

Managing Radioactive Waste for the Long Term

放射性廢棄物的長期管理

We owe it to ourselves and to future generations to deal with radioactive waste in a safe and environmentally responsible manner. Technical solutions are needed, but also, continuing dialogue between technical and non-technical stakeholders to ensure that society will agree upon and uphold its preferred solutions

爲了我們自己和後代子孫，對於安全的處理放射性廢物和保護環境，我們必須要採取負責任的態度。技術上的解決方案是必需的，而且也要維持在技術性與非技術性問題上利益相關方間的持續對話，以確保社區將同意並維護其首選的解決方案。

FSC

Forum on Stakeholder Confidence

利益相關方信心論壇

An international group of the Nuclear Energy Agency (NEA)

A specialised agency of the Organisation for Economic Co-operation and Development (OECD)

經濟合作與開發組織(OECD)所屬之專業機構核能署(NEA)裡的一個國際團體

FSC mandate & profile

The Forum on Stakeholder Confidence (FSC) is first and foremost a learning organisation. The FSC is stimulating a new approach to radioactive waste management and decision making. Through the FSC, members improve themselves as responsive actors in the governance of radioactive waste, and their involvement is helping to promote a cultural change in their home organisations.

The FSC was established by the NEA Radioactive Waste Management Committee (RWMC) in the year 2000. It fosters learning about stakeholder dialogue and ways to develop shared confidence, consent and approval of management solutions. «Stakeholder» is defined as anyone with a role to play or an interest in the process of deciding about RW management.

The FSC provides a setting for direct stakeholder exchange in an atmosphere of mutual respect and learning. The FSC is one of the rare contexts where technicians, civil servants and social scientists can interact. Together with local and national stakeholders, the FSC explores issues of interest, identifies best practice, and suggests recommendations. The FSC takes as a responsibility to mature its lessons in discussion and cooperation with those concerned, to validate its conclusions with the help of academic researchers, and to publish this learning for the record.

Participating in this forum are government policy and regulatory officials, R & D specialists, implementers and industry representatives from 16 countries: Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Japan, Norway, Spain, Sweden, Switzerland, the United Kingdom and the United States.

Together they explore means of ensuring an effective dialogue with the public, and consider ways to strengthen confidence in decision-making processes.

FSC 的任務及簡介

首先，也是最重要的，利益相關方信心論壇(FSC)一個，學習型組織。利益相關方信心論壇激發一種新方法來管理放射性廢棄物與進行決策。經由利益相關方信心論壇，委員們除了在管理放射性廢棄物方面提生自己作為快速有效的回應者外，也由於他們的參與可協助促進在其原屬組織/機構內的文化變革。

FSC是核能署的放射性廢棄物管理委員會(RWMC)於2000年所成立。它扶植學習有關利益相關各方的對話以及如何發展共同的信心的方法，進而同意並批准放射性廢棄物管理的解決方案。「利益相關方」的定義係指任何人對有關放射性廢棄物管理的決策過程可以發揮作用或有興趣者，均屬之。

FSC提供一個場合讓利益相關各方在相互尊重和學習的氣氛中直接進行意見交流。利益相關方信心論壇是一種罕見的情境，在那裡技術人員、公務員和社會科學家們可以相互交流。集合地方和國家之利益相關各方，大家在FSC共同探討關心的問題，標識最佳做法，並提出建議方案。FSC將以此作為責任，在與關心各方討論和合作的學習經驗中成長，藉助學術界研究人員的幫助來驗證其獲致的結論，並發布此等學習的結果作為紀錄。

參與這論壇者有政府的政策和管制官員，研發專家，設施建造者和工業界代表，分別來自16個國家：比利時，加拿大，捷克共和國，丹麥，芬蘭，法國，德國，匈牙利，義大利，日本，挪威，西班牙，瑞典，瑞士，英國和美國。他們共同探討如何確保有效地與公眾對話的方法，並尋求加強決策過程信心的途徑。

FSC activities

FSC **national workshops and community visits** provide feedback about the factors that influence public confidence in the area of radioactive waste management. On-site participants include the national waste management agency and safety authorities as well as representatives of non-governmental organizations, local communities, and the general public. Hosting the international learning group is appreciated by stakeholders as a means for dialogue and competence building.

