NOTES FROM THE GMF – ARCICEN SEMINAR ON NEW NUCLEAR DEVELOPMENT, 24 MAY 2024

Written by Meritxell Martell

The GMF – ARCICEN seminar on new nuclear development took place on 24 and 25 May 2024 in Saint Vulbas. The morning session focused on presentations from the French Nuclear Energy Society (SFEN), EDF, Naarea and Nucleareurope. Key messages from the morning session include:

- Nuclear is part of the energy mix and all types of energy sources are needed;
- Coherence, consistency and stability of political decisions is needed to ensure the low carbon economy required in Europe;
- Whilst Not In My BackYard (NIMBY) is a common phenomenon, the syndrome Please In My BackYard (PIMBY) needs to be acknowledged and is being revealed in Italy where there is a roadmap on Advanced Modular Reactors (AMRs);
- Euratom Treaty is the legal background document needed for progressing in Europe, but it requires the unanimity of the Council for going forward;
- Europe, despite being a small region compared to the USA where the number of nuclear reactors is the highest in the world, has 100 reactors providing around 23% of electricity and the nuclear industry offers 1 million jobs (considering direct, indirect and induced).
- Local communities further away from the nuclear power plant are less favourable to nuclear power. In France, mayors in a perimeter of 20 km are associated to the CLI and have access to information and can pose questions to the nuclear industry.
- One of the major challenges nowadays is the acceptability of transmission line projects by local communities.

The afternoon was devoted to a panel discussion on how local communities can prepare for new nuclear facilities, challenges and opportunities as well as lessons learned from previous experiences. The contributions from local representatives from Finland, Sweden and United Kingdom are summarised in this document, as well as those from the three selected sites in France to host EPR2 reactors (Penly, Gravelines and Bugey). The selection of the three French sites to host EPR2 was based on technical criteria, in particular cooling capacity, seismic hazard, the environmental sensitivity of the area, the ability to transmit the electricity that is generated, as well as the amount of land available. In addition, the strong support of the host communities and regions, which host already a nuclear facility, was a decisive factor in the choice of the host sites for the pairs of EPR2 reactors. This session was organised in the framework of the European Project ECOSENS https://ecosens-project.eu

Experience of Bure - Cigéo on deep geological disposal, president of the communauté de communes – Michel Loisy – President of the Community of Municipalities of Portes de Meuse

Bure integrates 54 communes and hosts Cigéo, France's Industrial Centre for Geological Disposal for radioactive waste. The project foresees 2,000 persons over a period of 7 or 8 years. After that, approximately 500 persons will work for Andra at the site.

The Community of municipalities Portes de Meuse is involved in the Andra project Cigéo through a development project. A contract was signed by a high-level committee between the State and the operators in 2019, but this contract did not assign specific financial resources. The different projects involve a diversity of fields, which are summarised below:

- Training: PoCES – Underground Environment Competence Centre offers companies operating in underground environments, adapted and tailor-made training in the area of construction of underground structures (civil engineering, tunnels), exploitation of underground quarries, exploration and mining, extraction of construction materials. PoCES is also a centre for exchange, monitoring and development of knowledge and practical know-how in the underground environment.
- MFR – training centre to help professional projects for families and in the context of rural areas.
- Health e-meuse: health experimentation platform based on digital and organisational innovation in three areas (Meuse, Meurthe-et-Moselle and Haute-Marne).
- Economic: Parc'Innov (70 hectares) – new model of industrial ecology with le Bassin de Joinville-en-Champagne, launched as a result of a partnership with the Atomic Energy Centre CEA. The idea is to host innovative and complementary industries which create synergies among them (e.g. the waste generated in one facility can be used as a resource in another nearby facility).

The Bure Information and Follow-up Committee in Bure (CLIS – Comité Local d'Information et Suivi) facilitates the public debate and provides public information.

The Public Interest Group (Groupe d'Intéret Publique - GIP)[1] Objectif Meuse is set up for the development of the region and has an annual budget of 30 million euros, which is part of the additional tax on the nuclear installations (INB) as waste producers. 50% of this budget is invested in the nearby area.

The opposition to Cigéo is mainly composed of persons from outside the area.

