmans, the framing of this nuclear presence was done differently in Dessel than it was (and still appears to be) in Mol. This difference in framing partly stems from the municipalities' differences in size, with Dessel having the character of a 'small rural community' (approximately 8.600 inhabitants on 2.703 ha.), and Mol having more the character of a 'small city' (approximately 32.200 inhabitants on 11.425 ha.). Still according to Bergmans, the difference in framing also follows from different social perceptions on the legacy of an industrial past and the historical development of the nuclear sites across the border of these two municipalities, with social actors in Dessel stressing more or less unanimously the advantages of the nuclear activities (e.g. employment, indirect economic benefits), while opinions in Mol were much more divided.

Bergmans (2005) indicates that nearly all contacts in Dessel referred to the nuclear presence and most importantly the LILW in temporary storage as their most important link to the siting problem. Many expressed their fears to become stuck with the interim storage (seemingly not considered to be a safe long-term solution by most experts) if no other location would be found to host a final repository. With regard to the nuclear presence and the waste in particular, Bergmans speculates that the community of Dessel had developed over the years a form of '*realpolitik*'. Dessel has learned to live with this nuclear activity over the last five decades, mostly on rather good neighbouring terms. The overall point of view was to look at this repository project as an opportunity to revive a declining nuclear sector and to make sure Dessel would not end up being Belgium's nuclear graveyard. Although Dessel does not count any anti-nuclear movements, nor a local green party, a critical reflection regarding public health and the environment was recorded; as well as a clear demand for more openness from the nuclear sector.

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seven reactors would operate for 40 years, the agency estimates that this would lead to a total 'damage cost' of 11,2 M€ for Belgium. This represents 2,3 to 2,9% of the projected technical cost of the disposal site in the case of the surface disposal option. The agency said that the deep disposal option would be about twice the cost of the surface option, but in that case, the 'radiological damage' to the environment would be significantly lower.
In the Government decision note the amount of 70 M€, at the time rather informally stated by NIRAS, can be read, but this amount lacks a solid foundation and it is unclear if it ought to be shared by STORA & MONA (& the broader region) or not.

In Mol the general attitude seemed to be prompted more by a nuclear past, than by a nuclear presence. According to Bergmans, the siting problem was mostly seen as a means to denounce the downsides of the nuclear presence in and around the municipality and to make getting rid off these nuclear liabilities part of the siting issue. The fact that the municipality of Mol has to deal with a historic waste problem (both nuclear and chemical) has been thematised by social movements. With a number of local anti-nuclear movements, a fairly strong green movement and a local green party, the attitude in Mol was therefore more heterogeneous than in Dessel. Furthermore, since most of the problems – such as the cleaning up of the most polluted sites (e.g. a brownfield where used to be an asbestos company) – call for a large-scale approach far beyond the municipal means and competences, social actors in Mol generally showed a willingness to discuss these issues on a regional level. Bergmans (2005) comes to the overall conclusion that compared to Dessel, in Mol the siting problem of LILW tended to be inextricably bound up with a negatively viewed nuclear presence. Nevertheless most local interlocutors were found sufficiently susceptible to engage in a partnership with NIRAS/ONDRAF.

In Fleurus-Farciennes, a very impoverished part of the country, the reason to engage in the process stemmed more from the fact that this could present an opportunity for local development, rather than from the nuclear character of the community. Indeed, the awareness of Fleurus-Farciennes being one of Belgium's nuclear sites was extremely low and one could therefore not speak of the existence of a 'nuclear culture' in these communities. The presence and the activities of the one nuclear company (the 'Institute for Radio-Elements' or IRE) was not widely known[10]. The activity of IRE is also rather small scale, producing a limited amount of LILW, conditioned on the company's premises. Unlike in Mol and Dessel, this nuclear activity has no fundamental impact on regional employment. The local politicians therefore were not particularly interested in the nuclear issue and the siting problem as such, but saw it as an opportunity to bring some new development to the community. As both the IRE and the only possible site for the repository were situated cross- border, neither one municipality could master this endeavour on its own. This gave them no choice but to form one inter-municipal partnership.
During the involvement process, the local green party expressed itself as opposed to Fleurus-Farciennes hosting a final disposal facility for three reasons: i) the site is far from ideal from a hydro-geological perspective, ii) the site currently does not host any of the waste (with the exemption of a very small fraction from IRE) to be disposed of in the envisaged repository, and iii) the potential site is situated in a densely populated area, literally in people's backyards. Besides, they claim this type of installation should be erected in an existing nuclear zone and Fleurus-Farciennes is not considered as such.
Interestingly enough some of the politicians seeing an opportunity at the start of the partnership, eventually decided against it once a concrete proposal was put to them.

1.8. Actors – who (entering, leaving); motivations & interests

The main actors actively involved in the Belgian RWM scene are:

NIRAS/ONDRAF (the RWM agency)
This semi-governmental organisation is entrusted with all the nuclear waste on Belgian territory, in exchange for financial guarantees from the waste producers with the aim to cover the costs of its

future management (cf. section 1.3 and 1.6). NIRAS/ONDRAF is governed by a Board of Directors appointed by the federal government. The day-to-day management is in the hand of an Executive Committee and the general management. For important decisions NIRAS/ONDRAF has to ask advice from a 'Permanent Technical Committee'. Most of the members of this committee are representatives from the major radioactive waste producers. Critics see this is a channel for the producers to affect the agency's policy (cf. infra).
NIRAS/ONDRAF has been charged with the management of all radioactive waste on Belgium territory 'of whatever origin'. The agency is competent in both the field of the management of waste generated in the nuclear fuel cycle and in the field of management of waste produced by the medical, industrial and scientific research sector. The management of fissile materials belongs to the responsibility of NIRAS/ONDRAF insofar these fissile materials are declared in excess by owner/producer. As long as these materials are not declared in excess, its management remains the responsibility of the owner/producer. Such is for example the case with the spent fuel from the nuclear power plants. NIRAS/ONDRAF can perform its tasks either by making use of its own resources or by subcontracting to third parties operating under its responsibility and supervision (including companies in which it has a shareholding) or to other independent parties. The transport of radioactive waste for instance, is subcontracted to specialised carriers. Its subsidiary, Belgoprocess, is responsible for the waste processing and conditioning operations, and for interim storage. The research and development activities within the framework of the disposal is for the greater part contracted out to the research centre SCK•CEN. The research centre acts independent from NIRAS/ONDRAF, but both are partners in the EURIDICE venture operating the underground research laboratory HADES. Other collaborators are universities, research consultancies, engineering consultancies, and other specialised companies, both at home and abroad.

Thus, in view of its mandate, NIRAS/ONDRAF main motivation and interest is finding a 'timely' solution to the problem of managing radioactive wastes of all kinds on the Belgian territory. For the LILW question, after the failed 'expertocratic' top-down approach employed in the nineties, NIRAS/ONDRAF became the main driving force behind the development of the partnership approach (by funding social science research teams to look for a socially acceptable solution). Now that a potential host community has been selected (Dessel), NIRAS/ONDRAF is currently looking to have a binding agreement on the integrated repository concept, and to have all necessary licences and government agreement to start construction by 2011. On the one hand, the timing is quite strict because the temporary interim storage facility (at the Belgoprocess site) has only limited capacity left. On the other hand, NIRAS/ONDRAF of course does not want to loose the social support that it has gained through the partnership approach (Mol will also have to be involved in further activities). In the future, NIRAS/ONDRAF has to carefully steer a 'middle course' between respecting time frames (imposed by government and structural limitations) and leaving enough time for consultation processes to take their due course.

FANC/AFCN (the Federal Agency for Nuclear Control)
FANC/AFCN is an autonomous incorporated government institution, under tutelage of the Minister of Internal Affairs. FANC/AFCN is responsible for the surveillance of nuclear activities and nuclear pollution in Belgium. Therefore the agency drafts laws and regulations and supervises the observance of these regulations. In that respect FANC/AFCN handles the applications of licences and ensures supervision and control on all activities that make use of ionising radiation. The agency also manages Telerad, a system that measures constantly the radioactivity in the air and in the river water.

10 Although this changed in the meantime following an incident at IRE end of August 2008.

Furthermore FANC/AFCN plays a role in the drawing up and execution of nuclear emergency plans. The agency in particular evaluates the consequences of a possible nuclear accident and communicates, in case of occurrence, the crisis to the public and the media. The agency is governed by a Board of Directors, appointed by the Federal Government. In order to perform its tasks, FANC/AFCN is assisted by a Scientific Council that advises on the agency's surveillance policy and on licensing applications. The council consists of experts within the field of nuclear energy and certain safety disciplines, appointed by the federal government. The operation of the agency is entirely financed by yearly retributions from the companies and organisations holding nuclear licenses.

