

# **R**eport on the Survey of the Review of New Reactor Applications

Working Group on  
the Regulation of  
New Reactors



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COMMITTEE ON NUCLEAR REGULATORY ACTIVITIES**

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**Report on the Survey of the Review of New Reactor Applications**

**Working Group on the Regulation of New Reactors**

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## FOREWORD

The Committee on Nuclear Regulatory Activities (CNRA) of the OECD Nuclear Energy Agency (NEA) is an international committee composed primarily of senior nuclear regulators. It was set up in 1989 as a forum for the exchange of information and experience among regulatory organisations and for the review of developments which could affect regulatory requirements. The Committee is responsible for the NEA programme concerning the regulation, licensing and inspection of nuclear installations. In particular, the Committee reviews current practices and operating experience.

The CNRA created the Working Group on the Regulation of New Reactors (Working Group) at the Bureau meeting of December 2007. Its Mandate was to “be responsible for the programme of work in the CNRA dealing with regulatory activities in the primary programme areas of siting, licensing and oversight for new commercial nuclear power reactors (Generation III+ and Generation IV)”.

At its second meeting in 2008, the Working Group agreed on the development of a report based on recent regulatory experiences describing; 1) the licensing structures, 2) the number of regulatory personnel and the skill sets needed to perform reviews, assessments and construction oversight, and 3) types of training needed for these activities. Also the Working Group agreed on the development of a comparison report on the licensing processes for each member state. Following a discussion at its meeting in March 2009, the Working Group agreed on combining the reports into one, and developing a survey where each member would provide their input to the completion of the report.

Its purpose is to serve as a guide for regulatory bodies to promote safety through the understanding of the different ways new reactor applications are reviewed by member states. It therefore follows that the audience for this report is primarily nuclear regulators, although the information and ideas may also be of interest to other nuclear industry organisations and interested members of the public.

This report, prepared by Mr. Eduardo Sastre-Fuente (NRC, United States), is based on discussions and input provided by members of the CNRA's Working Group on the Regulations of New Reactors, listed below. Ms. Laura Dudes (NRC, United States) and Mr. Alejandro Huerta (NEA Secretariat) chaired the meetings and supervised the work carried out by the group.

Phillip Webster, CNSC, Canada

Miroslav Svab, SUJB, Czech Republic

Jaromir Sipek, SUJB, Czech Republic

Petteri Tiippana, STUK, Finland

Tapani Virolainen, STUK, Finland

Guillaume Wack, ASN, France

Andras Toth, HAEA, Hungary

Kazunobu Sakamoto, JNES, Japan

Marcin Zagrajek, PAA, Poland

Jozef Kubanyi, UJD, Slovak Republic

Ladislav Haluska, UJD, Slovak Republic

Andreja Persic, SNSA, Slovenia

Jose M. Balmisa, CSN, Spain

Rosa Sardella, ENSI, Switzerland

Steve Gibson, ONR, United Kingdom

Laura Dudes, NRC, United States

Eduardo Sastre-Fuente, NRC, United States

Ian Grant, FANR, United Arab Emirates

Barry Kaufer, FANR, United Arab Emirates

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## INTRODUCTION

### **Importance of understanding other Member States' Regulations**

During five decades of commercial nuclear power operation, nuclear programmes in NEA countries have grown which has in turn brought about steady improvements to nuclear power plant safety; these improvements include the reduced frequency and severity of accidents. Better communication among member countries is one of the major reasons for their enhanced performance. For years, member states have learned from each other, incorporating past experience and lessons learned into their regulatory programmes. They consult each other when reviewing applications and maintain bilateral agreements to keep the communication channels open. This has been vital and will continue to be extremely important to the success of the new fleet of reactors being built.

This document will continue along these lines by providing a comprehensive report on the different regulatory structures, licensing processes and design reviews used by member states

.

## **SURVEY**

During the September 2009 meeting, the working group was presented with a draft survey comprising a broad range of questions related to the licensing process, design review and regulatory structure. At that time, it was decided to divide the survey into four parts: general, siting, design and construction. The General Section of the survey was sent to the group at the end of the meeting and member states were requested to provide their responses at the April 2010 meeting.

This report focuses on the results of this General Section and in particular, the general information questions pertaining to the regulatory body including licensing structure and processes. The following pages present a discussion of the results. Each member state was also asked to prepare a summary addressing their country's licensing process as well as organisation and public involvement during the licensing process.

The complete survey inputs from the general section are available in the appendices.



## HIGH LEVEL SUMMARIES

### Canada

The development, production and use of nuclear energy in Canada are regulated at the federal level by the Canadian Nuclear Safety Commission (CNSC) under the mandate of the *Nuclear Safety and Control Act* (NSCA) and its Regulations. The NSCA gives the Commission a broad mandate to regulate all activities related to the use of nuclear energy and provides for *the limitation, to a reasonable level and in a manner consistent with Canada's international obligations, of the risks to national security, the health and safety of persons and the environment*. This includes consideration of both radiological and conventional hazards and effects.

Licenses are responsible for safety and are held accountable through their licences. Under the NSCA, no licence may be issued unless, in the opinion of the Commission, the applicant:

- (a) is qualified to carry on the activity that the licence will authorise the licensee to carry on; and
- (b) will, in carrying on that activity, make adequate provisions for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

The CNSC's regulatory approach balances prescriptive (rule-based) regulation with non-prescriptive (performance-based) regulation. Under this regime, the applicant is expected to propose how they will meet the requirements of the Regulations under the NSCA. This is intended to allow applicants a measure of flexibility in the methods they can use to support their licensing case. In addition to the NSCA and its regulations, the CNSC publishes Regulatory Documents (RDs) to provide detail and clarification of the licensing and other regulatory requirements of the NSCA, Regulations and licence conditions. Regulatory documents are legally enforceable when referenced in a licence. The CNSC also publishes Guidance Documents (GDs) which provide detailed, general expectations and clarify acceptable means by which a licensee can meet a requirement.

In accordance with the NSCA and its regulations, nuclear power plants require separate licence applications for each of the following five lifecycle phases:

- Licence to prepare site, preceded by an Environmental Assessment (EA), which is required by a separate piece of federal legislation called the *Canadian Environmental Assessment Act*);
- Licence to construct;
- Licence to operate;
- Licence to decommission; and
- Licence to abandon.

At a high level:

- The *Licence to prepare site* permits the licensee to clear land, build site service infrastructure, and re-contour land. An application for a *Licence to prepare site* does not require detailed information or determination of a reactor design; however, high level design information is required for the EA accompanying the licensing decision. Construction of any plant structures, systems or components, such as the plant footings and base mat, will not be permitted under a *Licence to prepare site*.
- The *Licence to construct* permits the licensee to perform all plant construction and commissioning activities up to but not including first fuel load into the core. An application for a *Licence to construct* must contain detailed information about the reactor design and the supporting safety case.
- The *Licence to operate* permits the licensee to load fuel, complete remaining construction and commissioning with fuel in the core, and proceed to long-term commercial operation.

It is possible for applications to prepare a site, to construct and to operate a reactor facility to be assessed in parallel. Each application could be decided individually during one Commission Hearing, which would result in a combined licence being issued if a positive decision is made.

The CNSC offers a pre-licensing vendor design review as an optional service for reactor designs. This review process is intended to provide early identification and resolution of potential regulatory or technical issues in the design process, particularly those that could result in significant changes to the design or analysis. The process aims to increase regulatory certainty and ultimately contribute to public safety.

## Czech Republic

The licensing process and related analyses during the individual stages of the project (siting, design, construction, operation) are determined by Czech legislation, delegating full responsibility, on the fulfilment of specified duties, to the licensee.

The licensing process legislative framework is defined by Act No. 183/2006 Coll., on town and country planning and building regulations (the Building Act), the Atomic Act and their implementing decrees.

In the case of a nuclear installation construction, the Civil Construction Act established a three-stage procedure comprising:

**The site decision or siting is** made by the respective local department of planning and building control, unless the regional office or the Ministry for Regional Development reserves this right pursuant to Section 17 paragraph 2 and 3.

**The construction permit** and the **operating licence** for permanent operation are issued by the department of planning and building control of the Ministry of Industry and Trade. Their resolutions are conditional to positions issued by specialised regulatory bodies, including SÚJB. The department of planning and building control of the Ministry of Industry and Trade can issue the operating licence only with the approval of the municipal department of planning and building control, which is competent to issue the site decision and checks that the conditions are met; approval is not an administrative action. If neither a site decision nor a site approval is issued, the opinion of the municipal department of planning

and building control on how the foreseen site complies with projects of regional planning shall be sufficient.

The Atomic Act establishes how nuclear energy and ionising radiation should be used as well as the conditions for the performance of activities related to the use of nuclear energy and radiation practices. A precondition to perform such activities is a SÚJB licence issued by an administrative procedure independent of the procedure described above and required under the Civil Construction Act. The Atomic Act explicitly forbids the launching of siting, construction, operation and other activities at nuclear installations that require an SÚJB licence, before the respective SÚJB licence becomes legally effective.

This means that the approval procedure, other than the three-stage process mentioned above, also includes a several other partial licences issued by the SÚJB in accordance with the Atomic Act during different stages of the service life of a nuclear installation.

According to the provisions of Section 17 of the Atomic Act, a licence shall verify nuclear safety during all stages of the installation's service life (taking into account the specificity of specific licences) assess nuclear safety in a systematic and comprehensive manner using the latest science and technology, and ensure that the results of such assessments lead to practical implementation. The verification/assessment shall be documented. The content of the documentation is specified in the appendix to the Atomic Act. Safety assessment is, in compliance with the Atomic Act, reviewed by the SÚJB, both analytically and within its inspection activities. Details concerning the safety related documentation that precede the construction of a nuclear installation, as well as its commissioning and during its operation, are described in Chapters 17, 18 and 19 of the Article.

The implementing decrees complement the Atomic Act by establishing basic criteria for the nuclear safety assessment of a nuclear installation during the different stages of its service life.

As described below, the practical application of the requirement to perform a systematic and comprehensive assessment of a nuclear installation (in order to verify continual compliance with respect to design, applicable safety requirements in the valid national legislation and Limits and Conditions, includes, in particular:

- the systematic monitoring of nuclear and technical safety (supervision, inspections, tests),
- deterministic evaluation of nuclear safety Pre-operational (final) safety report),
- probabilistic safety assessment (the so-called 'living' Probabilistic Safety Assessment Study and its application - Safety Monitor).

The strengthening of SÚJB's organisational structure for licensing and supervising new construction unit is planned as SÚJB staff grows during 2010-2013 by a total of 20 experts (in the radiation protection division, in the emergency planning section and primarily in the nuclear safety division). The new section 'Nuclear facility licensing' has been established and is now fully staffed.

## **Finland**

The licensing process is defined by the legislation. The construction and operation of a nuclear facility is not allowed without a licence, which is granted by the Government. The conditions for granting a licence are prescribed in the Nuclear Energy Act.

Before issuing a construction licence for a nuclear power plant, a nuclear waste disposal facility, or another significant nuclear facility, a Decision-in-Principle by the Government is needed. The condition to grant a Decision-in-Principle is that the operation of the facility in question be in-line with the overall good of society. The municipality of the nuclear facility's intended site must be in favour of constructing the facility. There should also be enough prerequisites to construct the facility; according to the Nuclear Energy Act, these are as follows: the use of nuclear energy shall be safe; it shall not cause injury to people, or damage to the environment or property.

The coming into force of the Decision-in-Principle further requires that it be confirmed by a simple majority in Parliament. Parliament cannot make any changes to the Decision; it can only approve it or reject it as it is. During the Decision-in-Principle phase, STUK prepares a statement on the safety and preliminary safety assessment concerning the applicant, the proposed plant designs and plant sites. STUK also asks for a statement from the Advisory Commission on Nuclear Safety, for example.

For the Construction and Operating Licence application, the Ministry of Employment and the Economy asks for STUK's statement on safety. During this stage, Construction and Operating Licence documents are to be submitted to STUK for approval as defined by Sections 35 and 36 of the Nuclear Energy Decree. STUK also asks for a statement from the Advisory Commission on Nuclear Safety, for example. After having received all Construction and Operating Licence statements, the Government will make its decision.

In accordance with Section 108 of the Nuclear Energy Decree, the different phases of the construction of a nuclear facility may only begin after STUK has verified, on the basis of the Construction Licence documents and other detailed plans and documents it requires with respect to each phase, that the safety-related factors and safety regulations have been given sufficient consideration.

A review of the detailed design of structures and equipment can begin after STUK has found that the system-level design data of the system in question are sufficient and acceptable. This assessment may take place as part of a review of the Preliminary Safety Analysis Report or separate system-specific descriptions, which are subsequently added to the Final Safety Analysis Report.

Before loading fuel into the reactor, an Operating Licence is needed. Operating Licences are granted for a limited period of time. When Lovisa and Olkiluoto NPP began operating, this period was for five years and then for about ten years. Periodic re-licensing has allowed good opportunities for a comprehensive, periodic safety review. Current operating licences for the Loviisa and Olkiluoto units are valid for about 20 years, but periodic safety reviews (PRS) are required as a condition for continued operation of the licences.

## **France**

The licensing process for the new NPP is mainly defined by the Act on Transparency and Security in the Nuclear Field (TSN-Act). The licensing process for the new NPP comprises several sub-processes, as follows:

***Siting:***

Well before applying for an authorisation decree, the licensee informs the administration of the site(s) on which it plans to build this installation. The review then mainly concerns the socio-economic and safety aspects. From its perspective, the ASN analyses the safety-related characteristics of the sites: seismicity, hydrogeology, industrial environment, cold water sources, etc. Construction of an NPP requires issuing of a building permit by the prefect (*préfet*).

***Safety options:***

Any industrial concerns intending to operate an NPP may, even before starting the licensing procedure, ask ASN for an opinion on all or part of the safety options it intends to adopt for its installation. ASN then notifies the applicant of its opinion and will produce any additional studies and justifications as necessary for a possible authorisation of the decree application.

***Public debate:***

Pursuant to Articles L.121-1 and following of the Environment Code, the creation of an NPP must be preceded by a public debate. The public debate considers the suitability, objectives and characteristics of the project.

***Plant authorisation decree:***

An NPP authorisation decree application is submitted by the industry official in charge of operating the installation, thus acquiring the status of licensee to the ministers responsible for nuclear safety. The application is accompanied by a dossier comprising several items, including the detailed drawing of the installation, the impact assessment study, the preliminary safety analysis report, the risk management study and the decommissioning plan.

The ASN is responsible for reviewing the dossier, jointly with the ministers responsible for nuclear safety. This is followed by a period of parallel consultation with the public (public enquiry) and technical experts. The impact assessment is submitted to the environmental authority, created within the Departmental Council for the Environment and Sustainable Development (CGEDD), who then provides an opinion.

***The requirements defined by ASN for an authorisation decree application:***

In the authorisation decree application, ASN defines the requirements regarding the design, construction and operation of the NPP it considers to be necessary for nuclear safety.

These requirements may deal with the quality of the design, construction and operation of the installation as well as the requirements concerning NPP water intake and the radioactive materials discharged by the NPP.

***Commissioning Licence:***

Commissioning corresponds to first loading of fuel into the vessel. Prior to commissioning, the licensee sends ASN a dossier comprising the safety analysis report, the general operating rules, a waste management study, the on-site emergency plan and the decommissioning plan. After checking that the installation complies with the objectives and rules defined by the TSN Act and its implementing texts, ASN authorises commissioning of the installation.

Prior to or on completion of the authorisation procedure, partial commissioning may be authorised by an ASN decision for a limited period with regard to the arrival of nuclear fuel within the perimeter of a reactor, prior to first loading of fuel into this reactor.

## **Hungary**

Before the licensing of a new NPP there is a need for a preliminary Parliament decision, which is based on a government proposal.

The licensing process for the new NPPs consist of partial licensing as follows:

- The Environmental Protection Authority (EPA) is responsible for granting of the environmental licence for construction under the Environment Protection Act. The EPA requires a preliminary and a final environmental safety analysis report. During the course of the licensing process, a public consultation must be held.
- Licence to production and utilisation of electro energy: The licence is issued by the Energy Agency according to the Energy Act.
- According to the Atomic Act, the Hungarian Atomic Energy Authority (HAEA) has to issue a permit for the siting of nuclear facilities. The requirements for that permit are described in Nuclear Safety Regulation ch. 7. "Assessment and evaluation of site characteristics for nuclear facilities".
- The construction licence will be issued by HAEA. For this licence, a Preliminary Safety Analysis shall be submitted to the regulator.
- Requirements for the commissioning of NPPs are regulated by governmental decree No. 89/2005. The commissioning licence is issued by HAEA. The application for a licence shall include a draft version of the Final Safety Analysis Report.
- In all of the above written licensing processes, different specialised authorities will be involved to determine the limits of radioactivity releases, to regulate water source usage, physical protection requirements, etc.

## **Japan**

When selecting a site for a nuclear installation in Japan, the utility performs an environmental impact assessment and submits the draft Environmental Impact Statement (draft EIS) to the Ministry of Economy, Trade and Industry (METI). This statement describes the current status of the environment and the measures implemented to protect it, on the basis of the Environmental Impact Assessment Law and the Electricity Utilities Industry Law. The draft EIS is sent simultaneously to the related local governments for public consultation. The utility prepares their views, addressing residents' comments. Assessments on air, water, and soil pollution due to radioactive substances are performed under the Reactor Regulation Law and are exempted the Environmental Impact Assessment Law's application.

After METI's review of draft EIS, soliciting experts' opinion, the utility issues the final version of the EIS report taking into account METI's recommendations when revising the draft. METI's minister then issues an announcement about the adequacy of the utility's EIS, although legal permission is not required.

Once the EIS is issued, the utility will submit an application for a licence to construct or establishment to the Minister of METI in accordance with the Reactor Regulation Law. Applicants attach documents to

the application, including a description of the nuclear installation's safety design, radiation control, and accidents and failures.

The Nuclear and Industry Safety Agency (NISA) which is a special organisation under METI conducts an examination to determine the adequacy of the site, and the basic design of the structure and the equipment from the perspective of preventing radiological hazards, focusing on the evaluation of reactor core safety and radiation exposure due to the establishment of the nuclear installation. In addition, the regulatory body confirms that the nuclear installation should be used for peaceful purposes and be in line with the planned development and utilisation of nuclear energy; the applicant must also demonstrate sufficient technical capability to ensure safety and prove that it has a sufficient financial basis to execute the plan.

In the course of above procedures, two public hearings are held to give the residents in the vicinity an opportunity to gain deeper understanding and co-operation. The results of public hearings are taken into consideration during the safety examination.

## **Korea**

In Korea, the basic philosophy underlining the licensing review is to lead the industry towards the achievement of higher safety levels for the proposed nuclear power plant, comparing them to previous plant designs and incorporating design improvements. The regulatory authorities are represented by the Ministry of Education, Science and Technology (MEST) of the Korean Government, national level decision-making body represented by the Nuclear Safety Commission (NSC), and technical expert organisation represented by the Korea Institute of Nuclear Safety (KINS).

The legal framework provided by the Atomic Energy Act (AEA) encompasses authorisation for new NPPs and sets forth the licensing standards for each authorisation. The basic authorisation process for nuclear power reactors prescribed by the AEA consists of a two-step licensing process: the Construction Permit (CP) and Operating Licence (OL). A detailed licensing procedure for NPP is summarised below.

### ***The safety review and assessment.***

***Construction Permit (CP):*** The review objectives of the CP are: (i) to confirm the safety of the proposed NPP design, which should meet the related regulatory codes and standards, (ii) to review the safety of the preliminary designs which include the principles and concepts of the plant's design and the implementation of the regulatory criteria, and (iii) to evaluate the environmental impact and the strategy for minimising its effects. The main documents required for the application of a CP consist of a Preliminary Safety Analysis Report (PSAR), a Quality Assurance (QA) program and an Environmental Report (ER). A Site Survey Report and A detailed Geological Survey Report are also required for Early Site Approval when the applicant wishes to start civil work prior to the construction permit.

***Operating Licence (OL):*** For the OL, the safety of an NPP operation is evaluated by confirming that the final design meets the acceptance criteria. The main required documents of the OL application are a Final Safety Analysis Report (FSAR), a QA program, Technical Specifications for operation, and a Radiological Emergency Plan. When changes or modifications are to be made to the nuclear facilities during operation by the licensee, a relevant Safety Analysis Report or QA program should be submitted to KINS via MEST in accordance with the Atomic Energy Act. KINS performs a technical review and reports to MEST on the results. Then, MEST issues an authorisation to the licensee based on the KINS' report.

### *The regulatory inspections*

Regulatory inspections are implemented according to the relevant rules and regulations related to nuclear reactor facilities. The types of regulations, methods and content are briefly described below:

- **The pre-operational inspection** is performed to confirm whether or not: 1) the nuclear power reactor and related facilities are constructed in compliance with the conditions upon which the construction permit was granted, and 2) the constructed facilities could be safely operated during the design life by satisfying the licensing standards. This inspection is separated into facility inspection and performance inspection, and is carried out in the form of witnessed and documentary inspection.
- **The quality assurance inspection** is carried out to confirm that the quality assurance activities in the construction stages of the nuclear power reactor and related facilities are properly implemented and consistent with the quality assurance program, which was approved by the regulatory body. The quality assurance inspection is periodically performed not only at nuclear reactor facilities, but also on the supplier of the nuclear components, the designer, the nuclear fuel supplier, etc.
- **Resident inspector** performs daily inspections on the nuclear power plants under construction or in operation. The resident office is also engaged in witnessing for the major surveillance tests, an investigation of the enforcement upon occurrence of an abnormal condition at the NPPs, a verification of radiation safety control actions by the licensee of nuclear reactor facilities, etc.
- **The special inspection** includes an investigation of a reportable event (e.g., relating to an important safety issue, a public concern about nuclear safety) upon its occurrence, and on-site inspection to cope with a potential incident, etc.

### **Poland**

At the moment Poland has no nuclear power plants in construction or in operation. After a government decision, taken in 2009, on embarking on nuclear power, activities aimed at creating the necessary legal framework were launched.

Currently the NPP licensing system is set out by two main legal acts: the Act of Parliament of 29th November 2000 “Atomic law” (last major amendment entered into force on 1st July 2011 O.J No 132, item 766) and the Act of Parliament of 29th June 2011 “on preparing and implementing investments in a nuclear power facility and associated investments” (O.J. No 135, item 789). The latter contains a set of provisions related to investments in the nuclear power sector regulating issues like: spatial planning, land ownership, procurement procedures, etc. One of the most important instruments introduced by this act is the **Decision-in-Principle**. This decision will be issued in the initial phase of the project by the Minister of the Economy and will express political agreement and support to the given project.

“Atomic law” is piece of legislation regulating all issues related to nuclear safety, radiation protection, nuclear security, nuclear material safeguards, radioactive waste management and radiation emergency preparedness. This Act, in its current form, has been in force for several years and has been sufficient for current national needs, namely with regard to the regulation of research reactors, radioactive waste and spent fuel storage, and ionising radiation applications in science, medicine and industry. “Atomic law” constitutes the **President of National Atomic Energy Agency (PAA)** as the central organisation of government administration that serves as a **nuclear regulatory authority** in Poland. “Atomic law” is supported by set of detailed regulations issued by the Council of Ministries.

The last amendment of “Atomic law” (in force since 1 July 2011) was prepared in order to implement into Polish legislation a provision of the European safety directive (2009/71/EURATOM) and to introduce safety requirements dedicated to nuclear power installations. This system of licensing consists of four separate licences: a **construction licence** (at this stage approval of the site from a safety point of view is also performed), a **commissioning licence** (issued prior fuel loading), an **operation licence** (issued after the commissioning report is approved by PAA) and a **decommissioning licence**. “Atomic law” together with the Council of Minister regulations, although they are currently in the drafting stage (e.g. site characterisation, design requirements, safety analysis and content of SAR, etc.), sets out conditions that must be fulfilled and documentation that must be submitted to the nuclear regulatory authority before a licence for each stage can be issued.

## Slovakia

The licensing process in Slovakia is based on issuing several licences from different national authorities. Throughout all phases of licensing, the nuclear regulatory authority of the Slovak republic (hereinafter referred to as the “regulatory body”) has an irreplaceable role. If the licence is not issued directly by a nuclear regulatory body, the applicant is asked to submit a regulatory bodies` agreement to the authority, which will issue the licence.

All licensing processes for the new NPP are comprised of the following steps:

- **Spatial plans** – a new NPP must consider the national and local spatial plans as well as the zone’s spatial plan, which explicitly defines the location for NPP.
- **Licence to perform energy activity** – an applicant has to apply to the Slovak Republic’s Ministry of Economy for a licence to perform energy activity (defined as the production of electric energy and heat in an NPP) and for approval to build a power plant in compliance with the energy policy of the Slovak Republic. With regard to nuclear equipment, the licence is issued based on an agreement with the regulatory body.

<b>Authority</b> \ <b>Act</b>	on environmental impact assessment	Building	Atomic
Ministry of environment	final report from EIA process		
Regional civil construction authority/Nuclear regulatory authority (NRA)		licence for building placement	agreement for siting of nuclear instalation
NRA		building permission	
NRA		preliminary use of the construction	permission for commissioning
NRA		permission for the temporary use of the construction	permission for trial operation
NRA		construction approval	operating licence

**Table 1: Issued licences during the licencing process**

- ***Environmental impact assessment*** – the applicant has to perform this assessment and issues an environmental impact assessment report based on the Slovak Republic's Ministry of the Environment. A final report is issued upon the request of other authorities in order to be able issue other licences.
- ***Licence for building placement*** – issued by the local civil construction authority as a result of spatial procedure, however other authorities are asked for their consents with new NPPs.

The following decisions are issued by the regulatory body and together with the application, the documentation required by the Atomic Act has to be submitted. The safety analysis report, elaborated on a different level, is requested in all cases.

- ***Agreement for sitting of nuclear installation*** – issued based on Licence for building placement.
- ***Building permission*** – in the case of an NPP, the regulatory body is substituted by the civil construction authority and performs its activities.
- ***Permission for the preliminary use of the construction and for commissioning*** – permission for commissioning is divided into individual stages. Permission for a subsequent stage of commissioning is issued by the regulatory body after having reviewed the evaluation report of the preceding stage of commissioning.
- ***Permission for the temporary use of the construction and for the trial operation*** - issued based on the evaluation report of the nuclear installation commission.
- ***Official construction approval*** – issued as a result of the official construction approval proceeding, which is begun based on the affirmative evaluation of trial operation.
- ***Operating licence*** – issued based on a written application and after fulfilment of all legislative requests. It can be issued for a maximum of ten years and it can be issued repeatedly.

## Slovenia

The licensing process for the new NPP is based on a general process for siting facilities of national importance. The specialty of nuclear installation siting is the development of specific safety analysis that must also be prepared as part of the Environmental Report in the National Spatial Plan process and operating licence, which is, in addition the licence used for the facility, issued by the Slovenian Nuclear Safety Administration (SNSA).

The licensing process for the new NPP should comprise several sub-processes, which are as follows:

- ***National Strategic Spatial Plan***: represents a political decision regarding the use of nuclear energy in the Republic of Slovenia. It is prepared by the Ministry of the Environment and Spatial Planning on the basis of national programmes.
- ***Licence to perform energy activity and energy permit***: the investor applies for the licence to perform energy activity. The licence is issued by the Energy Agency, while the energy permit is issued by the Ministry of the Economy.
- ***National Spatial Plan***: represents a general siting process for all facilities of national importance. It is lead by the Ministry of the Environment and Spatial Planning. Other stakeholders are space arrangement authorities, the public, involved municipalities,

neighbouring countries, etc. Part of the National Spatial Plan for a new NPP is also the Special Safety Analysis, which is a key document regarding nuclear and radiation safety in the siting process.

- ***Environmental Impact Assessment and Environmental Protection Consent:*** the investor prepares the Environmental Impact Assessment report including information required by competent ministries (including SNSA). The Environmental Impact Assessment is the basis of an application for environmental protection consent, issued by the Environmental Agency.
- ***Consent for construction:*** it is issued by the SNSA based on the overview and approval of the Safety Analysis Report, design for construction, decommissioning programme, waste management programme, etc. Consent for construction represents the basis of an application for a construction licence.
- ***Construction licence:*** after it is issued by the Ministry of the Environment and Spatial Planning, the construction of the NPP can begin under the supervision of the SNSA, among others.
- ***Trial operation:*** before the licence for use of the facility is issued, technical checks and a trial operation must be performed. The investor must also apply to the SNSA for consent to start a trial operation. After the SNSA gives its consent, the Ministry of the Environment and Spatial Planning issues a decision to begin trial operation under the SNSA's supervision.
- ***Licence for use of the facility:*** the Ministry of the Environment and Spatial Planning issues the licence for use of the facility after it verifies that parameters regarding environmental impacts from the trial operation meet the prescribed limits.
- ***Operating licence:*** the investor applies to the SNSA for an operating licence after it receives the licence for use of the facility. The investor presents a Safety Analysis Report on trial operation, the decommissioning programme, quality management documentation, etc. The SNSA reviews and approves the submitted documentation and issues the operating licence. The facility can now start regular operation.

Based on the results from human resources' analyses, the number of staff needed for the realisation of each licensing sub-process task as well as the needed knowledge, skills and competencies can be estimated. The results show that the tasks related to siting, can be efficiently and timely accomplished by the existent SNSA staff. The most extensive task is reviewing the safety analysis report in the phase of issuing the consent for construction. Considering the present coverage of these technical fields, the results show that for the consent for construction phase, the SNSA requires an additional 20 new employees in different technical fields namely from mechanical engineering, material science, computer science, PSA and severe accident, QA engineering and project management (for the sake of comparison: nuclear and radiation safety divisions currently employ 18 experts all together).

## Spain

As set out in Article 12 of the Royal Decree 1836/1999 dated December 3rd, approving regulation of nuclear and radioactive installations, nuclear installations will require the following authorisations, depending on each individual case:

- **Preliminary or site authorisation:** this constitutes official recognition of the proposed objective and of the suitability of the site selected, and allows the licensee to request the

construction permit for the installation and initiate the preliminary infrastructure of the work authorised.

- **Construction permit:** this empowers the licensee to initiate construction of the installation and to request the operating permit.
- **Operating permit:** this allows the licensee to load the nuclear fuel or introduce nuclear substances into the installation, to carry out the nuclear testing programme and to operate the installation in accordance with the conditions set out in the authorisation. This authorisation is provisionally granted until nuclear testing has been satisfactorily completed. Upon completion of the operation for which the installations were conceived, this permit also allows the licensee to carry out the operations imposed by the administration prior to obtaining authorisation for dismantling.
- **Modification authorisation:** this allows the licensee to introduce modifications in the design of the installation or in its operating conditions whenever the criteria, standards and conditions on which the operating permit is based are altered.
- **Authorisation for performance and assembly of the modification:** this allows the licensee to initiate the performance, execution and assembly of those modifications that, in view of their major scope or because they imply significant works and assembly, need to be expressly authorised in the opinion of the Directorate General for Energy Policy and Mines or of the Nuclear Safety Council.
- **Dismantling permit:** once the operating permit has expired, the licensee is allowed to initiate decontamination activities, the disassembly of equipment, the demolition of structures and the removal of materials to ultimately allow for the full or restricted release of the site. The dismantling process will conclude with the issuing of a declaration of decommissioning, which will release the licensee of the installations from his responsibility as operator and, in the case of restricted release of the site, define the applicable limitations on the use and the party responsible for maintaining them and overseeing compliance.

In addition, the following will need to be authorised:

- The storage of nuclear substances during the installation, during the construction phases before having an operating permit.
- The change of ownership of nuclear installations.
- These authorisations are granted by the Ministry of Industry, Tourism and Trade following a report by the Nuclear Safety Council.

## Switzerland

The licensing process for new builds in Switzerland is regulated by the Nuclear Energy Act and the Nuclear Energy Ordinance. The process is sequentially ordered in three steps: general, construction and operating licence. The **general licence** is issued by the Federal Council (the Swiss government). The review of an application for a general licence is co-ordinated by the Swiss Federal Office of Energy. Environmental aspects are the responsibility of the Federal Office of the Environment. Compliance with spatial planning requirements is assessed by the Federal Office for Spatial Development. The Federal Swiss Nuclear Safety Inspectorate (ENSI) is responsible for evaluating nuclear safety and security. For the General Licence the applicant is not required to select a design or a set thereof and so there is no evaluation of a specific design. The safety assessment by the Inspectorate covers the siting aspects (meteorology,

hydrology, ground water, geology, seismology, etc.), but also radioprotection issues, human and organisational factors (including project management), security issues, decommissioning and waste disposal.

