



Principles and stakeholders in the regulation of nuclear safety and radiation protection

1 THE PRINCIPLES OF NUCLEAR SAFETY AND RADIATION PROTECTION

69

1|1 Fundamental principles

- 1|1|1 Principle of the prime responsibility of licensees
- 1|1|2 “Polluter-pays” principle
- 1|1|3 Precautionary principle
- 1|1|4 Public participation principle
- 1|1|5 The principle of justification
- 1|1|6 The principle of optimisation
- 1|1|7 The principle of limitation
- 1|1|8 The principle of prevention

1|2 Some aspects of the safety approach

- 1|2|1 Safety management
- 1|2|2 The “Defence in Depth” concept
- 1|2|3 Interposing of barriers
- 1|2|4 Deterministic and probabilistic approaches
- 1|2|5 Operating experience feedback

2 THE STAKEHOLDERS

74

2|1 Parliament

2|2 The Government

- 2|2|1 Ministers responsible for nuclear safety and radiation protection
- 2|2|2 The Prefects

2|3 ASN

- 2|3|1 Role and duties
- 2|3|2 Organisation
- 2|3|3 Operation

2|4 Consultative bodies

- 2|4|1 High Committee for Transparency and Information on Nuclear Security
- 2|4|2 The High Council for Public Health
- 2|4|3 The High Council for Prevention of Technological Risks
- 2|4|4 The Central Committee for Pressure Equipment

2|5 Technical support organisations

- 2|5|1 Institute for Radiation Protection and Nuclear Safety (IRSN)
- 2|5|2 Advisory Committees of experts
- 2|5|3 The ASN’s other technical support organisations

2|6 The pluralistic working groups

- 2|6|1 The working group for the national radioactive materials and waste management plan
 - 2|6|2 The steering committee for managing the post-accident phase (CODIRPA)
 - 2|6|3 The Steering Committee for Social Organisational and Human Factors (COFSOH)
 - 2|6|4 The other pluralistic groups
- #### 2|7 Other stakeholders
- 2|7|1 The French National Authority for Health
 - 2|7|2 The National Agency for the Safety of Medication and Health Products
 - 2|7|3 The French Health Monitoring Institute
 - 2|7|4 The French National Cancer Institute

3 OUTLOOK

88

Nuclear safety and radiation protection comprise the measures that allow nuclear activities to be carried out under normal conditions, that prevent accidents - whether involuntary or the result of malicious intent - and that limit the effects of radiation for workers, patients, the general public and the environment. Their common aim is to protect people and property against hazards, nuisances or inconveniences of whatever nature arising from nuclear activities and from exposure to natural ionising radiation.

Nuclear safety and radiation protection obey principles and approaches that have been put in place progressively and continually enriched by a process of feedback. The basic guiding principles are advocated internationally by the International Atomic Energy Agency (IAEA). In France, they are included in the Constitution or enacted in law, as well as now figuring in a European directive.

The regulation of civil nuclear safety and radiation protection in France is the task of the ASN, an independent administrative authority, working with other bodies of State, within Parliament, the Government and the Prefectures, and relying on technical expertise provided, notably, by the French Institute for Radiation Protection and Nuclear Safety (IRSN).

Acting on behalf of the State, ASN regulates nuclear safety and radiation protection in order to protect workers, health care recipients, the public and the environment from risks arising from nuclear activities. It also contributes to informing the citizens.

1 THE PRINCIPLES OF NUCLEAR SAFETY AND RADIATION PROTECTION

1.1 Fundamental principles

Nuclear activities must be carried out in compliance with the principles that underlie the legislative texts.

The IAEA Safety Standards (see chapter 7 section 2 | 2) set out ten fundamental safety principles which are put into application:

- internationally by the Convention on Nuclear Safety (CNS) (see chapter 7 section 4 | 1), which establishes the international framework for the regulation of nuclear safety and radiation protection;
- at European Community level by two directives establishing a community framework for the safety of

nuclear facilities and for the responsible and safe management of spent fuel and radioactive waste;

- at national level in France through the Environment Charter, which is part of the Constitution, and through law and regulations.

1.1.1 Principle of the prime responsibility of licensees

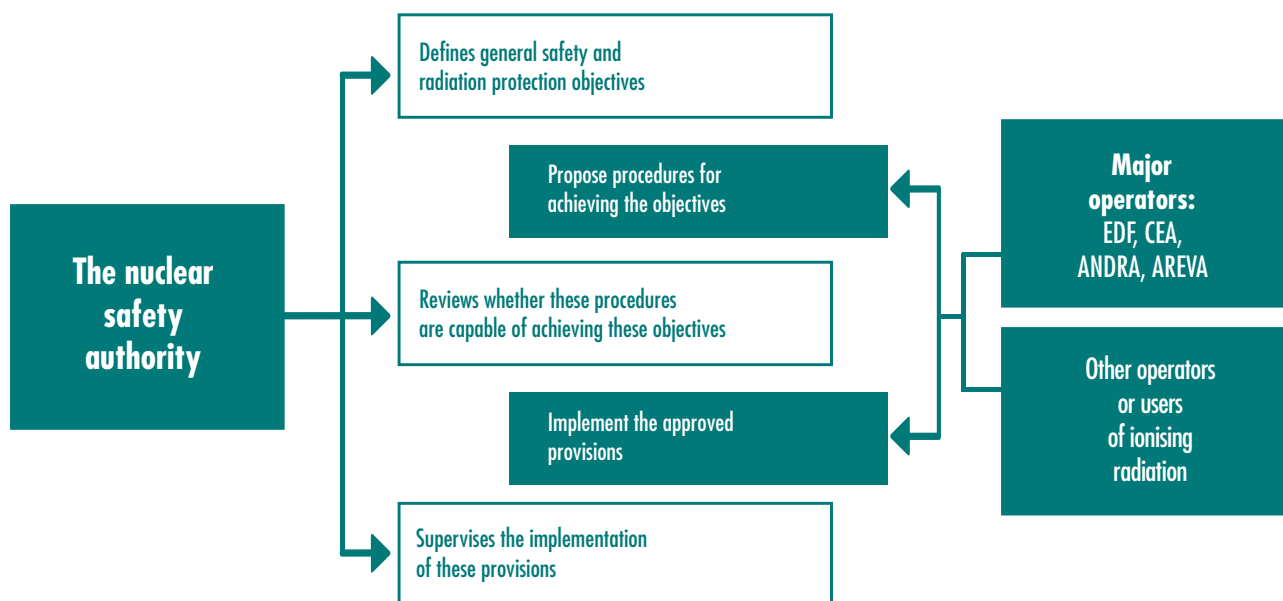
This principle, defined in Article 9 of the CNS, stipulates that prime responsibility for the safety of nuclear activities entailing risk rests with those undertaking or carrying out such activities.

It applies directly to all nuclear activities.

The fundamental safety principles

The IAEA establishes the following 10 principles in its publication “SF-1”:

1. The prime responsibility for safety must rest with the person or organisation responsible for facilities and activities that give rise to radiation risks;
2. An effective legal and governmental framework for safety, including an independent regulatory body, must be established and sustained;
3. Effective leadership and management for safety must be established and sustained in organisations concerned with, and facilities and activities that give rise to, radiation risks;
4. Facilities and activities that give rise to radiation risks must yield an overall benefit;
5. Protection must be optimised to provide the highest level of safety that can reasonably be achieved;
6. Measures for controlling radiation risks must ensure that no individual bears an unacceptable risk of harm;
7. People and the environment, both present and future, must be protected against radiation risks;
8. All practical efforts must be made to prevent and mitigate nuclear or radiation accidents;
9. Arrangements must be made for emergency preparedness and response for nuclear or radiation incidents;
10. Protective actions to reduce existing or unregulated radiation risks must be justified and optimised.



1 | 1 | 2 “Polluter-pays” principle

The “polluter-pays” principle, spelling out the operator’s prime responsibility, ensures that the costs of measures to prevent or reduce pollution are borne by those responsible for environmental damage. This principle is defined in Article 4 of the Environment Charter in these terms: “An individual must contribute to reparation of the environmental damage he or she has caused”.

This principle entails the taxation of Basic Nuclear Installations (BNI) (“BNI” tax and contribution to IRSN), the taxation of radioactive waste producers (additional waste taxes), of disposal facilities (additional “disposal” tax) and of installations classified on environmental protection grounds (ICPE) (fraction of the general tax on polluting activities – TGAP).

1 | 1 | 3 Precautionary principle

The precautionary principle, defined in Article 5 of the Environment Charter, states that: “the absence of certainty, in the light of current scientific and technical knowledge, must not delay the adoption of effective and proportionate measures to prevent a risk of serious and irreversible damage to the environment”.

Application of this principle results, for example, in assuming a linear no-threshold dose-effect relationship where the biological effects of exposure to low doses of ionising radiation are concerned. This point is clarified in chapter 1 of this report.

1 | 1 | 4 Public participation principle

This principle allows public participation in the making of decisions by public authorities. It is defined in Article 7 of the

Environment Charter as follows: “Within the conditions and limits defined by law, all individuals are entitled to access environmental information in the possession of the public authorities and to take part in the making of public decisions affecting the environment”.

In the nuclear field, this principle entails the organisation of national public debates, which are mandatory prior to the construction of a nuclear power plant for example, as well as public enquiries, especially when examining the creation or decommissioning of nuclear facilities, as well as consultations and public access to information, which are mandatory for all matters liable to lead to a significant increase in water intakes or discharges in the environment of a nuclear facility.