In the context of the partnerships, FANC/AFCN chose not to be involved officially, since it wanted to keep its independence from NIRAS/ONDRAF (official participation could have been interpreted as an endorsement of the integrated project proposal coming out of the partnership negotiations). In the Mol-Dessel partnerships, one FANC/AFCN representative acted as an 'observer' to the proceedings. However, since the start of the 'post-selection' phase, FANC/AFCN will take on a more active role as it is responsible for the licensing procedure.

Citizens / local stakeholders

We have already talked about who the local stakeholders are and speculated on their main motivations (past and future) (cf. 1.2, 1.7). Citizens have been formally involved through the partnerships and follow-up structures. No other initiatives, neither 'bottom up' or institutional have been organised alongside the partnership process. It is important to note here that only local citizens of the envisaged municipalities have been formally invited to participate. No additional inquiries have been organised on national level.

Now that the Mol and Dessel municipal councils have both agreed on the proposals put forward by their respective partnerships, these partnerships of course show a large interest in following up the further developments in LILW repository siting and ensuring that the necessary conditions specified in the integrated project proposals (including the socio-cultural 'added value') will be met. Besides this, the partnerships will continue to communicate on RWM issues to the 'grassroots level' of their communities.

Main waste 'producers' (Electrabel-Suez, FBFC, Belgonucléaire, Belgian state)

The waste producers were not directly involved in the partnerships, though of course they have a stake in the issue of LILW management. In general, the main waste producers are rather keen to find a suitable site, if not for the money already invested in this search, then to justify their claim that the problem of radioactive waste is a solvable one. Besides this, waste producers of course also have an interest in devolving their responsibilities for the radioactive wastes they produce to NIRAS/ONDRAF at 'competitive' tariffs. NIRAS/ONDRAF is to a large extent dependent on approval and financing of its strategies by the main waste producers, who are represented in the 'permanent technical committee'. One can see this as an emanation of the "polluter pays principle" – except that in this case, one should rather speak of a "polluter pays and controls" principle, since the 'permanent technical committee' de facto has to approve of NIRAS/ONDRAF's research, investment and communication programme. The disadvantage of this system is rather evident: it tends to exclude the possibility of contradictory expertise (or at least makes this more difficult), or even independent research activities. It is of course also in the interest of the waste producers that the radioactive wastes are managed in a responsible

way (i.e. meeting international standards, respecting legal procedures, etc.) since any 'negative publicity' will also have an impact on the perceived legitimacy of their activities.

Environmental NGOs (Greenpeace, Bond Beter Leefmilieu, local groups, …)

Environmental NGOs did not take part in the partnerships as such; although individual members of such groups could (and did) of course participate in their own name, as a citizen. In general the environmental movement never truly campaigned against the partnerships as such. Occasionally Greenpeace and other ecologists commenting in the national press on the partnership approach (and a few local players in Mol and Fleurus-Farciennes) accused the partnerships of 'selling out' and being 'bribed' into a solution favoured only by NIRAS/ONDRAF. Nevertheless most other local parties involved (particularly in Mol and Dessel) seem convinced they had enough control over the situation and enough input of their own to be able to stand firm against any accusations of bribery. At the end of the participatory process, Greenpeace and Bond Beter Leefmilieu rejected the integrated project proposals put forward by MONA and STOLA. Following the withdrawal of Fleurus and Farciennes a press release was issued to express concern about the disposal method chosen in Mol and Dessel, demanding the government not to approve of their candidacies.

2. Aspects of participation

2.1. What decision had to be made?

In the programme phase which formally finished in June 2006 (with the government decision in principle to opt for a surface disposal in Dessel), participation was focussed on **finding a site to host a LILW repository**. Whereas before 1998 the approach from NIRAS was to engineer the repository design and then look for a complementary site, the partnership approach aimed for agreement of the potential host community on a **site-specific repository design.** In the work programme LILW the selection of the disposal method is made dependent on the selection of the site. The government (in a decision of January 1998) had explicitly asked NIRAS/ONDRAF to, at least on a generic level, study both the surface and the deep disposal option. For STOLA and MONA both options were considered and eventually agreed upon as two valuable alternatives. In Fleurus-Farciennes the situation was somewhat different, as site conditions did not allow of neither surface nor deep disposal. The concept designed for this particular site therefore is more to be seen as near surface disposal.

An important aspect of the partnership approach was the introduction of the notion of an **integrated repository project** and the idea to jointly study and develop this project. This means that the partnerships did not only decide (or at least advise their municipal councils) on the possible acceptance of a repository on their territory (simply 'yes' or 'no'). Through the partnership, the local community was also, together with NIRAS, to decide on all repository related aspects and conditions (design, technical, environmental, aesthetical, etc.) for accepting such a repository on their territory. Furthermore, an accompanying local project that seeks to bring added value to the community was to be developed. The final outcome of the discussions in the partnership was therefore expected to be either a rejection (i.e. based on all the information gathered, the community decides against the repository project for technical, safety or other reasons) or a mutual integrated repository project, carried by both local stakeholders and NIRAS/ONDRAF.

2.2. Initiative (promoter of the participation process)

After the failure of top-down approaches to siting a LILW repository, the federal government in January 1998 took the crucial decision that by means of a long-term solution for short-lived intermediate and low-level waste, the agency should opt for a final repository, or at least one that could progressively become 'final', whether that be on the surface, or underground. The government decision furthermore stipulated that NIRAS/ONDRAF should start looking for a potential site first and foremost in the existing nuclear areas and additionally in any municipality that would be willing to volunteer. In addition, the agency was asked not just to investigate the technical feasibility of constructing a repository facility, but also to develop "…*methods, including management and negotiation mechanisms, to integrate the repository facility at the local level*…". This governmental decision thus endorsed the shift in approach NIRAS/ONDRAF was beginning to display at that time. RWM was more and more positioned as a societal question with technical implications, rather than the other way around. NIRAS/ONDRAF would no longer be looking for the ideal site to construct the ideal concept, but would opt for a voluntary siting procedure within existing nuclear communities.

2.3. Legal, economic, political background

The process for siting a LILW repository was set up as a voluntary process, where potential host communities had to declare themselves (by a municipal council decision) explicitly prepared to study and discuss the possibility of hosting such facility.
Engagement in this site investigation phase did not mean an immediate engagement to actually host the facility. Participation in NIRAS/ONDRAF's partnership approach gave the municipalities a de facto veto right. Although no legal basis for such a local veto right existed, NIRAS-ONDRAF's director-general at the time, as well as his successor, solemnly declared to uphold this gentlemen's agreement (cf. section 2.1). The veto right meant that, at any given point, the local stakeholders could retract their collaboration, thus gaining a considerable power over the initiator (in this case NIRAS/ONDRAF). Indeed, the veto right made it possible for the local communities to go a long way in the process, without having to commit to more than moving unto the next step. It thus clearly empowered the local communities and perhaps one could even say that without it, there might not have been any partnerships.
For Fleurus-Farciennes, the situation was fairly simple. If either municipality vetoed against a repository, then that would be the end of both communities involvement in LILW management. Effectively, after Fleurus-Farciennes' withdrawal, NIRAS/ONDRAF no longer had an interest in continuing the PaLoFF partnership.
For Mol and even more particularly for Dessel, the situation was completely different. Here the veto right cannot prevent the waste to stay in the community. On the contrary, if all other potential hosts vetoed against, these communities would be stuck with the consequences. But while they could not veto 'their' waste out of their municipality, the people from Dessel and Mol could use the veto to block options they do not agree with.
By giving them this veto right, NIRAS/ONDRAF on the other hand reassured itself of strong allies against both the waste producers (sometimes unwilling to pay for more research and site investigations) and the federal government (not always keen on taking decisions on sensitive issues such as these).

Both aspects of the project (the 'technical' repository part and the 'socio-economic' part) were to be considered as interdependent and inseparable elements of one integrated project. Vis-à-vis the participating local communities, NIRAS/ONDRAF engaged itself to uphold this principle and to never consider commencing the construction of a disposal facility without being capable of fully guaranteeing the realisation of the accompanying local project. Since the final decision on the choice of a potential host site was in the hands of the Belgian federal government and not of the director-general of NIRAS/ONDRAF, this engagement from NIRAS/ONDRAF took more the form of a gentlemen's agreement. This appears to have been accepted by the participating communities, as the interactions between the community representatives and NIRAS/ONDRAF were generally productive over the entire period of partnership functioning up till the approval of the final partnership proposals[11].
The bylaws of STOLA, MONA and PaLoFF referred to the object of the partnership being "…*to study the possibility of hosting a LILW-repository and to develop an integrated project proposal to be presented to the federal government*…". The partnerships were thus to become the carriers of the site investigations and the repository design and were to deal with all related issues such as safety, social, economic and ecological impact, urban planning, etc. Up until a partnership had reached a conclusion and presented it to the municipal council, the partnership was the **sole forum** to discuss the options for developing LILW-repository in a community (i.e. no 'parallel negotiations' on other political levels

11 The events leading up to the government decision in favour of Dessel showed however how easily trustful relationships can be impaired (cf. 2.7).

were organised). The lifetime of the partnerships were in principal limited in time, namely until a decision on an integrated project (including a rejection to host the repository facility) would be made. However for PaLoFF the bylaws stipulated the continuation of the organisation, even after NIRAS/ONDRAF should back out (both as member and sole sponsor of the organisation). This willingness to continue even without NIRAS/ONDRAF stems from the fact that many local partners saw this as an opportunity to unite and discuss options for local development with or without a radioactive waste facility as the core for this development[12].