[1] In return for developing a project considered of national importance, Article L.542-11 of the French Environment Code (based on the Act of 28 June 2006) requires companies that generate radioactive waste (EDF, AREA and CEA) to contribute to funding a public interest group in each French department. To this end, in 2016, the Haute-Marne and Objectif Meuse public interest groups each receive an annual budget of 30 million euros in funding.

Finland: lessons learned from Eurajoki regarding Olkiluoto 3 and Onkalo geological repository, Mr. Vesa Lakaniemi, mayor of Eurajoki

Eurajoki has a population of 9,150 inhabitants. In Eurajoki there are all types of energy: wind mill, solar energy, three nuclear power plant units in operation, the interim storage for spent nuclear fuel, a repository for low and medium-level waste and also the deep geological repository which will be in operation in 2025, as the first of its kind in the world.

The new nuclear power plant Olkiluoto 3 has 4,500 workers at the site. The revenues for the municipality from income taxes are much higher than initially estimated (7 million euros more than estimated). The visitor Centre has 20,000 visitors every year.

Safety is the most important factor. Municipality has a right of veto when decisions in principle are made, like the deep geological repository.

There is an active and open dialogue between Eurajoki, TVO and Posiva, the radioactive waste management company. TVO and Posiva's main policy is unconditional transparency which has developed necessary confidence. There is a co-operation group of Eurajoki municipality, TVO and Posiva since 1995. In addition, seminars and public information sessions are organised at the site.

Regarding the final disposal, science needed to be proved and went first and then the political decision was taken. The regulator STUK looked after all the safety requirements. The repository has a huge impact in the whole county, not only at municipal level.

The nuclear company TVO and Posiva pays real state taxes to the municipality. In that case, it is easy to make long standing plans when there is a steady income. It also offers business opportunities for local companies.

Netherlands: consultation with civil society for new nuclear reactors in Borsele, Mr. Frank van Bussel, environmental management in the energy transition in Borsele

In the Netherlands, there is only one NPP providing 3,200 MW in Borsele and there are offshore wind farms providing 3,500 MW. There are a lot of impacts from all the different energy projects. The central government of the Netherlands is looking at sites for new nuclear reactors but there is a preference for Borsele since it is already hosting one reactor. The municipality reflected on how to get involved in this debate and explored what people think about this.

The mayor, aldermen and the responsible environmental manager in the energy transition in Borsele visited all 15 villages which form Borsele and talked to the inhabitants. The response they received was that the citizens wanted the municipality to be proactive, to use the local knowledge and to start a process to involve the community.

They had to decide how to organise this process and opted for constituting a citizen assembly. There are 13,000 families in Borsele and the local council sent a letter to all of them asking who

would be interested to become part of this process. They received 350 reactions. They had preliminary criteria on which kind of citizens would constitute this assembly: 100 people, 50% male and 50% female, 50% of the assembly would be people under 35 years old because they are the future decision-makers. At least 50 people from the 350 reactions met the criteria of being younger than 35 years old. Finally, 100 people were selected. There are 22,000 inhabitants in Borsele and generally, everyone in Borsele knows someone from this citizen assembly.

The letter also included that the council was looking for local experts on different topics (e.g. nuclear waste, landscape, etc). 35 people wrote back saying they were interested and a specialised company was hired to select 15 local experts living in the municipality.

The citizen assembly met several times. During the first meetings the citizens discussed how to organise themselves, how to vote, how to take decisions. The local knowledge was also brought in these meetings. It was important to highlight that this participation process was not to discuss whether people are pro or antinuclear, but which terms and conditions would be presented to the government. After the 2nd meeting, 7 participants were selected to visit Hinkley point C with the aim to explain what happens when you start building a NPP. These 7 people reported back to the group of 100 and they continued to work on 39 terms and conditions (health and safety, housing, etc). The citizen assembly had a meeting with the council members and the municipal council adopted the document on the 39 terms and conditions. It was also essential to involve proactively the councillors in setting criteria and deciding how to develop the process. Establishing a link between the councillors and the 100 citizens was important.

The national ministry of energy and climate came at the beginning of the process to show that community involvement is very important and the terms and conditions would be considered as much as possible. When the terms and conditions were finalised, the city assembly travelled to the Hague to present the conditions to the government and the parliament. However, there were national elections in June 2024 and a new minister will be elected.

There have been two additional visits to Hinkley point C, with the local TV and with the local council. Seeing the construction of the new NPP helped a lot to understand the opportunities and challenges.