The Inspectorate's review and assessment of the application is documented in a safety evaluation report (SER), which may include licence conditions to be attached to the licence. A second evaluation of the application is made by Federal Nuclear Safety Commission. It focuses on basic aspects of the application and on the SER. If appropriate, it may include licence conditions. After that, the licensing process involves the cantons (regional authorities) and neighbouring countries. The application and the corresponding review by the federal and cantonal authorities are published as official documents and are subject to a three-month consultation period during which anyone can raise an issue. The Licence is then drafted and submitted to the Federal Parliament for approval. It is also put to a facultative national referendum.

The **construction licence** is issued by the Department of Environment, Transport, Energy and Communications. The Swiss Federal Office of Energy co-ordinates the review of the application for a construction licence. As with the review of the application for a general licence, the various federal offices, the Inspectorate and the Federal Nuclear Safety Commission are involved in issues relating to their specific responsibilities. The Inspectorate is responsible for the safety review of the site-specific design as submitted by the applicant. The safety assessment by the Inspectorate covers the reactor design on the specified site. This takes the form of an evaluation of the various aspects of the planned concept (overall plant design, reactor technology, civil engineering, systems engineering, human-factor engineering, quality and project management, etc.) and the relevant implementation plan.

After that, the licensing process involves the canton where the plant is to be constructed. The application and the corresponding review by the federal and cantonal authorities are published as official documents and during a one-month consultation period, parties with an involvement may raise an issue. The construction licence can be challenged and there are two appeal stages that can be invoked before it is legally binding.

The **operating licence** is issued by the Department of Environment, Transport, Energy and Communications. The Swiss Federal Office of Energy is responsible for the review of an application for an Operating Licence. The Inspectorate has primary responsibility for reviewing the application for an Operating Licence. The safety assessment by the Inspectorate covers an evaluation of the plant as built together with the operating provisions and the commissioning/ start-up tests. After that, the applicant must complete the same steps as the ones necessary to obtain the construction licence.

In parallel to the licensing process a **permit procedure** has been instituted in order to control the conditions attached to licences. The permits granted by the supervisory authorities as part of a valid licence are defined in the Nuclear Energy Ordinance or in the licence itself. They include selected elements of the construction work, the manufacture of important components, assembly and wiring on site, sets of commissioning tests as well as any safety-relevant changes to the installation during operation.

## United Arab Emirates

The Federal Authority for Nuclear Regulation (FANR) is the federal governmental agency designated as the Regulatory Body (RB), which obtains its powers from the Nuclear Law<sup>1</sup>. The Law requires that a licence shall be obtained prior to engaging in any "regulated activities". These activities include: selection and preparation of a site; construction, commissioning and operating a nuclear facility; possession, use,

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<sup>1</sup> Federal Law by Decree No. 6 of 2009, Concerning the Peaceful Uses of Nuclear Energy

manufacture, handling, import, export, transportation, storage, and disposal of regulated material. FANR has established a two-step process: construction licence and operating licence.

In addition, the Environmental Agency of Abu Dhabi (EAD) is an Abu Dhabi governmental agency responsible for establishing and regulating the Construction Environmental Permit (CEP) that applies to the format and content of the Terms of Reference (TOR), Environmental Impact Assessment (EIA), and Construction Environmental Management Plan (CEMP).

As a newly established RB, FANR's focus has been centered on the Construction Licence Application (CLA), as first operation is not scheduled until 2017. The CLA includes: a Preliminary Safety Analysis Report (PSAR), a Safeguards Plan, a Security Plan (construction), a Preliminary Emergency Preparedness Plan and the licensee's Integrated Management System. FANR uses safety evaluations performed by the Regulatory Body Country of Origin (RBCoO) to support its review of any licence application. However, FANR requirements are not automatically met based on another regulatory body's assessments.

The review strategy and approach incorporates a graded approach focusing resources on the most risk significant areas of application. The various PSAR sections are categorised as either Category 1 or 2. Criteria for Category 1 include:

- an item that involves a novel technology with a significant impact on safety;
- the acceptance of the design by the RBCoO, involves a new finding with significant effects on safety;
- if Structures, Systems and Components (SSCs) or operational issues contribute significantly to overall risk (i.e. per PRA), or
- other conditions associated with this item specific to the UAE.

Category 2 criteria include:

- items where documentation submitted by the applicant is considered adequate;
- submission demonstrates that RBCoO regulatory requirements for this item are consistent and meet those of FANR and there is a clear description and explanation of the technical basis used to perform review and assessment, and
- there is no design change from the reference plant and no significant impact on nuclear safety.

FANR specialists review items in accordance with Review Instruction and reach conclusions that are independent, but cognisant of the RBCoO information. In addition, FANR has engaged TSOs to support its work in the development of regulations and guides and review and assessment of CLA. The extent and depth of the review is commensurate with the safety importance of the item. Requests for Additional Information (RAIs) are used to gather supplementary information from the applicant to complete the assessment.

The FANR staff (including TSO support) involved in the development of regulations and guides, review and assessment, licensing and oversight comprises approximately 70 technical staff; expatriates and a number of UAE nationals in training. FANR has an 18 months review plan for the construction licence.

## United Kingdom

It is a requirement of the Nuclear Installations Act 1965 that the installation and operation of a nuclear facility is not allowed without a nuclear site licence. The power to grant licences is delegated to the Chief Inspector of Nuclear Installations who operates within the Office for Nuclear Regulation (ONR), a Statutory Agency of the Health and Safety Executive. The ONR may, on granting any nuclear site licence, and may from time to time thereafter, attach to the licence such conditions as ONR considers necessary or desirable in the interests of safety or the handling, treatment and disposal of nuclear materials.

A licence is issued for the full life of the nuclear facility. The Licence Conditions attached to it give the ONR the regulatory powers to control each phase of the facility's operation.

Although it is necessary to hold a licence before construction and installation can begin, there are also other regulations that control activities on a nuclear site and in many cases these are enforced by government agencies other than ONR.

Under UK law, a process of "Justification" is required before a nuclear installation can be constructed. Justification is a process required under the Justification of Practices involving Ionising Radiation Regulations 2004, under which the Secretary of State must decide whether a new class or type of practice resulting in exposure to ionising radiation is justified by its economic, social or other benefits in relation to the health detriment it may cause.

The siting of new nuclear power stations is subject to a Strategic Siting Assessment (SSA) conducted by the Department of Energy and Climate Change (DECC). The purpose of the SSA is to identify sites in England and Wales that are strategically suitable for deployment of new nuclear power stations by the end of 2025. A list of strategically suitable sites identified through the SSA will be included in a National Policy Statement (NPS) for nuclear power. The NPS must be formally ratified by the UK Parliament.

Before any major infrastructure project, including nuclear power stations, can be built, a Development Consent Order must be granted by the Infrastructure Planning Commission (IPC). The ratified nuclear NPS will include essential guidance to the IPC in considering proposed new nuclear power stations.

There are a number of other regulatory requirements that must be satisfied before construction of a new nuclear power station can begin. For example, a prospective licensee must be able to demonstrate their organisational capability; that they have security of tenure for the site; that they have satisfactory licence condition compliance requirements and appropriate security arrangements. Before granting a nuclear site licence the ONR must be satisfied with the safety case for the proposed installation.

Under the conditions attached to the nuclear site licence, a licensee would be expected to seek a Consent from the ONR before the start of nuclear safety related construction. The ONR would only issue a Consent when it is satisfied that adequate arrangements are in place for compliance with all 36 Licence Conditions, that a suitable safety management organisation has been established and that an adequate Pre-Construction Safety Report (PCSR) has been submitted.

Throughout the construction and commissioning phase, a licensee is required to divide the project into stages. The ONR may determine that a Consent will be needed to allow the licensee to proceed from one stage to the next. Typically such a Consent may be to allow nuclear fuel to be brought onto site for the first time.

## United States

All currently operating reactors in the United States received licences under the two-step process in 10 CFR Part 50. This licensing process requires both a construction permit and an operating licence. In an effort to improve regulatory efficiency and add greater predictability to the process, the NRC established alternative licensing processes in 10 CFR Part 52. The additional licensing processes in 10 CFR Part 52 provide for site approvals and design approvals in advance of construction authorisation. 10 CFR Part 52 moreover includes a process that combines a construction permit and an operating licence with conditions into one licence (a combined licence). Both the two-step and the combined licence processes require NRC approval to construct and operate a nuclear power plant.

In preparation for the review of new reactor licensing applications, the United States Nuclear Regulatory Commission (NRC) created a new office within the NRC responsible for accomplishing key components of the agency's nuclear reactor safety mission for new reactor facilities. As such, this organisation is responsible for regulatory activities in the primary program areas of siting, licensing and construction/vendor oversight for new commercial nuclear power reactors. This office has 400 employees with the technical expertise to review 25 full licence applications.

To obtain NRC approval to construct or operate a nuclear power plant, an applicant must submit safety analysis and environmental reports. Article 18 of the Atomic Energy Act describes the final safety analysis report and the NRC's review of the application.

Soon after the NRC accepts the application for review, it publishes a notice in the *Federal Register* stating that it is considering issuing the licence. This notice states that any person whose interest might be affected by the proceeding may petition the NRC for a hearing. If a public hearing is held, the same process applies as for the public hearing for a construction permit.

An early site permit (ESP) issued under 10 CFR Part 52, Subpart A, provides for resolution of site safety, environmental protection, and emergency preparedness issues, independent of a specific nuclear plant design review. The application for an early site permit must address the safety and environmental characteristics of the site and evaluate potential physical impediments to the development of an acceptable emergency plan or security plan. The applicant may submit additional information on emergency preparedness issues up to a complete emergency plan.

The staff documents its findings on site safety characteristics and emergency planning in a safety evaluation report and its findings on environmental protection issues in an environmental impact statement. The early site permit may also allow limited construction activities, subject to redress, before the issuance of a combined licence. The duration of an early site permit is 10 – 20 years, and the permit may be renewed. A construction permit or combined licence application may reference the early site permit.

The NRC may also certify a standard plant design through a rulemaking under 10 CFR Part 52, Subpart B, "Standard Design Certifications." The design certification process resolves final design information for an essentially complete plant, independent of a specific site. This committee composed of experts with many different backgrounds ensures that all details of the application and the technical assessment have been reviewed by the staff. The duration of a design certification is 15 years, and the certification may be renewed.

A combined licence (COL), issued under 10 CFR Part 52, Subpart C, authorises construction of a facility in a manner similar to a construction permit under 10 CFR Part 50. An application for a combined licence may incorporate by reference an early site permit, design certification, both, or neither. The advantage of referencing an early site permit or design certification is that issues resolved during those

processes are not considered at the combined licence stage. Just as for a construction permit, the NRC must hold a hearing before the decision to issue a combined licence. However, the combined licence will specify the inspections, tests, and analyses that the licensee must perform and the acceptance criteria that, if met, are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the licence and the applicable regulations. The time frame for review of this approval runs around five to seven years depending on the documents that the applicant may reference in the licence application (ESP and/or DCD).

After issuing a combined licence, the NRC staff will verify that the licensee has performed the required inspections, tests, and analyses, and before operation of the facility the Commission must find whether the licensee has met the acceptance criteria. Periodically during construction, the NRC staff will publish notices of the successful completion of inspections, tests, and analyses in the *Federal Register*. Not less than 180 days before the date scheduled for initial loading of fuel, the NRC will publish a notice of intended operation of the facility in the *Federal Register*.

The Advisory Committee on Reactor Safeguards, an independent statutory committee established to advise the NRC on reactor safety, reviews each application to construct or operate a nuclear power plant. The committee begins its review early in the licensing process by selecting the proper stages at which to meet with the applicant and NRC staff. Upon completing its review, the committee reports to the Commission.

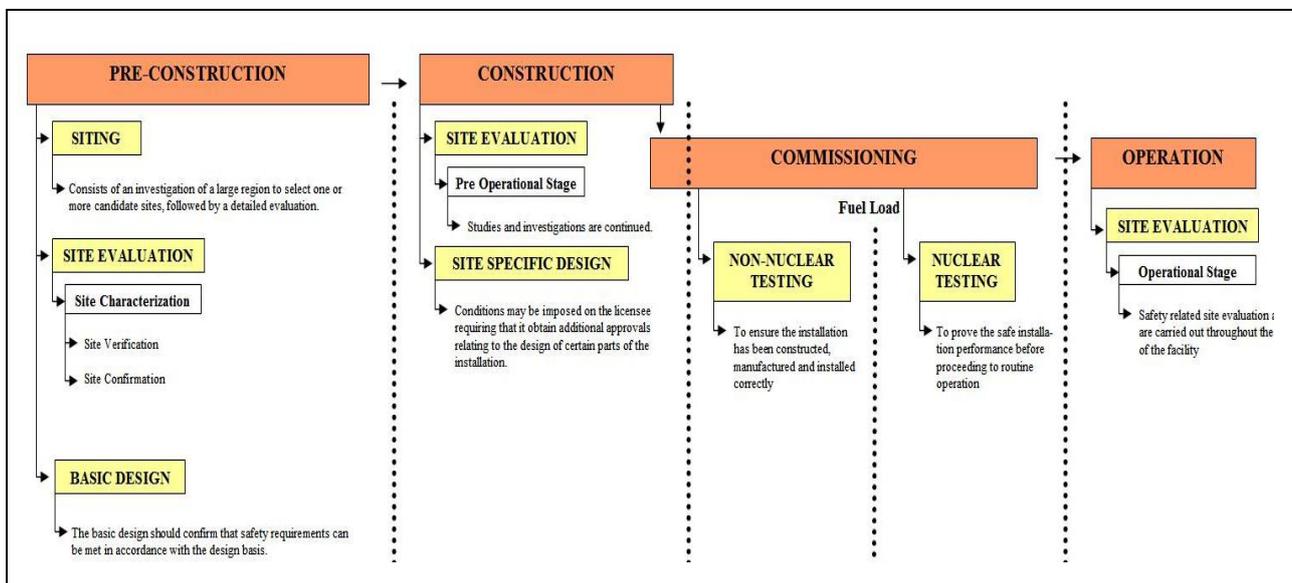
The public also has an opportunity to have its concerns addressed. The Atomic Energy Act requires that the NRC hold a public hearing before it may issue a construction permit, early site permit, or combined licence for a nuclear power plant. A three-member Atomic Safety and Licensing Board, consisting of one lawyer who acts as chairperson and two technically qualified persons, conducts the public hearing. Members of the public may submit statements to the licensing board, or they may petition for leave to intervene as full parties in the hearing.



## DISCUSSION

### Licensing Process

The survey starts with questions based on the licensing process. Each member state was asked to provide a general chart briefly summarising their licensing process. The questions on the licensing process were based on the IAEA's licensing process because, as the survey proved, most of the member states have a process very similar to the IAEA's general licensing process. This process is divided into four main stages: pre-construction, construction, commissioning and operation (Figure 1).



**Figure 1: IAEA licensing process**

During pre-construction, most regulators perform a review of the basic design and site safety issues. Some countries go into more specific reviews. For example, the USA's new licensing process requires the applicant to provide the complete design before getting the combined construction and operating licence (COLA).

During the construction stage, all of the regulators perform construction oversight. Some regulators, such as Finland, also review and approve the detailed design.

Commission for everyone starts during construction, but continues well after construction ends. This stage comprises two important events that directly involve the regulator: the issuance of the operating licence and the loading of fuel. In France's case, the regulator makes a decision for partial commissioning, informing the company that they can bring fuel on site.

## Governing Authorities

It is important to understand that when it comes to authorising a new nuclear power plant, in some countries the regulatory body is not the only decision-maker in the licensing process.

For example, in Canada, Hungary, Poland, Slovakia, the United Arab Emirates, the United Kingdom and the United States, the regulator is the one who makes the decision to grant licences. But in other countries, for example in the Czech Republic, Finland, France, Japan, Slovenia, Spain and Switzerland, the construction of a new reactor has to be approved by the government ministries.

In Hungary, preparation to construct the new NPP needs to be approved in principle by **Parliament**, while in Finland, the **Government** makes a decision in principle for site evaluation that is ratified by the Parliament. In Switzerland, the general licence is issued by the **Government**.

In the Czech Republic, the **local authority** also has a special role in the licensing process, because it needs to approve the location of the new NPP.

In France, **technical support organisations** are in charge of basic design assessment, site evaluation and the safety analysis review for testing, together with the regulatory body.

In some cases **other stakeholders**, such as environment centers, the public and neighboring countries are involved in the licensing process as decision makers. For example in Finland, all of them provide statements for the Environmental Impact Assessment.

The **regulator**, nevertheless, performs a specific function and role in all licensing phases (pre-construction, construction, commissioning phases) as a decision-making body in most countries.

## Legal Decision

Legal decisions are taken at different stages of the process and in different forms, but they are all based on an act of law approved by lawmakers. In some countries, the decision comes in the form of a simple consent where in other states, a full licence is needed.

The decision is usually granted by the government (often the Ministry of Environment), but in some cases the authorisation is granted through a regulatory decision; e.g. the decision for commissioning.

The applicant can be a company requesting a licence, an existing operator requesting a new licence or a company that has a site licence and would like to apply for a construction licence or start commissioning.

## Phase Implementation/Timeframe

As presented in previous chapters, basic models for licensing are usually quite similar in member states, but the detailed processes and parties involved differ among countries. This appendix summarises the estimated timeframe used for

- pre-construction – siting, site evaluation, basic design and other aspects needed mainly for political decisions to be taken and site selection;
- consent for construction – detailed site evaluation and design review to have a permit to start construction
- commissioning – requirements to obtain a licence for nuclear commissioning and operation.

The time it takes the applicant to get a licence is one of the main issues with building a nuclear power plant. Although time is necessary to ensure the safety and security of the public, this affects the applicant's ability to obtain funding for the project. However, this timeframe is also affected by the same applicant when the regulator gets incomplete submissions.

On average, regulatory reviews take three years from the beginning of the review to the start of construction. In some cases, the whole process can take up to eight years. The following table provides an average of how long this process takes in each country. There is lot of variation among the answers. Some countries have specified the timeframe for the entire licencing process step-by-step (indicated as P) while others have specified the timeframe necessary for a regulatory review to carried out for each steps (indicated as RR).

It is also good to notice, that the given values usually cover only the main licensing actions before each phase. For example, in Finland, STUK reviews detailed designs during construction and programs for commissioning before each step taken during commissioning process. Values given in the table explain only the main steps of licensing before construction and commissioning (construction and operating licences).

Countries	Pre-Construction (e.g., environmental assessment/ licence to prepare site, general design licence)	Consent for construction (permit or legal decision before start of construction)*	Commissioning (commissioning and operating licence)*
	Average Time (years)	Average Time (years)	Average Time (years)
Canada	1.5 (RR)	2 (RR)	1 (RR)
Czech	3 (P)	1 (RR)	.5 (RR)
Finland	2 (P), incl. 1(RR)	3 (P), incl. 1,5 (RR)	1.5 (P), incl. 1(RR)
France	3 (RR)		1 (RR)
Hungary	.5 (RR)	.5 (RR)	.5 (RR)
Japan	4 (P), 2 (RR)	5 (P)	
Poland	2 (P)		1.25 (P)
Slovakia	0,4 (RR)	1 (RR)	0,5 (RR)
Slovenia	4 (P)	2 (RR)	3 (P)
Switzerland	4 (P)	4 (P)	4 (P)
UK	3 (P)		5 (P)
USA	6 (P)		5 (P)
UAE	3 (P)		6 (P)

**Table 2: Timeframe for licensing before construction and commissioning**

*\*This estimate does not include the timeframe for construction or commissioning, but some reviews by the regulator may be performed during the construction stage.*

### Level of Effort

Most countries responded to this question by providing information on skills required to assess the applications received for pre-construction, construction and commissioning. Critical information related to the level of effort, i.e., man hours required, was very limited. Only three countries provided numbers, however, it was clear from the responses that the resources required were large. Many of the countries utilise technical support organisations to assist them in the reviews and oversight.

All regulators required skilled professionals in order to perform the work. In almost every case, the minimum requirement was an engineering degree or equivalent. Skill areas depended somewhat on the purpose of the review.

During the pre-construction phase, siting and site evaluation were the most prevalent issues and this required expertise from geologists, meteorologists, hydrologists, seismologist, project managers, environmental project managers and civil engineers.

For the basic design review, staff requirements included structural, civil, mechanical, electrical, nuclear, chemical and material engineers as well as project managers.

With construction begins, through commissioning and beyond, oversight increases by added inspections. This requires qualified inspectors, specialists and technical experts in addition to the normal staff.

While it is difficult, due to the lack of detailed data available, the level of effort expended, including technical support most likely averages between 25 to 50 man years throughout the processes. This is a rough estimate, but it is clear from both experienced countries and new entry countries, the skill sets and levels of effort are very similar among countries.

The main differences are whether or not in house staff have the experience and resources to carry out the work or whether outside technical assistance is required.

### **Documents Submitted**

Nearly all of the processes used for siting and licensing new nuclear power plants, the regulatory authorities require that documentation be submitted to support siting, construction, commissioning, and operations. Typically, there are regulations or regulatory guidance that describes the content and details of the documentation to be provided. The information provided by the proponent needs to be sufficient to demonstrate that the safety basis described in the legislative and regulatory framework is satisfied. In most cases, information submitted early provides environmental and design-related information that the regulatory authority uses as the basis for its siting and construction decisions. This preliminary information includes assessments of the environmental impacts on the surrounding environment and population, and an assessment of the safety performance of the plant, based on design information. Typically, as construction is completed additional documentation is submitted to show that the as-built plant meets the design requirements. This also includes an updated safety analysis using as-built information that shows the as-built plant can be operated safely, details on the commissioning activities and schedules, descriptions of the security and physical protection programs, emergency preparedness program descriptions, and operational parameters and technical specifications that govern operation.

### **Guidance Documents**

The majority of countries prepares or is preparing the guidance documents for the pre-construction, construction and commissioning phases, respectively. Canada, Hungary and the UAE refer to the IAEA guides to prepare the documents.

Countries	Pre construction	Construction	Commissioning
Canada	Yes	Yes	Yes
Czech Republic	Yes	Yes	Yes
Finland	Yes	Yes	Yes
France	Yes	Yes	Yes
Hungary	Yes	Yes	No
Japan	Yes	Yes	Yes
Poland	No	No	No
Slovakia	No	Yes	Yes
Slovenia	Yes	No	No
Spain	No	No	No
Switzerland	No	Yes	Yes
UAE	Yes	Yes	Yes
UK	Yes	Yes	Yes
USA	Yes	Yes	Yes

**Table 3: The availability of the guidance documents**

*Yes: available or to be developed; No: none at this time*

## Safety Assessment

For all of the phases of the safety assessment, the participant regulators are involved and perform some type of oversight of the project. In some cases, there is a heavy reliance on outside organisations (technical support organisations - TSOs) to provide detailed technical analysis or assessment of the operator's safety information. The purpose of this question's scope portion was to garner a fuller appreciation of the key technical areas a regulator focuses on during reviews of the new NPP applications. The responses herein did not delve into the detailed areas beyond the pre-construction environmental and siting phases. Phase 2 of this report (design) should provide additional details regarding the specific technical areas and the depth of a review performed during licensing.

### *Pre-Construction*

Overall, there is a significant level of agreement on the scope of the preconstruction reviews. Most members perform an environmental assessment and some level of site characterisation. Topics include but are not necessarily limited to: site geography and demography; near industrial, transport and military objects; meteorology, hydrology, geology, seismology and geotechnical aspects; external hazards impact, e.g. earthquake, extreme meteorological conditions, fire and airplane impact. In addition, basic reactor design parameters are developed to ensure that the design is enveloped by the site (e.g., source term, power outputs)

### *Construction*

The operator (licensee, applicant) prepares a safety assessment consistent with the approval they are seeking. For the most part, this approval is a construction approval, however, two countries (US Part 52 licence and Japan) perform a complete review of the design at this time and issue an approval to construct with a conditional provision for operation. The conditional provision is focused on verification of the as built conformance of the NPP with the approved design documents. The scope of this review focuses on the demonstration of the design of the nuclear island and the postulated safety performance of the nuclear systems (including systems that support the safety functions). Most regulators observe and or review the initial testing of the NPP and the results of the pre-operational test programs including non-nuclear and nuclear testing.

### ***Commissioning***

The operator (licensee) provides a Safety Analysis Report (SAR) that demonstrates the safety case for the nuclear power plant. All regulators either perform or have performed a review of this SAR. In some cases, the review is performed with assistance from a technical support organisation and in the case of Slovenia, the opinion of the TSO (or an authorised expert in radiation and nuclear safety) is mandatory for approval.

### **Public Participation**

All member states have some form of public participation. The degree varies between member states and all are unique to some extent.

The greater part of public consultation for most member states takes place during the pre-construction phase. Generally, some level of public participation is mandated by law. Often this is led by a government department, which is not the nuclear regulatory body, but, there are many cases whereby a nuclear regulatory body leads the consultation. In many cases, a range of government bodies consults with the public. In these instances it is common for the nuclear regulatory body to be a statutory consultee.

Not all public participation is a legal requirement. In some member states some elements of public participation are by invitation. This may supplement the public participation mandated by law.

In many cases it is necessary for the prospective Licensee to produce an Environmental Impact Assessment which is publicly available.

Public participation varies from being informed by letter or other means, being provided with information, being able to raise issues, to a full public enquiry.

Further public participation can take place in the construction and commissioning phase, although this is not always the case.

### **Oversight**

Each member state was asked to explain who performs the oversight during construction and during operation.

In most member states, the stakeholder accountable during construction, as well as during operation, is the respective regulatory authority. During construction, especially, many member states call upon the services of experts such as TSOs on site who support the regulatory authority. In some member states, like France or Japan, experts from the TSOs join the inspections during operation, too. In Switzerland and the UK, for example, there are other authorities besides the regulator that have oversight roles during construction.

In Slovakia, the members of the Slovak Chamber of Civil Engineers perform the construction oversight and UJD SR performs the operation oversight.

In Canada, the licensee is accountable for oversight by law, but the regulatory oversight of the licensee is performed by the regulator.

In Finland, the construction oversight is performed by all parties. Once operating, oversight is performed by the licensee, but the regulator verifies that the other stakeholders perform their functions.

### **Independent Advisory Committee**

Most of the countries use an independent advisory committee. Some are required to have one and take the Committee's advice into consideration during their licence review, while others have a committee for consultation that is not part of their regulatory framework. It all depends on how each country's regulations are written.

Mainly, the advisory committee performs the following tasks:

- an examination of the fundamental issues concerning nuclear safety;
- an evaluation of the regulatory agency's work during licensing steps;
- in some cases, participation in the legislative work necessitated by nuclear safety.

Most of the committees are composed of members representing different academic circles dealing with a very broad range of topics related to the nuclear field.



## **CONCLUSION**

This report focused on the results of the general section, containing the questions pertaining to the regulatory body licensing structure and processes. Two more related reports will be issued by the Working Group. The next report will discuss the results from a survey completed by the member states on their review of the nuclear power plant design and the expertise needed to perform this review. The last report will deal with a survey on the review of new reactor applications, focussing on the questions related to the construction stage.

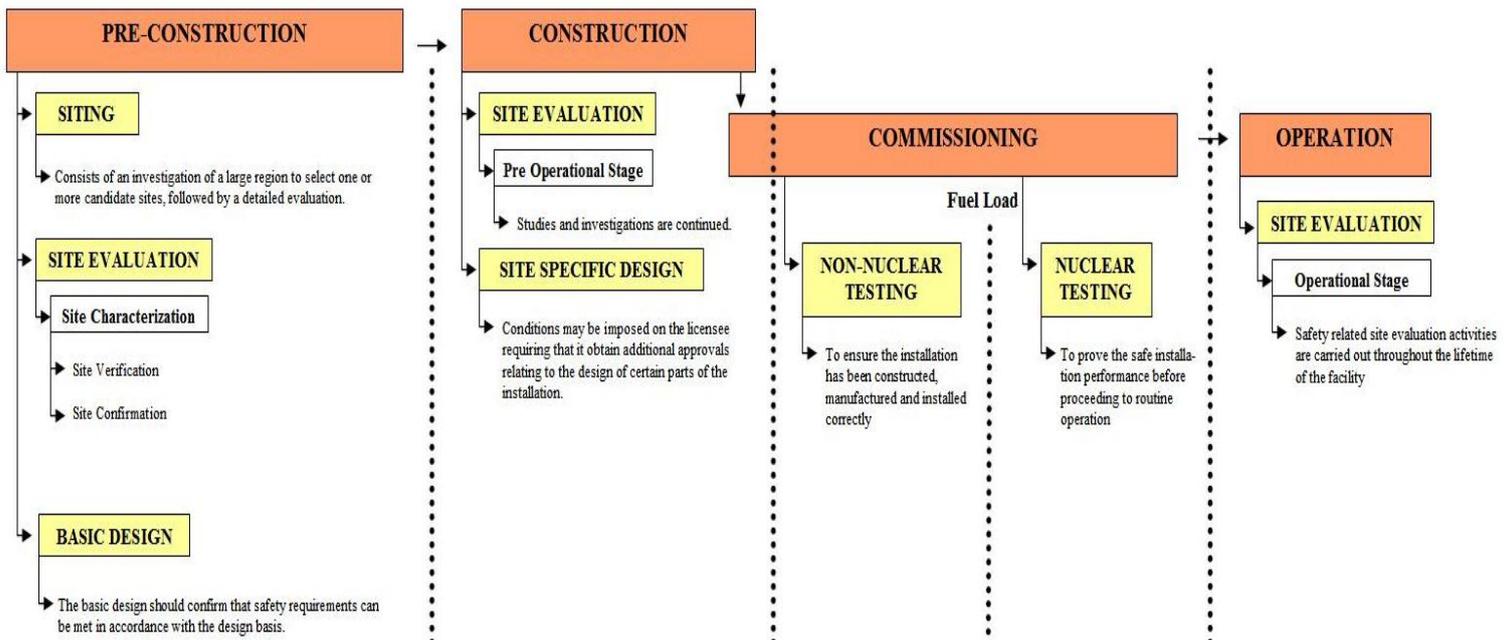


## APPENDIX A

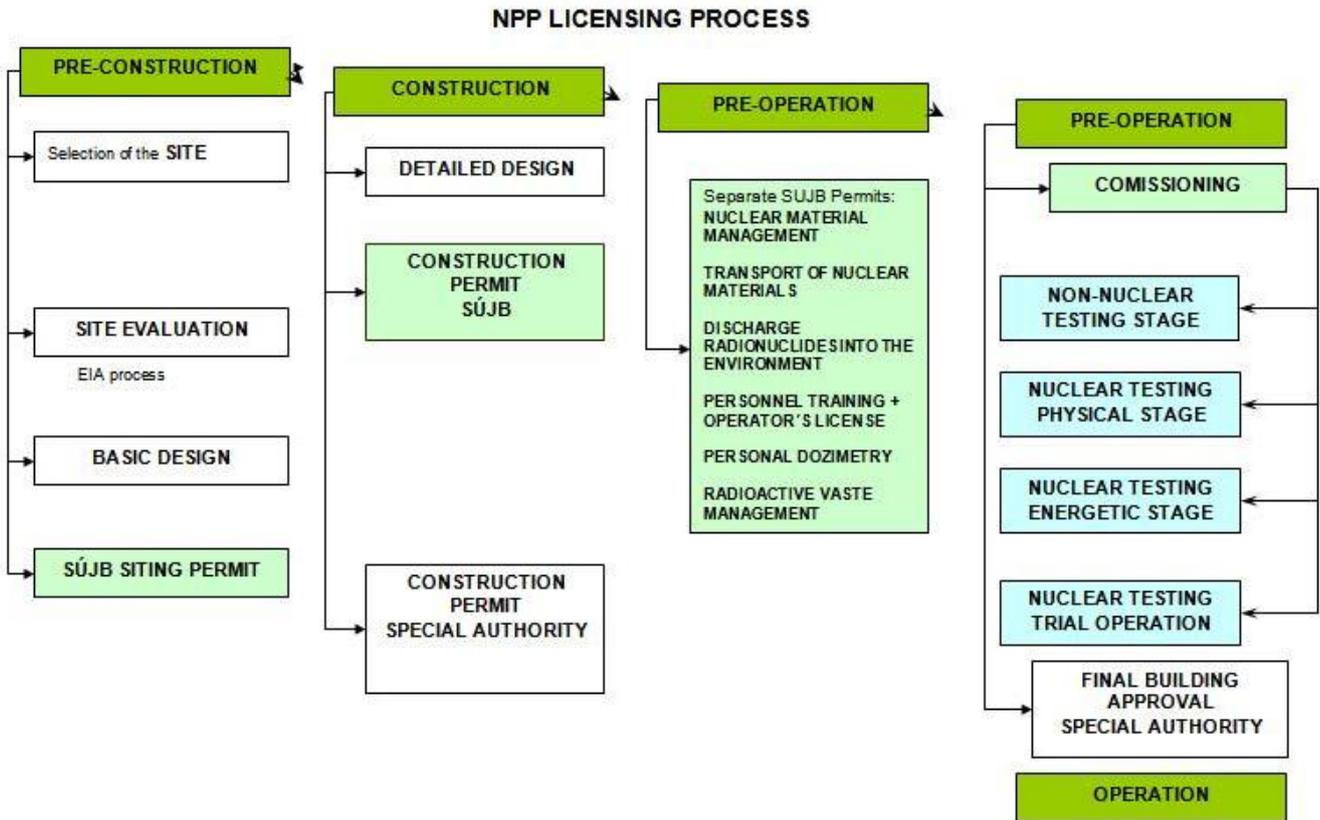
### Licensing process:

- Using the IAEA chart as example, provide a representation of the licensing process used by your agency.
- The survey starts with questions based on the licensing process. Each member state was asked to provide a general chart explaining a little of their licensing process. The questions on the licensing process were created using the IAEA licensing process because, as the survey proved, most of the member states have a process very similar to the IAEA general licensing process. This process is divided into four main stages: pre-construction, construction, commissioning and operation (Figure 1).
- During pre-construction, most of the regulators perform a review of the basic design and site safety issues. Some countries go into more specific reviews. For example, the United States' new licensing process requires the applicant to provide the complete design before getting the combined construction and operating licence(COLA).
- In the construction stage, all of the regulators perform oversight of the construction. Some of them, like Finland, also review and approve the detailed design.
- Commissioning for everyone starts during construction, but continues well after construction ends. This stage has two important events where the regulator is directly involved: the issuance of the operating licence and the loading of fuel. In the case of France, the regulator makes a decision for partial commissioning, informing the company that they can bring fuel on site.