In order to allow the local participants to work independently, each partnership received an annual budget of approximately 250.000 EURO from NIRAS/ONDRAF. On top of that a one-off budget of 150.000 EURO was set aside for the elaboration of the project proposal (STOLA for instance used some of this money to have an animated film made of the repository concept) and for socio-economic studies. This budget was managed by the executive committee. The annual budget served to cover general expenses such as the salaries of the project coordinators, all communication activities and all 'operational costs' (stationary, telephone bills, mailing, electricity, etc.), as well as logistical support for the working groups. This 'logistical support' should be interpreted in the broadest possible way. For instance, 'logistical support' allowed the partnerships to invite the experts of their choice, to order the studies they thought necessary and to pay for site visits or other relevant trips or conferences. The fact however that the partnership budget could be used to order research or studies does not mean that all research activities had to be paid for by the partnerships. All necessary research with regard to the technical and safety aspects of the repository facility remained NIRAS/ONDRAF's responsibility. Still it was agreed that the partnerships could decide they needed additional research in certain areas or wanted a second opinion. Such expenses as a rule also fell under the responsibility of NIRAS/ONDRAF. All non-directly repository related research was paid for by the partnership.
The partnerships were originally thought to have rounded up in about two years time, but for many different reasons the work took quite a bit longer. As after three years there still was enough money available to the partnerships and a final report was more or less in sight, it was agreed by all parties that it was not needed for NIRAS/ONDRAF to inject more money before the issuing of the final reports.

2.4. Inclusion – Participants

As the willingness of a community to host a repository depends on the level of social acceptance for this project, the partnership approach aimed at engaging a broad range of local parties concerned, as well as individual citizens. The question whether a partnership had to be established on a regional or on a strictly local level was subject to some debate. In order to make the threshold for participation as low as possible, a *local* partnership (in the strictest sense of the word) was recommended by the university researchers and agreed upon by NIRAS/ONDRAF and a majority of the local stakeholders. So at the first stage of the participatory siting process (i.e. the joint development of an integrated project proposal), emphasis was laid on the local level, attempting to make it a truly bottom-up exercise.
It was considered important for the local representation to be as broad as possible, assembling not only local politicians, but also delegates from environmental, cultural, social, socio-economic and other locally based organisations (thematic representativeness instead of elected or demographic representativeness[13]). These **representatives from the local civil society** were invited to become NIRAS/ONDRAF's partners in the local partnership. These partners seated in the decision-making

12 In reality however, PaLoFF seized to exist after the government's choice for Dessel and the NIRAS/ONDRAF budget was spent.

13 COWAM II, Roadmap for Local Committee Construction (WP1).

bodies of the partnership (general assembly and executive committee – cf. section 1.2.) and were the ones casting their vote on the proposed project before handing it to the municipality. They were taken to be more or less representative for the different views and sensitivities regarding both waste issue and the local community life. The civil society representatives approach thus aimed for broad input as well as output (feedback to the rank and file).

Regarding the **participation of local politicians**, in Dessel it was a deliberate choice to reserve the political representation in the general assembly and executive committee for council members only. As the final word in putting the community forward as a potential host for a repository facility laid with the municipal council, it was considered essential that council members were fully aware of the implications of their decision. In Mol and Fleurus-Farciennes the participation of council members was less formalised and local political parties were given more freedom to designate there representatives.

Apart from the organised members of the municipality, the partnerships also invited **local individual citizens** to take part in the working group discussions, preparing the project proposal in detail. In MONA about 33% of the working group members were individual citizens. In STOLA the 'unattached' participants of the working groups represented about 31%; while in PaLoFF this was 24% (Bergmans et al. 2006). However, in PaLoFF these individual participants were not solely directed to the working groups. They were also taken up as affiliated members of the General Assembly, which means they could participate in the debate, but were not permitted to vote. Additionally, one of the working groups in PaLoFF (the working group on local development for Fleurus) declared its sessions open for the public. Yet no member of the public ever took advantage of this possibility.

Regional authorities and administrations (as well as those representing other political decision levels) were not excluded from the concept proposition, but their role was limited to an advisory one. The idea was that in this way, interests that go beyond the municipal boundaries could also be expressed, without having a dominant or decisive influence on local decision-making. However, none of the partnerships actively sought to engage that type of partner.

FANC/AFCN was only asked (at least by STOLA and MONA) to take up the role of 'associated member', but the regulator declined, fearing this might affect its position as a neutral assessor in a later phase of the project. The FANC/AFCN-collaborator since the fall of 2001 residing in Dessel as the *'*local antenna for the Mol-Dessel region*'* did however occasionally take part as an observer in the more technical working groups, more particularly those dealing with issues as safety and impact on public health and the environment (cf. section 1.8.).

2.5. Inclusion – Issues / topics

Looking at stakeholder involvement in RWM in Belgium we see a much focused, but somewhat isolated approach, concentrated around **participation of local stakeholders in a siting process for a final repository for *LILW***. In spite of several declarations of intent, a participatory approach thus far has not crystallised for any other aspect of RWM. This seems to result to a large degree from the rather fragmented and incremental way through which the Belgian RWM and nuclear energy policy in general is developed. For instance separate programmes exist for HLW and for LILW, both in terms of general management and R&D.
However, worth mentioning here is the fact that the partnerships not only occupied themselves with the primary goal of considering the possibility to host a LILW repository. In all three we also see the

introduction of secondary objects and objectives. In MONA and PaLoFF this was explicitly and implicitly put down in the bylaws. The MONA bylaws stipulated that "…*within the context of the partnership,* ***other aspects of RWM*** *can be also discussed*…". Without the bylaws providing for it, in STOLA too a good number of secondary objects surfaced along the way. Such were for instance the return of shipments of vitrified waste from la Hague to the storage facility at Belgoprocess, the relation between the nuclear companies and the community of Dessel, the future of the nuclear sector, and so on. As mentioned before, after the government decision both MONA and STORA created a separate working group dedicated to general nuclear issues, hereby formally enlarging their scope beyond the siting process for a final repository for LILW[14].

2.6. Time frame (history, outlook)

The siting of a LILW repository takes place in a number of phases:

i) a 'pre-design' phase, involving the functioning of local partnerships in the communities who volunteered to be part of the process, leading to different proposals for an integrated repository concept and a government decision in principle on a choice for one potential host community (i.e. Dessel);

ii) a 'design' phase, involving the detailed designing of an integrated LILW repository project in Dessel, leading to a binding agreement between NIRAS/ONDRAF and the community of Dessel, but also involving the community of Mol, obtainment of the necessary licenses (issued by FANC/AFCN), and a government decision to go ahead with the implementation of the project;

iii) the implementation phase, involving the construction of the LILW repository and ending with the obtainment of an exploitation license (issued by FANC/AFCN);

iv) the operational phase, involving the gradual filling of the repository with LILW, leading to the closure of the repository; and

v) a post-closure phase.

Phase i) has been completed. After quite intense discussions and collaboration with NIRAS/ONDRAF, all three partnerships developed an integrated project proposal that was considered to be acceptable to all parties involved, which was subsequently put to the approval of the respective municipal councils. The two Flemish partnerships MONA (Mol) and STORA (Dessel) were appointed as official candidates to host a LILW-repository following a municipal council decision in both communities. A negative vote in Fleurus, followed by an abstention in Farciennes ended in a withdrawal of the PaloFF proposal. In May 2006 NIRAS/ONDRAF submitted its final report (with Dessel and Mol as candidate municipalities) to the federal government. The government was asked to choose a repository option (surface or deep geological) and one site (Mol or Dessel). NIRAS/ONDRAF, Mol as well as Dessel had insisted on a prompt decision. A month later, by the end of June 2006, the government took a decision in principle. It opted for surface disposal and sited the

14 Note that within STORA this new working group was first called “radioactive waste”, explicitly referring to all types of nuclear waste on the territory of Dessel), not only LILW. Only later it was changed into “nuclear issues”.

repository in Dessel. The decision furthermore stressed the need for continued dialogue with the local people (from the hosting and surrounding communities).

The decision to work with Dessel as the 'preferred candidate' marked the transition to stage ii), in which the license application files that are necessary to start the construction of the repository are being prepared. In this regard, a consultation process between NIRAS/ONDRAF and FANC/AFCN has started. A construction and environmental license and a safety report are required before the construction of the repository can start.
According to NIRAS/ONDRAF, a LILW repository can be operational in 2015-2020 at the earliest. The operational stage (iv), i.e. filling the repository, will take about thirty years and will be followed by the final covering and closure of the repository, and a monitoring phase of a few hundred years[15].