Some of the lessons learned from this process include:

- The local government needs to be pro-active and develop its own strategy. They should not wait for the nuclear company or the central government to come to the municipality;
- Have an open mind, ask questions and learn from others;
- Involve the community actively and make use of the knowledge and expertise in the communities. There is usually a lot of knowledge available at community level;
- Involve the younger generation. There is a strong young generation which has a different discussion about nuclear power than older generations;
- Communicate actively in the media. It was very important to tell the story of the 100 citizens, to go to the parliament, etc. Communicating in the media was one of the council's priorities. Nowadays, the 100 people story are constantly in the media because

the media is interested in them, in what do they say, what do they think. They are not interested in the mayor. This is also pointed out in the discussions in the parliament and the local council wants to keep them engaged.

We found out that there was a real change for the community, that there was a mind shift of building nuclear power again. What binds the 100 citizens is improving the quality of life and it is not about nuclear power or being in favour or against.

During the meetings, extra effort was needed to keep the young people involved. Older people started arguing that they did not want nuclear energy and it was not safe. The municipality did not want a discussion on yes or no but agreeing on terms and conditions to be presented to the government. After the first meetings, the organisers phoned the young people to ask how they had experienced the meeting, if they could come back next time, they understood that some older people were dominating the discussion but it was important to get the young generation involved. The local council also paid 50 euros per meeting for the participation of young representatives and this also proved very important.

There will a local impact report looking at issues like housing which will be finished at the end of the year. The citizen assembly will meet again and new people might be involved. The terms and conditions set in 2023 will be reviewed to check if they are still valid and whether more information in needed. The first half of 2025 there will be a negotiation with central government and after summer holidays, central government will take a final decision on location and they will choose the company. Another decision will be on the terms and conditions.

United Kingdom: learnings from Hinkley Point C and Cumbria, Mr. Douglas Bamsey, consultant and Mr. David Moore, Councillor of Cumberland and Chair of Nuleaf

One of the real difficulties with new nuclear projects is the length these processes take. The time construction might be 15 years and this is a very long time in people's life. Hinkley Point C is the first NPP project in UK since 1980s. The local discussion started in 2006 and completion might be 2027. It means a new learning for councils, for government, EDF, community, etc. Knowledge, understanding, skills did not exist to build a power station and had to learn and acquire new skills.

The new NPP has a huge potential range of impacts – positive and negative – not only for the construction of the NPP, but also the congestion, transport, education, housing pressures, etc. The councils struggled with convincing governments that this is much more than producing low carbon energy. For the local community the NPP is not as important as other issues like the congestion, transport, education, etc. The scale of it as a construction project remains a greatest concern – how can it transform the area?

Sommerset is an area of low skills, low aspirations, low wages and significant issues of affordable houses. Nuclear projects add to these problems, but has the potential to transform the area. It is a once generation opportunity and is very important to make the most of it when this type of projects come.

Local authorities have a role by listening and championing communities, giving them a voice, making sure there is local employment, educations, skills, local supply chain, adding to local infrastructure and housing supply.

Some of the challenges are related to too much consultation: government was talking to local communities; the decision was made by government and EDF was talking to local communities as well. Local communities would not have sufficient resources, it is very technical and very long. The question is how to maximise local benefits? How to achieve local employment? There is great potential for boom and bust and there is a need to make sure that this is not happening at the local economy. Hence, there is a danger of no lasting legacy. To avoid this, it is important to have an international training facility, a construction skill centre, a national college, achieving housing outcomes… But the challenge is that citizens ask for less congestion on the roads, they do not tend to ask for more opportunities for local young people as the community may not see that as the biggest issue.

Given the track record of fostering Hinkley Point C and in the context of reproducing legacy in this area for industrialization, Somerset is going to have the first UK's largest Gigafactory for electric vehicles. This will be located at the Gravity Smart campus and will create up to 4,000 jobs and many more as part of the supply chain. The longevity involved in the NPP and the fact that Somerset will have a gigafactory is a prove that there's confidence to deliver large scale projects.

The government and the developer need to plan together, they need to set targets, review and monitor objectives centrally. Flexibility and adaptability over time is important. It is only by planning and working together that an NPP be successfully delivered by the host area.
In the case of Hinkley Point C the initial plan was to finish it by 2019 and to have 5,600 workers at peak and now it's 11,000 workers. This is a substantial amount of employment. 35% of the workers are local people and the remainder stay for the week. There will be a decrease of workers and this also needs to be planned. More work is to be done on legacy.