Chapter 6 of this report presents the way in which the right to information is applied to all ASN’s areas of activity.

1 | 1 | 5 The principle of justification

The principle of justification, given expression in Article L. 1333-1 of the Public Health Code (CSP), states that: “A nuclear activity or an intervention can only be undertaken or carried out if its health, social, economic or scientific benefits so justify, given the risks inherent in the human exposure to ionising radiation that it is likely to entail”.

Depending on the type of activity, justification decisions are made at various levels of authority: they are the responsibility of Parliament for questions of general interest, of the Government for the creation or decommissioning of a BNI, and of ASN where transport operations or sources of radiation are concerned.

Assessment of the expected benefit of a nuclear activity and the corresponding health drawbacks may lead to prohibition of an activity for which the benefit would not seem to outweigh the

health risk. For existing activities, justification may be reassessed if the state of knowledge and technology so warrants.

1.1.6 The principle of optimisation

The principle of optimisation, formulated in Article L. 1333-1 of the Public Health Code, states that: “Human exposure to ionising radiation as a result of a nuclear activity or medical procedure must be kept as low as reasonably achievable, given current technology, economic and social factors and, where applicable, the intended medical purpose.”

This principle, referred to as the ALARA¹ principle, leads for example: to reducing, in the discharge licenses, the quantities of radionuclides authorised in the radioactive effluents from nuclear installations; to requiring surveillance of exposure at the workstation in order to reduce it to the strict minimum; and to ensuring that medical exposure as a result of diagnostic procedures remains close to the pre-determined reference levels.

1.1.7 The principle of limitation

The principle of limitation, expressed in Article L. 1333-1 of the Public Health Code, states that: “Exposure of an individual to ionising radiation as a result of a nuclear activity may not increase the sum of the doses received beyond the limits set by regulations, except when the individual is exposed for medical or biomedical research purposes”.

The exposure of the general public or of workers as a result of nuclear activities is subject to strict limits. These limits include significant safety margins to prevent deterministic effects from appearing, as well as aiming at reducing to the lowest level possible the appearance of probabilistic effects in the long term.

Exceeding these limits leads to an abnormal situation and one which may give rise to administrative or legal sanction.

In the case of medical exposure of patients, no strict dose limit is set provided that this voluntary exposure is justified by the expected health benefits to the person exposed.

1. As Low As Reasonably Achievable.

BNI tax, additional waste taxes, additional disposal tax and contribution to IRSN

The ASN Chairman is required by the TSN Act, now codified in books I and V of the Environment Code, to assess and order payment of the BNI tax, introduced under Article 43 of the 2000 Budget Act (Act 99-1172 of 30th December 1999). The revenue from this tax amounted to € 579.4 million in 2012. The proceeds go to the central state budget.

In addition, the “Waste” Act creates three further taxes levied on nuclear reactors and spent nuclear fuel reprocessing plants, known as the “research”, “support” and “technological dissemination” taxes. They are allocated to the financing of economic growth and of ANDRA’s research into underground disposal and storage. The revenue from these new taxes amounted to € 177.2 million in 2012.

Article 2 of Act 2009-1673 of 30th December 2009 also created an additional tax on ultimate disposal facilities. This tax is paid to the local communes and inter-commune public cooperation establishments around the disposal facility. The revenue from this tax amounted to € 2.4 million in 2012.

Finally, Article 96 of Act 2010-1658 of 29th December 2010 creates an annual contribution on behalf of IRSN to be paid by BNI licensees. This contribution is in particular designed to finance the review of the safety cases submitted by the BNI licensees. The revenue from this contribution amounted to € 48.1 million in 2012.

Table 1: Breakdown of licensee contributions

Licensee	Amount for 2012 (millions of euros)		
	BNI tax	Additional waste and disposal taxes	Contribution on behalf of IRSN
EDF	543.6	138.8	38.9
AREVA	16.3	8.9	3.3
CEA	6.5	27.2	5.0
ANDRA	5.4	2.4	0.2
OTHERS	7.6	2.3	0.7
TOTAL	579.4	179.6	48.1

1|1|8 The principle of prevention

The prevention principle, defined in Article 3 of the Environment Charter, requires the implementation of rules and actions designed to anticipate any environmental damage, which must take account of the “*best techniques available at an economically acceptable cost*”.

In the nuclear field, this principle underlies the concept of defence in depth, presented opposite.

1|2 Some aspects of the safety approach

The safety principles and approaches presented below were gradually implemented and incorporate experience feedback from accidents. Absolute safety can never be guaranteed and despite all the precautions taken in the design, construction and operation of nuclear facilities, an accident can never be completely ruled out. The willingness to move forward and to create a continuous improvement approach is thus essential if the risks are to be reduced.

1|2|1 Safety management

Safety management means fostering a safety culture within risk management organisations.

Safety culture is defined by the International Nuclear Safety Advisory Group (INSAG), an international nuclear safety consultative group reporting to the General Director of the IAEA, as: “*that assembly of characteristics and attitudes in organisations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance*”.

Safety culture therefore determines the ways in which an organisation and individuals perform their duties and accept responsibility, with safety in mind. It is one of the key fundamentals in maintaining and improving safety. It commits organisations and individuals to paying particular and appropriate attention to safety. At the individual level it is given expression by a rigorous and cautious approach and a questioning attitude making it possible to both obey rules and take initiative. In operational terms, the concept underpins decisions and actions relating to activities.

1|2|2 The “Defence in Depth” concept

The main means of preventing accidents or limiting their potential consequences is “defence in depth”. This consists in implementing material or organisational provisions (sometimes called lines of defence) structured in consecutive and independent levels, and which are capable of preventing the development of an accident. If one level of protection fails, the next level takes over.

An important element for the independence of the levels of defence is the use of different technologies (diversified systems).

The design of nuclear installations is based on a defence in depth approach. Five levels of protection are defined for nuclear reactors:

The five levels in “Defence in Depth”



Level 1: Prevention of abnormal operation and system failures

This is a question firstly of designing and building the facility in a robust and conservative manner, integrating safety margins and planning for resistance with respect to its own failures or to hazards. It implies conducting the most exhaustive study possible of normal operating conditions to determine the severest stresses to which the systems will be subjected. It is then possible to produce an initial design basis of the facility, incorporating safety margins. The facility must then be maintained in a state at least equivalent to that planned for in its design through appropriate maintenance. The facility must be operated in an informed and careful manner.

Level 2: Keeping the installation within authorised limits

Regulation and governing systems must be designed, installed and operated such that the installation is kept within an operating range that is far below the safety limits. For example, if the temperature in a system increases, a cooling system starts up before the temperature reaches the authorised limit. Monitoring of the condition and correct operation of systems forms part of this level of defence.

Level 3: Control of accidents without core meltdown

The aim here is to postulate that certain accidents, chosen for their “envelope” characteristics (the most penalising in a given

family) can happen, and to design and size backup systems to withstand those conditions.

Such accidents are generally studied with conservative hypotheses, that is to say the various parameters governing this accident are assumed to be the least favourable. The single-failure criterion is also applied, in other words, in the accident situation, we also postulate the failure of any given component. As a result of this, the systems coming into play in the event of an accident (safeguard systems ensuring emergency shutdown, injection of cooling water into the reactor, etc.) comprise at least two redundant channels.

Level 4: Control of accidents with core meltdown

These accidents have been considered since the Three Mile Island accident (1979) and are now taken into account in the design of new reactors such as the EPR. The aim is to preclude such accidents or to design systems that can withstand them. In the light of experience feedback from the Fukushima accident, ASN has prescribed a set of measures aiming at reinforcing the prevention and control of accidents with core meltdown.

Level 5: Mitigation of the radiological consequences of significant releases

This requires implementation of the measures provided for in the emergency plans, including measures to protect the general public: shelter, taking of stable iodine tablets to saturate the thyroid and avoid fixation of radioactive iodine carried by the radioactive plume, evacuation, restrictions on consumption of water and of agricultural products, etc.

1|2|3 Interposing of barriers

To limit the risk of releases, several superposed barriers are placed between the radioactive materials and the environment. Barriers must be designed to have a high degree of reliability and must be monitored to detect any weaknesses or failures. There are three such barriers for pressurised water reactors: the fuel cladding, the boundary of the reactor primary system, and the containment vessel (see chapter 12).

1|2|4 Deterministic and probabilistic approaches

Postulating the occurrence of certain accidents and verifying that, thanks to the planned functioning of the equipment, the consequences of these accidents will remain limited, is known as a deterministic approach. This approach is simple to apply in principle and allows the design of an installation (and its systems to be sized) with good safety margins, by using so-called "envelope" cases. It does not, however, lead to a realistic view of the most probable scenarios and does not rank risks satisfactorily, since it focuses attention on accidents studied with very pessimistic assumptions.

The deterministic approach therefore needs to be supplemented by an approach that takes better account of possible accident scenarios in terms of their probability, that is to say the probabilistic approach used in "probabilistic safety assessments" (PSA).

Thus for the nuclear power plants, the level-1 probabilistic safety assessments (PSA) consist in establishing, for each initiating event leading to the activation of a safeguard system

(level 3 of the defence in depth), event trees defined by the failures (or the success) of the actions planned for in the reactor management procedures and the failures (or correct operation) of the reactor equipment. The probability of each sequence is then calculated based on statistics on the reliability of systems and on the rate of success of actions (including data on "human reliability"). Similar sequences of events that correspond to the same initiating event are grouped into families, making it possible to determine the contribution of each family to the probability of reactor core meltdown.