2.7. Decision (what, who, how, why, ...)

As mentioned before, it took the federal government only a month to reply after the approval by the municipal councils of Dessel and Mol and the submission of the final report by NIRAS/ONDRAF. So the communities got the quick decision they asked for, but not everything worked out so smoothly. After the governmental decision, a 'confidential' NIRAS/ONDRAF document surfaced in which the agency explicitly stated to prefer Dessel over Mol. This was against all previous promises made: NIRAS/ONDRAF had always declared not to make a choice between the two municipalities. Now it had selected a 'favourite', without even informing the involved parties. Although practical, geographical issues must have played a decisive role too (the site in Dessel is located right next to the temporary storage at the site of Belgoprocess), from this ‘confidential’ note one can understand that Dessel has been 'rewarded' for its more co-operative attitude in the course of the partnership negotiations (e.g. the Dessel municipal council unanimously agreed on the partnership proposal, while in Mol there where some dissenting votes and abstentions). It is assumed that the absence of a green party in Dessel was one of the factors that played a role in the agency's decision, as it obviously envisages 'easier' cooperation with the municipality of Dessel in this respect. The consequence of this fact is distrust in Mol towards NIRAS/ONDRAF, especially towards the director-general who is responsible for this document. The incident shows how a trust relation that has been build up over several years can be broken down very quickly if a party does not stick to his word.
STORA and the community of Dessel seem satisfied with the decision taken by government. The government claimed in her decision that neighbouring communities have to be able to participate in the following phase of the repository project. Dessel is prepared to take Mol on board in the future development of the project, although they prefer autonomy in the final decisions. Mol and MONA prefer an equal share in the final decisions and stress the need for guarantees that NIRAS/ONDRAF will not act arbitrarily again in the future. Among the participants in the process and particularly the local politicians, there is a feeling of decreasing control over the situation. NIRAS/ONDRAF appears to be very focussed on moving ahead, despite the concerns of Dessel and Mol about the strictness of timing. The restructuring of the partnerships and the instalment of a joint steering committee however can be seen as a sign of a renewed 'understanding' between all partners, as it opened opportunities for a new process of negotiation and co-design, involving NIRAS/ONDRAF and both STORA and MONA. However, many subjects regarding long term governance still have to be dealt with.
Among others, issues to be investigated and elaborated on in the near future are:

15 See footnote 8.

- The issue of participating in the monitoring of the site itself (construction, exploitation and post-closure monitoring)
- For both partnerships, the practical organisation of representation and responsibilities and the (practical and in principle) division and degree of independence with regard to the management of the societal compensation.
- The elaboration to include a larger scope of stakeholders: who and what (neighbouring municipalities, different actors from the region around the nuclear zone Mol – Dessel – Geel, the province of Antwerp, the Flemish region, the federal tutelage minister(s) and administration, FANC/AFCN, the waste producers…).
- The definition of process, players and roles and timeline of the projects development (NIRAS/ONDRAF expresses an urge for an intermediary evaluation of the process of co-design: 'although the engagement and expertise from the partnership volunteers is extremely valuable and important, the size, timing and complexity of the project poses difficulties with regard to involvement in the development of all project aspects'[16].

2.8. Effects of the participation process

When discussing the effects of the participation process, one needs to distinguish between the impacts of the participation process on the actual pre-design of the LILW repository (as originally proposed by NIRAS/ONDRAF) and the more 'political' effects of participation.

Regarding the impact on the pre-design of the repository, however genuine the intent to jointly develop the project, in practice the initiative often remained with NIRAS/ONDRAF. However, this did not mean there was no critical reflection about the propositions made and their implications (safety, surveillance, societal, health and environmental impact…).
In fact, very early in the process the partnerships took up the role of 'patron' positioning NIRAS/ONDRAF in the role of architect. In Fleurus-Farciennes this was manifested by the demand to draft a first design before even entering into a full-blown partnership. For MONA and particularly STOLA, this can be deduced from the vocabulary used (referring to particular roles and responsibilities in the field of building and constructing) and the way the working group gatherings were set in scene (Bergmans 2005). As technical experts from NIRAS/ONDRAF proposed design concepts and basic characteristics for the development of the technical issues from the start, one could observe that many of the local stakeholders became knowledgeable about the technical issues at stake in the run of the process themselves. In addition, they each brought knowledge from their specific 'social background' into the process. This two-way input provided the basis for the necessary 'synergetic' expertise: technical knowledge that was tested to the conditions of the real social environment and *vice versa*. Of course there will always be a (practical) limit to the expertise one can gain in another area. Therefore it is evident that mutual trust remains another essential element in the development of a proposed solution. Although encouraged by NIRAS/ONDRAF, the initiative for the work done by the working groups on local development was to a larger extent situated with the partnerships, and impact of ideas about 'local added value' on the integrated project is clear (cf. the gentlemen's agreement referred to in 2.3).

Regarding the 'political' effects, except for the end responsibility with regard to the choice for one community as a potential host for a LILW repository, the partnership model guaranteed direct

16 NIRAS Masterplan in development version 1.0, p.76-77

influence on the policy implemented in their territory. The model thus swayed transparency in decision making and realised a clear attempt to restructure the traditional technocratic, top-down policy, thus at making a sense of empowerment and ownership of the local community over the project possible. .
Also, as mentioned before, 'follow-up structures' have been proposed and accepted as 'accompanying measures' in the further development of a LILW repository (see 1.2). Summarized the biggest differences are that STORA and MONA are no longer formally supposed to be limited in time (although a regular internal evaluation of the goals and objectives was recorded in the new bylaws) and are also looking at issues beyond the siting of LILW. One important topic is the presence of the other waste categories in temporary storage at the site of Belgoprocess. This does not mean either partnership will be developing a project proposal for a disposal facility of HLW. What it does mean, is that through the partnerships the communities of Dessel and Mol have started well beforehand to take position, in case the 'integrated action programme' and dialogue on the long-term management of high-level waste announced by NIRAS/ONDRAF ever crystallises.

On the other hand, influence of local stakeholders on national long-term RWM policy is still limited (whether about low- or high-level waste), as this policy covers more than only site conceptualisation and selection. It should be noted that this is not only a problem for RWM. Direct influence of local stakeholders on national policy remains limited to specific exercises organised by the federal and regional governments (e.g. focus groups and workshops on genetically modified food or energy policy). Belgium has also no tradition of organising public consultations (as it is for instance the case in Sweden or Denmark).

3. Evaluation of the Belgian partnership approach : applicability of the partnership model as a 'tool' to organise local democracy for engagement in RWM Governance

It is clear that a 'description' can never be entirely neutral; hence, the way we have described the Belgian partnership approach might be read in a way that already suggests an evaluation. The next part is more explicitly evaluative, although it should not be read as prescriptions. We do hope to provide insights that may prove relevant to ***all those interested and affected*** by possible future activities in the field of RWM. In the end, we should count on the intelligence and creativity of this audience to distill from this report those pieces of information relevant to them.
We would like to point out two further issues. Firstly, the division in different evaluative titles is necessary for reading purposes, but clearly all titles are interconnected. Secondly, the Belgian process of RWM is at the moment in a very dynamic and developing stage, so the research brief as a whole will unavoidably contain some superseded elements. Nevertheless we have tried to distract general basic ideas and evaluations.

3.1 Quality of local democracy

- o Modes of mobilisation

Looking at the overall history of the search for a potential host site for a LILW repository in Belgium, we believe it is fair to say that the management system has shown its lack of pro-activity in reflecting on (and acting upon) its wider role in society. It is only when the 'traditional' approach fails to deliver solutions that more openings are created towards public involvement. Radioactive waste management was (and still is) to a very large extent the work of scientific experts working within 'organisational boundaries' (universities, utilities, NIRAS/ONDRAF). It is only at the occasion of 'public outcry' and opposition that the political aspects are revealed and discussed more or less openly. LILW management has been through such a crisis of public opposition in the mid-'90s (when NIRAS/ONDRAF was looking for a candidate community to host a repository following a strictly 'scientific' top-down approach) and has consequently been 'opened up' to the public. Intermediate- and high-level waste management is still very much in a phase of fundamental research (since the mid-'70) with almost no societal debate (NIRAS/ONDRAF has only just started to organise the first stages of consultation).
Additionally, there is a strong argument that the Belgian siting process for a LILW repository was not entirely a voluntary one (see also 2.2). The government had indeed asked NIRAS/ONDRAF to perform site investigations first and foremost in the existing nuclear communities, and the only municipalities that engaged themselves in the process were nuclear communities. So there are actually good grounds to claim there was a certain degree of 'forced voluntarism' involved. In the context of RWM, this seems to a large extent unavoidable, as at least part of the waste to be disposed of is already stored at one or more locations. Besides, as a counter-argument, one could posit that not all Belgian nuclear communities (e.g. Doel and Tihange, where the Belgian NPPs are located) were willing to engage in the siting process and NIRAS/ONDRAF abstained from further site investigations in those locations.