The FSC's **annual meetings** in Paris include topical sessions and discussions to elaborate the ideas gained from the national workshops and deepen investigation. In addition to FSC members, participants typically include social scientists, academics, and local communities' representatives.

The FSC distills the lessons learnt from these activities and from desk studies and member questionnaires. It provides a pool of information to those with an interest in radioactive waste management or societal dialogue in the general area of technological decision-making.

FSC 的活動

FSC 的**全國性座談會和社區探訪**提供對有關放射性廢棄物管理方面影響公眾信心因素的回饋意見。現場參與者包括國家廢棄物管理機構和安全管制部門以及非政府組織的代表，地方社區和一般公眾。主辦此類國際學習組織活動受到利益相關各方的讚賞，因為它是進行對話和能力建設的手段。

在巴黎舉行的 **FSC 年度會議**，包括了專題報告和討論，以便闡述在全國性座談會中獲致的觀點和深入調查的結果。除了 FSC 的委員外，與會者通常包括社會科學家，學者，和

當地社區的代表。

FSC 從上述活動，並從書面研究和會員問卷調查中汲取學習經驗。它提供了一個資料集中處，方便那些對放射性廢棄物管理或其他技術層面之決策相關社會對話有興趣的人來查閱。

FSC publications

FSC studies and reports can be downloaded freely from the NEA web site at

www.nea.fr/html/rwm/fsc.html

- Learning and adapting to societal requirements
- Stepwise approach to decision-making
- Stakeholder involvement techniques
- Public information, consultation and involvement
- Regulators' evolving role and image
- Mental models approach to risk research
- Media relations
- Link between research, development and demonstration, and stakeholder confidence
- Cultural and structural changes in radioactive waste management organizations
- Fostering a durable relationship between a waste management facility and its host community
- Stakeholder involvement in the decommissioning of nuclear facilities
- Proceedings from all the FSC national workshops and community visits

FSC 的出版刊物

FSC 的相關研究和報告，可從 NEA 的網站中免費自由下載，網址為：

www.nea.fr/html/rwm/fsc.html

- 學習和適應社會需求
- 階段式的決策方法
- 利益相關方的參與技巧
- 公共訊息，諮詢和參與
- 監管機關衍化的角色和形象
- 從心智模式方法到風險研究
- 與媒體的關係

- 研究、開發和示範，以及與利益相關方信心之間聯繫關係的建立
- 放射性廢棄物管理機構在組織文化和結構上的改變
- 在放射性廢棄物管理設施與其所在社區之間培養一個可持續發展的關係
- 利益相關方參與核設施的除役
- 全國性座談會和社區探訪的所有會議記錄與報告

International Feedback from a Local Perspective

The FSC has held workshops in six countries and local communities therein according to its own well-tested approach. In each place, the host defines the principal themes for discussion in radioactive waste management. FSC members learn from national presenters about the history and context of each case study and hear a broad range of stakeholder voices describe their position, actions and concerns.

Sitting together in small groups for roundtable discussions, FSC members can ask questions of hosting stakeholders, understand better their point of view, and share experience from their own institutions and countries. Each table then gives feedback to the entire audience, and the main observations are published alongside the texts of stakeholder presentations. The FSC then elaborates further on the lessons to be learnt.

從國際回饋資料中看地方的觀點

FSC 已在六個國家與其地方社區依據他們自己行之有效的辦法舉辦了座談會。在每個地方，主辦機構為放射性廢棄物管理定義了主要討論的議題。FSC 委員從各個國家的主持人說明中學習到每個研究專案的歷史和背景，並廣泛聽取利益相關方描述有關他們的立場、行動和關注的聲音。

藉由以小團體形式大家坐在一起進行的圓桌討論會議，FSC 委員可以向主辦國之利益相關方提問以更了解他們的觀點，並分享他們的機構本身和國家的經驗。然後每個圓桌討論結果將回饋給全場觀眾，主要的意見將會與利益相關方報告的文本同時公佈。之後，FSC 將再進一步彙整並闡述應汲取的經驗與教訓。

Factors of Confidence ...