Although the PSAs are limited by the uncertainties concerning the reliability data and the approximations of the facility modelling, they consider a broader set of accidents than the deterministic assessments and enable the design resulting from the deterministic approach to be verified and supplemented if necessary. They are therefore to be used as a complement to deterministic studies and not as a substitute for them.

The deterministic studies and probabilistic assessments constitute an essential element in the demonstration of nuclear safety that addresses equipment internal faults, internal and external hazards, and plausible combinations of these events.

To be more precise, the internal faults correspond to malfunctions, failures or damage to facility equipment, including as a result of inappropriate human action. The hazards correspond to events originating inside or outside the facility and which can call into question the safety of the facility.

Internal faults include for example:

- loss of the electrical power supplies or the cooling systems;
- ejection of a rod cluster control assembly ;
- breaking of a pipe in the primary system of a nuclear reactor;
- reactor emergency shutdown failure during an incidental transient.

The internal hazards to be considered include:

- flying projectiles, notably those resulting from the failure of rotating equipment;
- pressure equipment failures;
- collisions and falling loads;
- explosions;
- fires;
- hazardous substance emissions;
- floods originating within the perimeter of the facility;
- electromagnetic interference;
- malicious acts.

The external hazards to be considered include:

- the risks induced by industrial activities and communication routes, including explosions, hazardous substance emissions and airplane crashes;
- earthquakes;
- lightning and electromagnetic interference;
- extreme meteorological or climatic conditions;
- fires;
- floods originating outside the perimeter of the facility;
- malicious acts.

1|2|5 Operating experience feedback

Experience feedback contributes to defence in depth. It consists in implementing a reliable system for detecting any anomalies

which can occur, such as equipment failures or procedural errors. This system should allow early detection of any abnormal operation and the relevant conclusions to be drawn (especially in terms of organisation) so as to prevent these

anomalies happening again. Operating experience feedback encompasses events, incidents and accidents occurring both in France and abroad, whenever relevant to enhancing nuclear safety or radiation protection.

2 THE STAKEHOLDERS

The organisation of the regulation of nuclear safety in France complies with the CNS, of which Article 7 requires that *“Each Contracting Party shall establish and maintain a legislative and regulatory framework to govern the safety of nuclear installations”* and of which Article 8 requires that each Party *“shall establish or designate a regulatory body entrusted with the implementation of the legislative and regulatory framework referred to in Article 7 and provided with adequate authority, competence and financial and human resources to fulfil its assigned responsibilities”*. These requirements are confirmed by the European Directive of 25th June 2009 on nuclear safety.

In France, the regulation of nuclear safety and radiation protection is primarily the responsibility of three parties: Parliament, the Government and ASN. Their respective competences are defined by the TSN Act, now codified in books I and V of the Environment Code, by ordinance 2012-6 of 5th January 2012.

2|1 Parliament

Parliament's principal role in the field of nuclear safety and radiation protection is to make laws. Two major Acts were passed in 2006: the TSN Act of 13th June 2006, on transparency and security in the nuclear field; and the Programme Act of 28th June 2006, on the sustainable management of radioactive materials and waste.

Like the other independent administrative authorities and in application of the provisions of the Environment Code, ASN makes regular reports on its activity to Parliament, notably to the OPECST (Parliamentary Office for the Evaluation of Scientific and Technological Choices) and to parliamentary commissions.

The role of the OPECST is to inform Parliament of the consequences of the scientific or technological choices so that it can make informed decisions; to this end, the OPECST gathers information, implements study programmes and conducts evaluations. ASN regularly reports on its activities to the OPECST, particularly by submitting the annual *Report on the State of Nuclear Safety and Radiation Protection in France* to it each year.

ASN also makes activity reports to the Parliamentary Commissions of the National Assembly and the Senate, particularly during hearings by the Economic Affairs Commissions.

The exchanges between ASN and elected officials are presented in more detail in the chapter 6.

2|2 The Government

The Government exercises regulatory powers. It is therefore in charge of laying down the general regulations concerning nuclear safety and radiation protection. The TSN Act also tasks it with making major decisions concerning BNIs, for which it relies on proposals or opinions from ASN. The Government can also call on consultative bodies such as the High Committee for Transparency and Information on Nuclear Safety (HCTISN).

The Government is responsible for civil protection in the event of an emergency.

2|2|1 Ministers responsible for nuclear safety and radiation protection

On the advice of ASN and, as applicable, on the basis of an ASN proposal, the Minister(s) responsible for nuclear safety define(s) the general regulations applicable to BNIs and take the major individual decisions concerning:

- the design, construction, operation, final shutdown and decommissioning of BNIs;
- the final shutdown, maintenance and surveillance of radioactive waste disposal facilities;
- the manufacturing and the operation of pressure equipment (PE) specifically designed for these installations.

The above-mentioned minister(s) can suspend the operation of an installation on the advice of ASN if it presents serious risks.

Furthermore, the Minister(s) responsible for radiation protection also define(s) - on the basis of ASN proposals if necessary - the general regulations applicable to radiation protection.

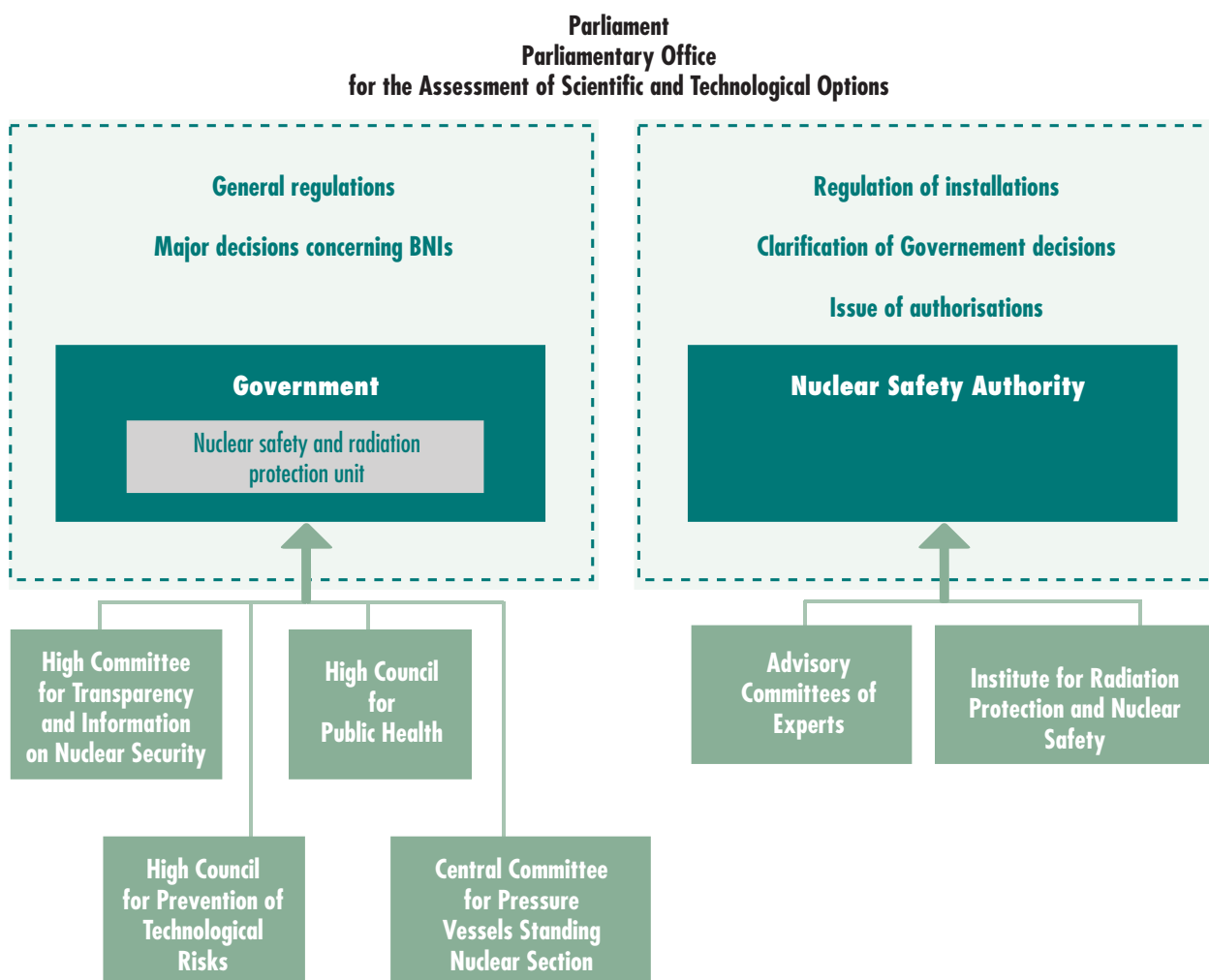
The regulation of worker radiation protection is the responsibility of the Minister for labour.

Finally, the Ministers responsible for nuclear safety and for radiation protection approve the ASN internal regulations by means of a Government order. Each of them also approves ASN technical regulatory resolution and certain individual resolution (setting BNI discharge limits, delicensing a BNI, etc.) affecting their own particular field.

The Nuclear Safety and Radiation Protection Mission

The MSNR (Nuclear Safety and Radiation Protection Mission), within the General Directorate for Risk Prevention at the

Regulation of nuclear safety and radiation protection in France



Ministry of Ecology, Sustainable Development and Energy, is tasked - in collaboration with ASN - with proposing Government policy on nuclear safety and radiation protection, except for defence-related activities and installations and the radiation protection of workers against ionising radiations.