EDF and local councils went to the central government to ask for resources and support. EDF gave resources to local councils.
It is important to have and keep confidence of the community and in the community. There are a lot of projects to raise skills. For instance, a college which take children from 16 and onwards achieves new skills training and raises aspirations of local people.
While the project has transformed people's life, it has not yet transformed community life. Some communities continue to be the poorest of the country.

David Moore – Chair of Nuleaf and Councillor in West Cumbria

The UK government has set up Great British Nuclear to coordinate the UK nuclear industry to help achieve government net-zero targets (deliver up to 24 GW of nuclear power in the UK by 2050).

There are nuclear facilities in beautiful parts of the world, in rural areas. Local community needs to be engaged in the process. Sellafied is a Unesco site, on the edge of the famous Lake District. Sellafied has everything: it was the first site in the UK to deliver nuclear power. It has weapons, reprocessing fuel from all over and now it is the biggest waste management site in Europe. All spent fuel created in the UK is stored at Sellafield or will come to Sellafield. Since 1984, there is engagement with local communities. We feel proud of engaging with nuclear industry.

With new build, we also have to deal with waste. We have aging silos of Canadian design which have been left for decades and we're cleaning up. Even the regulator defined the Sellafield nuclear waste storage as "intolerable risk".[2]

There is not only the LLW repository, but 2 communities are looking for the geological disposal. We are happy to engage in this process but it takes a long time. The community is interested in new build. The vision is to move forward with SMRs because we have already experienced the struggle to develop large scale nuclear. The UK is looking at putting fleets of 4 SMRs together. The problem is that all sites have difficulty to get access to the national grid.

Sweden: preparation of the municipality for the final repository for spent nuclear fuel, Mr. Fabian Sjöberg, mayor of Östhammar, Sweden

In Östhammar there is a high level of employment and unemployment does not exist. SKB and the nuclear power plant are the biggest employers in the area. There is a long background with nuclear facilities. In addition, the repository for short lived radioactive applied for an extension which was approved.

Regarding the deep geological repository, the last step before construction will take place in September, when there will be a hearing in Court where Östhammar puts forward the terms and conditions (e.g. how many trucks can go through the city every week, etc) and the Court takes a final decision.

During all the process related to the repository, the municipality had a group of experts grouped in different committees who had the task to read every single document for the repository and comment from the municipality perspective. Citizens feel that the local council has knowledge on these issues and represents the interests of the commune. In fact, the last polls showed that 86% of citizens in Östhammar think that the repository is very safe or very positive and 90% see the project as something beneficial for the whole society and for Östhammar.

Some of the lessons learned over these 40 years of the municipality involved in the siting of the geological repository include:

- Financing – there is a special fund that the facility owners pay to cover all costs for all handling of all nuclear waste;
- Transparency – even when something negative happens, it should never be hidden or made smaller. All information should be factual and transparent in order to build trust;
- Local presence: SKB bought an old hotel and converted it into their office. Inhabitants can go there if they have a question, they can touch and feel the rock which is displayed. The SKB office is only 20'' walking from the local council which facilitates the dialogue between SKB and the local council, including the participation of both parties when there are external visitors in one organization or the other. The CEO of SKB and the mayor of Östhammar also have a principle "it should only be one call away". They should always be able to take a phone call, otherwise something is not working well.

[2] https://www.bbc.com/news/uk-england-cumbria-20228176

Penly: relations with neighbouring communities, Mr. Patrice Philippe, mayor of Petit Caux

Petit Caux has a population of 10,000 inhabitants and hosts two nuclear reactors of 1300 MWe at Penly NPP (Normandy), a coastal site. The site was originally designed to host four reactors, with land set aside for this purpose. Penly is one of the candidates for hosting EPR, as part of EDF's proposed building programme for new nuclear reactors in France. Commissioning is expected to take place in 2035-2037.

There was a decision in 2021 by the central state to choose Penly as the first site to host new nuclear power plants. Before the decision was taken, they had to work in secrecy at regional level with the intercommunal ties without the State. EDF required local officials to work on the site reception.

There are five on-going projects in Petit-Caux at the same time: EPR Penly, offshore wind, cable landing, an obsolete 400kV substation which needs to be replaced and a grid line which leaves a power stations and four bays for four connections. It will be complicated.