- Inclusiveness

An essential dimension of participatory processes from the point of view of 'enhancing democracy' relates to the degree to which they are inclusive of the various categories of relevant stakeholders. On the one hand, some participatory processes are very carefully framed and the actors invited are restrictively defined. On the other hand, some processes are kept very open, and actors can be co-opted for participatory purposes by the decision makers and the stakeholders themselves, or participation can even be opened up to 'ordinary citizens' not representing particular interests. How exactly the boundaries of inclusiveness are drawn is a matter of ethics and pragmatics. The ethics of deliberation is very clear on this point: all those who are potentially affected by a risk should be given the opportunity to participate in a meaningful way. In the case of siting a LILW repository, there is therefore a strong ethical argument in favour of a 'regional' approach (the notion of a 'region' is kept vague on purpose, depending on the likely 'area of affectedness'), uniting a 'community at risk' in common dialogue. On the other hand, pragmatic considerations in the interest of maximising social inclusiveness (i.e. inclusion of 'concerned citizens' at the 'grassroots level') might lead towards a preference for a participative approach centred on existing administrative boundaries ('local' participation as defined by administrative authority over particular territories).

Who counts or should count as a 'stakeholder' in the pre-operational phase of the Belgian LILW repository was decided in consultation between NIRAS/ONDRAF (the project proponent), the university partner responsible for developing the partnership concept, and local stakeholders. As mentioned, there was some initial debate concerning the need for participation on a regional level (a combined partnership for Dessel/Mol, and possible involvement of the broader region) versus participation on a strictly local level (i.e. separate partnerships in both Dessel and Mol and no active involvement of the broader region). The second option was chosen and defended on the grounds that a strictly local definition of participation would allow for a very inclusive participation of all interested citizens (and not only the representatives of organised interests). Regional authorities and administrations (as well as those representing other political decision levels) were not excluded from the concept proposition (these actors were allowed to play an 'advisory role' in the partnership negotiations). However, although MONA mentioned the concern for the broader region, none of the partnerships actively sought to engage that type of partner.

Participation was locally inclusive and intense (discussions taking nearly six years to be completed) in the partnerships, but it is not clear why a 'trade-off' has to be made on ethical grounds between the principles of 'inclusiveness' (more fully realised in a strictly local approach) vs. 'early involvement of all those who will be affected by a certain risk' (pointing towards a supposedly less inclusive regional approach). Apart from the motive of not only wanting the formal representatives of organised interests to participate, it seems to us that the choice for a local approach was made more on pragmatic grounds (i.e. the unwillingness of Dessel to enter into a combined partnership with Mol due to different cultural backgrounds and earlier 'frictions'). In the current phase (the design phase), MONA and STORA work together in a 'combined structure' (the steering committee), but the individual partnerships remain in place, and one might presume that the community of Dessel is the 'privileged' partner after having been selected as a potential host for the LILW repository. Also in the current phase, under influence of MONA, the broader region is mentioned in discussions concerning the local development fund, but practical elaborations on including this regional party remain unclear, and even then the level, quality and timing of inclusion can be questioned.

So clearly, unfortunately, there is no easy answer to balancing ethical and pragmatic considerations. However it is advisable that the vulnerability of the strictly 'pragmatic' solution to strategic action at higher administrative levels in the case of siting a LILW repository (e.g. possibility of numerous municipalities 'competing' for a repository, or the risk of the broader region objecting only when the licensing phase has already started) should be considered very carefully. In this case, a 'mixed form'

(e.g. separate local partnerships operating but involving the broader region actively and meeting at regular intervals in a common overarching structure, in particular to discuss initial 'framing' at the beginning and means of collating the results of individual partnerships at the end of the proceedings) seems like an appropriate way of balancing ethics and pragmatics, yielding highest chances of something that 'works right'.

- Ethical codes of conduct

Ethical behaviour will likely be a crucial factor for the success of public participation. Research shows that only 21% / 33% of Belgians would trust government / the national waste management agency to give correct information about RWM (vs. 43% for NGOs and 50% for independent scientists (Eurobarometer, 2005)). Neither FANC/AFCN nor NIRAS/ONDRAF has adopted specific formal guidelines on ethical conduct, so that there is no official 'benchmark' against which their behaviour in the partnerships can be tested. In the case of NIRAS/ONDRAF (as mentioned before, FANC/AFCN did not yet participate actively in the partnerships), some indications on this can be gained from the internal evaluation exercise organised in the three Belgian partnerships[17]. Concerning its perceived independence from the nuclear industry, the result is rather glum: even after intensive participation, 80% / 75% of participants in MONA / STOLA is convinced that NIRAS/ONDRAF is strongly dependent on the nuclear sector. However, this perception did not seem to have a negative impact on NIRAS/ONDRAF's trustworthiness as a partner: 95% / 100% of participants in MONA/STOLA in June 2005 expressed their appreciation for the agency's functioning in this regard. The fact that the partnerships could function independently from NIRAS/ONDRAF (most significantly expressed in their power to veto out of the process at any time) seems to be the main reason behind this positive evaluation. Furthermore, these results should be qualified by some of the statements expressed in the focus group discussions which were part of the latter internal evaluation. There it was revealed that the high level of trust only pertained to the NIRAS/ONDRAF collaborators in the partnerships, but not to its Board of Directors. Some talked of the agency's 'dual face': one shown in the local context, the other in 'Brussels'. This perception was of course only strengthened by the subsequent 'leaking' of the confidential note addressed by NIRAS/ONDRAF's general manager to the Minister of Energy (cf. Section 2. 7).

In the case of FANC/AFCN, the degree to which this organisation is seen to be able to act independently from nuclear industry interests will be of high importance for the conduct of public participation. There is some reason for concern here. The FANC/AFCN was created by law in 1994 (i.e. some 20 years after the first nuclear power plants started delivering electricity), but became operational as late as September 2001, and has for the largest part of its operational history been plagued by (political) controversies which to a certain extent impair its ability to function properly. Indeed, criticism on FANC/AFCN is often harsh. The most heard comments are about the closed character of the organisation, about the shortage on staff and about the slackness with which the agency seemingly responds to its legally defined tasks. The question what constitutes an effective regulatory body – and perhaps more importantly, one that is seen to be effective – is of course very complex, but nevertheless some factors stand out as being of more or less crucial importance. Israelsson (2005) calls these the 'cornerstones' of a nuclear regulatory agency, and he identifies four of these: i) the existence of a distinct legislative framework; ii) the independence and separation of regulatory functions; iii) a suiting strategy for inspection and control; and iv) a set of effective enforcement powers. Taking these cornerstones, supplemented by more specific criteria, as a guideline for assessing FANC/AFCN's (potential for) legitimacy 'in the public eye' could be an interesting venue for inquiry when thinking about the applicability of the partnership approach.

When talking about codes of conduct, local stakeholders mostly fall outside scrutiny. Yet stakeholders have an ethical responsibility too when taking up a role in decision-making. Ethical self reflexion shouldn't be constrained to non-local, professional actors. The fact that local committees are often sponsored with public resources (ex. in the Belgian case, the partnerships, via NIRAS/ONDRAF, benefit from the money collected from all Belgian citizens, through paying their taxes and electricity bills) only spurs this thought.

3.2 Quality of multilevel governance

- Multilevel inclusive governance

There are many disadvantages to the tiered segmentation of decision making, and they are observable also in the case of the Belgian partnerships.
Firstly tiered segmentation of responsibility leads to the isolation of aspects of issues or problems from their actual context (e.g. first failed attempt at top-down siting decision in the '90s). The relevance of these single dimension solutions are called into question by local actors, who remain confronted with the full complexity of the situation. On the other hand, it may lead in the end to taking such problems out of the hands of the local actors, because these are managed at a higher tier than the regional or local level (e.g. the final choice between potential host sites was made without being transparent on the criteria on which this choice was based). This results in the local actors being excluded from the options and decision-making processes, although they impinge on their daily life.
The local communities play a key role in determining reliable governance conditions for RWM because they have the special ability to take a rounded view of the issues against the background of their local circumstances (Final Synthesis Report COWAM II, p.7). Therefore, the reinforcement of the democratic participation of local actors not only at the local or regional, but also at the national and even European levels of decision-making is a decisive factor if there is to be improvement in the governance of the nuclear activities and in the quality of decision making itself. Such new approaches should in the first instance make possible a participatory, inclusive and contextual evaluation in a local or regional context, prior to the taking of decisions at the national level if necessary. Starting from strictly 'local' problems, the problem framing could then be progressively further 'opened up' so that all aspects (economic, ethical, political and social) of the problem – formulated at a strategic level– can be taken into consideration.