The FSC has learnt that a number of factors contribute to shared stakeholder confidence that radioactive waste is managed safely, securely and in accordance with societal values and aspirations. These confidence factors, drawn from workshop discussion and reflection, can be arranged under the following themes.

信心的要素 ...

FSC 已經了解到，要安全無害地管理放射性廢棄物，並且符合社會價值觀和願望，有多種因素是有助於增強利益相關方共同的信心。這些信心因素，來自座談會的討論和反思，可以安排在以下主題來說明之。



... Relating to Decision-making Process

A stepwise approach to decision-making is preferred, combining a technical and societal focus. It should take into account and empower the full range of stakeholders (government, industry, public), fostering their mutual learning. It should embrace ethical considerations concerning future generations, and the potential socio-economic impacts on facility hosts as well as health, safety and environmental concerns. A bottom-up, community-based methodology should allow early, significant participation of the public in analysis and deliberation alongside the experts. The site selection process should empower potential host, neighbouring and transit municipalities to negotiate a win/win solution. Voluntary processes that incorporate the right to veto can be especially effective.

Regional development plans should be worked out with local, industry and national support. There should be cooperative efforts to rebuild trust between key players when there has been conflict, for example third-party facilitation when communication has broken down.

.....有關決策過程的信心要素

一個階段式方法是進行決策的首選，它結合了技術的重點和社會的焦點。它應該考慮到並賦予所有利益相關方(政府機關、業界、公眾)權力，來培養他們之間的相互學習。它應該包括對有關的未來世代方面的道德考慮，對設施建造所在地的社會和經濟影響，以及對衛生，安全和環境的關切。一個自下而上，以社區為基礎的方法，應該允許在早期就讓公眾和專家們一起有意義的參與分析及審議工作。

選址過程中應賦予潛在設施建造所在地、鄰近地區和即將交接市政當局權力來進行談判協商，俾獲取雙贏的解決方案。自發行動過程中納入行使否決權將可能會特別有效。

區域發展計劃應該由地方與業界共同制定並獲得國家的支持。當發生衝突之時應該有共同努力的機制，來重建關鍵成員之間的信任，例如：在溝通已破裂時由第三方進行調解。

... Relating to Roles and Structures

There should be a clear framework defining the role and rights of players. The financial responsibility for long-term waste management should be clear, and placed primarily on those who produce the waste. A driving role should be played by local communities. They should have an active role in developing and overseeing their own solutions with significant assistance from regulatory and decommissioning authorities and industry proponents. This includes planning and implementation when siting agreement is reached. It is useful to have local liaison groups near potential sites facilitating public information, education and consultation.

...有關角色和結構的信心要素

應該要有一個明確的框架來界定所有關係者的角色和權力。長期廢棄物管理之財政責任應當明確，並把主要責任加諸於那些廢棄物製造者。當地社區應發揮一個大力推動的角色。藉由法規與除役管制機關及業界支持者的大力協助，他們應該有更積極的作為來發展和監督自己合意的解決方案。這包括當選址達成協議時，所有與放射性廢棄物處置設施有關的規劃和施作。讓地方聯絡小組在潛在設施場址之附近地點，便利地提供公共資訊、教育和諮詢是相當有用的。

... Relating to Actors' Knowledge and Behaviour

It is important that all stakeholders assume their responsibilities, and that local and national players work together towards a mutually agreed resolution. Trust in the national regulatory bodies is valuable. Dialogue across communities through federate associations, and dialogue established between local decision-makers and national agency managers, enhances programs. Solutions are more easily reached when local players are engaged to solve their problem and/or improve their community well being. Confidence is gained if a higher standard of living is observed in the host community through for example increased tourism and better connections with other regions and the capital. Local communities appreciate technical training to participate in environmental monitoring. Community familiarity with the nuclear industry and the knowledge of community members working in existing facilities and construction sites contribute to local confidence.