The connection to the electricity network would involve building two 400 kV overhead lines (around 3 kilometers in length) for the transmission of the power generated by the two EPR2 reactors, and installing two underground cable systems, at a lower voltage, to power the internals of each reactor.

The challenge now is that several thousand workers will be brought to the region. Whilst the first forecast was 8,000 at peak, now EDF foresees 11,000 workers. Therefore, the topic under discussion is not the nuclear itself, but the acceptability of the construction site. In addition, this requires enhancing the nuclear sector skills and a regional training programme. Our objective is to have the fewest number of persons arriving to the nuclear site by car and for this we foresee an off-road parking within 2-3 km. The question is who is going to finance this?
It is also important to accommodate and house all the persons who will come to work at the nuclear site. The problem of the land and the property of the land is crucial. We basically have agricultural land and having the nuclear power plant in agricultural land is indeed a problem. The municipality has compensated hectares with biodiversity. Other points to consider include access to care, local catering, local services and leisure offerings.

Local officials and institutions have drawn up a regional action plan for Normandy, to prepare for the construction and medium-term operation of the EPR2 reactors, contingent on the project's approval. This initiative sets the stage for implementing the "Major construction project" process in collaboration with all stakeholders, facilitating the co-construction of a regional project. Its function is to address the construction site requirements (accommodation, collective transport, catering facilities) and their impact on local infrastructures (roads, public amenities), while also preparing for the post-construction phase. This process also aims to promote the employment of local labour. In 2023 a coordinator was nominated by the government to organise the actions of the different actors. An appropriate fiscal mechanism needs to be adapted to this type of project.

Bugey: preparation and challenges at the level of region and nuclear power plant operator

The Bugey plant currently comprises four operating 900 MWe pressurised water reactors. Bugey 1 was a gas-cooled reactor that was shut down permanently in 1994.

The nuclear power plant of Bugey will change its name to "Plain de l'Ain" nuclear power plant. The site has been selected for the installation of a pair of EPR2 reactors, together with Penly and Gravelines sites.

We can identify 3 main challenges:

- Access to the site: there is a motorway, railroad track, river Rhône which needs to be crossed. There is a need of an additional crossing. The community is happy with the industrial park. We are almost the largest city in the community, 9,000 people work and visit the NPP. But we only have one highway exit which is not enough. We need a new highway diffuser and this is the competence of the State and the highway company. The bridge is the responsibility of the department. The rail is not used, it costs 200,000 euros per year.
- Host new people in a dignified manner. Workers will come for a year and will leave, so we need to receive them and host them on a temporary basis. We have a limit regarding the growth of schools, for example.
- Education and training: we need to train young people in the region, we need to bring the universities closer to the terriroty, but they pursue higher education. This is a maximum priority.

Gravelines: establishment of the metropolitan pole la Côte d'Opale as part of EPR2, Bertrand Ringot, mayor of Gravelines

Gravelines has 12,000 inhabitants and there is an area, particularly in Calais, where the level of unemployment is rather high.
EDF plans for the construction of two pairs of EPR2 reactors at Gravelines NPP (Hauts-de-France region), another coastal site. In 2004, there was already an initiative to present Gravelines as a candidate site for EPR. There are currently 6 nuclear reactors. There are already 9,000 people employed at Gravelines at the NPP and the new developments would involve a total of 20,000 employees. 8,000 workers will be required to work on site at the peak of construction between 2030 and 2036. According to the data from an EDF Barometer the evolution of acceptability has risen intensely over the last years.

The decision was taken to work at the metropolitan area as this type of mega projects need to be undertaken at a higher regional level rather than at local level. A working group was set up to coordinate the governance at metropolitan level. The population will be multiplied by three. There are several working groups: transport and mobility (e.g. railway will need to be developed); housing; information; health offer; training, etc.

The PMCO covers an **urban and rural territory** of more than 700,000 inhabitants on the Opal Coast (more than 13% of the population of Hauts-de-France) and was established in 2013. This area is now facing an important demographic decline with the corresponding decrease in the active population. The training and employment revitalization in this area is extremely important.

The six territorial coherence scheme committees met to discuss the main topics which are of interest for the region and for which a regional action is needed such as landscape planning, tourism, education and research, culture, rural areas, economic development, etc.