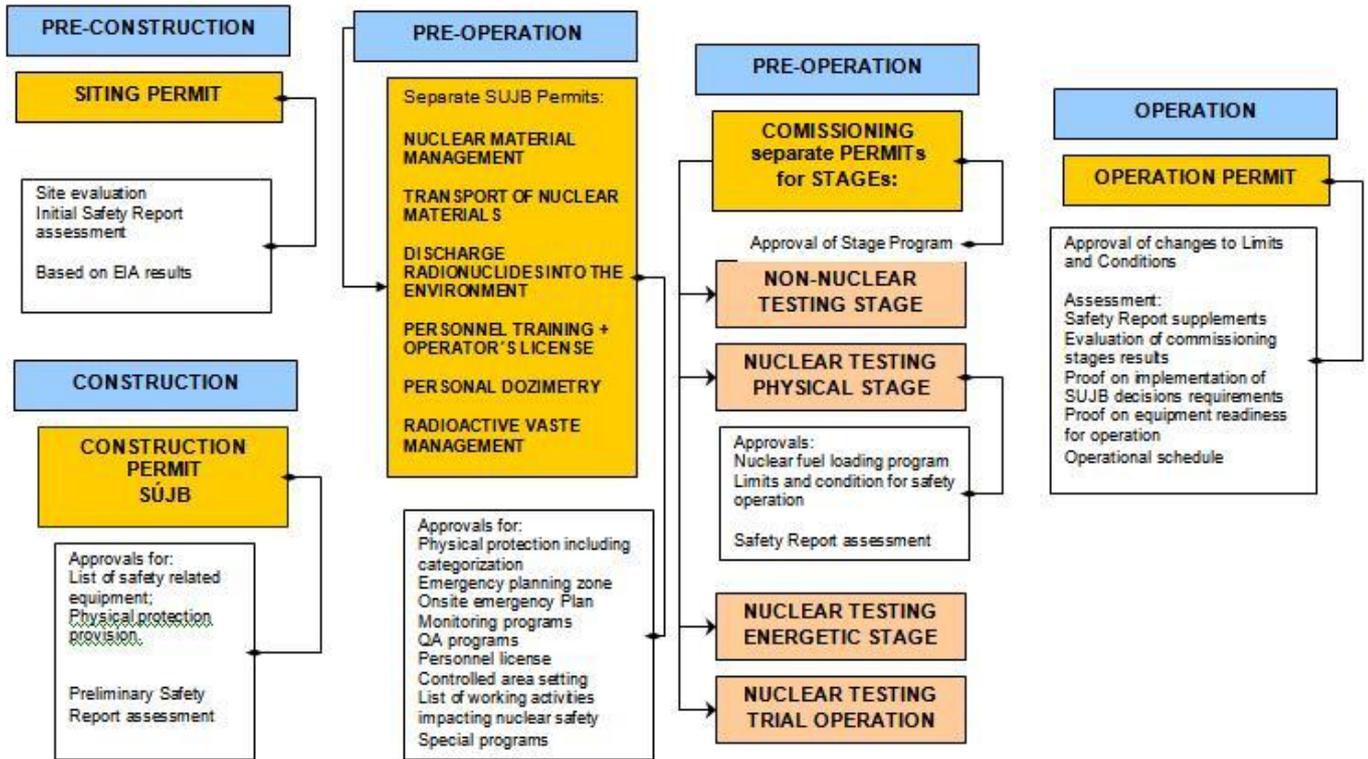
### IAEA Licensing Process



Czech Republic Licensing Process

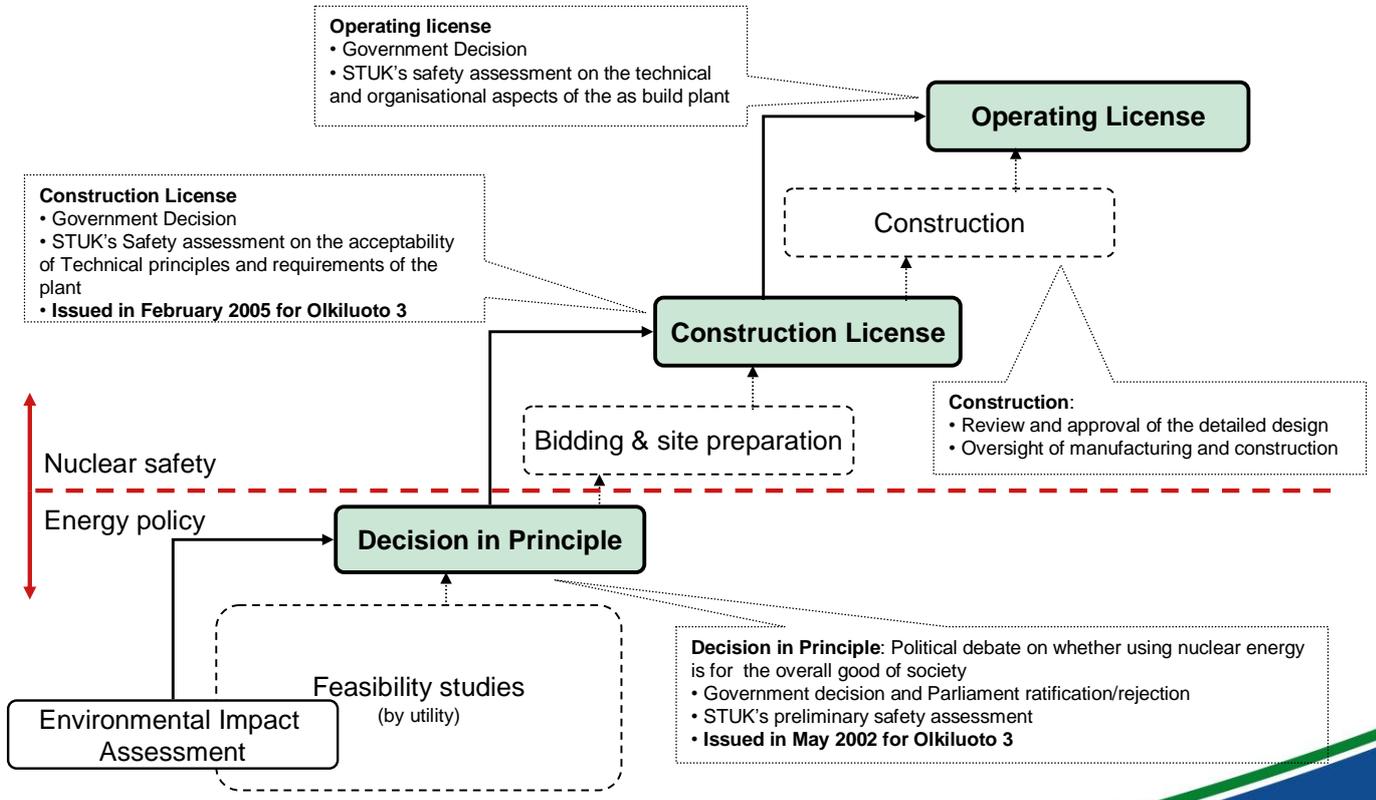


**CZECH REGULATORY AUTHORITY - SUJB**

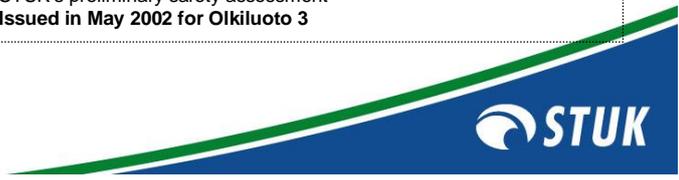


Finland Licensing Process

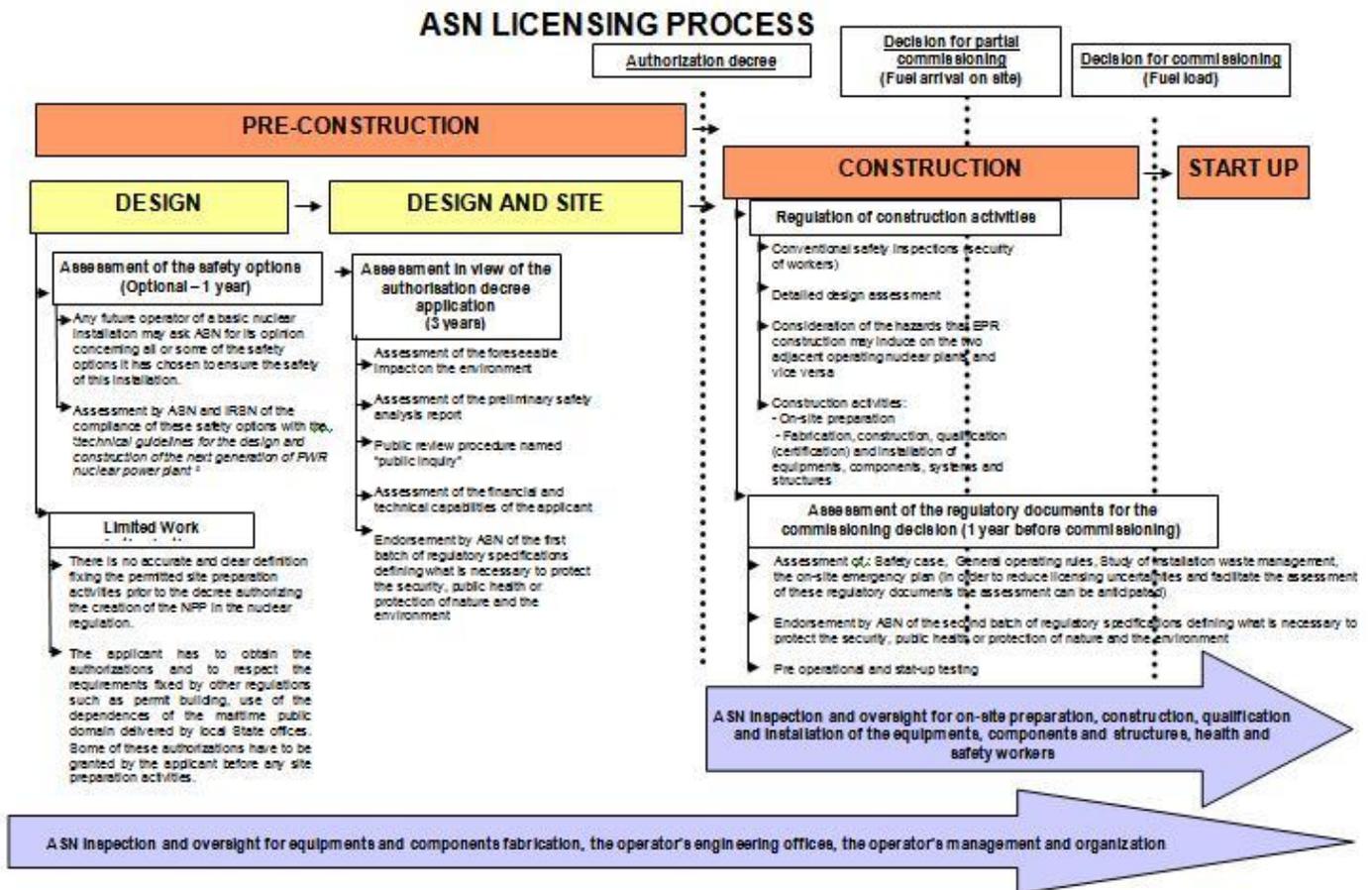
# Licensing Steps in Finland



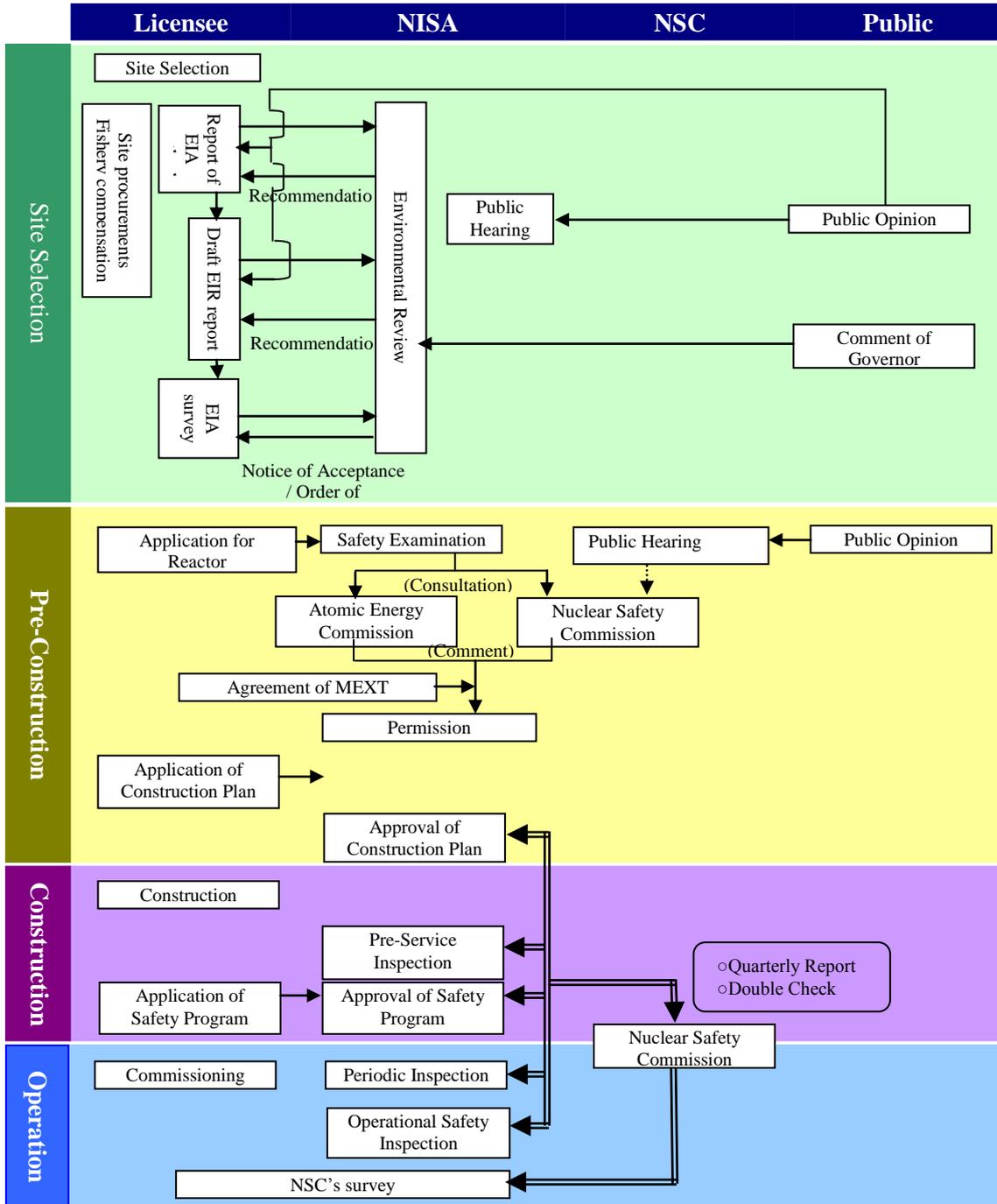
SÄTEILYTURVAKESKUS • STRÅLSÄKERHETSCENTRALEN  
RADIATION AND NUCLEAR SAFETY AUTHORITY