2|2|2 The Prefects

The Prefects are the State's representatives in the *départements*². They are the guarantors of public order and play a particularly important role in the event of an emergency, in that they are responsible for measures to protect the general public.

The Prefect intervenes during the various procedures presented in chapter 3. He in particular issues his opinion on authorisation applications and, at the request of ASN, calls on the Departmental Council for the Environment and Health and

Technological Risks, to obtain its opinion on water intake, effluent discharges and other detrimental effects of BNIs.

2|3 ASN

The TSN Act created an independent administrative nuclear safety authority (ASN) to monitor and regulate nuclear safety and radiation protection. ASN's remit comprises regulation, authorisation and monitoring as well as providing support to the public authorities for management of emergencies and contributing to informing the general public.

ASN is made up of a commission and of various departments. From a technical point of view, ASN relies on the expertise with which it is provided, notably by IRSN and by Advisory Committees of Experts (GPEs).

2. Administrative region headed by a Prefect.

2|3|1 Role and duties

Regulation

ASN is consulted on draft decrees and ministerial orders of a regulatory nature and dealing with nuclear safety.

It can take regulatory resolutions of a technical nature to complete the implementing procedures for decrees and orders adopted in the nuclear safety or radiation protection field, except for those relating to occupational medicine. These resolutions are subject to approval by the Ministers responsible for nuclear safety and for radiation protection.

Approval orders and approved resolutions are published in the *Official Journal*.

Authorisation

ASN reviews BNI authorisation or decommissioning applications, issues opinions and makes proposals to the Government concerning the decrees to be issued in these fields. It defines the requirements applicable to these installations with regard to the prevention of risks, pollution and detrimental effects. It authorises commissioning of these installations and pronounces delicensing following completion of decommissioning.

Some of these ASN resolutions require approval by the Ministers responsible for nuclear safety.

ASN also issues the licenses provided for in the Public Health Code (CSP) concerning small-scale nuclear activities and issues authorisations or approvals for radioactive substance transport operations.

ASN's resolutions and opinions are published in its *Official Bulletin* on its website (www.asn.fr).

Verification

ASN checks compliance with the general rules and specific requirements concerning nuclear safety and radiation protection applicable to BNIs, the design, construction and use of pressure equipment designed specifically for these installations, the transport of radioactive substances and the activities mentioned in Article L. 1333-1 of the CSP and the persons mentioned in Article L. 1333-10 of the CSP.

ASN organises permanent radiation protection monitoring throughout the national territory.

From among its own staff, it appoints nuclear safety inspectors, radiation protection inspectors and officers in charge of verifying compliance with pressure equipment requirements. It issues the required approvals to the organisations participating in the verifications and nuclear safety or radiation protection monitoring.

Chapter 4 of this report presents ASN actions in this field.

Emergency situations

ASN takes part in managing radiological emergency situations. It provides technical assistance to the competent authorities for the drafting of emergency response plans, taking account of the risks resulting from nuclear activities.

When such an emergency situation occurs, ASN verifies the steps taken by the licensee to make the facility safe. It assists the Government with all matters within its field of competence and submits its recommendations on the medical or health measures or civil protection steps to be taken. It informs the general public of the situation, of any releases into the environment and their consequences. It acts as the competent authority within the framework of international conventions, by notifying international organisations and foreign countries of the accident.

Chapter 5 of this report presents ASN actions in this field.

Investigation in the event of an accident

In the event of an incident or accident involving a nuclear activity, ASN may conduct a technical inquiry along similar lines to those applicable to "accident and investigation" boards called on to deal with transport accidents.

Information

ASN participates in informing the public in its areas of competence. Chapter 6 of this report presents ASN actions in this field.

Research monitoring

The quality of ASN's decisions relies primarily on robust technical expertise which, in turn, requires the best and most up-to-date knowledge.

Consequently, ASN attaches great importance to the availability of the knowledge required to underpin the expertise it may need to call upon in the medium and long term. ASN is also attentive to the quality of research initiatives, with the prospect of them being integrated in the licensees' safety demonstrations.

In April 2012, ASN issued an opinion on the importance it places in research, and on identifying the initial research topics to be further investigated in the fields of nuclear safety and radiation protection.

It may moreover be necessary to use experimental means, some of which require the mobilising of substantial resources. In this respect, the maintaining of facilities, some of which are unique in Europe, may be a major issue.

ASN notes the importance of fundamental research as a complement to applied research, which among other things enables promising safety options in nuclear safety and radiation protection to be explored, and helps improve the understanding of the phenomenology of physical phenomena encountered on the facilities.

In 2010, ASN set up a Scientific Committee to examine its proposed orientations concerning the research work to be conducted or taken further in the fields of nuclear safety and radiation protection. The Scientific Committee comprises seven members appointed for their expertise in the research field. Under the Chairmanship of Ashok Thadani, former research director of the United States Nuclear Regulatory Commission (NRC), the Scientific Committee met twice in 2012. It examined the following subjects:

- severe accidents;
- PWR nuclear fuel;



The scientific committee at a meeting on 28th November 2011. (From left to right) Michel Spiro, Bernard Boullis, Vincent Favaudon, Jean-Claude Lehmann, Ashok Thadani and Victor Teschendorff. Michel Schwarz was appointed to the committee on 19th June 2012 by ASN resolution

- waste conditioning;
- external dosimetry;
- waste disposal in deep geological formations;
- transport of radioactive substances.

The Fukushima nuclear accident also highlighted the need for more research in the field of nuclear safety. Thus, in 2012 ASN took part in the steering committee for the call for proposals issued by the French national research agency (ANR) for the nuclear safety part of the “investing in the future” programme.

2|3|2 Organisation

ASN is run by a Commission and comprises central services and regional divisions.

ASN Commission

The Commission comprises five Commissioners holding the post on a full-time basis. These are permanent appointments with a 6-year non-renewable mandate.

The Commission defines ASN strategy. More specifically, it is involved in developing overall policy, i.e. the doctrines and principles that underpin ASN's main missions of regulation, inspection, transparency, management of emergency situations and international relations. The Commission also develops the Multi-Year Strategic Plan (PSP).

Pursuant to the TSN Act, the Commission submits ASN's opinions to the Government and takes the main ASN decisions. It decides on the public position to be adopted on the main issues within ASN's sphere of competence. The Commission adopts the ASN internal regulations which lay down its organisation and working rules, as well as its ethical guidelines. The Commission's resolutions and opinions are published in ASN's *Official Bulletin*.



The ASN Commission as at 12th November 2012 (from left to right): Philippe Jamet, Michel Bourguignon, Pierre-Franck Chevet, Margot Tirmarche and Jean-Jacques Dumont

In 2012, the ASN Commission met 66 times. It issued 37 opinions and took 76 resolutions.

The ASN commission was partially renewed in November 2012, with Pierre-Franck Chevet, Chairman, and Margot Tirmarche, commissioner, succeeding to André-Claude Lacoste and Marie-Pierre Comets respectively.

ASN Central Services

The ASN central services comprise an Executive Committee, an Office of Administration, a Management and Expertise Office and eight departments covering specific themes.

Under the authority of the ASN Director-General, the Executive Committee organises and manages the departments on a day to day basis. It ensures that the orientations determined by the Commission are followed and that ASN's actions are effective. It oversees and coordinates the various entities.

The role of the departments is the national management of the activities for which they are responsible. They take part in drafting the general regulations and coordinate the actions of the ASN divisions.

- The Nuclear Power Plant Department (DCN) is responsible for regulating and inspecting the safety of the NPPs in operation, as well as the safety of future power generating reactor projects. It contributes to development of regulation/inspection strategies and ASN actions on subjects such as facility ageing, the extension of reactor service life, evaluation of NPP safety performance, and harmonisation of nuclear safety in Europe.

The DCN comprises five Branches: “Reassessment – Equipment – Hazard”, “Operation”, “Core – Studies”, “Radiation Protection – Environment and labour Inspections” and “Regulations and New Installations”.

- The Nuclear Pressure Equipment Department (DEP) is responsible for monitoring of safety of pressure equipment installed in BNIs. It is primarily tasked with developing



The ASN executive committee as at 1st January 2013 (from left to right): Henri Legrand, Sophie Mourlon, Jean-Christophe Niel, Nicolas Osouf, Jean-Luc Lachaume and Alain Delmestre

regulations on the design, manufacture and operation of nuclear pressure equipment and for monitoring application of these regulations by manufacturers and their sub-contractors, and by nuclear operators. The DEP also considers applications from approved organisations wishing to carry out regulation inspections on nuclear pressure equipment.

The DEP comprises three Branches: “Design – Manufacturing”, “In-service Monitoring” and “Relations with Divisions – Operations”.

- The Transport and Radiation Sources Department (DTS) is responsible for monitoring of activities relating to sources of ionising radiation in the non-medical sectors and for transport of radioactive substances. It contributes to the development of technical regulations, to monitoring of their application and to management of authorisation procedures (installations and equipment emitting ionising radiation in non-medical sectors, suppliers of medical and non-medical sources, accreditation of packaging and of relevant organisations). It is preparing to take charge of regulating radioactive source security.

The DTS comprises three Branches: “Transport Management”, “Radiation Protection and Sources” and “Source Security”.