...有關所有關係者之知識與行為的信心要素

讓所有利益相關方承擔起他們的責任，並讓地方和中央的參與人員一起工作俾獲致一個相互合意的解決方案是重要的。國家法規管制機關的信任是有價值的。透過聯邦協會來與整個社區進行對話，並在地方決策者和中央機構的管理人員之間建立對話機制，來強化這些方案的價值。當有當地社區的參與者來從事解決他們的問題和/或改善他們的社會福祉時，解決方案是比較容易達成的。如果可以讓當地社區的民眾見識到他們可以有更高標準的生活水平，例如：觀光人數的提昇、與其他地區和城市間聯繫交通的改善等，信心是可以獲得的。當地社區的民眾是樂於接受技術培訓來參與對環境監測的。當地社區對核工業的熟悉，和在現有設施或建構中之廠區工作的社區成員他們所具備的知識，將有助於社區的信心。

FSC national workshops

FSC的全國性座談會

Finland 2001 芬蘭

Stepwise decision making with stakeholder involvement

Case Study: The Government's Decision in Principle on the final disposal facility for spent nuclear fuel in Eurajoki

有利益相關方參與的階段式決策方法

個案研究：對 Eurajoki 用過核燃料最終處置設施政府的原則性決定

Canada 2002 加拿大

Social considerations and development opportunities

Case Study 1: The clean-up of low-level radioactive contaminated lands in Port Hope

Case Study 2: Federal legislation: The Nuclear Fuel Waste Act

社會因素和發展機會

個案研究 1：Port Hope 低放射性污染土地的清理

個案研究 2：聯邦法規：核燃料廢棄物法

Belgium 2003 比利時

Interests, values and knowledge in managing risk

Case Study: Local partnership methodology for the long-term management of low-level radioactive waste; its application in Fleurus-Farciennes, Mol and Dessel

風險管理的知識、利益與價值

個案研究：低放射性廢棄物長期管理之地方合作夥伴關係方法；在 Fleurus-Farciennes, Mol and Dessel 地區之適用經驗



Germany 2004 德國

Re-orientation of the radioactive waste management site selection strategy

Case Study: The Gorleben high-level waste and spent nuclear fuel repository project and a new national site selection process

放射性廢物管理選址策略的重新定位

個案研究: *Gorleben* 高階放射性廢棄物與用過核燃料貯存庫計畫與一個新的全國性選址過程



Spain 2005 西班牙

Stakeholder interactions between the local and national levels

Case Study 1: National policy for central long-term storage of spent nuclear fuel

Case Study 2: The decommissioning of the nuclear reactor Vandellós-I

地方和中央層級利益相關方之間的互動交流

個案研究 1: 用過核燃料集中長期貯存之國家政策

個案研究 2: *Vandellós-I* 核反應器的除役



Hungary 2006 匈牙利

Regional development and community support

Case Study 1: The role of local public oversight and information associations.

Case Study 2: Confidence aspects in the acceptance of the Bábaapáti repository

區域發展與社會的支持

個案研究 1: 地方公眾團體的監督角色和資訊提供的協會

個案研究 2: 對 *Bábaapáti* 貯存庫 在信心方面的接受度

France 2009 法國

Repositories and host regions: Envisaging the future together

Case Study: Territorial development and local expectations for a potential repository in the Meuse/Haute-Marne

貯存庫和入駐區域：共同努力擘畫未來

個案研究: 在 Meuse/Haute-Marne 建造一個潛在貯存庫有關之土地開發與當地社區的期望



If you have comments or questions on the work of the FSC, or would like to obtain FSC materials, please contact Dr. Claudio Pescatore at the Secretariat of the NEA Radioactive Waste Management Committee: claudio.pescatore@oecd.org

如果您對FSC的工作有任何意見或疑問，或想取得FSC的資料，請聯絡NEA 放射性廢棄物管理委員會秘書處的 Dr. Claudio Pescatore: claudio.pescatore@oecd.org