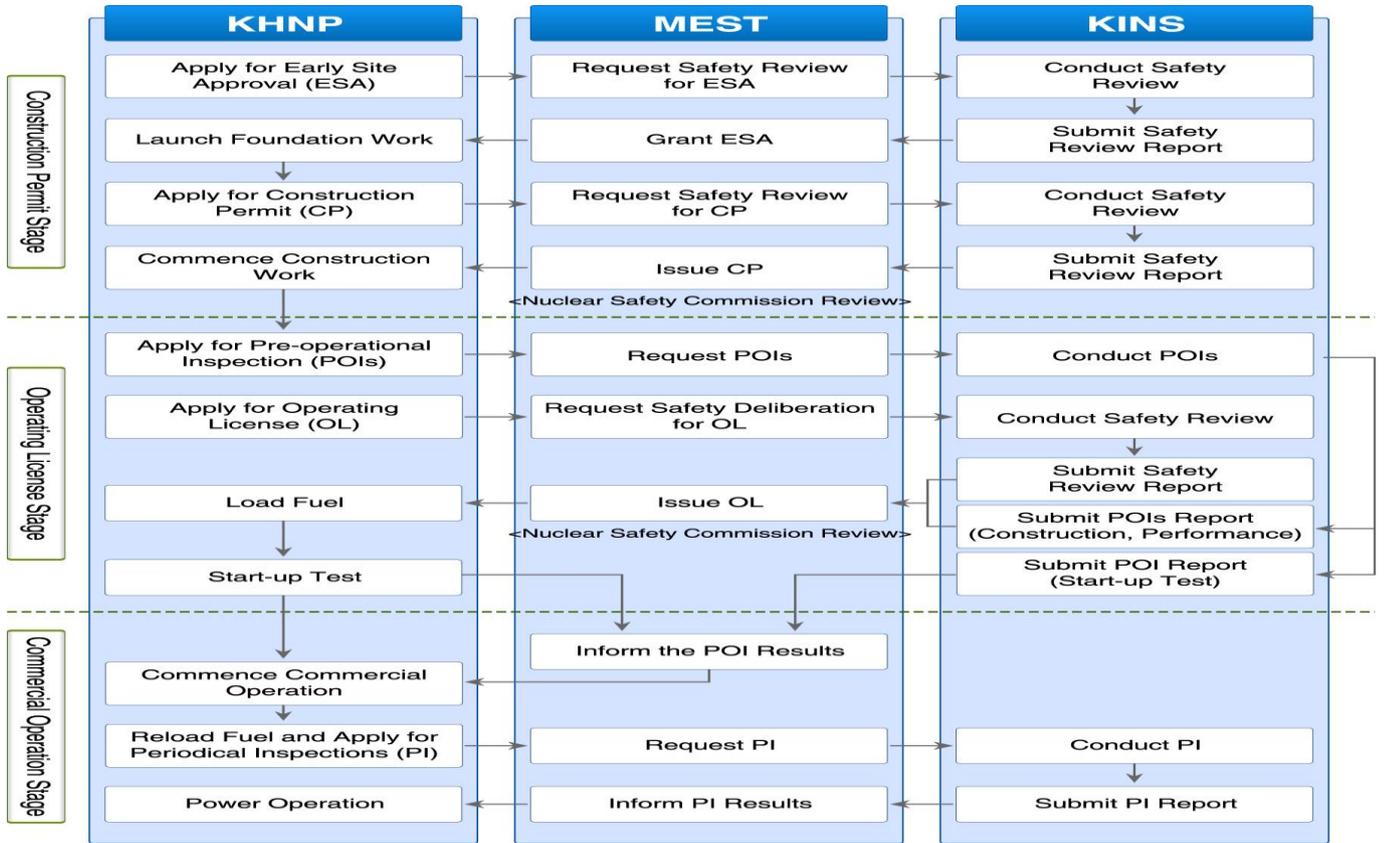
France Licensing Process



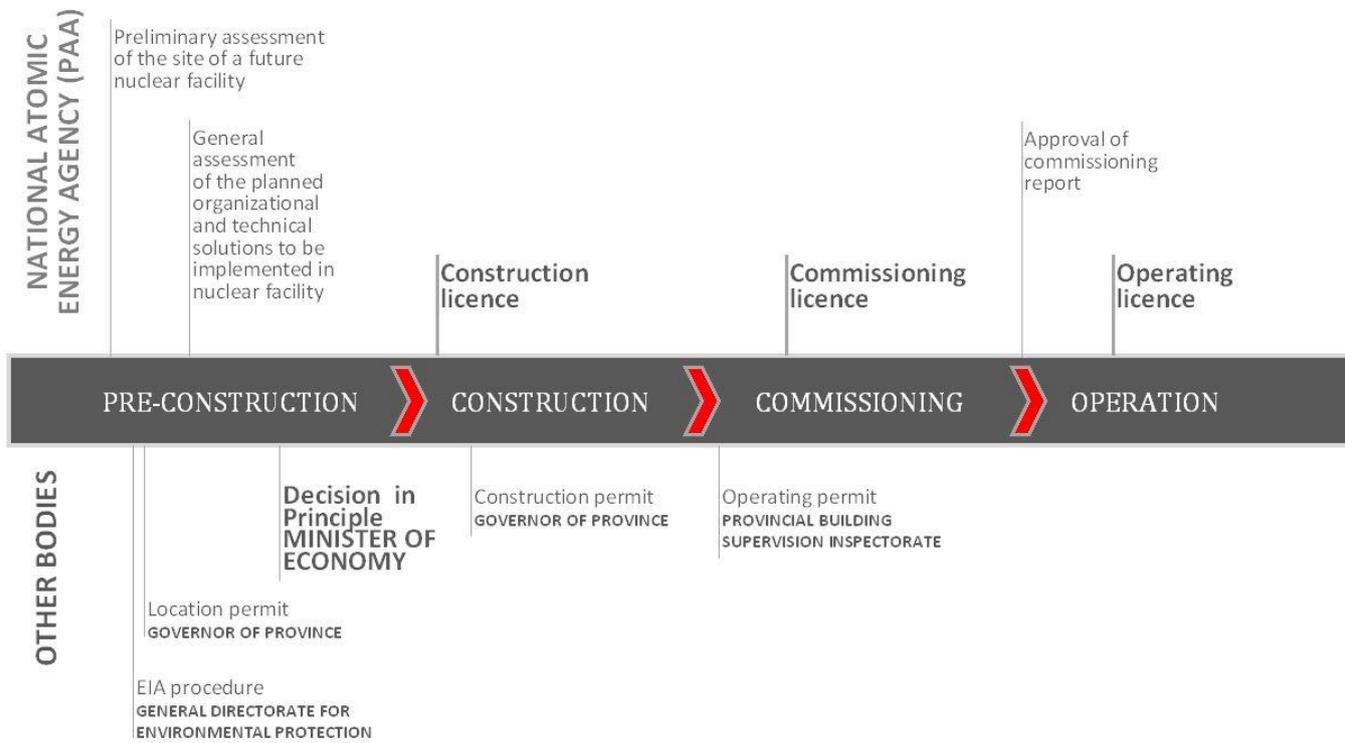
Japan Licensing Process



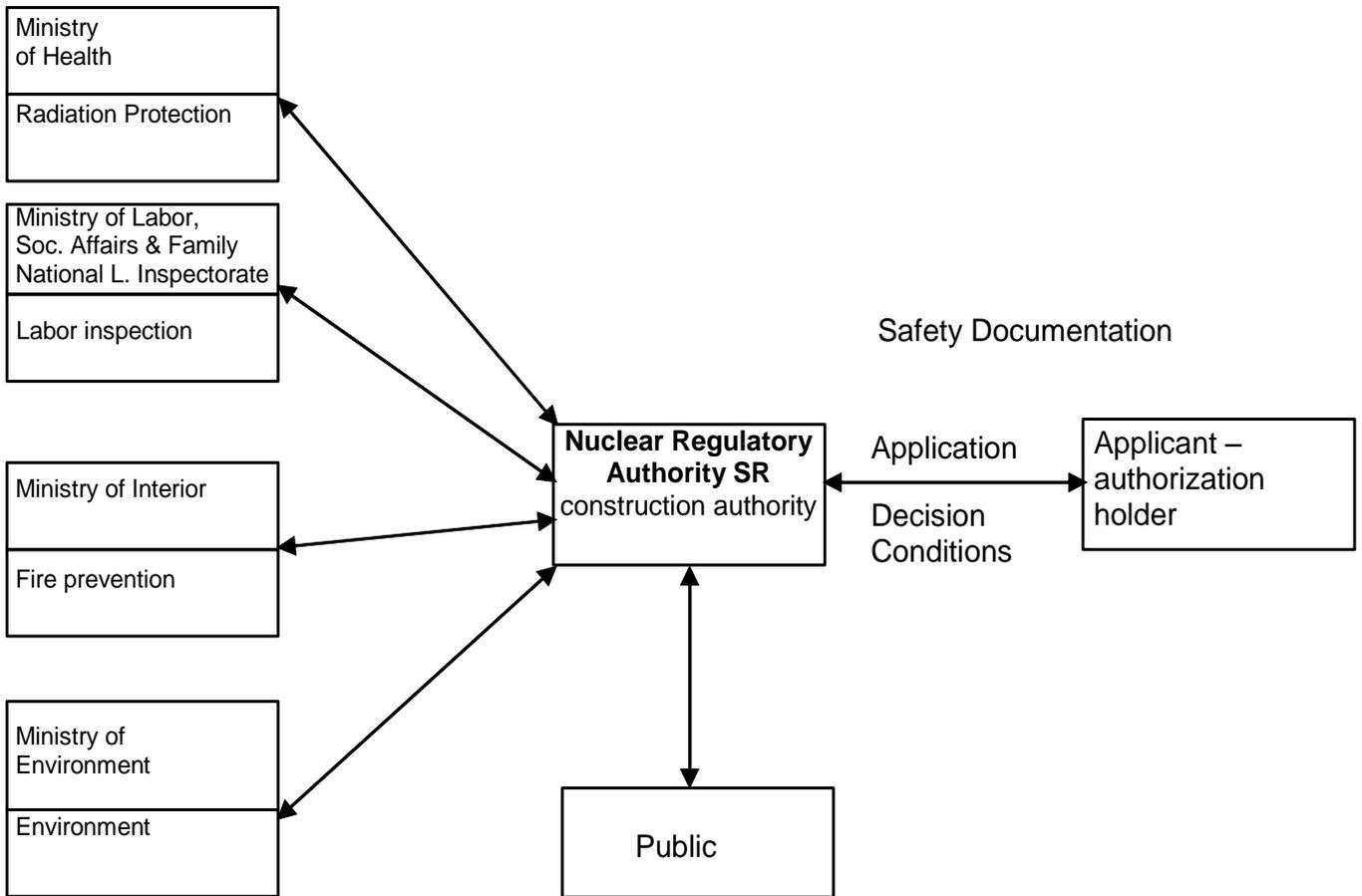
### Korea Licensing Process



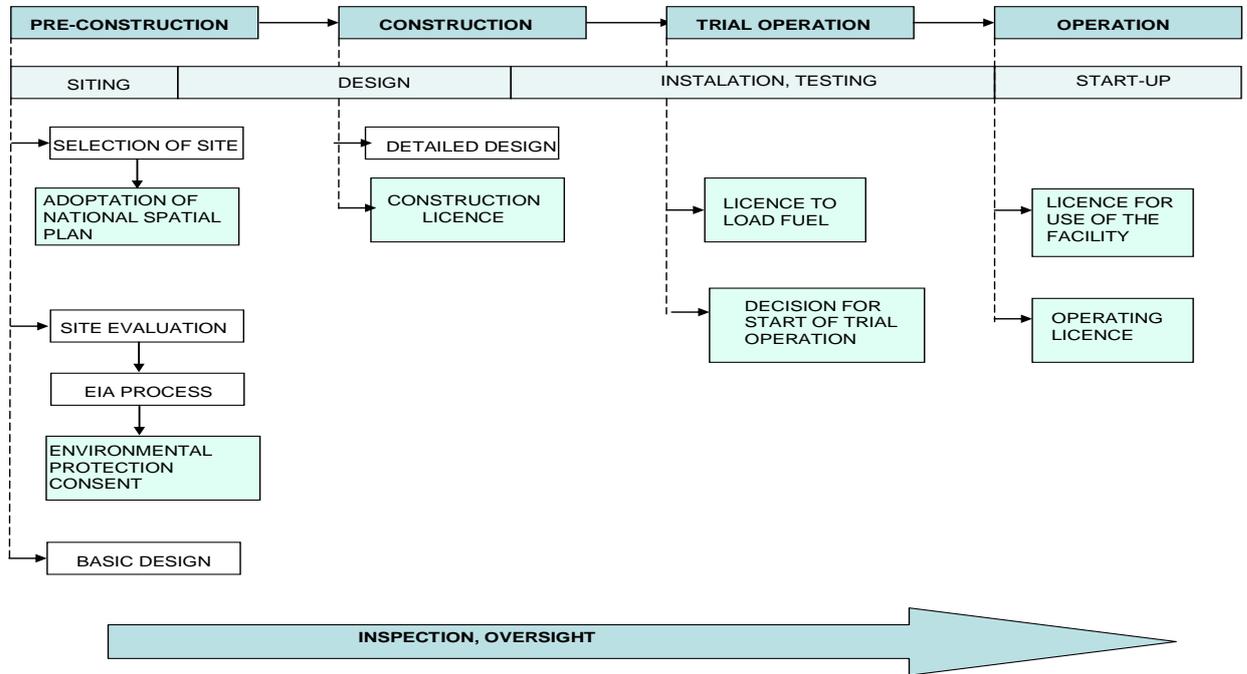
**Poland Licensing Process**



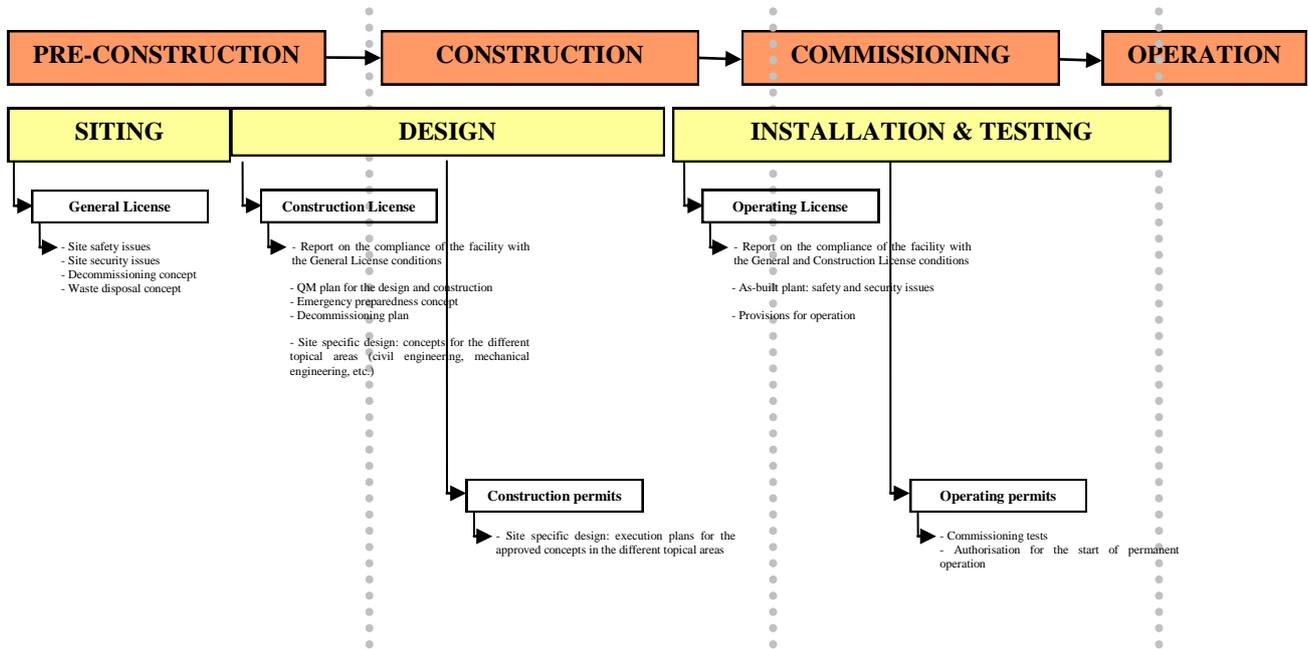
### Slovakia Licensing Process



### Slovenia Licensing Process

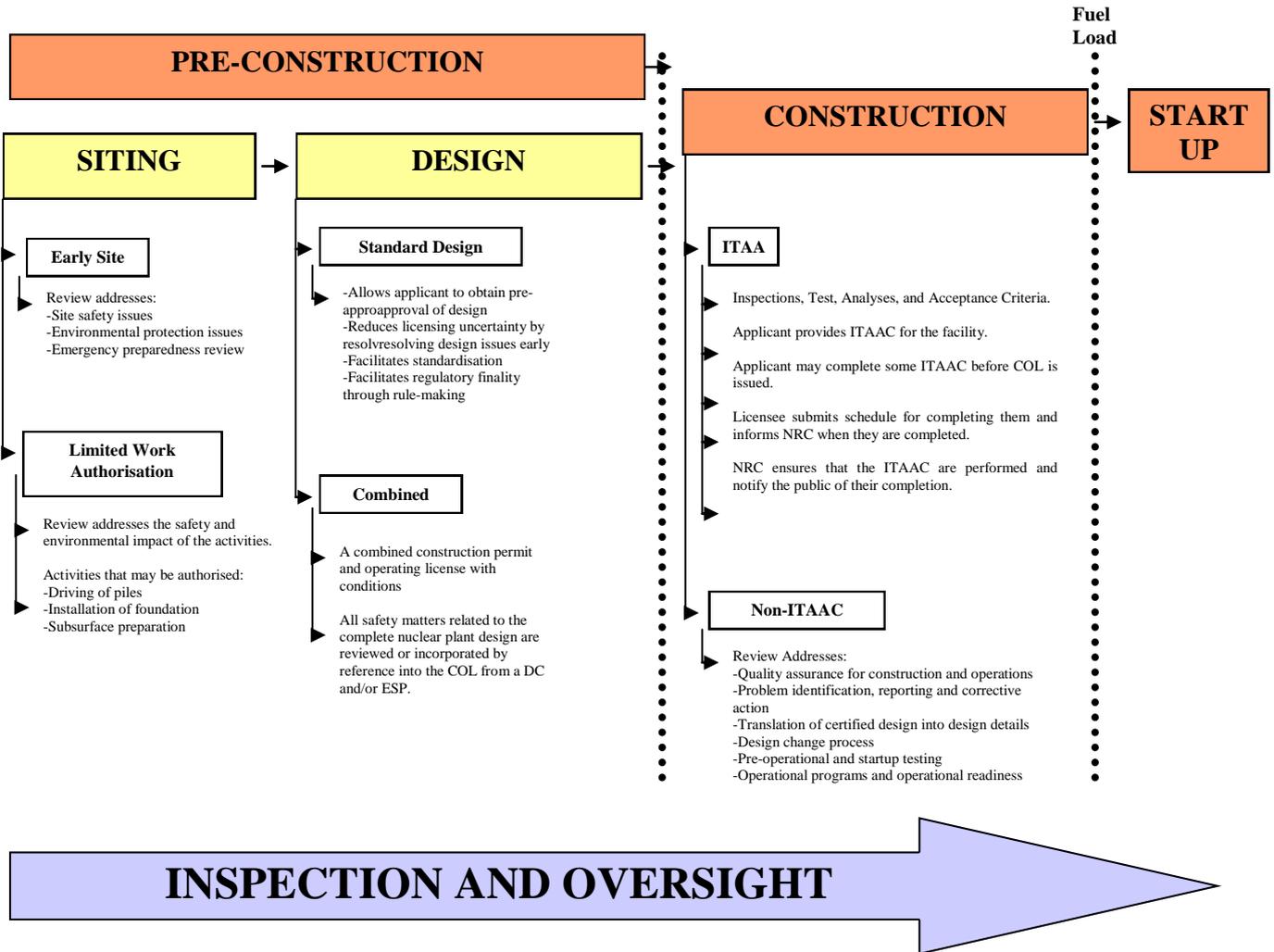


### Swiss Licensing Process Nuclear Safety Assessment



**INSPECTION AND OVERSIGHT**

**United States Licensing Process  
USNRC Licensing Process**





## APPENDIX B

### Who is the governing authority for each phase?

- It is important to understand that when it comes to authorising a new nuclear power plant, in some countries the regulatory body is not the only one making the main decision during the licensing process.
- For example, in Canada, Hungary, Poland, Slovakia, the United Arab Emirates, the United Kingdom and the United States, the regulator is the one who makes the decision about granting licences. But in other countries, for example in the Czech Republic, Finland, France, Japan, Slovenia, Spain and Switzerland, the construction of the new reactor must be approved by the government ministries.
- In Hungary, the preparation to construct the new NPP must be approved in principle by the **Parliament**, while in Finland, the **Government** makes a decision in principle for site evaluation that is ratified by the Parliament. In Switzerland, the general licence is issued by the **Government**.
- In the Czech Republic, the **local authority** also plays a special role in the licensing process, because it needs to approve the location of the new NPP.
- In France, the **technical support organisations** are in charge of basic design assessment, site evaluation and the review of safety analysis for testing, together with the regulatory body.
- In some cases **other stakeholders** such as environment centers, the public and neighboring countries are involved in the licensing process as decision makers. For example, in Finland, all of them provide statements for Environmental Impact Assessment.
- But nevertheless, in most countries, the regulator has a specific function and role as a decision-making body through all phases of licensing (pre-construction, construction, commissioning phases).

Who is the governing authority for each phase?	Canada CNSC
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The Canadian Nuclear Safety Commission using the <i>Nuclear Safety and Control Act</i> and the <i>Canadian Environmental Assessment Act</i> reviews an applicant’s site selection case, including a high level review of the proposed design as part of concurrent Environmental Assessment (EA) and licensing processes. The EA outcome is ultimately announced by the Federal Government, If successful, the applicant is granted a <i>Licence to Prepare Site</i> by the CNSC Commission to perform pre-construction activities on the site.</p> <p>Canada does not certify basic reactor designs.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The CNSC using the <i>Nuclear Safety and Control Act</i> conducts the review and issues the <i>Licence to Construct</i>.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>The CNSC using the <i>Nuclear Safety and Control Act</i> conducts compliance activities around all licensee commissioning.</p> <p>The <i>Licence to Construct</i> permits all commissioning activities with no fuel in the Reactor Core.</p> <p>The <i>Licence to Operate</i> permits all commissioning activities that require fuel in-core.</p>

<b>Who is the governing authority for each phase?</b>	<b>Czech Republic SUJB</b>
Pre-Construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Government approves State Energetic Policy  Ministry of Regional Development establishes “Policy of Country Development in CR” and “Country Plan”, documents are approved by Czech Government  Local Authority approves the localisation in compliance with the country plan  State Office for Nuclear Safety  Ministry of Environment is authority for site evaluation from the point of view of environmental impact (EIA )  State Office for Nuclear Safety  State Office for Nuclear Safety
Construction: <ul style="list-style-type: none"> <li>• Site-specific design</li> <li>• Site evaluation</li> <li>• Construction permit</li> </ul>	State Office for Nuclear Safety  State Office for Nuclear Safety  Ministry of Industry and Trade
Commissioning <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	State Office for Nuclear Safety is responsible for all stages of commissioning permits

Who is the governing authority for each phase?	Finland STUK
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>Environmental Impact Assessment (EIA):</b></p> <ul style="list-style-type: none"> <li>• <i>Ministry of the Employment and the Economy (MEE)</i> is the contact authority in the EIA process. MEE coordinates and collects all statements from stakeholders and issues contact authority's statement based on other's statements.</li> <li>• <i>Radiation and Nuclear Safety Authority (STUK)</i> is one of the stakeholders. In Finland EIA is based on environmental legislation and therefore it does not consider nuclear and radiation safety aspects in detail. Nuclear and radiation safety issues are addressed in more detail in the first licensing step (the Decision in Principle phase).</li> <li>• Other stakeholders that issues statements are <i>regional environment centres, ministries, government agencies, public, neighbouring countries.</i></li> </ul> <p><b>Site License:</b></p> <ul style="list-style-type: none"> <li>• There is no specific Site License in the Finnish licensing system and site selection and acceptance is a process that is addressed in several consequential steps starting from Environmental Impact Assessment (EIA) phase and Decision in Principle phase, both of which may include one or more alternative sites. From siting point of view, a prerequisite for positive Decision in Principle by the government is that the municipality has approved to site the reactor and STUK and rescues authorities have concluded that site is acceptable from safety and emergency preparedness point of view. The site is chosen by the applicant before submitting the Construction License application to the government.</li> </ul> <p><b>Site evaluation in Decision in Principle (DIP) phase</b></p> <ul style="list-style-type: none"> <li>• <i>MEE</i> coordinates and prepares decision.</li> <li>• <i>STUK</i> gives the preliminary safety assessment to the ministry. In this step, site safety evaluation is done. It includes geology and seismology, meteorology and hydrology, transport routes (sea, land and air), industrial activities and population among other things. Also, physical protection and emergency preparedness aspects are addressed in this phase.</li> <li>• <i>Government</i> makes the decision in Principle.</li> <li>• <i>Parliament</i> ratifies or rejects it.</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>Environmental Impact Assessment (EIA):</b></p> <ul style="list-style-type: none"> <li>• <i>Ministry of the Employment and the Economy (MEE)</i> is the contact authority in the EIA process. MEE coordinates and collects all statements from stakeholders and issues contact authority's statement based on other's statements.</li> <li>• <i>Radiation and Nuclear Safety Authority (STUK)</i> is one of the stakeholders. In Finland EIA is based on environmental legislation and therefore it does not consider nuclear and radiation safety aspects in detail. Nuclear and radiation safety issues are addressed in more detail in the first licensing step (the Decision in Principle phase).</li> <li>• Other stakeholders that issues statements are <i>regional environment</i></li> </ul>

	<p><i>centres, ministries, government agencies, public, neighbouring countries.</i></p> <p><b>Site License:</b></p> <ul style="list-style-type: none"> <li>• There is no specific Site License in the Finnish licensing system and site selection and acceptance is a process that is addressed in several consequential steps starting from EIA phase and Decision in Principle phase, both of which may include one or more alternative sites. From siting point of view, a prerequisite for positive Decision in Principle by the government is that the municipality has approved to site the reactor and STUK, and rescues authorities have concluded that site is acceptable from safety and emergency preparedness point of view. The site is chosen by the applicant before submitting the Construction License application to the government.</li> </ul> <p><b>Site evaluation in Decision in Principle (DIP) phase</b></p> <ul style="list-style-type: none"> <li>• <i>MEE</i> coordinates and prepares decision.</li> <li>• STUK gives the preliminary safety assessment to the ministry. In this step, site safety evaluation is done. It includes geology and seismology, meteorology and hydrology, transport routes (sea, land, and air), industrial activities and population among other things. Also, physical protection and emergency preparedness aspects are addressed in this phase.</li> <li>• <i>Government</i> makes the decision in Principle.</li> <li>• <i>Parliament</i> ratifies or rejects it.</li> </ul>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>Operating license</b></p> <ul style="list-style-type: none"> <li>• The Ministry of Employment and the Economy (MEE) co-ordinates and prepares decision which is made by the Government.</li> <li>• STUK performs the safety assessment and submits it to the MEE. Non-nuclear testing must be done prior operating license can be issued. Nuclear fuel loading or nuclear testing can not be started without operating license. STUK oversees both non nuclear and nuclear testing. Test results from each phase have to be submitted to STUK for approval.</li> </ul> <p>Government makes the decision. Government cannot make the decision without positive safety assessment from STUK.</p>

<b>Who is the governing authority for each phase?</b>	<b>France ASN</b>
Pre-construction <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>In France, site selection is not regulated by ASN. The n°2000-18 Act of 10 February 2000, defines that the minister in charge of energy makes public the multiannual plan of energetic production investments which lays down the objectives as regards distribution of production capacities by d' source; primary energy and, if necessary, by technique of production and geographical area.</p> <p>ASN with its Technical Support Organisation (TSOs) is in charge of site evaluation and basic design assessment on the basis of the applicant files.</p>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>ASN with its TSOs is in charge of site evaluation and site specific design assessment on the basis of the applicant files.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>ASN with its TSO leads the review of the safety analysis for all testing.</p>

<b>Who is the Governing Authority for each phase?</b>	<b>Hungary HAEA</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Preparation to construction of new NPP needs a decision in principle approved by the Parliament.</p> <p>Two authorities separately issue site licenses in the pre-construction phase. According to the Environment Protection Act: The Environmental Inspectorate grants the environmental license after a preliminary and a detailed environmental impact assessment (EIA).</p> <p>According to the Atomic Energy Act: the nuclear safety site license is issued by Hungarian Atomic Energy Agency (HAEA).</p>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The construction license is granted by the HAEA after the assessment of the Preliminary Safety Analysis Report.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>The commissioning license is issued by the HAEA based on the first version of FSAR.</p>

<b>Who is the governing authority for each phase?</b>	<b>Japan NISA/JNES</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>As for the commercial nuclear power plant (NPP), Nuclear and Industrial Safety Agency (NISA) of Ministry of Economy Trade and Industry (METI) has the primary responsibility for the review of environmental impact and basic design as well as safety analysis.</p> <p>The Minister of METI consults with the Atomic Energy Commission (AEC) and the Nuclear Safety Commission (NSC) on the results of its examination.</p> <p>The NSC reviews independently focusing on safety problems specific to the installation, and gives its views to the Minister of METI.</p> <p>The Minister of METI considers these views, asks for the consent of the Minister of MEXT, and then issues the license for establishment of NPP.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>NISA leads the review of safety analysis for the site evaluation and the site specific design, followed by pre-service inspection.</p> <p>In this stage, Japan Nuclear Energy Safety Organisation (JNES) support NISA technically and takes on part of inspection.</p> <p>NISA also takes responsibility for design approval for fuel assemblies, fuel assembly inspection.</p> <p>JNES is in charge of fuel assembly inspection, too.</p> <p>JNES is responsible for the audit of licensee's welding QA system.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>NISA also leads the review of the operation plan and the Operational Safety Program.</p>

<b>Who is the governing authority for each phase?</b>	<b>Korea MEST/KINS</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>MEST and KINS is in charge of site evaluation and basic design assessment on the basis of the applicant submissions.</p> <p>The Ministry of Education, Science and Technology (MEST) has a legal framework that prescribes overall authorisation processes applied to all stages of the lifetime of nuclear reactor facilities and activities. The applicant shall obtain different types of authorisation for the stages in the lifetime of nuclear reactor facilities including design, siting, construction, commissioning, operation, and decommissioning in accordance with the Atomic Energy Act (AEA), and shall obtain the approval of radiological emergency plan in accordance with the Act on Physical Protection and Radiological Emergency (APPRE).</p> <p>Any applicant who intends to construct (Article 11 (Construction Permits) of the Atomic Energy Act [AEA]), operate (Article 21 (Operating Licenses) of the AEA), or decommission (Article 31 (Decommissioning of Nuclear Power Reactor and Related Facilities) of the AEA) a nuclear power reactor and related facilities must submit applications that verify safety to Ministry of Education, Science &amp; Technology (MEST). Safety reviews of nuclear power reactors and related facilities have been entrusted to the Korea Institute of Nuclear Safety (KINS) as per Article 111 (Delegation of Authority) of the AEA, and KINS accordingly reviews and assesses whether the submittals comply with the relevant regulatory requirements.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site -specific design</li> </ul>	<p>MEST and KINS is in charge of site evaluation and basic design assessment on the basis of the applicant submissions.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>MEST and KINS is in charge of site evaluation and basic design assessment on the basis of the applicant submissions.</p>

<b>Who is the governing authority for each phase?</b>	<b>Poland PAA</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Preliminary assessment of the site of a future nuclear facility and general assessment of the planned organisational and technical solutions to be implemented in nuclear facility is performed by President of PAA (those activities are obligatory in case of NPP optional for other nuclear facilities).</p> <p>General Directorate for Environmental Protection is conducting EIA procedure.</p> <p>Minister of Economy issues Decision in Principle.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>In construction phase following decisions are required:</p> <ul style="list-style-type: none"> <li>• construction licence issued by President of PAA</li> <li>• construction permit issued by governor of province</li> </ul>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>In commissioning phase</p> <ul style="list-style-type: none"> <li>• operating permit issued Provincial Building Supervision Inspectorate</li> <li>• commissioning licence issued by President of PAA</li> </ul>

<b>Who is the governing authority for each phase?</b>	<b>Slovakia UJD</b>
Pre-construction <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	District construction authority issues decisions on siting of nuclear installation construction based on the approval of UJD SR and of other regulatory authorities (Public Health Care Office of SR, labor inspection bodies).
Construction <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The authorisation procedure for nuclear installation in Slovakia consists of 5 major stages: siting, construction, commissioning, operation and decommissioning. Authorisation for nuclear installation construction, permission for temporary use of the building including authorisation for commissioning and decision on construction approval (including authorisation for operation of nuclear installation) are issued by UJD SR as a construction authority. UJD SR conducts its competency as a construction authority and state administration authority for nuclear safety. Its decisions are based on its own partial decisions (partial approval of safety documentation), as well as on the statements of relevant regulatory authorities - Public Health Care Office of SR (radiation protection), National Labour Inspectorate, Labour Inspectorate (labour inspection and safety and health protection at work) and other bodies and organisations of state administration (fire prevention, civil defense).</p> <p>UJD SR is the governing authority also for designing of nuclear installations.</p>
Commissioning <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	See the above section

<b>Who is the governing authority for each phase?</b>	<b>Slovenia SNSA</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The Ministry of the Environment and Spatial Planning prepares the National Strategic Spatial Plan, which is adopted by the Parliament.</p> <p>The Ministry of the Environment and Spatial Planning leads the preparation of the National Spatial Plan (general siting process for the facilities of national importance). The National Spatial Plan (NSP) is adopted by the Slovenian Government.</p> <p>The Environmental Agency leads the process of Environmental Impact Assessment and issues the environmental protection consent.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The Slovenian Nuclear Safety Administration (in the following text SNSA) issues the consent for construction.</p> <p>The Ministry of the Environment and Spatial Planning, Spatial Planning Directorate, based on the SNSA's consent for construction, issues the construction licence.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>The Slovenian Nuclear Safety Administration issues the consent for the start of trial operation.</p> <p>The Ministry of the Environment and Spatial Planning, based on the SNSA's consent, issues the decision for start of trial operation.</p>

<b>Who is the governing authority for each phase?</b>	<b>Spain CSN</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	The licenses in all phases are granted by the Ministry of Industry. In this phase there are other considerations besides that of safety that are coordinated by the Ministry of Industry with the rest of local, regional or national institutions. However, the CSN is in charge of reviewing the safety analysis and to endorse conditions to the license if necessary.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	The above comments are applicable to this phase. CSN leads the review of the safety analysis in this phase
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	The above comments are applicable to this phase. CSN leads the review of the safety analysis in this phase

<b>Who is the governing authority for each phase?</b>	<b>Switzerland ENSI</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>As regulated in the Nuclear Energy Act (NEA) and in the corresponding Nuclear Energy Ordinance (NEO), the licensing in the pre-construction phase foresees essentially only a site license that goes under the name of General License.</p> <p>The General License is issued by the Federal Council (the Swiss government), approved by the parliament and subject to a national popular vote (a so called optional referendum). The review of a General License Application is coordinated by the Swiss Federal Office of Energy (SFOE). Environmental aspects are the responsibility of the Federal Office of the Environment; the compliance with the area planning requirements is checked by the Federal Office for Spatial Development; the Federal Nuclear Safety Inspectorate (ENSI) evaluates the themes of the nuclear safety and security as included in the application reports: Safety Analysis Report, Security Report, Concept for the Disposal of Radioactive Waste and Decommissioning Concept.</p> <p>In this phase there is no requirement on the applicant for choosing a design or a set thereof. Hence, no evaluation of a specific design is performed.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The Construction License is issued by the Department of Environment, Traffic, Energy and Communication (DETEC). The review of a Construction License Application is co-ordinated by SFOE. The different federal offices and the ENSI are involved as in the review of the General License Application in their specific fields of competence. The ENSI does the safety review of the site specific design as submitted by the applicant.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>The Operating License is issued by the DETEC. The review of an Operating License Application is co-ordinated by SFOE. The ENSI is the responsible for the review of the Operating License Application.</p>

<b>Who is the governing authority for each phase?</b>	<b>United Arab Emirates FANR</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Federal Authority for Nuclear Regulation (FANR) The governing legislation (UAE Federal Law by Decree No. 6 Concerning the Peaceful uses of Nuclear Energy) requires FANR to co-operate with other competent authorities in the field including environmental, health and safety, security etc.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	FANR
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	FANR

<b>Who is the governing authority for each phase?</b>	<b>United Kingdom ONR</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Nuclear Directorate considers siting issues alongside other local and national government organisations.</p> <p>Nuclear Directorate leads on the safety evaluation for a Nuclear power plant in the Nuclear Installations Act (1965), which is a relevant statutory provision of the health and Safety At Work Act (1974).</p> <p>The Environment Agency leads the process of Environment Impact Assessment and issues environmental protection consent.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Nuclear Directorate leads the review of the safety analysis for the site evaluation and the site specific design.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>The Nuclear Directorate leads the review of the safety analysis for all aspects of commissioning on a nuclear site.</p>

<b>Who is the governing authority for each phase?</b>	<b>United States USNRC</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	As established by the Energy Reorganisation Act of 1974, the Nuclear Regulatory Commission (NRC) leads the review of the safety analysis for a Nuclear Power Plant (NPP). Under chapter 10 part 52 of the Code of Federal Regulation (CFR), the procedure for authorising the construction and operation of a new NPP.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	The NRC leads the review of the safety analysis for the site evaluation and the site specific design.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	The NRC leads the review of the safety analysis for all testing.



## APPENDIX C

### **Is there a legal decision (e.g., Law, ordinance, decree)? Who grants it? Who is the applicant?**

- The legal decisions is taken at different stages of the process and in different forms, but they are all based on an act of law approve by the lawmakers. In some countries, the decision comes in a form of a simple consent where in other states a full licence is needed.
- The decision is usually granted by the government (often the Ministry of Environmental), but in some cases the authorisation is done by a regulatory decision; e.g. the decision for commissioning.
- The applicant can be a company wanting a license, an existing operator wanting a new license or a company having a site license applying for construction license or wanting to start commissioning.

<p><b>Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?</b></p>	<p><b>Canada CNSC</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Environmental Assessment: Conducted by a review panel jointly appointed by the federal Minister of Environmental and CNSC President. Federal Government (Governor in Council) issues decision on Environmental assessment.</p> <p>If successful, Review Panel (which is also panel of the CNSC) issues the Licence to Prepare Site under the Nuclear Safety and Control Act that permits pre-construction activities.</p> <p>The EA and licensing decision is made using site specific design submissions.</p> <p>Applicant is typically the operator of the facility and the entity who holds the decommissioning guarantee.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The CNSC Commission using the Nuclear Safety and Control Act uses CNSC Staff to conduct the review and provide recommendations and then issues the Licence to Construct using site specific design submissions.</p> <p>Applicant is typically the operator of the facility and the entity who holds the decommissioning guarantee.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>The CNSC Commission using the Nuclear Safety and Control Act</p> <p>The Licence to Construct permits all commissioning activities with no fuel in the Reactor Core.</p> <p>The Licence to Operate permits all commissioning activities that require fuel in-core.</p>

Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?	Czech Republic SUJB
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Applicant is power utility – the company with license to produce electrical energy Requirements of the Act No. 458/2000 Coll. (Energetic Act) Act No. 183/2006 Coll. Decision on localisation of the site Act No. 18/1997 Coll. Permit for siting based on assessment of Initial Safety Report by SUJB Act No. 100/2001 Coll. EIA status by Ministry of Environment
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Act No. 18/1997 Coll. Permit for construction based on assessment of Preliminary Safety Report by SUJB Act No. 183/2006 Coll. Permit Decision on building construction (construction start) by Ministry of Industry and Trade
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	Act No. 18/1997 Coll. Permit for all commissioning stages based on assessment of Pre-operational Safety Report by SUJB Act No. 183/2006 Coll. Decision on building construction approval (commercial operation start) by Ministry of Industry and Trade

<p><b>Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?</b></p>	<p><b>Finland STUK</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<ul style="list-style-type: none"> <li>• Applicant = power companies;</li> <li>• There is no specific Site License in Finland. Decision that addresses the site is made by the Government (Decision in Principle and Construction License).</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<ul style="list-style-type: none"> <li>• Applicant = power companies;</li> <li>• Construction license is issued by the Government;</li> <li>• STUK’s Safety assessment is a prerequisite for government to make the decision.</li> </ul>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<ul style="list-style-type: none"> <li>• Applicant = licensee = power companies;</li> <li>• Operating license is issued by the Government;</li> <li>• STUK’s Safety assessment is a prerequisite for government to make the decision.</li> </ul>

<b>Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?</b>	<b>France ASN</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>A site is selected by the applicant in accordance with Government choices. Nevertheless, in the set of documents submitted to ASN, the applicant must justify that the design of the NPP is compliant with the specific hazards of the site and that the impacts of the NPP are acceptable via an Environmental Assessment.</p> <p>The authorisation for the creation is issued by a decree signed by the Prime Minister and adopted upon advice of ASN.</p>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The n°2006-686 Act (TSN Act) of 13 June 2006 concerning nuclear transparency and safety allows ASN to perform some inspections.</p> <p>During construction, upon a specific decision endorsed by ASN applicable to FA3 following any severe or repeated malfunction of the quality management system or a non compliance or a significant incident relating to safety with regard to the design or construction of the installation, EDF shall suspend any safety-related activity within the meaning assigned by the Order of 10 August 1984. Without ASN's express approval, EDF shall not resume any suspended activity within two weeks after having submitted to ASN a report describing the implemented corrective and preventive measures. ASN may extend that period if it deems necessary to proceed with a new review.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>ASN authorises by a regulatory decision the commissioning of the installation after the assessment of the operator commissioning file.</p> <p>Some specific decisions can detail ASN requirements concerning the commissioning period of time.</p>

Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?	<b>Hungary HAEA</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Yes. The need for a decision in principle approved by the Parliament is stipulated in Atomic Act.</p> <p>Requirements of the environmental license are regulated by governmental decree No. 314/2005.</p> <p>Environmental license is issued by Environmental Inspectorate.</p> <p>Requirements of the nuclear safety site license are regulated by governmental decree No. 89/2005 ad its supplements (the annexes of this decree are the Nuclear Safety Requirements).</p> <p>The nuclear safety site license is issued by HAEA.</p> <p>The site license may be granted to an applicant provided that a principal decision is made by the Parliament to build a new NPP.</p> <p>After the site license is granted, the applicant becomes a licensee and all further licenses will be given to the licensee.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Requirements for the construction of NPP are regulated by governmental decree No. 89/2005 ad its supplements (NSR).</p> <p>The construction license is issued by HAEA.</p> <p>The application can be submitted by the holder of the site license.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Requirements for the commissioning of NPP are regulated by governmental decree No. 89/2005 ad its supplements (NSR).</p> <p>The commissioning license is issued by HAEA.</p> <p>The application can be submitted by the holder of the construction license.</p>

Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?	<b>Japan NISA/JNES</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>Siting and site evaluation</b></p> <p>Licensee (Utility) performs Environmental assessment in accordance with following law.</p> <p>Legal approval is not required.</p> <ul style="list-style-type: none"> <li>✓ Environment Impact Assessment Law</li> <li>✓ Electricity Utilities Industry Law</li> </ul> <p><b>Basic design</b></p> <p>The minister of METI grant the license for establishment of NPP based on following law.</p> <ul style="list-style-type: none"> <li>✓ Law on the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors (Reactor Regulation Law)</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>In accordance with the Electricity Utilities Industry Law, the licensee submits the Construction Plan for establishment of electric facilities, and obtains an approval of the Minister of METI, and goes through pre-service inspection by NISA. Part of inspection is done by JNES.</p> <p>The Electricity Utilities Industry Law prescribes Pre-service Inspection by NISA, as well as design approval and inspection of fuel assembly.</p> <p><i>Note: In Japan, Pre-service Inspection is carried out following 5 timeframe.</i></p> <p><i>At the time of installation of equipment.</i></p> <p><i>At the time of installation of steam turbines and auxiliary boilers</i></p> <p><i>At the time of fuel loading</i></p> <p><i>At the time of attaining criticality</i></p> <p><i>At the time of construction completion</i></p> <p><i>Here, we define that all pre-service inspection items listed above belong to construction stage.</i></p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>At the start of operation, the licensee must notify the Minister of METI (NISA) of the operation plan, obtain an approval of the Operational Safety Program by the Minister of METI in accordance with Reactor Regulation Law.</p>

<p><b>Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?</b></p>	<p style="text-align: center;"><b>Korea</b> <b>MEST/KINS</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The legal provisions regarding regulatory authorisation of nuclear power facilities and activities are contained in the Atomic Energy Act (AEA) as follows:</p> <ol style="list-style-type: none"> <li>1. Standard Design Approval for Nuclear Power Reactor and Related Facilities [AEA Article 12-2 (Approvals for Standard Design), Paragraph 1]: Any person who intends to repeatedly construct nuclear power reactors and related facilities of the same design may obtain approval for the standard design from MEST. Whether to apply for the standard design approval is up to the applicant.</li> <li>2. Early Site Approval for Nuclear Power Reactor and Related Facilities [AEA Article 11 (Construction Permits), Paragraph 3]: If a person, intending to construct a nuclear power reactor and related facilities, applies for approval of a site prior to an application for construction permit, MEST may grant advance approval for the site. Whether to apply for early site approval is up to the applicant.</li> </ol>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<ol style="list-style-type: none"> <li>3. Construction Permit for Nuclear Power Reactor and Related Facilities [AEA Article 11 (Construction Permits), Paragraph 1]: A person who intends to construct a nuclear power reactor and related facilities shall obtain construction permit from MEST.</li> </ol>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<ol style="list-style-type: none"> <li>4. Operation License for Nuclear Power Reactor and Related Facilities [AEA Article 21 (Operation licenses), Paragraph 1]: A person who intends to operate a nuclear power reactor and related facilities shall obtain an operation license from MEST.</li> </ol>

<b>Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?</b>	<b>Poland PAA</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	In pre-construction phase following decisions are required: <ul style="list-style-type: none"> <li>• preliminary assessment of the site of a future nuclear facility issued by President of PAA (obligatory in case of NPP optional for other nuclear facilities);</li> <li>• EIA decision issued by General Directorate for Environmental Protection;</li> <li>• location permit issued by governor of province;</li> <li>• general assessment of the planned organisational and technical solutions to be implemented in nuclear facility issued by President of PAA (obligatory in case of NPP optional for other nuclear facilities);</li> <li>• Decision in Principle issued by Minister of Economy.</li> </ul>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	In construction phase following decisions are required: <ul style="list-style-type: none"> <li>• construction licence issued by President of PAA;</li> <li>• construction permit issued by governor of province.</li> </ul>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	In commissioning phase: <ul style="list-style-type: none"> <li>• operating permit issued Provincial Building Supervision Inspectorate;</li> <li>• commissioning licence issued by President of PAA.</li> </ul>

Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?	Slovakia UJD
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Construction law
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Key legal act in the field of nuclear safety is the Act No. 541/2004 Coll. as amended. Base on this act, regulations and decisions of UJD SR are elaborated and issued. Besides generally binding legal provisions, UJD SR also issues safety guidelines to help operators meet the generally binding legal acts. In the authorisation procedure related to nuclear installation, standards and recommendations of the IAEA are used and applied. Documents of OECD/NEA and EU are used as well.</p> <p>Decisions can generally be characterised as acts of the law application. This implies that this is the application of rights and obligations determined in a generally binding legal provision in a particular case to a particular subject. Decisions issued by administration authorities are also referred to as individual administrative acts. The obligations imposed by a decision are enforceable.</p> <p>UJD SR issues various types of decisions: on approval, on permission, on authorisation, on sanction or measures imposing, on determination of new permission holder, on verification of professional competency, on documentation review and others.</p> <p>The competence of UJD SR is implied by § 4 of the Atomic Act.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	See the above section.

Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?	Slovenia SNSA
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>National Strategic Spatial Plan</b> is prepared by Ministry of the Environment and Spatial Planning on the basis of the following documents:</p> <ul style="list-style-type: none"> <li>• Ordinance on Spatial Planning Strategy of Slovenia (Official Gazette RS No. 76/2004),</li> <li>• Spatial Planning Act (Official Gazette RS No. 33/2007),</li> <li>• Resolution on the National Energy Programme (Official Gazette RS No. 57/2004).</li> </ul> <p>National Strategic Spatial Plan is adopted by the Parliament with an ordinance.</p> <p><b>Energy permit and the licence to perform energy activity:</b> The investor applies for the licence to perform energy activity, which is issued by Energy Agency. The energy permit is issued by Ministry of the Economy.</p> <p><b>National Spatial Plan (NSP)</b> represents general siting process for new NPP. It is lead by the Spatial Planning Directorate of the Ministry of the Environment and Spatial Planning. Other stakeholders include space arrangement authorities, such as various ministries, also the SNSA, municipal bodies and agencies and non-governmental organisations, the public, involved municipalities and neighbouring countries (signers of ESPOO convention). One part of the NSP for a new NPP is also the Special Safety Analysis (SSA), which is a key document regarding nuclear and radiation safety. The process starts, when the government adopts a resolution prepared by Ministry of the Environment and Spatial Planning on the basis of the following documents:</p> <ul style="list-style-type: none"> <li>• Spatial Planning Act (Official Gazette RS No. 33/2007),</li> <li>• Rules on the content, format and drawing-up of national spatial plan and on drawing-up of alternative solutions for its spatial arrangements, their evaluation and comparison (Official Gazette RS No. 99/2007),</li> <li>• Environment Protection Act (Official Gazette RS No. 39/2006),</li> <li>• Decree laying down the content of environmental report and on detailed procedure for the assessment of the effects on certain plans and programmes on the environment (Official Gazette RS No. 73/2005),</li> <li>• Decree on categories of projects for which an environmental impact assessment is mandatory (Official Gazette RS No. 66/1996),</li> <li>• Ionising Radiation Protection and Nuclear Safety Act (Official</li> </ul>

	<p>Gazette RS No. 102/2004),</p> <ul style="list-style-type: none"> <li>• Rules on the radiation and nuclear safety factors, regulation prepared by the SNSA.</li> </ul> <p>The NSP is adopted with the Governmental decree on the basis of Spatial Planning Act. With the conclusion of the NSP, basic design conditions are also issued.</p> <p><b>Environmental Impact Assessment (EIA) and environmental protection consent:</b> The investor prepares the EIA report which shall include information required by competent ministries, also the SNSA. The EIA and the project of intended activities, after being publicly displayed, are necessary to apply for the environmental protection consent, which is issued by the Environmental Agency on the basis of the following documents:</p> <ul style="list-style-type: none"> <li>• Spatial Planning Act (Official Gazette RS No. 33/2007),</li> <li>• Rules on design documentation (Official Gazette RS No. 55/2008),</li> <li>• Instruction on the methodology of preparing reports on environmental impact (Official Gazette RS No. 70/1996),</li> <li>• EURATOM treaty.</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>Consent for construction:</b> The investor applies for the consent for construction, which is issued by the SNSA. For the consent to be issued, the documents, such as Preliminary Safety Analysis Report, design for construction, decommissioning programme and waste management programme, have to be overviewed and approved. The legislation base are as follows:</p> <ul style="list-style-type: none"> <li>• Ionising Radiation Protection and Nuclear Safety Act (Official Gazette RS No. 102/2004),</li> <li>• Decree on the areas of limited use of space due to a nuclear facility and the conditions of facility construction in these areas (Official Gazette RS No. 36/2004),</li> <li>• Rules on the radiation and nuclear safety factors, regulation prepared by the SNSA.</li> <li>• Rules on radwaste and spent fuel treatment (Official Gazette RS No. 49/2006),</li> <li>• Rules on the monitoring of radioactivity (Official Gazette RS No. 20/2007),</li> <li>• Rules on design documentation (Official Gazette RS No. 55/2008),</li> <li>• Rules on public tender for selection of the most appropriate solution for spatial arrangement and objects (Official Gazette RS No. 108/04).</li> </ul> <p>Consent for construction is the basis of the application for construction</p>

	<p>license.</p> <p><b>Construction license:</b> The investor applies for construction license after receiving the consent for the construction from the SNSA. The license is issued by the Spatial Planning Directorate of the Ministry of the Environment and Spatial Planning on the basis of the following documents:</p> <ul style="list-style-type: none"> <li>• Construction Act (Official Gazette RS No. 102/2004),</li> <li>• Decree on kind of objects as for pretentiousness (Official Gazette RS No. 33/03, 78/05),</li> <li>• Decree on initiation and using of the object's classification and determination of the objects for the state sense (Official Gazette RS No. 37/08),</li> <li>• Ionising Radiation Protection and Nuclear Safety Act (Official Gazette RS No. 102/2004),</li> <li>• Rules on design documentation (Official Gazette RS No. 55/2008).</li> </ul>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>Trial operation:</b> Before the license for the use of the facility is issued, technical check must be carried out and the facility must undergo a trial operation. The investor must also apply to the SNSA for the consent to start trial operation and after it is issued, the Ministry of the Environment and Spatial Planning issues a decision to start of trial operation. Such decision is based on the following documents:</p> <ul style="list-style-type: none"> <li>• Ionising Radiation Protection and Nuclear Safety Act (Official Gazette RS No. 102/2004),</li> <li>• Construction Act (Official Gazette RS No. 102/2004).</li> </ul> <p>Note that the trial operation together with the technical check of the object is a part of the commissioning phase.</p>

<b>Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?</b>	<b>Spain CSN</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The procedure to grant a license is describe in the Law 15/1980, creating the Nuclear Safety Council, reformed by Law 33/2007 of November 7th. This procedure is developed in the Royal Decree 1836/1999, of December 3rd, approving the Regulation on Nuclear and Radioactive Facilities, modified by Royal Decree 35/2008, of January 18th, modifying the Regulation on Nuclear and Radioactive Facilities, approved by Royal Decree 1836/1999, of December 3rd.</p> <p>Royal Decree 35/2008, of January 18th, modifying the Regulation on Nuclear and Radioactive Facilities, approved by Royal Decree 1836/1999, of December 3rd (Official State Gazette 18/02/2008).</p> <p>All these are accessible in <a href="http://www.csn.es">www.csn.es</a>. The procedure</p> <p>In article 12 of the Royal Decree 35/2008 contains the different licenses that are required in relation to nuclear installations: a) site license, b) construction, c) operating license, d) decommissioning, e) closure license and f) temporary fuel spent storage installation.</p> <p>Articles 14,15 and 16 contain the documentation, procedure and reports to be submitted in the site application</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Regulation on Nuclear and Radioactive Facilities. Articles 17,18 and 19 contain the documentation to be submitted to CSN for the construction and the requisite of prenuclear tests.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Within the operating license there is a first a temporary license to carry out nuclear test.</p> <p>The operating license is described in articles 20 to 26 of the aforementioned regulation.</p>

<b>Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?</b>	<b>Switzerland ENSI</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Yes. The General License is granted by the Swiss Government upon request by a company, which must be legally established in Switzerland (Nuclear Energy Act, NEA Art 13.2).
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Yes. The Construction License is granted by the Department of Environment, Traffic, Energy and Communication (DETEC) upon request by a General License owner.  During construction, hold points are set. The permits to clear the hold points are issued by the ENSI.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	Yes. The Operating License is granted by the DETEC upon request by a Construction License owner.  During commissioning, hold points are set. The permits to clear the hold points are issued by the ENSI.

<p><b>Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?</b></p>	<p style="text-align: center;"><b>United Arab Emirates FANR</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The UAE Law defines the following as regulated activities for which a licence issued by FANR is required</p> <ul style="list-style-type: none"> <li>• selection of a site for a nuclear facility</li> <li>• preparation of a site for nuclear facility</li> <li>• construction of a nuclear facility</li> <li>• commissioning of a nuclear facility</li> <li>• operation of a nuclear facility</li> </ul> <p>Design is not a regulated activity and may be conducted without a licence.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>A licence is required to construct a nuclear facility. Site evaluation and design are considered to be part of construction</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>A licence is required to commission a nuclear facility (in practice may be the operating licence). No distinction is made in the Law between nuclear and non-nuclear testing.</p>

<b>Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?</b>	<b>United Kingdom ONR</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>No person can use a site for the purpose of installing or operating a NPP without a Nuclear Site Licence. This is granted by the Chief Inspector of the Nuclear Directorate (ND). A site with clear geographical boundaries may be licenced at any time but no later than first safety related pour of concrete.</p> <p>Nuclear Directorate may choose to issue a Design Acceptance Certificate for a new design.</p>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>By virtue of the Nuclear Site licence (NSL), Nuclear Directorate has a range of powers. If ND specifies then a licensee cannot proceed from one construction stage to another without the Consent of ND. It is normal to have a Consent at the start of construction. Other Consents will be at the discretion of the Directorate.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>By virtue of the Nuclear Site licence (NSL), Nuclear Directorate has a range of powers. If ND specifies then a licensee cannot proceed from one commissioning stage to another without the Consent of ND. It is normal to have a Consent at the start of active commissioning. Other Consents will be at the discretion of the Directorate.</p>

<b>Is there a legal decision (e.g., law, ordinance, decree)? Who grants it? Who is the applicant?</b>	<b>United States USNRC</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Yes,</p> <ul style="list-style-type: none"> <li>• Siting- the NRC may grant the applicant(investor-owned power company) an Early Site Permit (ESP) after having reasonable assurance that the site is adequate for a Nuclear Power Plant without harming the people and its environment. The applicant may decide not to apply for an ESP and in this case the review of the siting and site evaluation would be done in the Combined Licenses (CL) stage.</li> <li>• Basic Design (DC “Design Certification”)- the NRC certifies a basic design provided by an investor-owned engineering company after having reasonable assurance that the NPP designs will operate safely without harming the people and its environment.</li> <li>• Before construction, the applicant (investor-owned power company) applies for a Combined Licenses (CL). Under 10 CFR Part 52, The NRC grants a combined construction permit and operating license before construction starts. The CL is granted by the NRC after having reasonable assurance that the site specific design will operate safely without harming the people and its environment.</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>During Construction, no legal decision is taken by the NRC.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>After all the construction, testing and analyses has been verified by the NRC, the Commission, as prescribe in 10 CFR 52.103, makes a finding that the acceptance criteria in the COL are met and give permission for fuel load.</p>

## APPENDIX D

### **How is each phase implemented? (include involved parties and an estimated timeframe of completion)**

As presented in previous appendices, basic models of the licensing are usually quite similar in member states but in details processes and parties involved differ between countries. This appendix summarises the estimated timeframe used for:

- pre-construction – means siting, site evaluation, basic design and other aspects needed mainly for political decision making and site selection
- consent for construction – means detailed site evaluation and design review to have a permit to start construction
- commissioning – means aspects to have a license for nuclear commissioning and operation.

The time it takes the applicant to get a licence is one of the main issues with building a nuclear power plant. Although the time it's necessary to assure the safety and security of the public, this affects the applicant's ability to get funding for the project. But this timeframe is also affected by the same applicant when the regulator gets incomplete submissions.

On average, regulatory reviews take three years from the beginning of the review to the start of construction. In some cases the whole process extends up to eight years. The following table provides an average of how long it takes in each country. There is lot of dispersion between the answers. Some of the countries have explained the timeframe of the whole Process in each steps of the licensing (indicated as P) when others are explained the timeframe needed for Regulatory Review of each steps (indicated as RR).

It is also good to notice, that the given values usually covers only the main licensing actions before each phase. As an example, in Finland STUK reviews detailed design during the construction and programs for commissioning before each step of commissioning. Values given in the table explain only the main steps of licensing before construction and commissioning (construction and operating licenses).

Countries	Pre-Construction (e.g., environmental assessment/ licence to prepare site, general design licence)	Consent for construction (permit or legal decision before start of construction)*	Commissioning (commissioning and operating licence)*
	Average Time (years)	Average Time (years)	Average Time (years)
Canada	1.5 (RR)	2 (RR)	1 (RR)
Czech	3 (P)	1 (RR)	.5 (RR)
Finland	2 (P), incl. 1(RR)	3 (P), incl. 1,5 (RR)	1.5 (P), incl. 1(RR)
France	3 (RR)		1 (RR)
Hungary	.5 (RR)	.5 (RR)	.5 (RR)
Japan	4 (P), 2 (RR)	5 (P)	
Korea	3.75(P)		1.67(P)
Poland	2 (P)		1.25 (P)
Slovakia	0,4 (RR)	1 (RR)	0,5 (RR)
Slovenia	4 (P)	2 (RR)	3 (P)
Switzerland	4 (P)	4 (P)	4 (P)
UK	3 (P)		5 (P)
USA	6 (P)		5 (P)
UAE	3 (P)		6 (P)

\*This estimate doesn't include the timeframe of construction or commissioning but some reviews by the regulator may be performed during the construction stage.

How is each phase implemented? (include involved parties and an estimated timeframe of completion)	Canada CNSC
<ul style="list-style-type: none"> <li>• Pre-construction:</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The new reactor project proponent performs site evaluation and site selection and develops a site selection case that become the basis for Environmental Assessment and Licence to Prepare Site submissions to the CNSC. There is no federal government involvement in site evaluation or selection. (generally provincial or municipal involvement only)</p> <p>The Environmental Assessment and Licence to Prepare Site reviews can be done by CNSC Staff (in concert with other federal departments) concurrently and the full decision process from initial submission to issuance of the licence takes approximately 18 months (including hearings). Incomplete submissions by the applicant can cause delays triggered by requests for additional information issued by the Review Panel based on CNSC Staff recommendations.</p> <p>The results of the reviews as well as all submissions are subject to public/stakeholder consultation and the decisions about EA and the <i>Licence to Prepare Site</i> are conducted as formal transparent hearings.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The Licence to Construct reviews are done solely by CNSC Staff and the full decision process from initial submission to issuance of the licence is expected to take approximately 24 months because at the end of the construction phase, the facility will be at a stage of completion such that it is ready to load fuel and commence commissioning with fuel in-core (&gt;95% complete facility). This timeline assumes the facility design is “essentially complete” at time of submission. Incomplete submissions by the applicant can cause delays triggered by requests for additional information issued by CNSC Staff or the Commission.</p> <p>The results of the reviews as well as all submissions are subject to public/stakeholder consultation and the decision regarding the Licence to Construct is conducted in a formal transparent hearing environment.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Non-nuclear testing (called “Phase A Commissioning”) consists of all commissioning that can be done with no fuel in-core and is conducted under the Licence to Construct. It will be implemented by the licensee under a test plan reviewed by CNSC with appropriate hold points embedded in the Licence to Construct. The timeline for construction is estimated to be 4-5 years for a large NPP but is dependent on the licensee’s construction schedule. CNSC in concert with applicable federal and provincial agencies conducts compliance activities.</p> <p>The Licence to Operate reviews are done solely by CNSC Staff and the full decision process from initial submission to issuance of the licence is expected to take approximately 12 months. Incomplete submissions by the applicant can cause delays triggered by requests for additional</p>

	<p>information issued by CNSC Staff or the Commission.</p> <p>Nuclear testing (called “Phase B Commissioning”) consists of all commissioning that must be done with fuel in-core and is conducted under the Licence to Operate. It will be implemented by the licensee under a test plan reviewed by CNSC with appropriate hold points embedded in the Licence to Operate. CNSC in concert with applicable federal and provincial agencies conducts compliance activities.</p>
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How is each phase implemented? (include involved parties and an estimated timeframe of completion)	<b>Czech Republic SUJB</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Applicant is obliged to prepare all necessary documents which are required by related legislation (Acts, Decrees Regulations)</p> <p>Ministry of Industry and Trade Decision:</p> <ul style="list-style-type: none"> <li>- approves the company to produce electrical energy</li> </ul> <p>Environmental Impact Analyses are assessed with involvement of all potentially impacted subjects – Public, Local Authority, Ministries (e.g. Ministry of Health, Ministry of Interior, Ministry of Social Affairs), State Bodies (National Security Authority, Radioactive Waste Repository Authority), time duration depends on quality of documents and number of objections and its importance (up to 3 years)</p> <p>SUJB Decision = Permit for siting within 4 month from the application delivery date; applicant is the only participant in administrative procedure. (Detailed requirements are discussed prior to the finalisation of application 1 to 2 years) The positive status of EIA is included in conditions for SUJB permit.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>SUJB Decision = Permit for construction within one year from the application delivery date, applicant is the only participant in administrative procedure</p> <p>Decision making procedure includes SUJB Approval issued for:</p> <p>QA Plan, List of classified equipment, Physical Protection Provision</p> <p>Ministry of Industry and Trade Decision = Permit for construction with involvement of all impacted subjects, essential condition for decision is SUJB Permit</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>SUJB Decision = Permit for first fuel load within 6 month from the application delivered date, applicant is the only participant in administrative procedure</p> <p>SUJB issues Decision = Permit for following stages after fuel load within 10 days from the application delivered date, applicant is the only participant in administrative procedure</p> <p>Decision making procedure includes SUJB Approval issued for:</p> <p>Physical protection including categorisation</p> <p>Emergency planning zone</p> <p>Onsite emergency Plan</p> <p>Monitoring programs</p> <p>QA programs</p> <p>Personnel license</p> <p>Controlled area setting</p> <p>List of working activities impacting nuclear safety</p> <p>Special programs</p> <p>Nuclear fuel loading program</p> <p>Limits and condition for safety operation (Technical Specification)</p>

<p><b>How is each phase implemented? (include involved parties and an estimated timeframe of completion)</b></p>	<p><b>Finland STUK</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>Environmental Impact Assessment (EIA):</b></p> <ul style="list-style-type: none"> <li>• See Flowchart in annex I.</li> <li>• Applicant submits the EIA programme to the MEE.</li> <li>• The MEE asks statements from Municipalities, authorities incl. STUK and public.</li> <li>• Authorities, municipalities etc. submit their statements to the MEE, which issues a statement on the programme (final or requires update to the EIA programme).</li> <li>• After applicant has updated the EIA programme, assessment is done by the applicant. Results are submitted to the MEE which asks statements from stakeholders on the results.</li> <li>• After statements have been received by MEE, it issues contact authority’s statement which ends the EIA process.</li> </ul> <p><b>Decision in Principle (DIP)</b></p> <ul style="list-style-type: none"> <li>• See flowchart in Annex I.</li> <li>• Applicant sends the Application for DIP to the MEE and licensing documents to STUK.</li> <li>• MEE asks statements from authorities incl. STUK and arranges public hearings. STUK starts to prepare preliminary safety assessment.</li> <li>• Authorities, public etc. submit their statements back to MEE, which prepares the decision for the Government.</li> <li>• The Government makes decision (yes or no) and Parliament ratifies or rejects it.</li> <li>• Timeframe is about 2 years, STUK preliminary safety assessment about 1 year and estimated workload to perform preliminary safety assessment is about 2-3 manyears.</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>Construction license</b></p> <ul style="list-style-type: none"> <li>• See flowchart in Annex I.</li> <li>• License applicant submits the Application to the Ministry of Employment and the Economy (MEE) and licensing documents to STUK for review and approval.</li> <li>• MEE asks statements from authorities incl. STUK. STUK starts to prepare safety assessment.</li> <li>• Authorities send their statements back to MEE which prepares the decision for the Government.</li> <li>• The Government makes decision (yes or no).</li> <li>• Timeframe is about 2-3 years and STUK safety assessment about 1 to 2 years. Workload at STUK is about 25-35 manyears.</li> </ul>

<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>Operating license</b></p> <ul style="list-style-type: none"> <li>• See flowchart in Annex I.</li> <li>• Licensee sends the Application to the Ministry of Employment and the Economy (MEE) and licensing documents to STUK for review and approval.</li> <li>• MEE asks statements from authorities incl. STUK. STUK starts to prepare safety assessment.</li> <li>• Authorities send their statements back to MEE which prepares the decision for the Government.</li> <li>• The Government makes decision (yes or no).</li> <li>• Timeframe is about 1-5 years, STUK safety assessment about 1 year. Workload at STUK is about 30 manyears.</li> </ul>
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<b>How is each phase implemented? (include involved parties and an estimated timeframe of completion)</b>	<b>France ASN</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The time allotted to examination of applications for authorisation to create a nuclear power plant is set at three years.</p> <p>The authorisation application is sent to ASN. The ministers responsible for nuclear safety transmit the authorisation application to the local State representative in the area in which the local consultations and public inquiries are to be held.</p> <p>The draft decree is submitted to the consultative committee for basic nuclear installations for their opinion, along with the file submitted to the public inquiry.</p> <p>The ministers responsible for nuclear safety send the ASN the draft decree to get ASN opinion. On the basis of this opinion, the decree authorising the creation of the installation is firmed by Government (Prime minister).</p> <p>The decree authorising the creation of the installation and the opinion of ASN are published in the Official Journal of the French Republic.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>During construction, ASN will inspect and verify construction activities and testing required by the authorisation decree and the licensee file provided to get the authorisation decree.</p> <p>The construction timeframe will depend on the licensee's schedule but it may take around 5 years. The authorisation decree determines the boundary of the installation and sets the deadline after which it must be commissioned (10 years for Flamanville 3): after this period of time, the licensee has to submit a new file to get a new authorisation decree.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>During commissioning, ASN will inspect and verify all of the conditions, inspections and testing required:</p> <ul style="list-style-type: none"> <li>• For non-nuclear testing: by the licensee commissioning file and the specific decisions endorsed by ASN ;</li> <li>• For nuclear testing: by the licensee commissioning file, the commissioning authorisation and the specific decisions endorsed by ASN.</li> </ul> <p>Prior to commissioning of the installation, the operator sends the Nuclear Safety Authority a file comprising: safety case which describes the built installation, general operating rules, study of installation waste management, and the on-site emergency plan.</p> <p>The time allotted to examination of commissioning file applications is set at one year.</p>

How is each phase implemented? (include involved parties and an estimated timeframe of completion)	Hungary HAEA
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Co-authority involvements:</p> <ul style="list-style-type: none"> <li>• Public Health and Medical Officer Service (dose limits, protection zone);</li> <li>• Chief-Inspectorate of Environment, Nature and Water <sup>2</sup>;</li> <li>• Hungarian Police Captaincy;</li> <li>• General Directorate for Emergency Preparedness;</li> <li>• Local Building Authority (settlement rules)</li> </ul> <p>Co-authority involvements:</p> <ul style="list-style-type: none"> <li>• National Mining and Geological Office;</li> <li>• Chief-Inspectorate of Environment, Nature and Water ;</li> <li>• Hungarian Police Captaincy;</li> </ul> <p>Meanwhile environmental licensing procedure covers Preliminary Environmental Impact Study (see above too, under legal decisions!).</p> <p>Duration of the nuclear safety site licensing process by HAEA: 6 months</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Co-authority involvements:</p> <ul style="list-style-type: none"> <li>• National Mining and Geological Office;</li> <li>• Chief-Inspectorate of Environment, Nature and Water ;</li> <li>• Hungarian Police Captaincy;</li> <li>• General Directorate for Emergency Preparedness;</li> </ul> <p>Meanwhile environmental licensing includes Detailed Environmental Impact Study according to Espoo Treaty + EU directive;</p> <p>Licensing also:</p> <ul style="list-style-type: none"> <li>• Energy Office</li> <li>• Industrial Safety Authority</li> <li>• Fire-Protection Authority</li> </ul>

<sup>2</sup> There is a specialty at the moment in Hungary regarding the role of the

- Environmental Inspectorate – local area authority for environmental licensing, inspection and environmental impact assessment
- Chief-Inspectorate of Environment, Nature and Water – co-authority in nuclear safety licensing procedures

	<p>Duration of the construction licensing process by HAEA: 6 months</p> <p>Inspecting also:</p> <ul style="list-style-type: none"> <li>• Industrial Safety Authority</li> <li>• Fire-Protection Authority</li> </ul>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Duration of the commissioning licensing process by HAEA: 6 months</p> <p>Inspecting:</p> <p>Co-authorities (all of the above!)</p>

How is each phase implemented? (include involved parties and an estimated timeframe of completion)	Japan JNES
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>- Environmental impact assessment</b></p> <p>METI (NISA) conducts the evaluation, soliciting experts' opinion.</p> <p>At first NISA reviews the method of Licensee's environmental assessment. This procedure takes about 6 months.</p> <p>The next step is the review of the draft Environmental Impact Statement (draft EIS) prepared by licensee. This labor takes about 9 months.</p> <p><b>- License for establishment of NPP</b></p> <p>NISA reviews the application for establishment.</p> <p>The procedure consists of following two step. The duration of each procedure is also described.</p> <p>First Step</p> <p>Safety review by NISA based on the information from the licensee's application. In this part, JNES support technically, and carry out the cross check of seismic and transient analysis if necessary. This step takes 12 to 18 months.</p> <p>Second Step</p> <p>The Minister of METI consults with the Atomic Energy Commission (AEC) and the Nuclear Safety Commission (NSC) on the results of its review. During the review process of METI's results, the NSC reviews independently and gives its views to the Minister of METI. This part takes another 12 to 18 months.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>- Construction Plan for establishment of electric facilities</b></p> <p>NISA and JNES review the application.</p> <p>The licensee submits the application step by step (usually 5 to 6 steps). Once the construction of each step is completed, NISA carries out the pre-service inspection. Here, JNES takes on part of pre-service inspection.</p> <p>Entire construction timeframe may be around 5 years.</p> <p><b>- Design approval and inspection for Fuel Assembly</b></p> <p>NISA reviews application and carry out the inspection.</p> <p><b>- elding check</b></p> <p>JNES review the licensee's welding check system. The time frame depends on the construction period.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>- Operation Plan</b></p> <p>NISA reviews licensee's operation plan.</p> <p><b>- Operational Safety Program</b></p> <p>NISA reviews licensee's operational safety program and gives approval.</p> <p>JNES supports NISA technically.</p>

<p><b>How is each phase implemented? (include involved parties and an estimated timeframe of completion)</b></p>	<p><b>Korea MEST/KINS</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<ul style="list-style-type: none"> <li>• A License for the Site Preparation is granted by the MKE (Ministry of Knowledge and Economy) in accordance with Electric Source Development Promotion Act and followed by safety review and approval of a site for the construction and operation, conducted by MEST and KINS.</li> <li>• Foundation excavation is regulated under an Early Site Approval issued by MEST. The issuance of an early site approval is based on the results of the safety review by KINS.</li> <li>• The applicant has an option to apply the construction permit in package with evaluation of the safety of site without the procedure of an early site approval.</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<ul style="list-style-type: none"> <li>• In a review for a construction permit application of a nuclear power plant, KINS verifies whether the nuclear power plant will sufficiently meet the related legislation and technical standards.</li> <li>• The processing time for granting a permit, CP or OL, is within 24 months or within 15 months for the identical reactor. But the period required additionally for excusable reasons is not included. Recently, the timeframe for granting the CP was 38, 55, 53 or 34 months for four(4) projects of eight(8) constructing NPPs, respectively.</li> <li>• The standard design approval to grant the Design Certificate for APR1400 took 17 months.</li> <li>• After issuing the CP, the utility can start foundation excavation and the regulatory inspection is implemented to confirm whether the construction is in compliance with the construction permit.</li> <li>• The regulatory inspection for the nuclear facilities is continued until issue the OL. The utility apply the OL during pre-operational stage of regulatory inspection.</li> </ul>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<ul style="list-style-type: none"> <li>• In a review for an OL of a nuclear power plant, KINS reviews the application document and inspect all of the conditions required by the license.</li> <li>• The averaged time from application to grant of OL was around 20 months, and the commissioning time frame to non-nuclear testing(pre-operational test) is less than that of OL.</li> <li>• After issuing the OL, the utility can start the fuel loading and the regulatory inspection is continued to confirm the startup test is in compliance with the technical standard.</li> <li>• The regulatory inspection for the startup test (Nuclear Testing) took around six months.</li> </ul>

How is each phase implemented? (include involved parties and an estimated timeframe of completion)	Poland PAA
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Involved parties are described in previous survey answers and charts. Estimated timeframe for issuing consequent licenses (as provided in amended <i>Atomic law</i> ) is following: <ul style="list-style-type: none"> <li>– construction licence: 24 months</li> <li>– commissioning licence: 9 months</li> <li>– operation licence: 6 months</li> </ul>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	

How is each phase implemented? (include involved parties and an estimated timeframe of completion)	<b>Slovakia UJD</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>See the information given in the previous sections.</p> <p>Estimated timeframe:</p> <p>If the elements required are included in the application, if the required documentation is attached to the application and the applicant has fulfilled conditions, the Authority shall decide on the issuance of the permission or authorisation</p> <p>a) within 60 days unless this Act provides for differently,</p> <p>b) within four months if siting of nuclear installation, except repository is concerned,</p> <p>c) within six months if nuclear installation commissioning or decommissioning stage is concerned,</p> <p>d) within one year if building authorisation, siting and closure of repository or repeated authorisation for operation of a nuclear installation after periodic safety review.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	Estimated timeframe depends on the responsible commissioning company.