- The Waste, Research Facilities and Fuel Cycle Department (DRC) is responsible for monitoring nuclear fuel cycle facilities, research facilities, nuclear installations being decommissioned, contaminated sites and radioactive waste management. It takes part in monitoring and inspecting the Bure underground research laboratory and the research facilities covered by international conventions, such as CERN or ITER.

The DRC comprises four Branches: “cross-cutting topics and research facilities”, “Fuel cycle facilities”, “Management of radioactive waste” and “Decommissioning and Clean-out”.

- The Ionising Radiation and Health Department (DIS) is tasked with regulating medical applications of ionising radiation and organising - in collaboration with IRSN and the various health authorities - the scientific, health and medical watch with regard to the effects of ionising radiation on health. It contributes to the drafting of the regulations in the field of radiation protection, including with respect to natural ionising radiation, and the updating of health protection measures should a nuclear or radiological event take place.

The DIS comprises two Branches: “Exposure in the Medical Sector” and “Exposure of Workers and the Public”.

- The Environment and Emergency Department (DEU) is responsible for monitoring of environmental protection and management of emergency situations. It establishes the policy on nationwide radiological monitoring and on provision of information to the public as well as helping to ensure that discharges from BNIs are as low as reasonably achievable, in particular by establishing general regulations. The DEU also contributes to defining the organisational framework of public authorities and nuclear operators where management of emergency situations is concerned and establishes ASN regulatory policy.

The DEU comprises three Branches: “Safety and Emergency Preparedness”, “Environment and Prevention of Nuisances” and “Development of Regulations”.

- The International Relations Department (DRI) is in charge of ASN’s bilateral and multilateral international relations. It develops exchanges with ASN’s counterpart organisations in other countries to provide information about and explain French practices and to provide the countries concerned with useful information on the safety of French nuclear installations close to their borders. The DRI coordinates ASN representation within international bodies such as the European Union, the IAEA or the Nuclear Energy Agency (NEA).

- The Communication and Public Information Department (DCI) develops and implements ASN’s policy on communication and information regarding nuclear safety and radiation protection. It coordinates communication and information actions targeting different audiences, with a focus on handling requests for documentation, making ASN’s position known and explaining regulations.

The DCI comprises two Branches: “Public Information” and “Publications and Multimedia”.

- The Office of Administration (SG) helps to provide ASN with the adequate, appropriate and long-term resources necessary for it to function. It is responsible for managing the human resources, including with regard to skills, and for developing the social dialogue. It is also responsible for ASN real estate policy and its logistical and material resources. It is in charge of ASN budget policy and ensures optimised use of its financial resources. Finally, it provides legal expertise for ASN as a whole.

The SG comprises four Branches: “Human Resources”, “Budget – Finance”, “Logistics – Real Estate” and “Legal Affairs”.

- The Management and Expertise Office (MEA) provides ASN with IT resources and a high level of expertise. It ensures that ASN’s actions are coherent, by means of a quality approach and by overseeing coordination of the workforce.

The MEA comprises three Branches: “Information Technology and Telephony”, “Expertise and Research” and “Coordination and Quality”.

ASN divisions

The eleven ASN regional divisions carry out their activities under the authority of regional representatives.



The ASN Directors as at 1st January 2013 (from left to right): Jean-Luc Godet, Martine Baudoin, Stéphane Pailler, Sophie Chevalier, Vivien Tran-Thien, Lydie Evrard, Luc Chaniel, Thomas Houdré and Alain Delmestre



The ASN regional representatives as at 1st January 2013 (from left to right): Marc Hoeltzel, Nicolas Forray, Hubert Ferry-Wilczek, Corinne Etaix, Bernard Doroszczuk and Michel Pascal (absent: Jean-Christophe Villemaud, Philippe Ledenvic and Laurent Roy)



The ASN regional heads as at 1st January 2013 (from left to right): Alain Rivière, François Godin, Pierre Siefert, Grégoire Deyirmendjian, Pierre Perdiguer, Delphine Ruel, Florian Kraft, Anne-Cécile Rigail, Simon Huffeteau, Jean-Michel Ferat and Fabien Schilz

The Director of the Regional Directorate for the Environment, Planning and Housing (DREAL) or of the Regional Directorate for the Environment and Energy (DRIEE) in which the division in question is located takes on this responsibility as regional representative. S/he is placed at the disposal of ASN to fulfil this role which is not exercised under the authority of the Prefect. Delegation of the power of signature by the Director-General gives them the authority to take decisions at a local level.

The divisions carry out most of the direct inspections on the BNIs, on radioactive substance transport operations and on small-scale nuclear activities, and review most of the authorisation applications filed with ASN by the nuclear activity licensees within their regions.

In emergency situations, the divisions assist the Prefect of the *département* who is in charge of protecting the general public, and supervise the operations carried out to safeguard the facility on the site. To ensure preparedness for these situations, they take part in drawing up the emergency plans drafted by the Prefects and in periodic emergency exercises.

The divisions contribute to ASN's public information duty. They for example take part in the meetings of the local information committees (CLIs) and maintain regular relations with the local media, elected officials, associations, licensees and local administrations.

ASN's divisions are presented in chapter 8 of this report.

2|3|3 Operation

Human resources

The total ASN workforce as at 31st December 2012 stood at 471, divided between the central services (251 people), the regional divisions (217 people) and international representation (3 people).

This workforce can be further broken down as follows:

- 369 tenured or contract staff;
- 102 people seconded by public institutions (Health and Social Security Services - Paris Hospitals, CEA, IRSN ANDRA, SDIS), 20 of whom are seconded by IRSN as part of the staffs reinforcements further to the Fukushima accident.

As at 31st December 2012, the average age of the ASN staff was 44.

A balanced age pyramid and a policy of diversity in recruitment (and thus of experience), gives ASN the qualified and complementary human resources it needs to meet its responsibilities. In addition, the training, the method of integration of the youngest staff members and transmission of know-how help to obtain the required level of expertise.

To ensure that it always has staff with the required competence, ASN must be able to offer them – in relation to its needs – varied career paths, enhancing their existing experience in particular.

Skills management

Competence is one of the four key values of ASN. The tutor system, initial and continuous training, whether general, linked to nuclear techniques, the field of communication, or legal matters, as well as day-to-day practices, are essential aspects of the professionalism of ASN staff.

Management of the skills of ASN personnel is based primarily on training tailored for each staff member from a detailed and regularly updated core training corpus. Such training is taken into consideration in any decisions to qualify staff as inspectors. In 2012, nearly 4,520 days of training were provided to ASN staff through 266 sessions forming part of 169 different courses. The financial cost of the courses, provided by organisations other than ASN, amounted to €580 thousand.

Since 1997, ASN has followed a programme of qualification of its inspectors, based on recognition of their technical competence.

An Accreditation Committee was set up in 1997 to advise the Director-General on the entire qualification system. In particular, the Committee reviews the applicable training curriculum and the qualification reference systems and conducts interviews with inspectors as part of a confirmation process. Chaired by Mr Philippe Saint Raymond, the Accreditation Committee comprises senior ASN inspectors and persons qualified in inspection, human resources, appraisal and teaching in the field of nuclear safety and inspection of classified installations. Its competence was confirmed in 2009 for the radiation protection field.

The Accreditation Committee met three times in 2012 and proposed the confirmation of 15 inspectors. As at 31st December 2012, 62 ASN nuclear safety or radiation protection inspectors are senior inspectors, that is to say about 21% of the total number of ASN inspectors.

Social dialogue

Maintaining and developing a high level of social dialogue is a key objective in ASN's human resources policy. In the eventful context of 2012, the ASN Social Dialogue Committee (SDC), which replaced the Joint Technical Committee at the end of 2011, met on 7 occasions in 2012 and presented numerous subjects to the personnel representatives (new mobility convention concluded with the CEA, creation of the ASN's Committee for Health, Safety and Working Conditions (CHSCT), project to relocate regional divisions, implementation of the "medicines" act, specific phase of the project to relocate the ASN's central services, etc.).

Complementing the action of the ASN SDC, the Joint Consultative Commission (CCP) – which has competence for contract staff – met twice.

At the end of 2012, ASN created a another new social dialogue body with its CHSCT, which will study in greater depth the questions of health and safety.

Professional ethics

Two legislative texts set specific rules of professional ethics applicable to ASN:

- the Environment Code stipulates that as soon as the ASN Commission members are appointed, they shall draw up a declaration indicating the interests they hold or have held in the course of the previous five years in the areas falling under the competence of ASN. This declaration, which is filed at the ASN head office and is held at the disposal of the members of the Commission, is updated at the initiative of the Commissioner concerned as soon as any change occurs that would modify the declaration. No member of the Commission may hold, during their mandate, an interest that could affect their independence or impartiality (Article L. 592-6 of the Environment Code);
- the Act of 29th December 2011 relative to the reinforcing of the sanitary safety of medicines and health products, known as the "Medicines Act", establishes a modernised framework for professional ethics and sanitary expertise that the Authorities involved in the area of health and sanitary safety must comply with. For ASN, these particular ethical rules apply to its activity relative to the safety of health products. The declarations of interests of the persons concerned within ASN, and the members of the ASN Commission in particular, are published on www.asn.fr.

Chapter 3 of the ASN's Rules of Procedure sets out the rules applicable to all the ASN employees, focusing in particular on:

- observance of professional secrecy and duty of discretion;
- abuse of authority and breaches of the duty of integrity;
- conflicts of interest;
- guarantees of independence with regard to persons or entities subject to ASN oversight.

Financial resources

Since 2000, all the personnel and operating resources involved in the performance of the responsibilities entrusted to ASN have been covered by the State's general budget.