Provisions made to enable local actors to formally emerge as co-actors in the higher decision-making spheres (an approach which is lacking up till now in the Belgian partnership experience) should not be seen as an alternative to representative democracy, which continues to play its role in the decision-making process. The legitimacy of actors and stakeholders does not depend on their status as the representatives or emissaries of a particular interest group. Rather, in their diversity and in their closeness to the local and regional context, these actors can make a decisive contribution to the robustness and the quality of the decision-making process. In this regard, an increasing role for local actors is taking shape in the European Union and in the Member States, by federating the networks of the relevant local area or regional communities concerned with the nuclear industry. One could for instance point out the structuring of local and regional communities in Spain (AMAC), Great Britain (NuLeAF), and at the European level (GMF). Similarly, local commissions have engaged in an active federative approach not only in France (ANCLI), but also in Spain and the United Kingdom. They are currently setting up a European network (EUROCLI)[18].

17 This evaluation is on file with the authors.

18 On networking and federations, also see COWAM II, Roadmap for Local Committee Construction (WP1), p.19.

- A balanced articulation of participation and decision making

The implementation of democratic participation or inclusion implies that a clear distinction be made between the preparation and information stages on the one hand, and decision making on the other. The commitment of new categories of actors to the decision-making preparation phase does not necessarily imply their involvement in the actual decision. The legitimacy and responsibility of public and private decision-makers must be respected to make participation possible. Nevertheless, participation or inclusion is meaningful only if conditions are brought into being such that the participation can effectively influence the outcome of the decision. Therefore, these conditions should be discussed at the very early stages of a participatory initiative, and should of course be respected over the entire course of the process. It should be clear that misleading stakeholders on this account can cause an instant loss of credibility which can take a long time to be restored (again the intransparant criteria on which the final choice between potential host sites was made within the Belgian case serves as a good example).

- A step-wise decision-making process, involving all partners from the early stages

Many states use or intend to use a 'step-wise' process for developing and implementing a RWM programme, and for good reasons. The Belgian experience shows that a (costly) reassessment becomes necessary when past decisions are not reached through a socially acceptable process. What is meant by a ‘step-wise’ process is that states (sometimes under the pressure of EU directives) are developing or implementing comprehensive strategies for dealing with all types of radioactive waste on their territory (cf. ex. our expressed concerns with regard to the rather isolated treatment of LILW in Belgium). Integrated plans start from a generic strategic discussion and go on to set out all stages in the decision-making process, including a discussion of the activities which have to occur before a programme moves from one stage to another. A broad understanding of all the steps involved in decision making has the advantage of developing a basis for decisions by all partners (industry, regulator, authorities, regions, municipalities, local partnerships, etc.), while still maintaining independence with regard to the actual decisions taken (one can agree on the basis for decisions without necessary agreeing on the decision that will be taken on this basis). In the case of nuclear waste, ‘all partners’ is likely also to include neighboring countries. Transboundary risk considerations will also have to be addressed in the Belgian case, as Dessel lies close to the Dutch border, and both Belgium and the Netherlands are signatories to the 'Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management'[19].

- Striving for a fair and balanced distribution of (dis-)advantages at all negotiation levels

The problem of justification of local committees in democratic societies can be illustrated by opposing two views. One possible point of view is that issues which are of interest to the 'nation as a whole' should be decided upon at the national level, through the 'traditional' channels of representative democracy. The rationale is then that representative democracy by definition takes into account public concerns. Another point of view holds that when issues disproportionately affect a single locality, that locality should also be given a disproportionate decision-making power, even if the issues

19 The Joint Convention (http://www.iaea.org/Publications/Documents/Infcircs/1997/infcirc546.pdf, INFCIRC/546, 24 December 1997) addresses transboundary risks in the context of transport of spent fuel and radioactive waste in Article 27. Belgium is a Contracting Party to the Joint Convention, as are the neighbouring countries of France, Germany, Luxembourg, and the Netherlands.

are national in scope. Many national RWM programmes provide for a de facto local veto over siting, which may be either strong (as is the case for instance in Belgium) or weak, depending on how easily in practical terms authorities at a higher level can override it. It appears that, all other circumstances being equal, the more power is distributed in favour of a local government, the greater will be the likely acceptance by the public in that particular community (again as witnessed in Belgium).
Regardless of strategic considerations, good practice requires the streamlining of justification at the national and international level with the conditions for justification set at the regional or local level, however difficult this may be. Apart from decision-making power, the issue of compensation also falls under balanced distribution of (dis-)advantages. We come back to this later (cf. 3.4).

3.3 Development of local knowledge, know-how and expertise

- The ‘opening up’ of expertise

Experiences such as the Belgian partnership approach show that, while a member of the general public may not have time to devote to 'learning for the sake of learning', when faced with an issue of concern to them they will take an active role in finding the information that helps them feel they have control over the situation. Furthermore, the partnership experience also shows that 'ordinary' people can access and handle information: when given the means and time to address issues in an informed manner, they are willing and able to discuss and balance risks and benefits.
Generally, in the last few years, innovative processes have been developed, enabling the construction of expertise whose relevancy and reliability are reinforced in the eyes of the different stakeholders, and in particular, the local actors. In these processes, it is the credibility of expertise which is at least as important – if not more so – than the factual knowledge brought into the process by the various expert witnesses invited to present their views. Technical competence takes on an expansive meaning in the context of public participation: scientific laypeople are generally not well placed to evaluate the expert's knowledge of a subject in a direct way, but they will base their judgment on the expert's ability to explain complicated matters in a way that can be understood and processed by a wide audience. Experts are not only seen by the public as 'providers of information', they are also there to be challenged and tested. Faced with these expectations, experts often turn out to be ineffective communicators, since they frequently concentrate on messages of reassurance (starting from the expectation that this is what 'the people want') rather than on evidence of capability. The Belgian partnership experience shows the crucial importance of expert behaviour at the interface between 'science' and 'the public' for the credibility of risk management organisations (cf. the general approval of the 'local face' of NIRAS/ONDRAF). Dawson and Darst (2006) explain that successful public participation programmes also crucially depend on pre-existing levels of trust in industry and government more broadly. Credibility is gained by personal and organisational performance (again cf. the contrasting assessments made in the Belgian partnerships of the behaviour of the local representatives of NIRAS/ONDRAF and its Board of Directors), by evidence of independence (in particular of the nuclear industry, which was shown to be a concern in the Belgian case), and by providing the means to test expert testimonies (e.g. availability of budget for hiring independent expertise). It follows that public participation programmes – even if applied very meticulously – may not lead towards the requisite trust if pre-existing attitudes towards government and the competent authorities are largely negative. On the other hand, trust can be built up through processes such as those going on in RWM programmes all over the world; hence, these processes can also be seen as 'investments in trust-building'.
An important condition for the opening up of expertise towards people of the general public remains training. Training takes place progressively as involvement in concrete problems relating to the

decision making on a waste repository grows. The training of local actors as regards the basic physical and technical processes at work remains a necessary point of passage for the proper understanding of these issues – and experience shows that such an understanding is by no means an insurmountable barrier for non-experts. But this training also requires an understanding on the part of the experts of the difference between discussing technical aspects with peers (where a large degree of common understanding can be presupposed), reassuring the public with comforting messages, and allowing expertise to be 'stretched' by stakeholder questioning (i.e. being willing to discuss assumptions, uncertainties, the credibility of evidence, etc.).

- Openness and transparency

In order to realise the idea of co-design the partnership approach aimed for, openness and transparency are key elements. The Belgian federal government has legislation on the 'publicity of government' (*Belgian Law Gazette*, 30 June 1994)[20] and on the right of access to information concerning the environment (*Belgian Law Gazette*, 28 August 2006). Both contain certain restrictions, e.g. concerning the 'physical security of radioactive materials'[21], national security and information of a confidential commercial nature. Neither for NIRAS/ONDRAF nor for FANC/AFCN agency-specific freedom of information regulations have been defined. Despite this fact, NIRAS/ONDRAF has shown a commitment to transparency by affording the partnerships the opportunity to critically examine the agency's proposals by hiring independent experts (funded from an autonomously managed budget). Since LILW repositories do not contain fissile materials (except in trace amounts), no specific restrictions concerning the security of radioactive materials should apply. However, transparency on the modalities of financing a long-term (and possibly yet to establish middle long-term) fund for waste management is more problematic, since NIRAS/ONDRAF is dependent on private contracts with the waste producers for funding its waste management strategy. Hence, a lot of crucial information is kept secret (by confidentiality clauses), even from policy makers (especially members of parliament!).

As we have mentioned already, it was only at the occasion of 'public outcry' and opposition that the political aspects of LILW were revealed and discussed more openly. This historical lack of openness and transparency is also reflected in the low percentage of Belgian citizens who feel they are well-informed about RWM in their country (only 23% feel they are 'well informed' – which is about the European average of 25%, cf. Eurobarometer 2005). Also interesting are the results of the internal evaluation exercise organised in the partnerships: Before the start of the partnerships, 42% / 48% of the participants in MONA / STOLA considered NIRAS/ONDRAF to be an 'open' organisation; this number increased to 57% / 71% in June 2005. These figures show that an intense participative process has an effect on the degree of (perceived) openness – albeit that in the case of MONA the effect is still limited.