<b>How is each phase implemented? (include involved parties and an estimated timeframe of completion)</b>	<p style="text-align: center;"><b>Slovenia SNSA</b></p> <p><u>Note: The general picture of phase implementation is described in the response to the previous question.</u></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>In the pre-construction process for new nuclear power plants, the Ministry of the Environmental and Spatial Planning, the Ministry of Economy, the Ministry of Health, the Ministry of the Interior, the Ministry of Agriculture, Forestry and Food, the Ministry of Transport and the Ministry of Culture are involved.</p> <p>Additionally, municipal bodies and agencies, non-governmental organisations, the public, involved municipalities and neighboring countries are also involved in the process.</p> <p>The SNSA and the Environmental Agency regulate the selection of sites as the decision - making bodies.</p> <p>General siting process, which includes the site evaluation, is quite complicated and long lasting. If only terms set in the legislation, are taken into account, it lasts approximately 4 years, but experiences show that it can last up to 6 years or more.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>In the construction phase of the licencing process for new nuclear power plants, the Ministry of the Environmental and Spatial Planning and the SNSA are involved.</p> <p>The SNSA issues the consent for construction in 2 years after receiving all required documentation, while the Ministry of the Environmental and Spatial Planning issues the construction license in 2 months after receiving the required documentation (including the SNSA's consent for construction).</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>In the commissioning phase of the licencing process for new nuclear power plants, the Ministry of the Environmental and Spatial Planning and the SNSA are involved</p> <p>The commissioning phase lasts approximately 3 years (technical check plus 2 years of trial operation).</p>

<b>How is each phase implemented? (include involved parties and an estimated timeframe of completion)</b>	<b>Switzerland ENSI</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The process of granting a General License may take around 4 years after the application has been submitted. The review of the application is done by the federal authorities mentioned in the questions above. The licensing process sees the involvement of the cantons (regional authorities) and of neighbouring countries as well. The application and the corresponding review by the federal and cantonal authorities are officially published. During the 3-month publication period, everybody can raise an issue against them. The License is submitted to the approval of the Swiss parliament and of a national popular vote (optional referendum).</p>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The process of granting a Construction License may take around 4 years after the application has been submitted. The review of the application is done by the federal authorities mentioned in the questions above. The licensing process sees the involvement of the canton where the plant will be constructed. The application and the corresponding review by the federal and cantonal authorities are officially published. During the 1-month publication period, involved parties can raise an issue against them. The Construction License can be challenged in 2 successive degrees of appeal before it reaches a legally binding status.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>The process of granting an Operating License may take around 4 years after the application has been submitted. The review of the application is done by the federal authorities mentioned in the questions above. The application and the corresponding review by the federal and cantonal authorities are officially published. During the 1-month publication period, involved parties can raise an issue against them. The Operating License can be challenged in 2 successive degrees of appeal before it reaches a legally binding status.</p>

<b>How is each phase implemented? (include involved parties and an estimated timeframe of completion)</b>	<b>United Arab Emirates FANR</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	The future licensee (Emirates nuclear energy corporation) will be responsible for all phases of development of the NPP. ENEC intends to engage a prime contractor to manage and supervise the project. Estimate 3 years
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Estimate 5 years
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	Estimate 1 year

<b>How is each phase implemented? (include involved parties and an estimated timeframe of completion)</b>	<b>United Kingdom ONR</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>ND may undertake a Generic Design Assessment, which is typically expected to take about three years but could take longer depending on the issues.</p> <p>When a submission is made for a NSL, ND will typically take about one year to process the application and grant a Licence. During this application process, other processes involving local and national government agencies will take place in parallel. There will be consultation between the agencies involved.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Where ND has specified, Consents may be granted at appropriate stages of construction. In addition, there will be regular inspections of construction activity. It may be that ND will also exercise other powers under the NSL in this phase. The timeframe depends on the construction timeframe.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Where ND has specified, Consents may be granted at appropriate stages of commissioning. In addition, there will be regular inspections of commissioning activity. It may be that ND will also exercise other powers under the NSL in this phase. The timeframe depends on the commissioning timeframe.</p>

<b>How is each phase implemented? (include involved parties and an estimated timeframe of completion)</b>	<b>United States USNRC</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<ul style="list-style-type: none"> <li>• After the applicant submits all the necessary documentations, the NRC may take around 3 years to review all of the safety review of the site. During this time, the public, regional governments and other federal agencies (e.g., Dept. of transportation, Environmental Protection Agency) will be consulted.</li> <li>• For the Design Certification, the process may take around 6 years. It all depends on the issues of the design.</li> <li>• For the COL, the review process may take around 3 years. This time will depend on the timeliness of the information provided by the applicant and if the applicant holds a DC.</li> </ul>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<ul style="list-style-type: none"> <li>• During Construction, the NRC will inspect and verify all of the conditions, inspections and testing required by the license granted before construction.</li> <li>• The Construction timeframe will depend on the licensee's schedule but it may take around 5 years.</li> </ul>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>During "commissioning," the NRC will inspect and verify all of the conditions, inspections and testing required by the license</p> <p>The commissioning timeframe will depend on the licensee's schedule and the issue needed to be resolve before fuel load, but it will take at least 6 months.</p>



## APPENDIX E

### What levels of effort and skill sets are needed?

- Most countries responded to this question by providing information on skills required to assess the applications received for the pre-construction, construction and commissioning. Critical information related to the level of effort, i.e., man hours required, was very limited. Only 3 countries provided numbers, however it was clear from the responses that resources required were large. Many of the countries utilise technical support organisations to assist them in the reviews and oversight.
- All regulators required skilled professionals in order to perform the work. In Almost every case the minimum requirement was an engineering degree or equivalent. Skill areas depended somewhat on the purpose of the review.
- During the pre-construction phase, siting and site evaluation were the most prevalent issue and this required expertise from geologists, meteorologists, hydrologist, seismologist, project manager, environmental project manager, civil engineers.
- For the basic design review staff requirements included project managers, structural, civil, mechanical, electrical, nuclear, chemical and material engineers.
- With the commencement of construction through commissioning and beyond, oversight is increased by added inspections. This requires qualified inspectors, specialists and technical experts in addition to the normal staff.
- While it is difficult, due to the lack of detailed data available, the level of effort expended, including technical support most likely averages between 25 to 50 man years throughout the processes. This is a rough estimate but it is clear from both experienced countries and new entry countries, the skill sets and levels of effort are very similar.
- The main differences are whether or not in house staff has the experience and resources to carry out the work or outside technical assistance is required.

What levels of effort and skill sets are needed?	Canada CNSC
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>For Environmental Assessment and <i>Licence to Prepare Site</i> review process by CNSC and other Federal Departments:</p> <p><b>Note:</b> High level facility design details are integral to the EA and site selection case portion of <i>Licence to Prepare Site</i>. Focus is on viability of site for full facility lifecycle to decommissioning and abandonment.</p> <p>geologists, meteorologists, hydrologist, seismologist, project manager, environmental project manager, environmental risk and compliance specialists, aboriginal consultation specialists, mechanical engineers, electrical engineers, security specialists, fuel and physics specialists, health physicist, nuclear and conventional waste and hazardous materials specialists, decommissioning specialists, quality assurance/management system specialists, fire protection specialist, fish and wildlife specialists, consultation/communication specialists,</p> <p>The majority of the siting effort is performed during this stage. Level of effort is dependent on the quality of submissions but is generally restricted to a 6 month review window.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>For <i>Licence to Construct</i> review process</p> <p>Project manager, environmental risk and compliance specialists, aboriginal consultation specialists, mechanical engineers, electrical engineers, security specialists, safeguards specialists, fuel and physics specialists, health physicist, nuclear and conventional waste and hazardous materials specialists, decommissioning specialists, quality assurance/management system specialists, fire protection specialist, fish and wildlife specialists, consultation/communication specialists</p> <p>Level of effort is dependent on the quality of submissions but is generally restricted to a two year timeline.</p> <p>Once Construction has begun, all of the above to support ongoing activities plus:</p> <p>Inspectors, Site Specific Project Manager and some specific skill sets maybe needed to review test results (for example, welding specialists, concrete specialists). Resident inspectors will exist on each site depending on the site specific issues. Technical experts may be needed to review some tests.</p> <p>Regulatory manpower estimates for this stage are currently under development in line with the project timeline for our first applicant.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Non-nuclear testing is part of Construction (see above)</p> <p>Nuclear testing (Phase B commissioning) is performed under a <i>Licence to Operate</i>:</p> <p>Same skill sets as used in non-nuclear commissioning, but resident inspectors will be increased to Operating Plant levels supplemented by Staff specialist assistance in specific commissioning activities such as review of first criticality, special pressure boundary tests at power.</p> <p>Regulatory manpower estimates for this stage are currently under development in line with the project timeline for our first applicant.</p>

<b>What levels of effort and skill sets are needed?</b>	<b>Czech Republic SUJB</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Civil (structure), mechanical, electrical, electronics, nuclear, chemical and material engineers
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Civil (structure), mechanical, electrical, electronics, nuclear, chemical and material engineers, medicine doctors (radiation protection specialists)
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	Civil (structure), mechanical, electrical, electronics, nuclear, chemical and material engineers, medicine doctors (radiation protection specialists)

What levels of effort and skill sets are needed?	Finland STUK
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>From the point of regulatory body (STUK):</p> <p><b>EIA</b></p> <p>At EIA process STUK evaluates radiological consequences to the environment and emergency preparedness issues. STUK also participates to the public hearings as an expert organisation.</p> <p><b>Decision in Principle (DIP)</b></p> <p>STUK reviews the application and submitted documentation and prepares preliminary safety assessment. Areas of STUK review are a conceptual design of plant alternatives, capabilities of the applicant and safety of the plant site alternatives.</p> <p>Needed resources are reactor physicists, process, I&amp;C and electrical system's engineering, mechanical engineering, civil engineering, management systems expertise, plant layout, siting (seismicity, geology, hydrology, meteorology), emergency preparedness and security expert) and waste management expert.</p> <p>During the process meetings between license applicant, vendors and STUK are arranged if needed to explain the application more in detail or to make changes to the plant basic design if needed.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>From the point of regulatory body (STUK):</p> <p><b>Construction license</b></p> <p>STUK reviews the application (Preliminary Safety Analyses Report, Probabilistic Risk Analyses, Safety Classification, QA for design and construction, safeguards, emergency preparedness, security arrangements) and prepares safety assessment. Basic design of the selected plant is evaluated in more detail; so called system level is now reviewed and both vendor and licensee organisations are evaluated.</p> <p>Needed resources and expertise are reactor physicists, accident and transient analyses experts, process, I&amp;C and electrical system's engineering, mechanical engineering, manufacturing technologies, strength analyses experts, civil engineering, management systems expertise, plant layout, siting (seismicity, geology, hydrology, meteorology), emergency preparedness and security expert) and waste management expert, safeguards.</p> <p><b>During construction</b></p> <p>In accordance with Section 108 of the Nuclear Energy Decree, the different phases of construction of a nuclear facility may begin only after STUK has on the basis of the documents mentioned in Section 3.2 above, and other detailed plans and documents it requires, verified in respect of each phase, that the safety-related factors and safety regulations have been given sufficient consideration.</p>

	<p>Review of the structure and equipment designs can begin after STUK has found that the system-level design data of the system concerned are sufficient and acceptable. This assessment may take place as part of the review of the Preliminary Safety Analysis Report or as reviews of the separate system-specific descriptions, which are subsequently added to the Final Safety Analysis Report.</p> <p>During construction, STUK approves the necessary detailed designs for the systems, structures and components. As far as nuclear power plants are concerned, detailed information on the requirements for system descriptions has been provided in Guide YVL 2.0 and in YVL Guides of specific technical areas.</p> <p>In accordance with Section 109 of the Nuclear Energy Decree, STUK controls the construction of the facility in detail. The purpose is to ensure that the conditions stated in the construction license, the regulations for pressure equipment and the approved plans referred to in Section 3.2 above are complied with and that the nuclear facility is constructed in other respects in accordance with the regulations issued on the basis of the Nuclear Energy Act. In particular, the control is aimed to verify that working methods ensuring high quality are employed for the construction. Section 60 a of the Nuclear Energy Act requires that the manufacturers of nuclear pressure equipment and the inspection and testing organisations that exercise control have received STUK's approval. In accordance with Section 113 of the Nuclear Energy Decree, non-destructive testing of the structures and components of a nuclear facility may only be carried out by a testing organisation and a tester approved by STUK. The procedures linked with these approvals have been described in Guides YVL 1.3 and YVL 3.4.</p> <p><b>Construction Inspection Programme</b></p> <p>The purpose of STUK's Construction Inspection Programme is to verify that the operations of the construction licensee ensure high-quality construction and implementation in accordance with the approved designs while complying with the regulations and official decisions concerned. In particular, the Construction Inspection Programme assesses and controls the following issues:</p> <ul style="list-style-type: none"> <li>• the licensee's general operations with a view to constructing the facility</li> <li>• detailed procedures in the various fields of technology implemented for constructing the facility</li> <li>• dealing with safety matters and consideration of safety in management procedures</li> <li>• the licensee's expertise and use of expertise</li> <li>• quality management and quality control.</li> </ul> <p>The Construction Inspection Programme is divided into two main levels: the upper level assesses the licensee's main operations, such as project management and resources management, project control, dealing with safety issues and project quality management. The next level, known as the operation level, assesses, e.g., project quality assurance, training of the</p>
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	<p>operating personnel, inspection procedures, utilisation of the PSA, document, management, radiation safety, and structure and component-specific inspections in the various fields of technology. Furthermore, the emergency response arrangements during construction, physical protection, fire protection and nuclear waste treatment are included in the Construction Inspection Programme within the scope STUK considers necessary.</p> <p>In addition to the above-mentioned inspections, of which the licensee is informed in advance, STUK carries out inspections without prior notice at its discretion.</p> <p><b>Buildings and concrete and steel structures</b></p> <p>STUK controls the design, manufacture and installation of the buildings and concrete and steel structures important to safety. The control includes</p> <ul style="list-style-type: none"> <li>• pre-inspection of structures</li> <li>• inspections at the construction site concerning the readiness to begin work</li> <li>• inspections concerning manufacture</li> <li>• construction inspections of steel structures</li> <li>• commissioning inspections.</li> </ul> <p>The safety class of structures is taken into account when determining the scope of control and setting the requirements. The requirements for and control of concrete and steel structures have been described in Guides YVL 4.1 and YVL 4.2. Fire protection at nuclear facilities is discussed in Guide YVL 4.3.</p> <p>Only organisations and persons in their employ that have been granted approval by STUK are allowed to carry out inspections and expert duties subject to license relating to concrete and steel structures. Guides YVL 1.3 and YVL 4.1 deal with these duties and the approval procedures.</p> <p><b>Components</b></p> <p>STUK controls the design, manufacture and installation of pressure equipment and other mechanical components of nuclear facilities. The control includes</p> <ul style="list-style-type: none"> <li>• inspection of the construction plans for components</li> <li>• approval of the manufacturers and testing organisations</li> <li>• inspections concerning manufacture</li> <li>• construction inspections</li> <li>• installation inspections</li> <li>• commissioning inspections.</li> </ul> <p>The safety class of components is taken into account when determining the scope of control and setting the requirements. On the licensee's application, STUK may approve a separate testing organisation to carry out specified control duties. The requirements for and control of mechanical components</p>
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	<p>have been described in Guides YVL 1.3, YVL 1.14 and YVL 1.15 and in YVL Guides of series 3 and 5. Guide YVL 3.0 describes the principles of pressure equipment control.</p> <p>Guide YVL 3.4 presents the requirements for the approval of manufacturers</p> <p>Only organisations and persons in their employ that have been granted approval by STUK are allowed to carry out inspection and testing duties subject to license relating to mechanical components. Guide YVL 1.3 deals with these duties and the approval procedure.</p> <p>STUK controls the design, manufacture and installation of electrical and instrumentation and control equipment of nuclear facilities. The control includes review of the suitability assessment, inspections concerning manufacture and installation to be conducted at STUK's discretion, and commissioning inspections.</p> <p>The safety significance of the component concerned is taken into account when determining the scope of control and setting the requirements. The requirements for and control of electrical and instrumentation and control equipment have been described in Guides YVL 5.2 and YVL 5.5. Guides YVL 7.9 and YVL 7.10 give the requirements for radiation protection of nuclear facility workers and monitoring of occupational exposure. Other requirements and control concerning the radiation protection and environmental monitoring of a nuclear facility are discussed in guides of the YVL 7 Guide series.</p> <p><b>Nuclear fuel</b></p> <p>In accordance with Sections 114 and 115 of the Nuclear Energy Decree, STUK controls that the nuclear fuel is designed, manufactured, transported, stored, handled and used in compliance with the valid regulations.</p> <p>The nuclear fuel licensing procedure and STUK's regulatory control measures for nuclear power plants have been described in Guide YVL 6.1.</p> <p>Guides YVL 6.2, YVL 6.3, YVL 6.4, YVL 6.5, YVL 6.7 and YVL 6.8 give the requirements for the design, manufacture, transport, handling, storage and use of nuclear fuel.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>Operating license</b></p> <p>An operating license for a nuclear facility shall be applied for from the Government. The application for a license and its processing are dealt with in Sections 16, 17, 20, 23, 24 and 25 of the Nuclear Energy Act and in Sections 33, 34, 36, 37, 38, 39 and 40 of the Nuclear Energy Decree. The application shall be supplemented with the documents listed in Section 34 of the Nuclear Energy Decree.</p> <p>STUK issues a statement on the application for an operating license. The statement is supplemented with a safety assessment. When preparing the safety assessment, STUK requests from the Ministry of the Interior a statement about the documents referred to in Section 36, Point 6, of the Nuclear Energy Decree concerning the physical protection and emergency response arrangements.</p>

	<p>The preconditions for granting an operating license are defined in Section 20 of the Nuclear Energy Act. In its safety assessment, STUK takes a stand on the fulfillment of the requirements laid down in the relevant legislation and YVL Guides as regards to the issues to be controlled by STUK.</p> <p>When applying for an operating license, the documents listed in Section 36 of the Nuclear Energy Decree, and other reports considered necessary by STUK under Subsection 3 of Section 36 of the Decree shall be submitted to STUK for approval. STUK issues a statement about the operating license application only after having approved essential parts of each of these documents by a separate decision.</p> <p><b>Commissioning</b></p> <p><b>Preparations for operation; organisation and training</b></p> <p>In accordance with Section 119 of the Nuclear Energy Decree, STUK controls that the organisation operating the facility is appropriate and adequate and that the persons involved in the use of nuclear energy meet the competence requirements and that they are given proper training. Development and training of the operating organisation shall begin early enough during the construction of the nuclear power plant (YVL 2.5).</p> <p>When reviewing the administrative rules and organisation manual referred to in Section 4.2 above, STUK assesses the appropriateness and adequacy of the license applicant's organisation and the qualifications required.</p> <p>In accordance with Section 128 of the Nuclear Energy Decree, the operator of the facility systems in the main control room of a nuclear facility shall have STUK's approval for this job.</p> <p>The requirements for the nuclear power plant operator licensing and the training of personnel have been defined in Guides YVL 1.6 and YVL 1.7.</p> <p><b>Pre-operational testing</b></p> <p>The purpose of the pre-operational testing of a nuclear facility is to demonstrate that the facility has been constructed and operates as designed. The testing consists of the following stages:</p> <ul style="list-style-type: none"> <li>• system performance tests</li> <li>• fuel loading and pre-criticality tests of the reactor systems</li> <li>• making the reactor critical and low-power tests</li> <li>• power tests.</li> </ul> <p>STUK controls the testing of a nuclear facility by reviewing the general testing plans and programmes, by watching the tests at the nuclear facility and by reviewing the documents of test results.</p> <p>The operation of a nuclear power plant is considered to begin when the loading of nuclear fuel into the reactor begins. The reactor loading requires that the Government has granted an operating license and that STUK has approved the application concerning fuel loading and the reports on the reactor and fuel behaviour in the first operating cycle.</p> <p>To ensure that the nuclear facility complies with the regulations applied to</p>
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	<p>it, STUK verifies, in accordance with Section 20 of the Nuclear Energy Act, before the fuel loading that</p> <ul style="list-style-type: none"> <li>• the documents linked with operation of the facility, referred to in Section 36 of the Nuclear Energy Decree, are acceptable in all respects</li> <li>• the instruction manuals concerning operation of the facility, including instructions for accidents and transients, are adequate</li> <li>• the organisation operating the nuclear facility is appropriate and adequate</li> <li>• the persons involved in the use of nuclear energy meet the competence requirements</li> <li>• the persons designated as responsible manager for the facility operation and as his/her deputy have received STUK's approval</li> <li>• there is a sufficient number of licensed operators at the facility</li> <li>• for operation of the facility, persons who have received STUK's approval have been appointed to see to the emergency response arrangements, physical protection and safeguards of nuclear materials</li> <li>• the commissioning inspections of the facility systems, structures and components have been carried out with acceptable results</li> <li>• the results of system performance tests are acceptable insofar as it has been possible to perform the testing without the reactor</li> <li>• pre-service inspections of the structures and components have been completed</li> <li>• physical protection and emergency response arrangements are sufficient</li> <li>• the necessary control to prevent the proliferation of nuclear weapons has been arranged appropriately</li> <li>• the licensee of the nuclear facility has arranged indemnification regarding liability in the case of nuclear damage as prescribed.</li> </ul> <p>The reactor may be made critical and brought to a higher power level in accordance with the decisions taken by STUK.</p> <p>When the testing has finished, the holder of the operating license shall assess the results of the testing as a whole. The testing results shall be used to assess, for instance, whether any changes in the Final Safety Analysis Report and in the operational limits and conditions are needed. On the basis of this assessment, the licensee shall make the necessary changes in the operational limits and conditions and in the Final Safety Analysis Report, and submit them to STUK for approval.</p> <p>Guide YVL 2.5 deals with regulatory control of the testing of nuclear power plants.</p>
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What levels of effort and skill sets are needed?	France ASN
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The EPR basic design assessment started in 1989 to 2007 with the authorisation decree. The assessment was divided in different steps:</p> <ul style="list-style-type: none"> <li>-Definition of the safety objectives (1989-1993)</li> <li>-Assessment of the safety options (1994-2000)</li> <li>-Assessment in view of the authorisation decree application (2001-2007)</li> </ul> <p>During these 18 years of assessment, the workload was not continuous. For the authorisation decree application, 8 Advisory Committee for nuclear reactors meetings were held.</p> <p>Very roughly, we can try to estimate the work load as follows.</p> <p><u>On ASN side per year:</u></p> <ul style="list-style-type: none"> <li>- to elaborate the technical guidelines, manage the design assessment and the assessment of regulatory documents for the authorisation decree: 3 people</li> </ul> <p><u>On TSO side per year:</u></p> <ul style="list-style-type: none"> <li>- to elaborate the technical guidelines, to assess the basic design: around 12 full-time equivalent</li> </ul> <p><u>Skilled needed:</u> geologists, meteorologists, hydrologist, seismologist, project manager, civil, structural, mechanical, electrical, nuclear, chemical and material engineers, thermohydraulicians, I&amp;C experts, human factor experts, radiation protection, hazards (fire, explosion, flooding...) experts</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><u>On ASN side per year:</u></p> <ul style="list-style-type: none"> <li>- to oversight construction activities on-site: 4 inspectors (one dedicated to health and safety)</li> <li>- to manage the detailed design assessment and anticipated assessment of regulatory documents for the commissioning decision and oversight engineering offices and equipments facilities: 3 people</li> <li>- to oversight heavy component manufacturing: 3 people</li> </ul> <p><u>On TSO side per year:</u></p> <ul style="list-style-type: none"> <li>- to assess the detailed design, the non compliance impact on site, and anticipate the assessment of regulatory documents for the commissioning decision: around 20 full-time equivalent</li> </ul> <p><u>Skilled needed:</u> geologists, meteorologists, hydrologist, seismologist, project manager, civil, structural, mechanical, electrical, nuclear, chemical and material engineers, thermohydraulicians, I&amp;C experts, human factor experts, radiation protection experts, hazards (fire, explosion, flooding...) experts.</p>

<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><u>On ASN side per year:</u></p> <ul style="list-style-type: none"> <li>- to oversight construction activities on-site: 4 inspectors (one dedicated to health and safety)</li> <li>- to manage the assessment of regulatory documents for the commissioning decision and oversight engineering offices and equipments facilities: 3 people</li> </ul> <p><u>On TSO side per year:</u></p> <ul style="list-style-type: none"> <li>- to assess the regulatory documents for the commissioning decision around 20 full-time equivalent</li> </ul> <p><u>Skilled needed:</u> project manager, civil, structural, mechanical, electrical, nuclear, chemical and material engineers, thermohydraulicians, I&amp;C experts, human factor experts, radiation protection experts, hazards (fire, explosion, flooding...) experts.</p>
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What levels of effort and skill sets are needed?	Hungary HAEA
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	The task requires: Structural Engineer, Civil Engineer, Mechanical Engineer and Electrical Engineer, Nuclear Engineer, expert in management systems.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Structural Engineer, Mechanical Engineer and Electrical Engineer, Nuclear Engineer, Material Engineer, experts in welding, material testing, standards, computer codes, management systems and configuration management.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	Structural Engineer, Mechanical Engineer and Electrical Engineer Nuclear Engineer, Chemical Engineer, Material Engineer, Physical Scientist, experts in commissioning, operation, standards, computer codes, management systems and configuration management.

What levels of effort and skill sets are needed?	Japan NISA/JNES
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>- Environmental impact assessment</b></p> <p>Although no specific skill is required, engineers who have about 5 years experience as government official takes responsibility. Usually they have Bachelor or Master of engineering degree.</p> <p><b>- License for establishment of NPP</b></p> <p>METI</p> <p>Although no specific skill requirement is exist, person who in charge of reviewing application will be selected considering his/her experience.</p> <p>JNES</p> <p>Seismic engineer, specialist of accident (transient) analysis.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>- Construction Plan for establishment of electric facilities</b></p> <p>METI</p> <p>Although no specific skill requirement is exist, person who in charge of reviewing application will be selected considering his/her experience.</p> <p>JNES</p> <p>Seismic engineer, specialist of structural integrity.</p> <p><b>- Pre-service Inspection</b></p> <p>NISA</p> <p>Officials who have at least 2 years experience in safety preservation in the construction, maintenance and operation of the electric facilities, and have bachelor degree of electricity engineering, civil engineering, mechanical engineering or management engineering.</p> <p>JNES</p> <p>Inspectors who have at least 2 years experience in safety preservation in the construction, maintenance and operation of the electric facilities, and have bachelor degree of electricity engineering, civil engineering, mechanical engineering or management engineering.</p> <p><b>Welding check</b></p> <p>Inspectors who have at least 2 years experience in safety preservation in the construction, maintenance and operation of the electric facilities as well as inspection related works of nuclear facilities, and have bachelor degree of electricity engineering, civil engineering, mechanical engineering or management engineering.</p> <p><b>- Design approval and inspection for Fuel Assembly</b></p> <p>Officials who have at least 2 years experience in safety preservation in the</p>

	<p>construction, maintenance and operation of the electric facilities, and have bachelor degree of electricity engineering, civil engineering, mechanical engineering or management engineering.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>- Operation Plan</b></p> <p>No special skill is required. (In reality, the skill level of the person who is in charge of this work is same as inspector)</p> <p><b>- Operational Safety Program</b></p> <p>NISA</p> <p>No special skill is required. (In reality, the skill level of the person who is in charge of this work is same as inspector)</p> <p>JNES</p> <p>Engineers in each related areas.</p>

What levels of effort and skill sets are needed?	<b>Korea</b> <b>MEST/KINS</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The regulatory staff shall receive the education and training which are stipulated by the Acts and prescribed as the requirements on the establishment of the education and training plan, the categorisation of education and trainings, the implementation and control of the education and training, and so on.</p> <ul style="list-style-type: none"> <li>• Siting and Site Evaluation – geologists, meteorologists, hydrologist, seismologist, project manager, environmental project manager, civil engineers. The majority of the siting effort is performed during this stage.</li> <li>• Basic Design – project manager, structural, civil, mechanical, electrical, nuclear, chemical and material engineers. The majority of the mechanical, chemical, nuclear, electrical and material engineering effort is performed during this stage.</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<ul style="list-style-type: none"> <li>• Site Specific Design – project manager, inspectors disciplined from structural, civil, mechanical, electrical, nuclear, chemical and material engineering. The level of effort will depend on the issues not resolved during previous stages and would be specific to the site. Around 2,000 man hours per one constructing unit was recorded.</li> <li>• Construction – project manager, inspectors disciplined from structural, civil, mechanical, electrical, nuclear, chemical and material engineering. Around 2,000 man hours per one constructing unit.</li> </ul>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<ul style="list-style-type: none"> <li>• Non-Nuclear Testing - project manager, inspectors disciplined from structural, civil, mechanical, electrical, nuclear, chemical and material engineering. Around 5,000 man hours per one commissioning unit</li> <li>• Nuclear Testing - project manager, inspectors disciplined from mechanical, nuclear and electrical engineering. Around 1,500 man hours per one commissioning unit</li> <li>• There are six resident inspectors in each site depending on the site specific issues.</li> </ul>

What levels of effort and skill sets are needed?	Poland PAA
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Overall HR development programme assumes recruiting specialist with following academic background: geology/geophysics, hydrology/meteorology, nuclear engineering, structural engineering, mechanical engineering, civil engineering, electrical engineering, nuclear physics, environmental protection, law and administration.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	

What levels of effort and skill sets are needed?	Slovakia UJD
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Geologist, Geophysicist, Meteorologist, Hydrologist, Structural Engineer, Civil Engineer, Mechanical Engineer and Electrical Engineer with special knowledge of nuclear engineering Nuclear Engineer, Health Physicist, Physical Scientist, Project Manager
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Structural Engineer, Mechanical Engineer and Electrical Engineer with special knowledge of nuclear engineering, standards, computer codes Nuclear Engineer, Chemical Engineer, Material Engineer, Health Physicist, Physical Scientist, Project Manager Inspectors
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	Structural Engineer, Mechanical Engineer and Electrical Engineer with special knowledge of nuclear engineering, standards Nuclear Engineer, Chemical Engineer, Material Engineer, Health Physicist, Physical Scientist, Project Manager Inspectors

What levels of effort and skill sets are needed?	Slovenia SNSA
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Geologist, Geophysicist, Meteorologist, Hydrologist, Structural Engineer, Civil Engineer, Mechanical Engineer and Electrical Engineer with special knowledge of nuclear engineering Nuclear Engineer, Health Physicist, Physical Scientist, Project Manager
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Structural Engineer, Mechanical Engineer and Electrical Engineer with special knowledge of nuclear engineering, standards, computer codes Nuclear Engineer, Chemical Engineer, Material Engineer, Health Physicist, Physical Scientist, Project Manager Inspectors
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	Structural Engineer, Mechanical Engineer and Electrical Engineer with special knowledge of nuclear engineering, standards Nuclear Engineer, Chemical Engineer, Material Engineer, Health Physicist, Physical Scientist, Project Manager Inspectors

What levels of effort and skill sets are needed?	Spain CSN
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	CSN works as a matrix organisation with project manager co-ordinating the tasks of specialised branches (civil engineering, structural and mechanics, electrical and instrumentation, nuclear, etc). In each branch there are about 5 experts that are supported with external companies and institutions.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	

What levels of effort and skill sets are needed?	Switzerland ENSI
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>General License -</p> <p>Safety Review by the ENSI:</p> <p>Project manager, geologists, geophysicists, seismologists, hydrologists, meteorologists, electrical engineers, civil engineers, system engineers, probabilistic hazard experts, radioprotection experts, human and organisational factors experts</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Construction License -</p> <p>Safety Review by the ENSI:</p> <p>Project manager, quality manager, geologists, geophysicists, seismologists, hydrologists, meteorologists, electrical engineers, civil engineers, system engineers, mechanical engineers, PSA experts, radioprotection experts, human and organisational factors experts.</p> <p>Inspectors during construction.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Operating License -</p> <p>Safety Review by the ENSI:</p> <p>Project manager, quality manager, geologists, geophysicists, seismologists, hydrologists, meteorologists, electrical engineers, civil engineers, system engineers, mechanical engineers, PSA experts, radioprotection experts, human and organisational factors experts.</p> <p>Inspectors during commissioning.</p>

What levels of effort and skill sets are needed?	United Arab Emirates FANR
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Divided between the regulator and licensee. At site evaluation stage effort is 1-2 FTE for the regulator and estimate 30 FTE for operator
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Based on assumed four unit project, licensee planned to grow to 2000 by 2020 with some 10,000 construction workforce. Regulatory body involved technical staff 70 with \$10M contract for external technical support organisation.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	As per above

What levels of effort and skill sets are needed?	United Kingdom ONR
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	For the GDA and site specific design, a high level of technical competence is needed as usually required in any nuclear design assessment. This will be supplemented by legal expertise and policy and project management experts
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	There is a continuing need through the construction phase to maintain a high level of technical expertise in all the usual technical areas. Project expertise is particularly important at this time.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	There is a continuing need through the commissioning phase to maintain a high level of technical expertise in all the usual technical areas. Project expertise continues to be important at this time. Also operational expertise becomes important.