The ASN's budget amounted to €75.6 million in 2012. It comprises €39.6 million in ASN payroll credits and €36 million in operating credits for the ASN central services and the eleven regional divisions.

Furthermore, €84 million of credits were devoted to the technical appraisals performed by IRSN on behalf of ASN, as provided for by the TSN Act: these credits come from a State subsidy, supplemented since 2011 by an annual contribution from the BNI licensees. ASN is consulted by the Government concerning the corresponding part of the State subsidy to IRSN and the amount of the annual contribution due from the BNI licensees.

In total, the State's 2012 budget for transparency and the regulation of nuclear safety and radiation protection in France, amounted to €170.5 million: €75.6 million for the ASN budget, €4 million for IRSN technical support to ASN, €10.6 million for other IRSN missions and €0.15 million for the working of the HCTISN (French High Committee for Transparency and Information on Nuclear Security).

As shown in table 2, these credits are split between five programmes (181, 217, 333, 218 and 190) to which must be added the annual contribution to IRSN.

ASN moves its head office to Montrouge

As part of the project initiated in 2011, ASN will be moving its head office to a building of high environmental quality in Montrouge, a Paris suburb near the Porte d'Orleans, at the end of the first quarter of 2013.

This is a significant and structuring step in ASN's development, six years after its change of status. This will give ASN a head office that can accommodate its central services staff of over 250 employees and consolidate its internal functioning and cohesion.

Until 2012, the ASN Commission and central services (except for DEP) occupied two separate sites situated more than 10 kilometres apart, one in Paris, the other in Fontenay-aux-Roses.



TO BE NOTED IN 2012

Table 2: Credits allocated to transparency and the regulation of nuclear safety and radiation protection in France, in 2012 and 2013

Mission	Programme	Action	Nature	LF ⁽¹⁾ 2012 (€M)	PLF ⁽²⁾ 2013 AE ⁽³⁾ (€M)	PLF ⁽²⁾ 2013 CP ⁽⁴⁾ (€M)
Ministerial mission Ecology, sustainable development and spatial planning	Programme 181 : Risk Prevention	Action 9 Regulation of nuclear safety and radiation protection	Staff (including seconded employees)	39.60	39.78	39.78
			Operating and intervention spending	18.50	13.48	18.50
			TOTAL	58.10	53.26	58.28
	Programme 217: Management and coordination of policies for ecology, energy and sustainable development and the sea	Action 1 Prevention of technological risks and pollution	Operation of the HCTISN (High Committee for Transparency and Information on Nuclear Security)	0.15	0.15	0.15
		-	Operation of ASN's 11 regional divisions	10.08 (5)	13.35 (5)	13.35 (5)
Ministerial mission Oversight of government actions	Programme 333 : Resources shared by decentralised administrations	-		1.15	1.15	1.15
Interministerial mission Management of public finances and human resources	Programme 218 : Implementation and oversight of economic and financial policies	-	Operation of the ASN central services (Paris and Fontenay-aux-Roses)	6.27 (6)	6.27 (6)	6.27 (6)
SUB-TOTAL				75.75	74.18	79.20
Interministerial mission Research and higher education	Programme 190 : Research in the fields of energy and sustainable development and spatial planning	Sub-action 11-2 (area 3) The French Institute for Radiation Protection and Nuclear Safety (IRSN)	IRSN technical support activities for ASN	46.40	45.15	45.15
Annual contribution to IRSN instituted by Article 96 of budget amendment Act 2010-1658 of 29th December 2010				37.60 (7)	38.80 (7)	38.80 (7)
SUB-TOTAL				84.00	83.95	83.95
TOTAL				159.75	158.13	163.15

(1) LFI: Initial Budget Law

(2) PFI: Budget Bill

(3) AE: Commitment Authorisation

(4) CP: Credits paid

(5) Source: PLF 2012 and 2013

(6) Source: 2006 Budget Bill (after deduction of transfer made under 2008 Budget Bill).

(7) Out of a total contribution product estimated at €48 M in 2012.

This complex funding structure is detrimental to the overall clarity of the cost of regulation. It moreover leads to difficulties in terms of budgetary preparation, arbitration and implementation.

Lastly, in 2012 the French Public Accounts Office conducted an audit of ASN, the conclusions of which are expected in 2013.

ASN management tools

The strategy-based approach

The Multi-year Strategic Plan (PSP), prepared under the authority of the ASN Commission, outlines ASN's strategic orientations for a three year period. It is presented annually in an operational orientation document that sets the year's priorities for ASN, and which is in turn adapted by each entity into an annual action plan that is subject to periodic monitoring. This three-level approach is an essential part of ASN's development, organisation and management.

In 2012 ASN produced the PSP for the period for 2013-2015, based in particular on an assessment of the implementation of the 2010-2012 PSP; the PSP is accessible on line at www.asn.fr.

Quality management system

To guarantee and improve the quality and effectiveness of its actions, ASN defines and implements a quality management system inspired by the ISO and IAEA international standards. This system is based on:

- an organisation manual containing organisation notes and procedures, defining the rules to be applied for each task;
- internal and external audits to check rigorous application of the system's requirements;
- listening to the stakeholders;
- performance indicators for monitoring the effectiveness of action taken;
- a periodic review of the system, to foster continuous improvement.

In 2006, in line with its continuous progress approach, ASN received an Integrated Regulatory Review Service (IRRS) peer review mission, to ensure that its organisation and practices comply with international IAEA standards. This "full scope" mission addressed all of the fields covered by the IRRS nuclear safety and radiation protection missions.

An IRRS follow up mission was organised in 2009. The participating international experts considered that ASN had responded satisfactorily to 90% of the recommendations and suggestions made in 2006. In a number of areas such as inspection, emergency preparedness, public information or ASN's international role, they were once again of the opinion that ASN's actions ranked amongst the best international practices. They also identified some areas for improvement, notably in terms of skills management.

ASN took advantage of the conclusions of this mission to reinforce the conformity of its practices and its organisation with the best international standards. The next IRRS mission will be received in 2014.

The reports can be viewed on the ASN website.

Internal communication

ASN's internal communication endeavours, like the human resources department, to foster the sharing of information and experience between teams and activities, by reinforcing the internal culture and reasserting the specific nature of ASN's remit, rallying the staff around the strategic orientations defined for their missions, and developing strong group dynamics. In 2012 ASN used various media to highlight the skills and achievements of its staff: in addition to the internal communication media (intranet, an activity report, the magazine *Transparence* – see chapter 6), it organised meetings to allow the staff to discuss the strategy and priorities proposed by the ASN Commission. These included: several seminars held during the development of the strategic plan for 2013-2015 and bringing together the ASN teams at local and national level; the traditional New Year Wishes evening at which the ASN Chairman and Director-General present the outlook for the future; and the presentation of the *Report on the state of nuclear safety and radiation protection in France* to the staff, before it is presented to the National Assembly and the press. Lastly, in spring and autumn of 2012, ASN organised the presentation of the two Issues of the review *Contrôle* devoted respectively to the transport of radioactive materials and the management of sites and soils contaminated by radioactivity.

Measures were also taken to prepare the staff for future transfer of ASN's head office to Montrouge, a Paris suburb, which will take place in 2013. ASN thus implemented specific actions (information meetings, panels, creation of a specific section in the intranet) to regularly inform the personnel of the progress of the relocation project and to involve them in each major step along the way. It also organised visits to the future head office premises.

Lastly, the sharing of information on the work of ASN's regional divisions continues to be encouraged: some fifteen regional information notices were published on *Oasis*, the ASN intranet. The daily press review that all ASN staff members receive by e-mail enables them to keep tuned in to the subjects in which ASN is particularly involved.

2|4 Consultative bodies

2|4|1 High Committee for Transparency and Information on Nuclear Security

The TSN Act created a High Committee for Transparency and Information on Nuclear Security (HCTISN), an information, discussion and debating body dealing with the risks inherent in nuclear activities and the impact of these activities on human health, the environment and nuclear safety.

The High Committee can issue an opinion on any question in these fields, as well as on controls and the relevant information. It can also deal with any issue concerning the accessibility of nuclear safety information and propose any measures such as to guarantee or improve nuclear transparency. It can be called on by the Government, Parliament, the local information committees or the licensees of nuclear facilities, with regard to

all questions relating to information about nuclear safety and its regulation and monitoring.

The HCTISN's activities in 2012 are described in chapter 6.

2|4|2 The High Council for Public Health

The High Council for Public Health (HCSP), created by Act 2004-806 of 9th August 2004 concerning public health policy, is a scientific and technical consultative body reporting to the Minister responsible for Health.

The HCSP contributes to defining the multi-year public health objectives, reviews the attainment of national public health objectives and contributes to the annual monitoring process. Together with the health agencies, it provides the public authorities with the expertise necessary for managing health risks and for defining and evaluating prevention and health safety policies and strategies. It also anticipates future developments and provides advice on public health issues.

2|4|3 The High Council for Prevention of Technological Risks

As part of the process to overhaul the technological risks consultation process, the Government issued a decree on 27th July 2010, abolishing the BNI Consultative Committee (CCINB) which had been created by decree on 2nd November 2007 and which was consulted on texts relating to the regulation of basic nuclear installations and the more important individual resolutions regarding these facilities.

Henceforth, consultation will take place before the High Council for Prevention of Technological Risks (CSPRT), created by Order 2010-418 of 27th April 2010. Alongside representatives of the State, the Council will be made up of licensees, qualified personalities and representatives of environmental associations. The CSPRT, which takes over from the high council for classified facilities, will see the scope of its remit extended to pipelines transporting gas, hydrocarbons and chemicals, as well as covering BNIs.