Openness and transparency should also be evaluated for the partnerships themselves. MONA, STORA and PaLoFF all routinely made information available on websites, and made considerable efforts to reach also those community members which did not participate in the meetings by various means of publicity and manifestation[22]. Nevertheless a few critical remarks can be made too. The realization of the idea behind involving members of local organisations, namely their output under the form of feedback to the rank and file, wasn't subject to any control. Also, the effectuation of openness, transparency and communication between the individual partnerships, especially between MONA and STOLA, has proven to be difficult.

20 Modified several times (e.g. Belgian Law Gazette 4 Sept. 1998, 15 July 2000, 19 April 2007).

21 More specifically information restrictions on materials containing one or more of the following fissile elements: Pu-239, U-233, uranium enriched in U-233 or U-235; or nuclear base materials such as natural uranium or thorium.

22 The PaLoFF website no longer exists.

- The European framework to openness and transparency

With regard to the future, pro-active openness and transparency will likely become crucial success factors for any RWM strategy – driven by strong public expectations (56% of Belgians and 58% of Europeans indicate they would like to participate in the decision-making process concerning the hypothetical construction of a RW repository in their neighbourhood – cf. Eurobarometer 2005) and EU legislation on the matter.

Several European instruments will come / are in place that likely to have a serious impact on RWM in this regard. The most important ones to mention are the EU Directive on Environmental Impact Assessment (EIA) (applicable in the context of concrete projects), the EU Directives on Strategic Environmental impact Assessment (SEA) (applicable in the context of policy making), the Aarhus Convention, and some instruments that are concerned specifically with the nuclear sector, namely the proposal for a 'Directive laying down basic obligations and general principles on the safety of nuclear installations', and the proposal for a 'Directive on the safe management of the spent nuclear fuel and radioactive waste' (the so-called 'nuclear package', introduced in 2003-2004).

Notwithstanding the fact that the 'spirit' of the European directives and national legislation underlines public participation as a desirable goal in itself, we believe it is justifiable to ask whether – and under which conditions – impact assessment processes can really become 'tools for democracy' rather than political instruments, serving only as a post factum legitimation to decisions already made elsewhere and by someone else (Laes 2007). It is evident that such broad questions cannot be answered in general; the way EIA or SEA processes are actually implemented makes a huge difference. This in turn depends on a lot of contextual factors, e.g. local or national political traditions, history of the planning process, strength of environmental associations, etc. Arguably one of the most important factors in this regard is the behaviour of the initiator of the SEA or EIA process (i.e. NIRAS/ONDRAF in the Belgian context). The developer of the 'waste plan' is after all at relative liberty to comply with the aims of legislation in a number of ways. If the only goal is to fulfil the 'minimal conditions' set down by legislation, it is unlikely that public participation (or the impact assessment process in itself) will have any impact on decision making. Thus, even though the *legality* of an EIA or SEA procedure will generally be undisputed, questions over its *legitimacy* will likely remain (while the basis of legitimacy of course differs according to the actor asked). Here, factors such as the degree of trust invested in NIRAS/ONDRAF, the possibility to independently challenge the position taken by the implementer, the (perceived) dominance of the nuclear sector, the offer of real alternatives of equal merit in the 'waste plan', etc. will tend to determine the perceived legitimacy of the process.

- Acknowledgement of uncertainties

Within nuclear waste siting projects, many project documents are presented as fact sheets. We have already mentioned the difficulties of calculating the socio-economic impact of a waste repository (cf. ex. footnote 10). But also with regard to technical aspects, it ought to be acknowledged that many facts are not point estimates, but are variables with ranges above and below the “expected value”, often highly context dependent. Assumptions and uncertainties occur throughout the full range of RWM issues, technical as well as socio-economical. A clear identification of the variables that form the bases for the uncertainty range, and a explanation of their influence on results, can foster the quality of public participation as it can help to identify where more information or investigation of alternatives could be useful, thus possibly narrowing the uncertainty bands. Such a self-discipline would be beneficial both to the facilitator (forced to think more clearly about variables and alternatives) and to the stakeholders (encouraged to think critically and out of the box), in the light of quality of interactions, of openness and transparency, and of safety.

- Opening up themes and topics for debate

Local stakeholders usually consider a much wider range of information to be relevant for a siting issue such as the Belgian LILW waste repository than experts from individual disciplines do. Issues such as the potential for control if something goes wrong, the extent to which institutions can be trusted to manage the risk in question properly, concerns over equity in risk-bearing, and concerns over threats to local and personal amenity are typically issues of significant importance for local stakeholders (as also revealed in the Belgian partnership experience). An important issue for local actors is to be able to handle and manage all themes which in their view are appropriate within the local context (e.g. not only a potential LILW repository, but also temporary RW storage facilities present on the territory), and also to raise questions about the dimensions which are of concern to them in national and international decision-making processes (ex. the future of nuclear activities in the country). This opening of the participatory process to wider themes and topics is a fundamental issue in order for stakeholders to understand the process they are involved in as meaningful, and thus be encouraged to give voice to their questions and concerns. Such an opening can, secondly, identify margins of manoeuvre and limitations in the decision-making processes, whilst also explaining the issues associated with other decision-making levels, where stakeholders may seek further involvement. In the Belgian case, an opening was created by setting up follow-up structures with a wider remit, but further concretisation on structure and status is still needed.

It could be discussed whether participatory RWM deliberations should be framed in or at least also consider the broader energy debate, using a concrete and touchable issue (RW) as a steppingstone to questioning general energy supply but also demand. As also shown by the Belgian case, programmes of public involvement often centre on *'how'* to deal with concrete issues, like the siting of nuclear waste, without involving stakeholders in the 'why' of the nuclear industry in general, i.e. an appraisal of whether an industrial practice such as nuclear energy production is justified in the context of a wider debate on energy policy and sustainable development. Unfortunately, this justification is also a matter of major difficulties in the general democratic context, and there are no easy answers to be given.

3.4 Local integration of RWM activities

- Local integration of RWM activities: durability

We have already spoken about the historical nuclear presence in the region of Mol and Dessel (ex.1.7), the whole of nuclear activities referred to by the local people as ‘den atom’. Local integration of nuclear activity in general therefore exists under the form of knowledge of the existence, employment and certain municipality benefits (ex. taxes). This of course lies far off from a broad definition of integration as involvement in activities and decision – making. Moreover, as also mentioned before, RWM hasn’t been topic of structural public debate, nationally nor locally. The partnership approach, with STORA and MONA ‘s representative set up and public face, clearly caused a local turn in this regard, the integrated design character of the LILW repository project specifically aiming at the local integration of RWM activities.

Although we believe to have covered the participatory and integration aspect related to the design phase of the LILW repository, especially with regard to decision making and knowledge building, the durability of participation and local integration is yet to be discussed, not only in this research brief but also in reality. On a practical base there are financial and structural arrangements yet to be sorted out (continued participatory mechanisms, integration within an overall socio-economic framework), on a

more conceptual base some thoughts about the contribution of local integration of RWM seem useful. With regard to the latter, we will focus on local communities' capacity to contribute to safety and surveillance, to the development and transmission of a safety legacy from 1 generation to another.

- Local integration of RWM activities through 'compensation'

For projects that last six decades or longer, like nuclear waste repositories, sustainability considerations indicate that the societal durability of an agreed solution is essential to project success. Whereas safety and the absence environmental and health impact where straightforward sine qua non's expressed by all partnerships, intensive discussions on societal durability took place within the 'local development' (LD) working groups, as part of the socio-economic component of the integrated design project.

When having a look at the MONA partnership, initially the activities of the LD working group were oriented towards the identification of a list of projects which represented an 'added value' for the community – e.g. projects concerning the creation of new opportunities for employment, health, the environment, improved mobility, etc. The group derived a list of selection criteria for setting priorities – e.g. projects should serve the 'common good', be committed to social goals, be ecologically sound and sustainable, etc. It is clear that the LD working group in its initial deliberations was trying to identify 'well-matched' compensations for possibly accepting a LILW repository. According to this logic, the host community is entitled to compensations to restore the disturbed sense of justice. However, it was never rendered really explicit what the local community should be compensated for – in fact, the word 'compensation' was never mentioned in the 'official' partnership discourse. Instead, partnerships should aim to construct an 'integrated repository concept with added value for the local community'. This finding suggests some wariness with regard to the idea of balancing or trading off positive against negative aspects in the case of RWM, a critique expressed explicitly by environmental NGOs (cf. 1.8). STOLA was more explicit in stating why setting conditions for the acceptance of a LILW repository on its territory was justified. In their final report they mention the service of the municipality to the whole of the Belgian population, the long term occupation of space that otherwise could have been used for other goals, the visual impact of a repository, the psychological burden on current and future local generations, and the merit of the development of know-how with regard to participatory decision-making and repository design concepts.