What levels of effort and skill sets are needed?	United States USNRC
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<ul style="list-style-type: none"> <li>• Siting and Site Evaluation – geologists, meteorologists, hydrologist, seismologist, project manager, environmental project manager, civil engineers. The majority of the siting effort is performed during this stage. In average, around 50,000 man hours.</li> <li>• Basic Design – project managers, structural, civil, mechanical, electrical, nuclear, chemical and material engineers. The majority of the mechanical, chemical, nuclear, electrical and material engineering effort is performed during this stage. In average, around 100,000 man hours.</li> </ul>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<ul style="list-style-type: none"> <li>• Site Specific Design – all of the Skill sets needed described above. The level of effort will depend on the issues not resolved during previous stages and would be specific to the site. In average, around 60,000 man hours.</li> <li>• Construction – Inspectors, Project Managers and some specific skill sets maybe needed to review test results. There will be around 5 resident inspectors in each site depending on the site specific issues. Technical experts maybe needed to review some tests.</li> </ul>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<ul style="list-style-type: none"> <li>• Inspectors, regional specialists and project managers. Technical experts maybe needed to review some tests. In average, around 35,000 man hours</li> </ul>



## APPENDIX F

**What documents are submitted? How are they submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.**

Under essentially all of the processes being used for siting and licensing new nuclear power plants, the regulatory authorities require documentation to be submitted to support siting, construction, commissioning, and operations. Typically, there are regulations or regulatory guidance that describes the content and details of the documentation to be provided. The information provided by the proponent needs to be sufficient to demonstrate that the safety basis described in the legislative and regulatory framework is satisfied. In most cases, the information submitted early provides environmental and design related information that the regulatory authority uses as the basis for its siting and construction decisions. This preliminary information includes assessments of the environmental impacts on the surrounding environment and population, and an assessment of the safety performance of the plant based on design information. Typically, as construction is completed additional documentation is submitted to show that the as-built plant meets the design requirements. This also includes an updated safety analysis using as-built information that shows that the as-built plant can be operated safely, details on the commissioning activities and schedules, descriptions of the security and physical protection programs, emergency preparedness program descriptions, and operational parameters and technical specifications that govern operation.

<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p style="text-align: center;"><b>Canada CNSC</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The proponent uses for guidance provided in CNSC Regulatory Document RD-346 “<i>Site Evaluation for New Nuclear Power Plants</i>” is to independently evaluate and then select the preferred site. The proponent then uses their siting information to develop two documents which are used to trigger both the nuclear licensing process and a parallel Environmental Assessment (EA) process:</p> <ol style="list-style-type: none"> <li>1. <b>Project Description:</b> Guidance regarding completion of this document is provided by the Federal Major Projects Management Office<sup>3</sup> in a guidance document. This document triggers the Federal EA process<sup>4</sup>.</li> <li>2. <b>Application for a Licence to Prepare Site:</b> Guidance is currently provided only at the level of the regulations<sup>5</sup> and already existing CNSC guidance documents (IAEA guides are also accepted), but this will soon be supplemented with a new CNSC guidance document expected to be issued by October 2010. The license application must be accompanied by an application fee to begin regulatory review and cost recovery by the CNSC.</li> </ol> <p>For each project, the EA and licensing currently uses a federal Panel review process. Federal Agencies, under a Project Agreement, collaborate to develop a project specific Environmental Assessment Guidelines document which the proponent is required to consider when submitting EA information to the Panel for review. The EA guidelines generally require high level design information about the proposed facility in order to predict the effects of that facility over its full lifecycle. Much of the information submitted in the EA is used to support the “site selection case” in the application for the <i>Licence to Prepare Site</i>.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Continued site evaluation work by the licensee is required for the facility under all licenses per the <i>General Nuclear Safety and Control Regulations</i> and is based on evaluation programs submitted for review during the Environmental Assessment phase of the project. Site compliance activities by the CNSC and other federal and provincial agencies is conducted while the licensed activities are being executed to confirm the programs are</p>

<sup>3</sup> This a Federal department that provides Federal department co-ordination services through a Project Agreement endorsed by participating Federal Departments.

<sup>4</sup> Elements for the en

<sup>5</sup> For example: Under the *Nuclear Safety and Control Act, General Nuclear Safety and Control Regulations, Class I Facilities Regulations, Nuclear Security Regulations, etc.*

	<p>being maintained currently by the licensee.</p> <p>To trigger a construction license review by the CNSC, the licensee submits an application for a <i>License to Construct</i> which includes a site specific PSAR.</p> <p>Guidance is currently provided only at the level of the regulations<sup>6</sup> and already existing CNSC guidance documents (certain IAEA guides are also accepted), but this will soon be supplemented with a new CNSC guidance document expected to be issued by October 2010.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Per the <i>General Nuclear Safety and Control Regulations</i>, as well as the <i>Class I Facilities Regulations</i>, commissioning plans are requested by Staff at the application stage for the <i>License to Construct</i>. These plans would be expected to be detailed for Phase A<sup>7</sup> commissioning and at a higher level for Phase B commissioning. The plans are expected to be developed during actual construction such that they will be detailed enough to permit synchronisation of the regulatory compliance activities with day to day activities of the licensee. Towards the later stages of plant construction, such detail is also expected to develop for the Phase B commissioning in preparation for application for a <i>License to Operate</i><sup>8</sup>.</p>

<sup>6</sup> For example: Under the *Nuclear Safety and Control Act*, *General Nuclear Safety and Control Regulations*, *Class I Facilities Regulations*, *Nuclear Security Regulations*, etc.

<sup>7</sup> Phase A Commissioning is all commissioning of all plant systems with no fuel in core. Phase B commissioning is done with fuel in core.

<sup>8</sup> Which permits fuel to be loaded into the core and the reactor to be placed in a Guaranteed Shutdown State.

<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p style="text-align: center;"><b>Czech Republic SÚJB</b></p>
	<p>All documents required by Atomic Act are submitted in the file as the attachment to application. If necessary, the additional information and documents are required in administrative procedure.</p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>Documentation set in Atomic Act:</b></p> <p>I. Initial Safety Report which shall include</p> <ol style="list-style-type: none"> <li>1. Description and evidence of suitability of the selected site from the aspect of siting criteria for nuclear installations as established in a legal implementing regulation;</li> <li>2. Description and preliminary assessment of design conception from the aspect of requirements laid down in an implementing regulation for nuclear safety, radiation protection and emergency preparedness;</li> <li>3. Preliminary assessment of impact of operation of proposed installation on personnel, the public and the environment;</li> <li>4. Proposal of conception for safe termination of operation;</li> <li>5. Assessment of quality assurance in process of selection of site, method of quality assurance for preparatory stage of construction and quality assurance principles for followed stages.</li> </ol> <p>II. Analysis of needs and possibilities of physical protection.</p> <p><b>Prescribed details are in implementing legislation:</b></p> <p>Decree of the SÚJB No. 144/1997 Coll., on Physical Protection of Nuclear Materials and Nuclear Facilities and their Classification, as amended</p> <p>Decree of the SÚJB No. 215/1997 Coll., on Criteria for Siting Nuclear Facilities and Very Significant Ionising Radiation Sources</p> <p>Decree of the SÚJB No. 195/1999 Coll., on Basic Design Criteria for Nuclear Installations with Respect to Nuclear Safety Radiation Protection and Emergency Preparedness</p> <p>Decree of the SÚJB No. 307/2002 Coll., on Radiation Protection, as amended</p> <p>Decree of the SÚJB No. 185/2003 Coll., on Decommissioning of Nuclear Installation</p> <p>Decree of the SÚJB No. 132/2008 Coll. on Quality Assurance System in carrying out activities connected with utilisation of nuclear energy and radiation protection and on Quality assurance of selected equipment in regard their assignment to classes of nuclear safety</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>Documentation set in Atomic Act:</b></p> <p>I. Preliminary Safety Report which shall include</p> <ol style="list-style-type: none"> <li>1. Evidence that the proposed design meets all requirements for</li> </ol>

	<p>nuclear safety, radiation protection and emergency preparedness as laid down in an implementing regulations;</p> <ol style="list-style-type: none"> <li>2. Safety analyses and analyses of the potential unauthorised handling of nuclear materials and ionising radiation sources, and an assessment of their consequences for personnel, public and environment;</li> <li>3. Information on predicted lifetime of nuclear installation or very significant ionising radiation source;</li> <li>4. Assessment of nuclear waste generation and management of it during commissioning and operation of the installation or workplace being licensed;</li> <li>5. Conception of safe termination of operation and decommissioning of the installation or workplace being licensed, including disposal of nuclear waste;</li> <li>6. Conception for spent nuclear fuel management;</li> <li>7. Assessment of quality assurance during preparation for construction, method of quality assurance for the carrying out of construction work and principles of quality assurance for linking stages;</li> <li>8. List of classified equipment.</li> </ol> <p>II. Proposed method of providing physical protection.</p> <p><b>Prescribed details are in implementing legislation:</b></p> <p>Decree of the SÚJB No. 144/1997 Coll., on Physical Protection of Nuclear Materials and Nuclear Facilities and their Classification, as amended</p> <p>Decree of the SÚJB No. 145/1997 Coll., on Accounting for and Control of Nuclear Materials and their Detailed Specification, as amended</p> <p>Decree of the SÚJB No. 195/1999 Coll., on Basic Design Criteria for Nuclear Installations with Respect to Nuclear Safety Radiation Protection and Emergency Preparedness</p> <p>Decree of the SÚJB No. 307/2002 Coll., on Radiation Protection</p> <p>Decree of the SÚJB No. 185/2003 Coll., on Decommissioning of Nuclear Installation</p> <p>Decree of the SÚJB No. 132/2008 Coll. on Quality Assurance System in carrying out activities connected with utilisation of nuclear energy and radiation protection and on Quality assurance of selected equipment in regard their assignment to classes of nuclear safety</p> <p>Decree of the SÚJB No. 309/2005 Coll., on provision of technical safety for classified equipment</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>Documentation set in Atomic Act:</b></p> <p>a) For stages prior to nuclear fuel load into a reactor (non-nuclear testing)</p> <ol style="list-style-type: none"> <li>1. Time schedule for work in a given stage;</li> <li>2. Program for the stage;</li> <li>3. Evidence that installation and personnel are prepared for the stage;</li> <li>4. Evaluation of results of the preceding stage;</li> </ol>

	<p>5. Method by which physical protection is to be provided.</p> <p>b) For the first nuclear fuel load</p> <p>I. Pre-operational Safety Report which shall include</p> <ol style="list-style-type: none"> <li>1. Description of changes to original design assessed in the Preliminary Safety Report and evidence that there has been no decrease in the level of nuclear safety of the nuclear installation;</li> <li>2. Supplementary and more precise evidence of nuclear safety and radiation protection provisions;</li> <li>3. Limits and conditions for safe operation of the nuclear installation;</li> <li>4. Neutron-physics characteristics of the nuclear reactor;</li> <li>5. Method of radioactive waste management;</li> <li>6. Quality assessment of classified equipment;</li> </ol> <p>II. Further documentation which shall include</p> <ol style="list-style-type: none"> <li>1. Evidence that all prior decisions and conditions of the Office were fulfilled;</li> <li>2. Time schedule for nuclear fuel loading;</li> <li>3. Program for nuclear fuel loading;</li> <li>4. Evidence that installation and personnel are prepared for nuclear fuel loading;</li> <li>5. Evaluation of the result of previous stages;</li> <li>6. On-site emergency plan;</li> <li>7. Changes in the provision of physical protection;</li> <li>8. Program of operational inspections;</li> <li>9. Proposed decommissioning method;</li> <li>10. Cost estimate for decommissioning as in II.9, verified by the Authority.</li> </ol> <p>c) For stages following the first nuclear fuel load into the reactor</p> <ol style="list-style-type: none"> <li>1. Time schedule for work in this stage;</li> <li>2. Program of this stage;</li> <li>3. Evidence that installation and personnel are prepared for the stage in question;</li> <li>4. Evaluation of results of the previous stage.</li> </ol> <p><b>Prescribed details are in implementing legislation:</b></p> <p>Decree of the SÚJB No. 106/1998 Coll., on Nuclear Safety and Radiation Protection Assurance during Commissioning and Operation of Nuclear Facilities</p> <p>Decree of the SÚJB No. 144/1997 Coll., on Physical Protection of Nuclear</p>
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	<p>Materials and Nuclear Facilities and their Classification, as amended</p> <p>Decree of the SÚJB No. 195/1999 Coll., on Basic Design Criteria for Nuclear Installations with Respect to Nuclear Safety Radiation Protection and Emergency Preparedness</p> <p>Decree of the SÚJB No. 307/2002 Coll., on Radiation Protection</p> <p>Decree of the SÚJB No. 185/2003 Coll., on Decommissioning of Nuclear Installation</p> <p>Decree of the SÚJB No. 132/2008 Coll. on Quality Assurance System in carrying out activities connected with utilisation of nuclear energy and radiation protection and on Quality assurance of selected equipment in regard their assignment to classes of nuclear safety</p> <p>Decree of the SÚJB No. 318/2002 Coll., on Details of Emergency Preparedness of Nuclear Facilities and Workplaces with Ionising Radiation Sources and on Requirements on the Content of On-Site Emergency Plan and Emergency Rule, amended</p> <p>Decree of the SÚJB No. 185/2003 Coll., on Decommissioning of Nuclear Installation</p> <p>Decree of the SÚJB No. 317/2002 Coll., on Type Approval of Packaging Assemblies for Transport, Storage and Disposal of Nuclear Materials and Radioactive Substances, on Type Approval of Ionising Radiation Sources and on Transport of Nuclear Materials and Specified Radioactive Substances, as amended</p> <p>Decree of the SÚJB No. 319/2002 Coll., on Performance and Management of the National Radiation Network</p> <p>Decree of the SÚJB No. 146/1997 Coll., Specifying Activities Directly Affecting Nuclear Safety and Activities Especially Important from Radiation Protection Viewpoint, Requirements on Qualification and Professional Training, on Method to be Used for Verification of Special Professional Competency and for Issue Authorisations to Selected Personnel, and the Form of Documentation to be Approved for Licensing of Expert Training of Selected Personnel, amended</p> <p>Decree of the SÚJB No. 193/2005 Coll., on list of theoretical and practical areas forming a content of education and of preparation required for performance of regulated activities within the scope of power of the State Office for Nuclear Safety</p>
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<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p style="text-align: center;"><b>Finland STUK</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>EIA</b></p> <p>Environmental Impact Assessment programme is submitted to the MEE, which submits it to STUK for statement. The EIA procedure falls under the Act on Environmental Impact Assessment Procedure (EIA) (468/1994) and the Decree on EIA (268/1999).</p> <p><b>Decision in Principle (DIP)</b></p> <p>Licensee sends the application to the Ministry of Employment and the Economy (MEE). MEE asks the statement (preliminary safety assessment) from STUK.</p> <p>When applying for a DiP, descriptions of the facility options in question shall be submitted to STUK, in addition to the documents required in Section 24 of the Nuclear Energy Decree. The following information, i.a., shall be given about each facility option:</p> <ul style="list-style-type: none"> <li>• a description of the facility and its reactor, primary circuit and containment as well as other safety systems</li> <li>• references to the facilities that have served as models, and a summary of the most significant modifications compared with them</li> <li>• a summary of the safety analyses carried out for the facility option</li> <li>• general plans for the facility's implementation organisation, the suppliers of the facility and its most important systems and components, as well as quality management of the implementation</li> <li>• the license applicant's own assessment of the opportunity to implement the facility option in question in accordance with the Finnish regulations.</li> </ul> <p>STUK may request detailed information on each facility option at its discretion.</p> <p>If Parliament ratifies the Government resolution, the license applicant shall submit to STUK for information the safety-related design criteria used for the nuclear facility in the invitation for tenders.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>Construction license</b></p> <p><b>License application and its processing</b></p> <p>A construction license for a nuclear facility shall be applied for from the Government. The application for a license and its processing are dealt with in Sections 16, 17, 18, 19, 23, 24 and 25 of the Nuclear Energy Act and in</p>

Sections 31, 32, 35, 37, 37a, 38, 39 and 40 of the Nuclear Energy Decree. The application shall be supplemented with the documents listed in Section 32 of the Nuclear Energy Decree.

STUK issues a statement on the application for a construction license. The statement is supplemented with a safety assessment. When preparing the safety assessment, STUK requests from the Ministry of the Interior a statement about the documents referred to in Section 35, Point 4, of the Nuclear Energy Decree concerning the physical protection and emergency response arrangements.

The preconditions for granting a construction license are defined in Sections 18 and 19 of the Nuclear Energy Act. In its safety assessment, STUK takes a stand on the fulfillment of the requirements laid down in the relevant legislation and YVL Guides regarding the issues to be controlled by STUK.

The construction of a nuclear facility shall not begin, as far as the structures affecting nuclear safety are concerned, before the Government has granted the construction license required by the Nuclear Energy Act for the facility. Beginning the formwork and reinforcing work of the safety-classified concrete structures at the building site is considered to be construction of this kind. If the manufacture of structures and components for the nuclear facility is begun before the construction license is granted, the license applicant shall apply for STUK's prior approval for commencing the work.

#### **Documents to be submitted to STUK**

When applying for a construction license, the documents listed in Section 35 of the Nuclear Energy Decree, and other reports considered necessary by STUK under Subsection 2 of Section 35 of the Decree shall be submitted to STUK for approval. STUK issues a statement about the construction license application only after having approved essential parts of each of these documents by a separate decision. Requirements for these documents and specified instructions for their submission are given below.

#### **Preliminary Safety Analysis Report**

The purpose of the Preliminary Safety Analysis Report (PSAR) is to demonstrate that the factors affecting safety and the safety regulations have been adequately taken into account.

The PSAR shall include the following documents: a description of the nuclear facility's safety principles and design basis, as well as other design criteria and how these are met, a detailed description of the facility and the site, a description of the facility's operation, a description of the facility's behaviour in transient and accident conditions, a summary of the results of the Probabilistic Safety Assessment (PSA), and a report on environmental effects of the facility's operation. Guide YVL 2.0 gives the detailed requirements for describing safety-classified systems.

The Safety Analysis Report shall be primarily drawn up in Finnish. However, STUK may agree, on application, that certain parts of the safety analysis report to be defined separately could be submitted to STUK in some other language approved by STUK.

The purpose of topical reports is to describe in detail on what kinds of experimental research and theoretical analyses the facility design is based. The reports may be related to the facility in question or to another facility of a similar type designed by the same supplier. In the PSAR, a reference shall be made to the topical reports that play a significant role in assessing the Safety Analysis Report.

Topical reports to be submitted concern, e.g., the fuel, reactor, reactor pressure vessel, safety systems and containment. These reports shall include research results important for design and describe in detail the calculation models used for design and the codes employed for computer analyses. Furthermore, they shall give the most significant results and conclusions.

The topical reports shall be submitted to STUK for approval in such a way that they can be dealt with during the consideration of the corresponding item in the Preliminary Safety Analysis report.

As far as nuclear power plants are concerned, requirements for the analytical methods and results of deterministic accident analyses are defined in Guide YVL 2.2.

#### **Proposal for a Safety Classification Document**

The Safety Classification Document shall include classification of the systems, structures and components important to safety of the nuclear facility on the basis of their functional and structural safety significance. In making the classification, the functions with which the systems, structures and components are linked shall also be considered.

The safety class affects the requirements set for the design, manufacture, installation, testing and inspections. STUK determines its regulatory control measures taken for each item on the basis of the safety class.

As far as nuclear power plants are concerned, requirements for the safety classification are given in Guide YVL 2.1. The safety classification shall be assessed with the aid of the PSA in accordance with Guide YVL 2.8.

#### **Report on quality management during construction**

The report shall describe the systematic procedures followed by the organisations involved in the design and construction of the nuclear facility in their operations that affect quality.

The quality manual of the construction license applicant concerning the construction phase shall be submitted to STUK for approval.

The quality manuals of the facility's main supplier, building contractor, fuel supplier, suppliers of the most important components and equipment, and design organisations shall be submitted to STUK for information. If other organisations play a significant role in implementing the facility project, STUK also requests, at its discretion, their quality manuals for information.

Guide YVL 1.4 gives the general requirements for the management system linked with quality and safety management.

#### **Plans for physical protection and emergency response arrangements**

The purpose of physical protection is to prevent illegal acts against the nuclear facility. The preliminary physical protection plan shall include a plan for the security arrangements during the construction and operation of the nuclear facility. The plan shall cover both the structural protection of the facility and the administrative procedures.

Emergency response arrangements are aimed at limiting nuclear damage in the nuclear facility and its environment in the event of an accident. The preliminary emergency plan shall include a plan for the facility's own emergency response arrangements and their connection with emergency plans for which the authorities are responsible. The plan shall incorporate consideration of the emergency response arrangements in the facility design, and the administrative procedures.

Government Decisions [8] and [9] define the general requirements for the physical protection and emergency response arrangements of nuclear power plants. Detailed requirements have been laid down in Guides YVL 6.11 and YVL 7.4.

#### **Plan for arranging necessary safeguards to prevent the proliferation of nuclear weapons**

The purpose of nuclear material safeguards is to ensure that nuclear materials and other nuclear items will not be used to make nuclear weapons or other nuclear explosives. The plan for implementing the safeguards shall include the design data on the facility structure and the basic data on operation, as well as a description of how the nuclear material safeguards are meant to be managed in the facility.

The requirements for nuclear material safeguards and STUK's regulatory control measures are dealt with in Guides YVL 6.1, YVL 6.9 and YVL 6.10. Any permits linked with acquisitions are dealt with in Section 6 below.

#### **Verification of the opportunities for regulatory control**

In accordance with Section 35 of the Nuclear Energy Decree, the license applicant shall describe and verify the arrangements for implementing the regulatory control by STUK both in Finland and abroad.

#### **Design-phase Probabilistic Safety Assessment (PSA)**

The design-phase PSA refers to a preliminary analysis of Levels 1 and 2 of the Probabilistic Safety Assessment (PSA). Level 1 of the PSA constitutes analysis of the probability of reactor core damage. The analysis of Level 2 assesses the amount, probability and timing of radioactive materials leaking from the containment.

As far as nuclear power plants are concerned, the purpose of the design-phase Probabilistic Safety Assessment is to demonstrate that the probabilistic design objectives stated in Guide YVL 2.8 are achieved. The Guide also gives requirements for the contents of the analysis.

#### **Other reports**

With regard to nuclear power plants, the license applicant shall submit a report on fulfillment of the requirements laid down in Government

	<p>Decisions 395–397/1991 and in the relevant YVL Guides. Correspondingly, with regard to other nuclear facilities, the license applicant shall submit a report on fulfillment of the requirements set in the YVL Guides concerning the nuclear facility in question.</p> <p>The license applicant shall submit a preliminary description of the principles of managing the ageing of the facility. The description shall take account of all significant ageing and wear mechanisms, and potential degradation owing to ageing. The following information, i.a., shall be provided in the report:</p> <ul style="list-style-type: none"> <li>• the general ageing management strategy for the facility and the prerequisites for its implementation</li> <li>• provision for sufficient margins in designing the systems, structures and components important to safety to ensure that the systems, structures and components will be capable of fulfilling all the necessary safety functions throughout their operating lives</li> <li>• how the facility layout ensures accessibility to the systems, structures and components to enable their inspection, maintenance and repair</li> <li>• how the suitability and reliability of the systems, structures and components for all design basis operating and accident conditions are ensured during their acquisition</li> <li>• how the availability of sufficient reference data on the systems, components and structures and on their operating conditions is ensured during construction and commissioning (testing)</li> <li>• how the availability of knowledge related to ageing management and the expertise of the facility personnel are ensured as early as during the design, construction and commissioning (testing) of the facility.</li> </ul> <p>The license applicant shall submit to STUK for information the plan for the construction project of the nuclear facility, which describes the main stages of the project and the necessary official approvals, including the target schedules.</p> <p><b>During construction</b></p> <p>YVL-guides present detailed and partly technology depended requirements how systems, structures and components are process and their manufacturers evaluated during construction and installation phases.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>Operating license</b></p> <p><b>License application and its processing</b></p> <p>An operating license for a nuclear facility shall be applied for from the Government. The application for a license and its processing are dealt with in Sections 16, 17, 20, 23, 24 and 25 of the Nuclear Energy Act and in Sections 33, 34, 36, 37, 38, 39 and 40 of the Nuclear Energy Decree. The application shall be supplemented with the documents listed in Section 34 of the Nuclear Energy Decree.</p> <p>STUK issues a statement on the application for an operating license. The</p>

statement is supplemented with a safety assessment. When preparing the safety assessment, STUK requests from the Ministry of the Interior a statement about the documents referred to in Section 36, Point 6, of the Nuclear Energy Decree concerning the physical protection and emergency response arrangements.

The preconditions for granting an operating license are defined in Section 20 of the Nuclear Energy Act. In its safety assessment, STUK takes a stand on the fulfillment of the requirements laid down in the relevant legislation and YVL Guides as regards the issues to be controlled by STUK.

#### **Documents to be submitted to STUK**

When applying for an operating license, the documents listed in Section 36 of the Nuclear Energy Decree, and other reports considered necessary by STUK under Subsection 3 of Section 36 of the Decree shall be submitted to STUK for approval. STUK issues a statement about the operating license application only after having approved essential parts of each of these documents by a separate decision. Requirements for these documents and specified instructions for their submission are given below.

#### **Final Safety Analysis Report**

The general requirements for the Preliminary Safety Analysis Report also apply to the Final Safety Analysis Report. The Safety Analysis Report, including its accident analyses and topical reports, shall be based on the actual systems, structures and components of the nuclear facility. Guide YVL 2.0 gives the detailed requirements for describing safety-classified systems.

In addition to the information on the nuclear facility and the site, the Final Safety Analysis Report shall include descriptions of the facility commissioning and operation. Guide YVL 2.5 deals with requirements for the testing of nuclear power plants.

#### **Probabilistic Safety Assessment**

The Probabilistic Safety Assessment (PSA) shall include analyses in accordance with Levels 1 and 2, which are based on the actual systems, structures and components of the nuclear facility.

Guide YVL 2.8 defines the requirements for the Probabilistic Safety Assessment of a nuclear power plant.

#### **Quality management system during operation**

The operation-time quality management system shall describe the systematic procedures that are followed during the commissioning and operation of the nuclear facility in functions affecting quality and safety.

The tasks, authority and responsibilities of the licensee's organisational units, as well as the personnel's competence requirements shall be specified in a separate organisation manual or a corresponding document, which shall be submitted to STUK for information.

#### **Operational Limits and Conditions**

The Operational Limits and Conditions shall determine the limits on the process parameters most important to safety, that are complied with in all operational states, as well as the limitations on the facility operation resulting from any component failure, or a deviation from a process parameter value. The Operational Limits and Conditions shall also set requirements for the tests and inspections important to safety by which the operability of the systems and components is periodically verified. Furthermore, the Operational Limits and Conditions shall determine the minimum number of personnel required for the different operational states of a nuclear power plant and define the release limits on radioactive materials.

The coverage and sufficient balance of the Operational Limits and Conditions of a nuclear power plant shall be verified in accordance with Guide YVL 2.8.

#### **Summary programme for in-service inspections**

The summary programme for in-service inspections shall define the periodic inspections of the components and structures important to safety to be carried out after commissioning. The programme shall contain the items scheduled for inspection, including the scopes, methods and periods of inspection.

Guide YVL 3.8 gives the requirements for in-service inspections of nuclear power plants and contents of the necessary qualification.

#### **Report on physical protection and emergency response arrangements**

The plans for physical protection and emergency response arrangements shall take account of the facility rooms, systems and components as well as the structure and areas of responsibility of the facility's operating organisation.

The requirements for the contents of a physical protection plan have been defined in Guide YVL 6.11 and in STUK's separate supplementary decisions.

As far as nuclear power plants are concerned, the requirements for the contents of an emergency plan have been given in Guide YVL 7.4.

#### **Report on arrangement of the necessary safeguards to prevent the proliferation of nuclear weapons**

The report shall constitute a manual concerning the accounting and control system of nuclear materials.

Guide YVL 6.9 gives the requirements for the accounting and control system of nuclear materials.

#### **Administrative rules**

In accordance with Section 122 of the Nuclear Energy Decree, the administrative rules shall determine the duties, authority and responsibilities of the designated responsible manager of a nuclear facility, his/her deputy and the rest of the personnel needed for operation of the nuclear facility.

### **Environmental radiation monitoring programme**

The environmental radiation monitoring programme shall describe the systematic measures taken to monitor the occurrence of radioactive materials in the vicinity of the nuclear facility from which they originate. Measures in accordance with the programme shall be initiated early enough before the facility is commissioned to enable assessment of the facility's environmental effects.

As far as nuclear power plants are concerned, the requirements for the environmental radiation monitoring programme have been presented in Guide YVL 7.7.

### **Other reports**

With regard to nuclear power plants, the license applicant shall submit a report on fulfillment of the requirements laid down in Government Decisions 395–397/1991 and in the relevant YVL Guides. Correspondingly, with regard to other nuclear facilities, the license applicant shall submit a report on fulfillment of the requirements set in the YVL Guides concerning the nuclear facility in question.

To make provision for the ageing of the facility, a plan shall be presented for how the design and qualification of the components and structures, their operation and operating experience, in-service inspections and tests, and maintenance are integrated so as to form a comprehensive ageing management programme. All significant ageing and wear mechanisms and potential degradation owing to ageing shall be identified to provide a basis for the plan. In addition, the following information shall be provided to support the plan:

- provision for sufficient margins in designing the systems, structures and components important to safety to ensure that the systems, structures and components will be capable of fulfilling all the necessary safety functions throughout their operating lives
- how the facility layout ensures accessibility to the systems, structures and components to enable their inspection, maintenance and repair
- how the suitability and reliability of the systems, structures and components for all design basis operating and accident conditions have been ensured during their acquisitions
- how the availability of sufficient reference data on the systems, components and structures and on their operating conditions has been ensured during construction and commissioning (testing)
- how the availability of knowledge related to ageing management and the expertise of the facility personnel have been ensured.

### **Commissioning**

Procedure for plant and system level commissioning is presented in YVL 2.5. STUK approves plant, phase, system and equipment level commissioning plans and result documentation and reviews administrative procedures.