The Government obligatorily submits ministerial orders concerning BNIs to the CSPRT for its opinion. ASN may also submit individual resolutions relating to BNIs to it.

2|4|4 The Central Committee for Pressure Equipment

The Central Committee for Pressure Equipment (CCAP), created by Article 26 of decree 99-1046 of 13th December 1999 concerning pressure equipment (PE), is a consultative organisation reporting to the minister responsible for industry.

It comprises members of the various administrations concerned, persons chosen for their particular competence and representatives of the pressure equipment manufacturers and users and of the technical and professional organisations concerned. It is chaired by Mr Jean-François Magana.

The Government and ASN obligatorily submit all questions concerning the legislative and regulatory aspects of nuclear pressure equipment (ministerial orders and individual decisions

concerning BNIs alike) to the CCAP. Accident reports concerning pressure equipment are also communicated to it.

2|5 ASN's technical support organisations

ASN benefits from the expertise of technical support organisations to prepare its decisions. The French Institute for Radiation Protection and Nuclear Safety (IRSN, www.irsn.fr) is the main such organisation. ASN has been making efforts to diversify its experts for several years.

2|5|1 Institute for Radiation Protection and Nuclear Safety (IRSN)

Created by Act 2001-398 of 9th May 2001 and by decree 2002-254 of 22nd February 2002, IRSN was set up as an independent public industrial and commercial establishment, as part of the national reorganisation of nuclear safety and radiation protection regulation, in order to bring together public expertise and research resources in these fields. IRSN reports to the ministers for the environment, health, research, industry and defence.

IRSN conducts and implements research programmes in order to build its public expertise capacity on the very latest national and international scientific knowledge in the fields of nuclear and radiological risks. It is tasked with providing technical support for the public authorities with competence for safety, radiation protection and security, in both the civil and defence sectors.

IRSN also has certain public service responsibilities, in particular monitoring of the environment and of populations exposed to ionising radiation.

IRSN manages national databases (national nuclear material accounting, national inventory of radioactive sources, file for monitoring worker exposure to ionising radiation, etc.), and contributes to informing the public about the risks associated with ionising radiation.

IRSN workforce

As at 31st December 2012, IRSN's overall workforce stood at 1700, about 400 of whom are devoted to ASN technical support.

In order to initiate experience feedback from the Fukushima accident, IRSN's workforce was boosted by an extra 44 staff, 22 of whom are seconded to ASN.

IRSN budget

In 2012, IRSN's total budget amounted to €212 million, of which €84 million were devoted to providing ASN with technical support.

IRSN credits for ASN technical support are covered in part (€46.4 million) by a subsidy from the State's general budget allocated to IRSN and included in action 11 "Research in the field of risks" of programme 190 "Research in the fields of energy and sustainable development and spatial planning", of the interministerial "Research and higher education" mission. The rest (€37.6 million) is covered by a contribution from the nuclear licensees. This contribution was put into place by the budget amendment act of 29th December 2010.

An agreement was signed by ASN and IRSN to define the principles governing the technical support provided to ASN by the Institute. This agreement is clarified on a yearly basis by a protocol identifying the actions to be performed by IRSN to support ASN.

2|5|2 Advisory Committees of experts (GPE)

In preparing its decisions, ASN calls on the opinions and recommendations of seven Advisory Committees of Experts (GPE), with expert knowledge in the areas of waste, nuclear pressure equipment, medical exposure, non-medical radiation protection, reactors, transport, and laboratories and nuclear plants.

ASN consults the GPEs in preparing its main decisions. In particular, they review the preliminary, provisional and final safety analysis reports for each BNI. They can also be consulted about changes in regulations or doctrine.

For each of the subjects covered, the GPEs examine the reports produced by IRSN, by a special working group or by one of the ASN departments. They issue an opinion backed up by recommendations.

The GPEs comprise experts nominated for their individual competence. They come from various backgrounds; universities, associations, appraisal and research organisations. They can also be licensees of nuclear facilities or come from other sectors (industrial, medical, etc.). Participation by foreign experts can help diversify the approach to problems and take advantage of experience acquired internationally.

In 2013, ASN will continue its reflections on how the system of GPEs can evolve, taking care to ensure high levels of expertise and independence with respect to the projects leaders.

Since 2009, as part of its commitment to transparency in nuclear safety and radiation protection, ASN has published the GPE letters of referral, the opinions of the GPEs and ASN's position statements based on these opinions. IRSN for its part publishes the syntheses of the technical investigation reports it presents to the GPEs.

In 2012, the ASN budget allocated to the GPEs was around €170 thousand.

Advisory Committee for Waste (GPD)

The Advisory Committee for waste (GPD) is chaired by Mr Pierre Bérest. It comprises experts appointed for their competence in the nuclear, geological and mining fields.

In 2012, it held three information meetings and one 2-day bipartite meeting with the Germans during which it visited two facilities.

The Advisory Committee for nuclear pressure equipment (GPESPN)

Since 2009, the GPESPN has replaced the Standing Nuclear Section (SPN) of the CCAP. The GPESPN is chaired by Mr Philippe Merle and comprises experts appointed for their competence in the field of pressure equipment.

It held three meetings in 2012.

The Advisory Committee for medical exposure (GPMED)

Chaired by Mr Yves Coquin, the GPMED comprises experts appointed for their competence in the field of radiation protection of health professionals, the general public and patients and for medical applications of ionising radiation.

It held five meetings in 2012.

The composition of the GPMED changed at the end of 2012, and it is now chaired by Mr Bernard Aubert.

The Advisory Committee for radiation protection in non-medical sectors and in the environment (GPRADE)

Until 2012, the work of the GPRAD covered the radiation protection of workers (other than health professionals) and the radiation protection of the public, for industrial and research applications using ionising radiations, as well as for radiation from NORM.

It held four meetings in 2012.

At the end of 2012 its mandate was widened to cover protection of the environment and its composition was changed. This new Advisory Committee for radiation protection in non-medical sectors and in the environment (now called GPRADE) is chaired by Mr Jean-Paul Samain.

Advisory Committee for reactors (GPR)

The Advisory Committee for reactors is chaired by Mr Pierre Govaerts and comprises experts appointed for their competence in the field of reactors.

It held eight meetings and visited one facility in 2012.

Advisory Committee for transport (GPT)

Chaired by Mr Jacques Aguilar, the GPT comprises experts appointed for their competence in the area of transport.

It held three meetings in 2012, one of which was an internal meeting.

The Advisory Committee for laboratories and plants (GPU)

The Advisory Committee for laboratories and plants is chaired by Mr Philippe Saint Raymond. It comprises experts appointed for their competence in the field of laboratories and plants in which radioactive substances are used.

It held five meetings and visited one installation in 2012.

2|5|3 The ASN's other technical support organisations

To diversify its expertise and to benefit from other specific skills, ASN also has its own budget allowance, amounting to €0.49 million in 2012.

A significant part of this budget is allocated to subjects concerning exposure of the general public to radon in the

home, as well as to the work of the Steering Committee for managing the post-nuclear accident phase (CODIRPA).

In 2012, ASN continued or initiated collaboration with:

- the Scientific and Technical Centre for Building (CSTB): questions relating to population exposure to radon in the home (multi-year action 2012-2014). Setting up and coordinating a “buildings radon” network, cost-effectiveness analysis of policies for the management of radon in buildings, technical support to ASN and the players in the field;
- the French National Institute for Industrial Environment and Risks (INERIS): appraisal of EDF’s proposals for the prevention and control of accidental pollution of groundwater by chemical substances at the Fessenheim nuclear power plant;
- the Nuclear Protection Evaluation Centre (CEPN): support for post-nuclear accident work, review of training programmes for radiation protection of patients;
- FACTEA: situation assessment of radioactive substance transport operations carried out in France;
- SYMLOG: methodological support for information and participation of the general public according to the terms of the Aarhus convention.

The implementation of a framework agreement in 2013 should give impetus to the use of diversified expertise.

2|6 The pluralistic working groups

ASN has set up several pluralistic working groups; they enable the stakeholders to take part in the development of doctrines, the defining of action plans or the monitoring of their implementation.

2|6|1 The working group for the national radioactive materials and waste management plan

Article L.542-1-2 of the Environment Code requires the production of the national radioactive materials and waste management plan (PNGMDR), revised every three years, the purpose of which is to review the existing management procedures for radioactive materials and waste, to identify the foreseeable needs for storage and disposal facilities, to clarify the necessary capacity of these facilities and the storage durations and, for radioactive waste for which there is as yet no final management solution, to determine the objectives to be met.

The working group (WG) tasked with producing the PNGMDR comprises environmental protection associations, representatives of elected officials, and regulatory authorities, alongside the radioactive waste producers and managers. It is co-chaired by the DGEC (General Directorate for Energy and the Climate) of the Ministry for energy and sustainable development and by ASN.

The work of the PNGMDR WG is presented in greater detail in chapter 16.

2|6|2 The steering committee for managing the post-accident phase (CODIRPA)

Pursuant to the interministerial directive of 7th April 2005, ASN, in association with the ministerial departments concerned, is responsible for “defining, preparing and implementing the steps necessary to deal with a post-accident situation”.

In order to develop a doctrine and after testing post-accident management during national and international exercises, ASN created the CODIRPA (Steering committee responsible for post-accident management), comprising representatives of all the relevant stakeholders. This committee, led by ASN, has representatives from the ministerial departments concerned, the health agencies, associations, the local information committees (CLI), and IRSN.