Both partnerships however realised the importance and difficulties of integrating future generations into the picture of societal integration. The development of a vision on the sustainable development of the local or regional area, which is supported by the community as a whole and also expected to be so in the future, is all but self-evident. Thus in a second phase, the MONA LD working group changed their opinion and considered it to be inappropriate to identify a list of projects based on current preferences (for preferences could change in the future); instead the LD working group now took up the idea of constituting an autonomous long-term fund for the financing of future projects (still subject to guidelines concerning the suitability of these projects, as laid out in the mission statement of the fund). This unavoidably caused goals, means and outcomes to be stated in rather vague and possibly ambiguous terms. Apart from the local development fund with its sustainability conditions for the beneficiary projects, other rather general conditions set by both MONA and STORA were: the conservation of regional nuclear know-how and expertise, maximal local employment, reconversion measures in the case of a reduction of the local nuclear activities, the optimization of emergency planning and staff, the continuation of high quality radiation measurements, health monitoring and, last but not least, continued participation. STOLA once again was a bit more concrete in also requesting well defined opportunities with regard to spatial planning and a broadly conceived 'communication

centre'.
An important aspect for societal durability that shouldn't be forgotten, is the lasting visibility of the link between the socio-economic realizations and the LILW repository from which they originate, as a means to initiate regular reappraisals of justification. The structure of the fund as well as the continuation of participation play an important role in this regard, and should therefore carefully be investigated and designed.

- Continued participation

An issue like the siting of nuclear waste is characterised by the intervention of various categories of actors, operators, public authorities and experts, who have at their disposal the resources required for participation into the decision-making processes. Although the pure volunteer model is not the only option (see ex. COWAM II Roadmap for Local Committee Construction), actors from civil society and other stakeholders most frequently participate without specific resources, making a personal commitment in terms of time and money. The Belgian partnerships clearly identified access to structural arrangements with a legally recognised status and to regular resources guaranteeing their independence, as a necessary precondition for carrying out their local democratic vocation.
Time is one of the most important resources to be given to stakeholders. Rushing towards a decision is likely to damage the quality and credibility of a participatory process. The Belgian partnership approach has proven the difficulties of balancing in between project managers handling a professional timeline on the one side, and local volunteers devoting their evening time on the other.
The partnership approach up until now only addresses the short & middle long term local contribution of local stakeholders to the LILW repository, in all of its existing phases. High on the agenda are clarifications on desired follow up structures of participations (regarding organisation, and scope of members and themes) and securing financial resources for the societal aspects of the integrated project (see also 1.6). With regard to themes the partnerships have started to broaden their scope with the introduction of a working group for general nuclear issues, in which middle and high level waste are likely to important topics.

- Local integration for enhancing the capacity of local communities to contribute to safety and surveillance

As already inferred, contrary to popular expert beliefs, the available case studies suggest that acknowledgement of scientific uncertainty and some degree of lack of information does not lead automatically to a general public disapproval. A precondition however, is that management or regulatory mechanisms to deal with this situation are provided and explained, and appropriate safety measures and emergency planning provisions are discussed in a transparent way. As shown throughout the Belgian partnerships' history, these aspects are of the highest concern especially to people living in the vicinity of a waste repository, and they can therefore take up a special role in designing and guarding safety and surveillance aspects. In the case of the Belgian LILW repository, the approach of co-design made it possible for local people to carry out this function. It yielded the possibility of adding additional conditions to the generic design concept worked out by NIRAS/ONDRAF with regard to technical feasibility, safety, environmental and health impact. To give some examples: with regard to technical feasibility a clear illustration is that both a surface and a deep geological repository were investigated. Another example is STOLA's request to add an inspection cellar to the original technical design. With regard to safety the installation of a public emergency servant was asked for as well as additional training and equipment for the fire brigade. A health related request was stringent monitoring of deceases, occurrence of cancer and congenital defects. Environmentally it was demanded to have as much traffic as possible via water (the adjacent canal),

and more in general a comprehensive baseline study was carried out to function as a reference for the request of further detailed and iterative measurements.
The possibility to hire external, independent expertise for a second opinion stands out as a contributing characteristic to safety as such within the Belgian partnership approach.
We want to mention here that 'enhancing the capacity of local communities to contribute to safety and surveillance' should not be understood as a way to put an extra burden or accountability on the local committee. Safety should be the prime responsibility of the mandated authorities in close cooperation with the industry. It is right to say that there is a need to 'develop a shared expertise on radioactive waste issues within the community and pass it through generations', but this expertise should mainly serve to support the local committee's 'vigilance' on issues of concern for the local community. The role of the local committee in this respect can thus be seen as that of a 'stretcher' (vigilance with regard to the responsibilities of the authority) rather than as a guardian who would need to take up own responsibility for safety.
On another critical note it can be said that the partnership approach as such mainly addresses a short and middle long term local contribution to safety and surveillance (explorations, design, development and construction & "early" exploitation). The long term dimension of radioactive waste demands a broader definition of safety though, one encompassing the ability of societal actors to play their role over time (Final Synthesis Report COWAM II p.8). The working out of proposals for future participation thus also springs from wanting to enlarge the scope for local safety and monitoring contributions and the development and transmission of a safety legacy from 1 generation to another, through opening up the timeline from pre-siting and siting to include implantation, operation, closure and post-closure phases. One topic already referring to this longer term range is the request of both partnerships for reversibility and retrievability. In general it can be said that this longer term range focuses more on societal durability. The general drive for openness and transparency originating from the partnership approach already forms a long term contribution on itself in this regard, as does the request for the preservation on nuclear knowledge and know-how in the region. STOLA explicitly demanded the presence of and information about the repository to be diffused and archived as broad and on as many diverse carriers as possible. And although cultural, economical and tourist motivations form a large part of it, the communication centre STOLA requested was also motivated by the demand for more openness, transparency and pro-activity from the nuclear sector. Although not explicitly stated, we can hope that the communication centre will also enhance the development and transmission of a safety legacy from 1 generation to another and the maintenance of a collective memory about the LILW repository in Dessel (the idea is also to couple a visit to the centre with one to the repository).

Annex

The Belgian partnership approach - Basic SWOT analysis

The following SWOT analysis has been taken over from the presentations made on the occasion of the National Stakeholder Group meetings in Slovenia, Romania and France, 2008.

→ **disclaimer SWOT analysis:**

- SWOT technique: limited critical-analytic capacity; not possible to grasp full complexity and nuance
- from out of the 'ideal inclusive governance' perspective; not from out of the perspective of the national waste agency, the politicians or the stakeholders;
- twofold analysis:

1 of the partnership model 'as such';
2 of the inclusive governance process in Belgium
(1999 – now); (3 independent partnerships working in parallel within one process)

Strengths

1 partnership model

- mobilising 'civic duty': defending well-being of entire community & opportunity for long-term financing for local development (LLW management as an integrated project);
- empowerment of stakeholders (veto right);
- Dessel, as small community, saw an important part of the population involved in an intense participative process.

2 Belgian process

(given the fact that the Belgian process first had to go through expensive lessons to come to a more inclusive character)

- voluntary involvement of three communities
(all three nuclear, implying a certain familiarity with the issue);
- waste was not a 'hot' political issue in the beginning;
- problem ownership: waste 'already there' (pragmatic fact that 'enabled' nuclear communities to become involved and to be finally accepted as legitimate partners in the political negotiation process).

Weaknesses

1 partnership model

- problem of representativity remains (how 'representative' can an involvement process be?); referenda to validate partnership work could have affirmed conclusions but were not organised;
- creation of another independent body alongside the (democratically elected) municipality council: representation of the municipality council in the partnership needed;
- after the local partnership process, the report of the candidate community comes in the hands of the traditional (national) politics (no multi-level inclusive governance).

2 Belgian process

- phenomenon of competition between communities;
- NIRAS 'long term fund' up till now only foresees to cover technical costs; amount of and recourses for socio-economic costs still unknown, even so who will be responsible to collect the finances;
- only small waste producers paid their share of the 'long term fund' up till now; accountability of Electrabel becomes a possible issue due to the change of ownership (Suez);
- local process was not backed by societal debate on national level.

Opportunities

1 partnership model

- character of robustness for future follow-up ('symbolic', structural, administrative).

2 Belgian process

- experience and existing dynamics to support and feed into future governance of high level waste.

Threats

1 partnership model

- creation of another independent body alongside the (democratically elected) municipality council;

→ possible authority conflicts;

→ could start living ‘an own life’ (risk of decoupling from grassroots level);
- issue of authority with regard to the future management of local development fund.

2 Belgian process

- loss of motivation from the start, especially within the community of Mol (against previous promises, NIRAS expressed preference for one of the communities (Dessel) towards the national authorities);
- long continuous working period: risk of stakeholder fatigue;
- strict NIRAS timing to be compatible with time-intensive participatory process;
- loss of political support before or during project phase through varying future local and national legislations;
- loss of ‘evidence’ of connection of compensation with site; conflict on future reassessment of compensation.

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