The work of the CODIRPA is presented in greater detail in chapter 5.

2|6|3 The Steering Committee for Social, Organisational and Human Factors (COFSOH)

Considering that there is a need to move forward with the reflections and work on the contribution of human and organisational factors to the safety of nuclear facilities, ASN decided to set up the COFSOH (Steering Committee for Social, Organisational and Human Factors) in 2012.

2|6|4 The other pluralistic groups

In 2012, the ASN-led national committee tasked with monitoring the national plan for the management of risks relating to radon was opened to associations.

ASN has also set up a pluralistic committee for tracking studies and research into leukaemia in children and ionising radiation.

2|7 Other stakeholders

As part of its mission to protect the general public from the health risks of ionising radiation, the ASN cooperates closely with other competent institutional stakeholders addressing health issues.

2|7|1 The French National Authority for Health

The French National Authority for Health (HAS), a body created by the French Government in 2004, is tasked primarily with maintaining an equitable health system and with improving patient care.

The Authority and its activities are presented on its website: www.has-sante.fr. An ASN-HAS convention was signed on 4th December 2008.

2|7|2 The National Agency for the Safety of Medication and Health Products

The National Agency for the Safety of Medication and Health Products (ANSM) was created on 1st May 2012. The ANSM, a public institution reporting to the Ministry of Health, has taken up the duties of the AFSSAPS alongside other new responsibilities. Its key role is to offer patients an equitable access to innovation and to guarantee the safety of health products throughout their life cycle, from initial testing through to monitoring after receiving authorisation to put them on the market.

The Agency and its activities are presented on its website: www.ansm.sante.fr. An ASN-AFSSAPS convention was signed on 15th July 2009.

2|7|3 The French Health Monitoring Institute

The French Health Monitoring Institute (InVS), a public body created in 1998, is tasked primarily with watching over all areas of public health and raising the alert where necessary.

The Institute and its activities are presented on its website: www.invs.sante.fr. An ASN-InVS convention was signed on 7th September 2009.

2|7|4 The French National Cancer Institute

Created in 2004, the French National Cancer Institute (INCa) is primarily responsible for coordinating activities in the fight against cancer.

The Institute and its activities are presented on its website: www.e-cancer.fr

ASN creates a Steering Committee for Social Organisational and Human Factors (COFSOH)

The social, organisational and human factors received particular attention during the stress tests further to the Fukushima accident. On completion of the various investigations, ASN indicated in January 2012 that it was retaining three priorities in this area:

- the renewal of the licensees' workforce and skills;
- the organisation of the use of subcontracting, which is an important and complicated subject;
- research on these topics, for which programmes must be set up, at national or European levels.

Further to the stress tests, ASN has set up a pluralistic working group on these subjects, called the COFSOH (steering committee for social, organisational and human factors). This committee includes, apart from ASN, representatives of institutions, environmental protection associations, personalities chosen for their scientific, technical, economic, social, or information and communication expertise, persons in charge of nuclear activities, nuclear industry professional federations and representative employees' unions.

Three plenary meetings of this committee were held in 2012. They allowed initial discussions on the following subjects among others: conditions of subcontracting and relations between the ordering customer and subcontractors, the relationship between "managed security" and "regulated security", management of skills in a context of staff renewal, and the use of relevant human and organisational factors (HOF) indicators to assess safety.

The organisation of the follow-up to the work of the COFSOH, through working groups, has been discussed. The major work themes identified at the present stage are:

- subcontracting in normal operating situations: work organisation and conditions;
- use of subcontracting: legal aspects;
- management of emergency situations;
- assessment of organisational structures and material or organisational changes;
- the relationship between "managed security" and "regulated security";
- skills management.

Work on the first three topics will start at the beginning of 2013.

The elements resulting from the work of the COFSOH will be published on www.asn.fr as and when available.

Table 3: Advisory Committee meetings and visits in 2012

Committee	Main agenda	Date
GPR	Review of the orientations of the program associated with the extension of operating life of the reactors of the EDF fleet in service	18th and 19th January
GP MED	DOSEO platform Recommendations on the minimum technical design, operating and maintenance rules of <i>in vivo</i> nuclear medicine facilities Nuclear medicine: implantable devices	1st February
GPRAD/GP MED	Review of the draft resolution setting the minimum technical design rules that facilities in which X-rays are produced and used must satisfy Review of the desirable changes to SISERI (ionising radiation exposure monitoring information system)	2nd February
GPU	Management strategy for solid waste, radioactive liquid effluents, spent fuels and unused sealed sources from the CEA's civil facilities	15th February
GPU	CIS Bio International (BNI 29) - Continuation of the periodic safety review of the installation	7th March
GPRAD/GP MED	Review of the draft resolution setting the minimum technical design rules that facilities in which X-rays are produced and used must satisfy Review of the desirable changes to SISERI (ionising radiation exposure monitoring information system)	15th March
GPR	PWR - Flamanville 3 – Site inspection	19th March
GPD	Internal meeting	3rd April
GPR	PWR - Flamanville 3 - Information meeting on the state of work site progress	5th April
GPR/GPU	Information meeting on the phenomena causing external flooding and the approaches and methods of characterising flood risk situations	9th May
GPR	PWR – Level-1 probabilistic safety assessments (EPS1) relative to 1,300 MWe plant units undergoing their 3rd periodic safety review	10th May
GPESPN	Information meeting on the progress of manufacture of the main nuclear pressure equipment and repair of the Flamanville 3 EPR reactor vessel head	15th May
GPESPN	Implementation guide for the order of 12th December 2005 concerning nuclear pressure equipment	15th May
GPR/GPU	PWR and PLANTS – Review of the draft guide concerning the protection of sites against external flooding	24th May
GPRAD	Information relative to the draft order defining the conditions of certification of outside companies working within establishments carrying out nuclear activities and temporary work agencies concerned by these activities	8th June
GPU	Inspection of BNI 116 - La Hague (UP3 A) – AREVA NC	8th June
GPD	Technical information meeting relative to the CIGEO creation authorisation decree (geology / hydrogeology)	11th June
GP MED	Recommendations on minimum technical design, operating and maintenance rules of <i>in vivo</i> nuclear medicine facilities	26th June
GPU	BNI 116 - La Hague (AREVA NC) – Periodic safety review of UP3 A plant	27th June
GPESPN	Revising of the guide to the evaluation of NPE conformity	5th July
GPD	GPD / ESK meeting at La Hague	4th and 5th September
GPD	Technical information meeting relative to the CIGEO creation authorisation decree (geochemistry)	27th September
GPRAD / GP MED	Review of the report of the working group on desirable changes in the delimiting of access to restricted areas	28th September
GPR	Nuclear power reactors - EDF - Orientations of periodic safety review (2nd 10-year inspection) of the 1,450 MWe reactors	25th October
GPT	New approval of DE 025 (package for waste drums)	8th November
GPT	Internal meeting	8th November
GPT	IAEA information cycle and "inspections" results (experience feedback from incidents – inspections)	4th December
GPR	PWR + EPR-Stress Tests / Hardened safety core specifications	13th December

3 OUTLOOK

Pursuant to its remit, ASN will in the coming years continue its action to oversee and inform of the application of the principles of nuclear safety and radiation protection. For the years 2013 to 2015, ASN has defined the strategic lines of its action in its multi-year strategic plan (PSP), based in particular on an assessment of the implementation of the 2010-2012 PSP.

ASN will continue to nurture close relations with the other stakeholders involved in its oversight and information actions, while maintaining its independence. ASN shall in particular take steps to encourage the involvement of the stakeholders in pluralistic working groups, especially in the Steering Committee for Social, Organisational and Human Factors (COFSOH).

When preparing its resolutions, the ASN asks for opinions and recommendations from 7 expert groups. In 2013 ASN will continue its reflections on how the system of Advisory Committees of Experts can evolve, taking care to ensure high levels of expertise and independence with respect to projects leaders.

With regard to the budget for the regulation of nuclear safety and radiation protection for 2013, ASN pointed out in its opinion No. 2012-AV-0164 of 18th October 2012 that in general terms, the budget bill reflects the Government's efforts to maintain the ASN's resources in a particularly constrained budgetary context.

Nevertheless, with regard to the financing of its technical support, ASN has observed that the subsidy paid to IRSN has

been reduced in the 2013 budget bill from €46.4 million to €45.15 million. ASN considered that the annual contribution paid to IRSN, which was finally increased in application of the order of 15th December 2011, should at least compensate for this reduction in budgetary resources so that the overall means devoted to nuclear safety assessments can meet the development of the measures implemented to reinforce nuclear safety further to experience feedback from the Fukushima accident.

More generally, ASN considers that the means for overseeing nuclear safety and radiation protection remain insufficient given the priority issues that France must address over the long term further to the Fukushima accident, and that globally the means lack visibility, as was pointed out in the French Public Accounts Office report of January 2012 relative to the costs of the nuclear power process.

Furthermore, the failure to implement the system for funding the local information committees (CLI) through part of the tax on the basic nuclear installations, as provided for in Article L. 125-31 of the Environment Code, prevents the full development of CLIs with association status.

To resolve these difficulties in subsequent years, it is necessary to revise and clarify the funding of the oversight of nuclear safety and radiation protection in France, aspects for which ASN made proposals in its opinion of 9th November 2011 on the 2012 budget for the oversight of nuclear safety and radiation protection.