<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p><b>France</b> <b>ASN</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The application for an authorisation decree is accompanied by a file comprising the documents listed on article 8 of the decree 2007-1557 of 2 November 2007 concerning basic nuclear installations and the supervision of the transport of radioactive materials with respect to nuclear safety.</p> <p>In particular :</p> <ul style="list-style-type: none"> <li>▪ the impact assessment (content described in article 9)</li> <li>▪ the preliminary safety case (content described in article 10)</li> <li>▪ the risk control study (content described in article 11)</li> <li>▪ a presentation of the applicant's technical and financial capabilities.</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>See previous answer.</p> <p>In application of the Act on transparency and security in the nuclear field (TSN) of 13 June 2006, ASN defined by a decision of 26 September 2008 the regulatory specifications for the Flamanville 3 EPR reactor currently being built on the Flamanville site.</p> <p>This first batch of 58 regulatory specifications :</p> <p>defines technical requirements related to the detailed design of the facility.</p> <p>regulates notably the facility's building conditions in terms of information to be communicated to ASN and provisions to take to control the impact of the worksite on the two reactors operating on the site.</p> <p>The regulatory specifications are endorsed by the ASN decision No. 2008-DC-0114 of 26 September 2008.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Prior to commissioning of the installation, the operator sends ASN an application comprising the documents listed on article 20 of the decree 2007-1557 of 2 November 2007 concerning basic nuclear installations and the supervision of the transport of radioactive materials with respect to nuclear safety.</p> <p>In particular :</p> <p>1° The safety case comprising the updated preliminary safety case and the data provided for</p> <p>assessment of built installation conformity with the requirements of the authorisation decree and</p>

	<p>the construction requirements</p> <p>2° The general operating rules the operator intends to implement, as of commissioning of the installation</p> <p>3° A study of installation waste management, specifying the operator's objectives for limiting the volume and radiological, chemical and biological toxicity of the waste produced in its installations and, by reuse and reprocessing of the waste thus produced, for reducing the size of the repository reserved for ultimate waste. This study takes account of all installation waste management channels up until disposal. It can cover the waste produced by all the installations and equipment located within the nuclear installation perimeter;</p> <p>4° The on-site emergency plan mentioned in article L. 1333-6 of the Public Health Code, which is mandatory for basic nuclear installations, together with the opinion of the health, safety and working conditions committee, obtained in accordance with article L. 236-2 of the Labour Code;</p> <p>5° An up date as necessary of the decommissioning Plan</p>
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<b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b>	<p style="text-align: center;"><b>Hungary HAEA</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The environmental procedure has two steps. In the first one, the applicant shall provide a preliminary documentation which is regulated by decree No. 314/2005. After this, the detailed environmental impact assessment (EIA) is made in accordance with the same decree</p> <p>No. 314/2005, which defines the content of the necessary documents.</p> <p>Requirements of document for nuclear safety site license is regulated by decree No. 89/2005 ad its supplements (NSR). The application for license shall attach regulatory licenses prescribed in other legal documents issued by other authorities involved in the licensing procedure, like, environmental and health authorities.</p> <p>The documents used and referred in the documentation serving the basis for the application for license specifying the details shall be submitted upon request of the Authority.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Content requirements of the application for construction license is regulated by decree No. 89/2005 ad its supplements (NSR).</p> <p>The application for license shall include the Preliminary Safety Analysis Report and regulatory licenses prescribed in other legal documents – issued by other authorities related to the activity defined in the application for license.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Content requirements of the application for commissioning license is regulated by decree No. 89/2005 ad its supplements (NSR).</p> <p>The application for license shall include the first version of Final Safety Report and regulatory licenses prescribed in other legal documents – issued by other authorities related to the activity defined in the application for license.</p>

<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p style="text-align: center;"><b>Japan</b> <b>NISA/JNES</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>- Siting and site evaluation</b></p> <p>Licensee submits the draft Environmental Impact Statement (draft EIS) that explain current status of the environment and measures to protect it.</p> <p>Environment Impact Assessment Law and Electricity Utilities Industry Law (Article 46) prescribe the content of the document.</p> <p><b>- Basic Design</b></p> <p>Licensee submits the application format for a license for establishment.</p> <p>Applicants attach documents to the application format including a description on safety design of the nuclear installation, radiation control, and accidents and failures</p> <p>Reactor regulation law (Article 23.2) and Ordinance on the Establishment, Operation, etc. of Commercial Nuclear Reactors (Article 2.2) prescribes the contents and format.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>- Detailed design</b></p> <p>Licensee submits the construction Plan for establishment of electric facilities.</p> <p>The detailed design of facilities to explain consistency with the basic design and design policies approved at the stage of licensing for establishment, and conformity with the technical standards based on the Electricity Utilities Industry Law (Article 47), are described.</p> <p><b>- Welding check</b></p> <p>Licensee submits the application for welding check in accordance with the Electricity Utilities Industry Law (Article 52). JNES issue the format of the application.</p> <p><b>- Design approval and inspection for Fuel Assembly</b></p> <p>Licensee submits the detailed design of fuel assembly, the result of analysis and so on, in accordance with the Electricity Utilities Industry Law (Article 51). “Rules for the Enforcement of the Electricity Utilities Industry Law” prescribes the contents and format.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>- Operation Plan</b></p> <p>Licensee submits the detailed operation plan that include monthly outlook of output, Uranium consumption, Uranium stock and so on.</p> <p>The Ordinance on the Establishment, Operation, etc. of Commercial</p>

	<p>Nuclear Reactors (Article 4) prescribes the format.</p> <p><b>- Operational Safety Program</b></p> <p>Licensee submits operational safety program, which prescribes procedures of operational management, operational limits and safety education of personnel, in accordance with the Reactor regulation law (Article 32).</p> <p>23 items prescribed in the Operational Safety Program are provided in the Ordinance on the Establishment, Operation, etc. of Commercial Nuclear Reactors, which includes the technical specification, periodic assessment, quality assurance, maintenance management, safety education, etc. of nuclear installations.</p>
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<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p style="text-align: center;"><b>Korea MEST/KINS</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The Atomic Energy Act (AEA) defines the list of documents that must be submitted at each authorisation stage. In the case of a nuclear power reactor and related facilities, the relevant legislation and MEST Notices prescribe the specific information that must be included in application documents for a permit or license as shown below:</p> <ol style="list-style-type: none"> <li>1. AEA Enforcement Regulation Article 7 (Preparation of Attached Documents for Construction Permit): The table of contents for radiation environmental report, preliminary safety analysis report, and design quality assurance program which are part of the attached documents for construction permit application.</li> <li>2. AEA Enforcement Regulation Article 16 (Matters to be Stated in Technical Specifications for Operation, etc.): The table of contents for technical specifications for operation, final safety analysis report, and operation quality assurance program.</li> <li>3. MEST Notice No.2009-37 (Standard Format and Content of Technical Specifications for Operation, MEST.Reactor.003)</li> <li>4. MEST Notice No.2009-37 (Standard Format and Content of Radiation Environmental Report for Nuclear Power Utilisation Facilities, MEST.Reactor.007)</li> <li>5. MEST Notice No.2010-05 (Regulation on Preparation of Explanatory Report on Technical Capability for Construction and Operation of Nuclear Reactor Facilities, MEST.Reactor.037)</li> </ol> <p>The relevant legislation clearly prescribes the contents that should be included in the application documents depending on the types of permission which the authorised parties intend to apply for.</p> <p>The documents that should be submitted at each authorisation stage are shown below.</p> <ol style="list-style-type: none"> <li>1. Standard Design Approval(SDA): Standard design specifications addressed in AEA Article 12-2 (Approvals for Standard Design), explanatory report on the nuclear reactor usage purposes as addressed in AEA Enforcement Regulation Article 11-2 (Application for Standard Design Approval), explanatory report on technical capability with respect to nuclear reactor design, standard design safety analysis report, emergency operating procedure preparation plan, etc.</li> <li>2. Early Site Approval (ESA): Radiological environmental impact analysis report addressed in AEA Article 11 (Construction Permits), site investigation report.</li> </ol>

<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>For instance, in the cases of construction permit and operating license for a nuclear power reactor and related facilities, the contents that should be included in the associated application documents are as follows:</p> <ol style="list-style-type: none"> <li>1. Construction Permit: Radiation Environmental Report (RER), preliminary Safety Analysis Report (PSAR), Quality Assurance Program for construction, etc. which are part of the attachment documents for construction permit application; AEA Enforcement Regulation Article 7 (Preparation of Attached Documents for Construction Permit).             <ul style="list-style-type: none"> <li>- Radiation Environmental Report: Radiological impact on facilities and the surrounding areas, prediction of Radiological impact on the surrounding environments resulting from construction and operation of the facilities, radiological environmental monitoring plan, assessment of radiological impact due to events during plant operation, etc.</li> <li>- Preliminary Safety Analysis Report: Items on the site of nuclear reactor facilities, radioactive waste management, radiation protection, organisation, initial test, accident analysis, technical specifications, quality assurance, human engineering, etc. in reflection of design specifications</li> <li>- Quality assurance program for construction: Organisation for the quality assurance framework, quality assurance plan, design control, procurement document control, etc.</li> <li>- Explanatory report on the nuclear reactor usage purposes</li> <li>- Explanatory report on technical capability with respect to construction of nuclear reactor facilities</li> </ul> </li> </ol>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<ol style="list-style-type: none"> <li>2. Operating License: Technical specifications for operation, final safety analysis report (FSAR), quality assurance program for operation, etc., which are parts of the attachment documents for operating license application; AEA Enforcement Regulation Article 16 (Matters to be Stated in Technical Specifications for Operation, etc.).             <ul style="list-style-type: none"> <li>- Technical specifications for operation of nuclear power reactor and related facilities: Items on the operation of nuclear reactor facilities, management of radiation and environment, operational control, etc.</li> <li>- Radiation environmental report: Required only when changes have been made to the radiological environmental impact analysis report submitted at the time of application for construction permit.</li> <li>- Final safety analysis report: Items on the site of nuclear reactor facilities, design, radioactive waste management, radiation protection, organisation, initial test, accident analysis, technical</li> </ul> </li> </ol>

	<p>specifications, quality assurance, human engineering, etc. in reflection of final design specifications.</p> <ul style="list-style-type: none"><li>- Quality assurance program for operation: Organisation for the quality assurance framework, quality assurance plan, design control, procurement document control, etc.</li><li>- Explanatory report on technical capability for nuclear reactor operation</li><li>- Explanatory report on nuclear fuel loading plan</li><li>- Explanatory report on technical basis and verification method to be applied in developing the emergency operating procedures</li></ul>
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<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p><b>Poland PAA</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>There is an existing Council of Ministries regulation on the documents required upon the submission of a licence application for operations which involve exposure to ionising radiation or upon reporting such operations. This regulation will be amended in part referring to nuclear facilities which is currently adjusted to research reactor. Draft of new regulation is under preparation.</p> <p>New types of documents (introduced in amended <i>Atomic law</i>) required on different steps of licensing include: Siting Report, Preliminary Safety Analysis Report, Commissioning Program and Commissioning Report, Financial Report, SSC Safety Classification Documentation and Integrated Management System Documentation, Decommissioning Program.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	

<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p style="text-align: center;"><b>Slovakia UJD</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>A. Documents to be attached to the written application for permission for siting of nuclear installation</b></p> <p>a) safety report of reference,  b) report of reference on the decommissioning method,  c) project intention for physical and technical solution of nuclear installation – design development project level,  d) report of reference on the method of management of radioactive wastes and spent nuclear fuel,  e) requirements on the quality of the nuclear installation,  f) proposed boundaries of the nuclear installation,  g) proposed size of the emergency planning zone ,  h) environmental impact assessment of the nuclear installation, if special regulation establishes,8) as well as potential impact assessment of the environment on the nuclear installation.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>B. Documents to be attached to the written application for building permission for the construction of nuclear installation</b></p> <p>a) preliminary safety report providing evidence for the meeting of the legal requirements on nuclear safety based on the data considered in the project,  b) project documentation needed for building permission proceedings ,  c) preliminary plan of management of radioactive waste, spent fuel, including their transport,  d) preliminary decommissioning plan concept,  e) classification of classified equipment into the safety classes,  f) preliminary plan of physical protection,  g) quality system documentation and requirements on the quality of the nuclear installation and their evaluation as mentioned in Section A, letter e),  h) preliminary on-site emergency plan,  i) preliminary limits and conditions of safe operation,  j) pre-operation preliminary inspection programme of nuclear installation,</p>

	<p>k) preliminary outline of the boundaries of the nuclear installation (specification of the data mentioned under Section A letter f),</p> <p>l) preliminary definition of the size of the emergency planning zone of the nuclear installation (specification of the data mentioned under Section A letter</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>C. Documents to be attached to the written application for authorisation for the commissioning of nuclear installation and operation</b></p> <p>a) limits and conditions of safe operation,</p> <p>b) list of classified equipment as classified into safety classes,</p> <p>c) testing programmes of classified equipment as determined by the Authority,</p> <p>d) nuclear installation commissioning programme, split up into stages,</p> <p>e) operational control programme of classified equipment,</p> <p>f) quality system documentation and requirements on the quality of the nuclear installation, and their evaluation pursuant to Section B letter g),</p> <p>g) operating regulations set by the Authority,</p> <p>h) on-site emergency plan,</p> <p>i) pre-operation safety report, specifying the report mentioned under Section B letter a),</p> <p>j) probability assessment of operation safety of shut-down reactor and for low output levels, as well as for full reactor output in case of nuclear installation comprising nuclear reactor,</p> <p>k) physical protection plan, as well as description of the method of aviation activities at premises or in the vicinity of the nuclear installation,</p> <p>l) radioactive waste and spent fuel management plan, including their transport,</p> <p>m) plan concept of decommissioning of the nuclear installation,</p> <p>n) document providing evidence for financial coverage of liability for nuclear damage, except repository,</p> <p>o) professional training systems for employees,</p> <p>p) training programmes for licensed employees,</p> <p>q) training programmes for employees with professional competency,</p> <p>r) documents providing evidence for the meeting of the qualification criteria by licensed employees and employees with professional competency,</p> <p>s) documents providing evidence for the preparedness of nuclear</p>

	<p>installation to be commissioned, for trial operation evaluation report on the commissioning of nuclear installation, and for permanent operation evaluation report on trial operation,</p> <p>t) off-site emergency plan for regions within the emergency planning zone ,</p> <p>u) definition of boundaries of nuclear installation by specification of the data mentioned under Section B letter k),</p> <p>v) definition of the size of the emergency planning zone of nuclear installation by specification of the data mentioned under Section B letter l)</p>
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<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p style="text-align: center;"><b>Slovenia SNSA</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The pre-construction documentation needed for approval of the facility site shall be prepared in accordance with Rules on the energy permit issuing, Rules on the content, format and drawing-up of national spatial plan and on drawing-up of alternative solutions for it's spatial arrangements, their evaluation and comparison and Rules on the radiation and nuclear safety factors. The following documentation are submitted:</p> <ul style="list-style-type: none"> <li>• proposal for national strategic spatial plan,</li> <li>• investor's project for new energetic object with technical rough idea,</li> <li>• proposal for national spatial plan,</li> <li>• rough idea (project) for a new NPP,</li> <li>• environmental report for a new NPP including the special safety analysis and</li> <li>• environmental impact assessment report.</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The project documentation needed for approval of the construction of a facility shall be prepared in accordance with Ionising Radiation Protection and Nuclear Safety Act, Rules on the radiation and nuclear safety factors, Rules on radwaste and spent fuel treatment, Rules on monitoring of radioactivity and Rules on the radiation and nuclear safety factors. The following documentation are submitted:</p> <ul style="list-style-type: none"> <li>• preliminary safety analysis report, decommissioning programme, waste management programme, radiological monitoring programme with the opinion of an authorised expert for radiation and nuclear safety about them,</li> <li>• design for construction license,</li> <li>• physical protection plan,</li> <li>• design for construction and</li> <li>• opinion of an authorised expert for radiation and nuclear safety about all documentation above.</li> </ul>

<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>The project documentation for trial operation permit shall be prepared in accordance with Rules on the radiation and nuclear safety factors and Rules on format and content of the document to demonstrate reliability of the object .The following documentation are submitted:</p> <ul style="list-style-type: none"> <li>• as build design,</li> <li>• the safety analysis report,</li> <li>• trial operation programme,</li> <li>• QM documentation,</li> <li>• waste management programme,</li> <li>• the aging programme, SSC qualification programme, operating experience feedback programme, operating performance indicators programme,</li> <li>• the fire protection analysis,</li> <li>• in-service inspections and maintenance programme,</li> <li>• the radiological monitoring programme,</li> <li>• NPP’s modification evaluation procedure,</li> <li>• decommissioning programme and</li> <li>• opinion of an authorised expert for radiation and nuclear safety about all documentation above.</li> </ul> <p>Additionally, the documentation of</p> <ul style="list-style-type: none"> <li>• the operating procedures,</li> <li>• the results of operation tests of specific systems and components,</li> <li>• the evidence of the quality of the equipments, using materials</li> <li>• the evidence of the applied standards,</li> <li>• the evidence of plant personnel qualification,</li> <li>• the emergency protection and rescue plan and</li> <li>• the physical protection plan are needed for NPP’s trial operation start.</li> </ul>
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<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p style="text-align: center;"><b>Spain</b> <b>CSN</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><u>Article 14. Request</u></p> <p>The request for prior authorisation shall be accompanied with the following documents:</p> <p>a) Declaration on the needs whose satisfaction is intended, the justification for the installation and the site chosen.</p> <p>b) Descriptive report. This report shall consist of a description of the fundamental elements that shall be comprised by the installation, and in general, must include the basic information on the installation, the technology that is to be used, the prior supply plan and the provisions for its dismantling.</p> <p>c) Construction draft project. Phases and execution deadlines. Prior economic study regarding the financial investments and the expected costs.</p> <p>d) Site characterisation study, and of the site's area of influence, including sufficient data on the site parameters that may affect nuclear safety and radiological protection, including those of a demographic and ecological nature, as well as those activities related to land use and planning.</p> <p>e) The organisation foreseen by the requesting party in order to supervise the project and to guarantee quality during construction.</p> <p>f) Description of the preliminary activities and infrastructure work that are expected to be carried out once the prior authorisation is granted and before requesting the construction authorisation.</p> <p><u>Article 15. Processing</u></p> <p>1. Once the request for prior authorisation has been received, the Ministry of Industry and Energy shall present a copy of this to the respective Government Delegation to initiate the public information period, that shall begin from the moment of publication in the "Official State Gazette", and in the corresponding Autonomous Community Gazette of a public announcement in which the aim and main characteristics of the installation shall be defined. In the announcement, mention shall be made of the fact that the persons and bodies that consider themselves affected by this project may present, within thirty days, and before the corresponding Government Delegation, writs of allegations that they consider appropriate.</p> <p>2. The public information process shall be carried out together with that foreseen for the study of environmental impact in its specific regulation.</p> <p>3. Once the thirty-day period for public information has elapsed, the Government Delegation shall carry out the relevant checks, both regarding the</p>

	<p>documents handed over as to the writs of allegations, and shall present its report regarding both. It shall send the dossier to the Ministry of Industry and Energy, and a copy of it to the Nuclear Safety Council.</p> <p>Article 16. Reports</p> <p>The Ministry of Industry and Energy, before awarding the corresponding authorisation, shall compile reports from all the affected public administrations and institutions, as well as from other Ministries, as long as the nature of the aforementioned authorisation should require them.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>Construction authorisation</b></p> <p><u>Article 17.</u> Request</p> <p>The request for the construction authorisation shall be accompanied with the following documents:</p> <ol style="list-style-type: none"> <li>a) General project for the installation.</li> <li>b) Acquisition program that shall include a list of the elements, equipments and their origin.</li> <li>c) Budget, funds, execution deadlines and technical collaboration regime.</li> <li>d) Economic study, that shall update the one presented together with the request for prior authorisation.</li> <li>e) Preliminary safety study, which must include: <ol style="list-style-type: none"> <li>1°. Description of the site and its surrounding area, with current data on the parameters that may affect nuclear safety and radiological protection, including those of a demographic, ecological, land and water use type, and all the data that may contribute to a better understanding of the site, as well as the monitoring and verification plans for the site's representative basic parameters.</li> <li>2°. Description of the installation, in which the criteria followed for the design of those components or systems upon which the safety of the installation depends shall be included.</li> <li>3°. Analysis of foreseeable accidents and their consequences.</li> <li>4°. Analytic radiological survey, which theoretically estimates the potential radiological impact of the installation on the population and the environment.</li> <li>5°. Update of the organisation foreseen by the requesting party to supervise the development of the project and to guarantee quality during the construction phase.</li> <li>6°. Foreseen organisation regarding the future exploitation of the installation, and the preliminary training program for the exploiting personnel.</li> <li>7°. Preoperational environmental radiological monitoring program, taking as a base the conclusions obtained in the analytic radiological survey that permits the establishment of a reference level or radiological background of the monitored area.</li> <li>8°. Quality guarantee program for the construction.</li> </ol> </li> </ol>

	<p>f) Technological, economic and financial provisions for dismantling and closure.</p> <p>g) Administrative authorisations and awards that must be issued by other Ministries and public administrations, or the documents that accredit the fact of having requested them, with all their necessary requirements.</p> <p><u>Article 18. Prenuclear tests</u></p> <p>During the construction and assembly of nuclear installations, and before proceeding to the charging of the nuclear fuel, or the admission of nuclear substances into the installation, the title-holder of the authorisation must carry out a prenuclear test program, that shall include tests, verifications and check-ups to be carried out on the different systems that are contained in the installation.</p> <p>The goal of the aforementioned prenuclear test program is to accredit the adequate behaviour of the equipment or parts that the installation comprises, both in terms of nuclear safety and radiological protection, as with industrial standards and techniques that may be applicable.</p> <p><u>Article 19. Approval and execution</u></p> <p>1. The prenuclear test program shall be proposed by the title-holder of the authorisation. The Directorate-General of Energy, following the report of the Nuclear Safety Council, before its execution, must approve this program, together with the technical conditions of each test.</p> <p>2. The execution of the tests and verifications shall take place under the responsibility of the title-holder of the authorisation. The procedures through which this shall be executed, as well as the obtained results, shall be duly documented. The Directorate-General of Energy, following the report from the Nuclear Safety Council, shall signal, within the prenuclear test program, the tests and verifications that must be carried out in the presence of the inspection of the Nuclear Safety Council and the Ministry of Industry and Energy.</p> <p>3. The results of the prenuclear tests shall be presented to the Directorate-General of Energy and the Nuclear Safety Council, for their analysis before the exploitation authorisation can be granted.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>Operating authorisation</b></p> <p><u>Article 20. Request</u></p> <p>1. The request for the exploitation authorisation must be accompanied with the following documents, that shall in any case update the content of those presented when requesting the construction authorisation:</p> <p>a) Safety study. This shall include the necessary information to perform an analysis of the installation from the perspective of nuclear safety and radiological protection, as well as an analysis and evaluation of the risks deriving from the operation of the installation, both in its normal operating conditions as well as in accident situations. Specifically, the documents must refer to the following issues:</p> <p>1°. Complementary data, obtained during construction, regarding the site and</p>

	<p>its characteristics.</p> <p>2°. Description of the installation as it has been constructed, and of the processes that are to take place within it. A description of the nuclear, and non nuclear, instruments, of the control and protection systems, of the buildings or contention structures, of the auxiliary systems, of the collection and disposal systems for radioactive waste, and any other system or component that is significant for the safety of the installation, shall be included.</p> <p>3°. Analysis of foreseeable accidents deriving from the malfunction of elements and apparatus, operational mistakes, or of external agents to the installation, and their consequences.</p> <p>4°. Analytic radiological study of the installation.</p> <p>5°. Operational environmental radiological monitoring program, with the aim of evaluating the impact deriving from its operation.</p> <p>b) Operational regulation. This document shall contain the following information:</p> <p>1°. Roster of working positions with nuclear responsibilities, from the director or head of the operation, to the supervisors, operators, persons in charge of radiological monitoring and those who carry out the nuclear tests.</p> <p>2°. Organisation. Shall specify the organisation and functions of the personnel attached to the installation, both in normal operating conditions and in emergency situations. The basic training programmes for the installation's personnel shall be defined, both for those with licences and those without, and the technical competences for each specific mission shall be established, as well as those further training programs that are considered to be appropriate.</p> <p>3°. Operational standards, both in normal conditions and in accidents. These standards and the procedures that develop them must refer to the whole of the installation and the different systems that are comprised within it.</p> <p>c) Technical operational specifications. These shall contain the limit values of those variables that affect safety, the limits for the actions of the automatic protection systems, and the minimum operative conditions, the programme for revisions, calibration and periodic inspections of the systems and components and operative control.</p> <p>d) The in-site emergency plan. This shall detail the measures foreseen by the title-holder and the allocation of responsibilities in accident situations, with the aim of mitigating their consequences, to protect the installation's personnel, and to notify its occurrence immediately to the competent organs, including the initial evaluation of the circumstances and the consequences of the situation. Furthermore, it shall establish the actions foreseen by the title-holder to offer assistance in off-site protection interventions, according to the off-site emergency plans that the competent organs may establish, when the Nuclear Safety Council so determines.</p> <p>e) Nuclear test program. This shall describe the aforementioned tests, the specific techniques, and expected results. For each test, the procedure to be followed must be detailed, together with the data to be gathered in its execution and the maximum and minimum values expected for the variables of</p>
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interest during the execution of the tests. It shall also include the safety criteria applicable for the performance of these tests.

f) Quality guarantee manual. This shall establish the scope and content of the quality program that is applicable to the tests and the exploitation of the systems, structures and components related to safety, as well as the design, production, construction, tests and exploitation of their modifications.

g) Radiological protection manual. This document must include the installation's radiological protection standards.

h) Plan for the management of radioactive waste, that shall include, when appropriate, the contracts established with companies that manage waste, and which shall include, among other factors, a system for their possible declassification.

i) Final economic study, that shall analyse the fulfilment of the economic and financial forecasts, and which shall express the total and effective cost of the installation.

j) Dismantling and closure forecasts, in which the final foreseen destination for the generated waste shall be determined, and which shall include the cost analysis, as well as the economic and financial forecasts to ensure closure.

#### Article 21. Nuclear tests

1. The exploitation authorisation shall be awarded, provisionally, for the time period that is necessary to carry out the nuclear test program, and to analyse the results.

2. The nuclear test program shall include all the tests, verifications, and check-ups to be carried out on each one of the different systems that comprise the installation, from the moment of the initial charge of nuclear fuel, or from the introduction of nuclear substances into the installation, until it becomes fully operational, including those that must be carried out in nuclear power plants and nuclear reactors operating at a hundred percent of their authorised thermal power.

What is established in Article 19, shall be applicable to the nuclear test program.

3. The official representation of the Nuclear Safety Council, during the performance of the tests, shall have the capacity to suspend its execution, at any moment, if in its opinion, the continuation could prove to be potentially dangerous. In such a case, the Nuclear Safety Council shall adopt the measures that may be required, informing the Directorate-General of Energy of them.

#### Article 22. Result of the tests

Once the nuclear test program is completed, the title-holder of the authorisation must present the Directorate-General of Energy, and the Nuclear Safety Council with:

a) The results of the nuclear test program.

b) A proposal for modifications in the operational technical specifications, if, as a result of the nuclear tests carried out, their incorporation is considered to

	<p>be advisable.</p> <p><u>Article 23. Awarding</u></p> <p>The Nuclear Safety Council shall present a report to the Ministry of Industry and Energy, both on the results of the tests as well as on any modifications, whose introduction may be necessary, together with the conditions for the renewal of the exploitation authorisation for the period it establishes.</p> <p>The Ministry of Industry and Energy, shall then grant the new exploitation authorisation for the corresponding length of time.</p> <p><u>Article 24. Modifications in the conditions</u></p> <p>The Directorate-General of Energy, at its own initiative, or following the Nuclear Safety Council's request, within their respective competences, may require of the title-holder of an exploitation authorisation the introduction of new conditions or the alteration of those already imposed within the conditions of the existing authorisation.</p>
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<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p style="text-align: center;"><b>Switzerland ENSI</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>General License -</p> <p>Documents to be submitted are listed in the Nuclear Energy Ordinance (NEO, Art. 22-23):</p> <ul style="list-style-type: none"> <li>▪ Environmental Impact Report</li> <li>▪ Report on compliance with the area planning requirements</li> <li>▪ Safety Analysis Report</li> <li>▪ Security Report</li> <li>▪ Concept for the Disposal of Radioactive Waste</li> <li>▪ Decommissioning Concept</li> </ul> <p>The NEO, though, does not further specify the contents of each document.</p> <p>The Application has to be submitted officially to the SFOE.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Construction License -</p> <p>Documents to be submitted are listed in the Nuclear Energy Ordinance (NEO, Art. 24-27 and Appendix 4):</p> <ul style="list-style-type: none"> <li>▪ Report on the compliance of the facility with the General License conditions</li> <li>▪ Environmental Impact Report (part 2)</li> <li>▪ Report on the compliance with the area planning requirements (part 2)</li> <li>▪ Safety Analysis Report and additional documents as indicated in NEO App. 4</li> <li>▪ QM program for the project and construction stages</li> <li>▪ Emergency preparedness concept</li> <li>▪ Decommissioning plan or project for the monitoring period and plan for closure of the facility</li> </ul> <p>The ENSI is required by the NEO to specify requirements on the content and format of these documents in regulatory guidelines. These guidelines are currently under development (cf. answer to the next question).</p> <p>The Application has to be submitted officially to the SFOE.</p>

<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Operating License -</p> <p>Documents to be submitted are listed in the Nuclear Energy Ordinance (NEO, Art. 28-31, Appendix 3 and 4):</p> <ul style="list-style-type: none"> <li>▪ Report on the compliance of the facility with the General and Construction License conditions</li> <li>▪ Evidence of insurance cover</li> <li>▪ Safety Analysis Report and additional document as indicated in NEO App. 4</li> <li>▪ Organisational and technical documentation as indicated in NEO App. 3</li> </ul> <p>The ENSI is required by the NEO to specify requirements on the content and format of these documents in regulatory guidelines. These guidelines are currently under development (cf. answer to the next question).</p> <p>The Application has to be submitted officially to the SFOE.</p>
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<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p style="text-align: center;"><b>United Arab Emirates FANR</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Licence applications are required for a licence to select site, a licence to prepare site, a limited construction licence (for manufacture of long-lead items)</p> <p>Regulations have been drafted covering the limited construction licence. The requirements for the other two licences will be defined in official correspondence with the applicant.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>A licence application is required for a licence to construct.</p> <p>Regulations are in place defining the general and technical content of the application.</p> <p>The principal document to be submitted by the applicant is a Preliminary Safety Analysis Report which integrates all needed safety, security and safeguards information.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>An application is required for a licence to commission and operate.</p> <p>Regulations defining the content of the application are planned.</p> <p>The principal document to be submitted by the applicant is a Final Safety Analysis Report which updates and completes the PSAR.</p>

<b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b>	<b>United Kingdom ONR</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Documents are presented to other government bodies such as the Environment Agency, the new Infrastructure Planning Commission, and others.</p> <p>Nuclear Directorate will require design information to complete the GDA where this is requested.</p> <p>To issue a NSL, ND requires an application which includes a Safety Management Prospectus that will describe the organisation for safety amongst other things. ND also requires that adequate arrangements are in place to demonstrate compliance with the conditions attached to the NSL. The content of these documents are not prescribed in regulations.</p>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Before construction begins, ND is likely to have specified that a Consent will be required. An adequate pre-construction safety report (PCSR) is normally required to enable this Consent to be given. The content of the PCSR is not prescribed in regulations.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Before active commissioning begins, ND is likely to have specified that a Consent will be required. An adequate pre-commissioning safety report (PComSR) may be required to enable this Consent to be given. In any case, the NSL requires that an adequate safety case is in place. The content of the PComSR is not prescribed in regulations.</p>

<p><b>What documents are submitted? How are they Submitted? Are there regulations that prescribe the content and format of those documents? If so, please provide some detail.</b></p>	<p style="text-align: center;"><b>United States USNRC</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<ul style="list-style-type: none"> <li>• Siting and site evaluation - the applicant submits the Final Safety Analysis Report (FSAR) with the environmental and site evaluation. Some of the information can also be submitted as Topical Reports, but must be references in the FSAR. In 10 CFR 52.17 gives the information required for an ESP.</li> <li>• Design Certification - the applicant submits the FSAR. Some of the information can also be submitted as Topical Reports, but must be references in the FSAR. In 10 CFR 52.47, it gives the information required for a DCD.</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<ul style="list-style-type: none"> <li>• Combined License (COL) – the applicant submits the FSAR and Topical Reports referenced in the FSAR. In 10 CFR 52.77-79 gives the information required for a COL.</li> <li>• During construction ,the Licensee submits all of the test results and inspections required in the licenses.</li> </ul>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>During “commissioning,” the Licensee submits all of the test results and inspections required in the license.</p>

## APPENDIX G

**Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?**

Majority of countries prepare or are preparing the guidance documents for pre-construction, construction and commissioning phases, respectively. Canada, Hungary and UAE refer IAEA guides to prepare the documents.

	Pre construction	Construction	Commissioning
Canada	Yes	Yes	Yes
Czech Republic	Yes	Yes	Yes
Finland	Yes	Yes	Yes
France	Yes	Yes	Yes
Hungary	Yes	Yes	No
Japan	Yes	Yes	Yes
Korea	Yes	Yes	Yes
Poland	No	No	No
Slovakia	No	Yes	Yes
Slovenia	Yes	No	No
Spain	No	No	No
Switzerland	No	Yes	Yes
UAE	Yes	Yes	Yes
UK	Yes	Yes	Yes
USA	Yes	Yes	Yes

**Availability of the guidance documents (Yes: available or to be developed, No: none at this time)**

<p><b>Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?</b></p>	<p style="text-align: center;"><b>Canada CNSC</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b><u>Guidance for proponent:</u></b></p> <p><b>Site Evaluation:</b> RD-346 <i>Site Evaluation for New Nuclear Power Plants</i> and reference IAEA guides related to site evaluation.</p> <p><b>Siting<sup>9</sup>:</b> For <i>License to Prepare Site</i>: Regulations under the <i>Nuclear Safety and Control Act</i>. This will soon be supplemented with a new CNSC guidance document expected to be issued by October 2010 that provides all criteria needed to successfully apply for the license. For the parallel Environmental Assessment (EA) process, guidance is provided in site specific Environmental Assessment Guidelines jointly produced by involved federal departments and endorsed by the Federal Minister of the Environment. The proponent is required to consider these guidelines when submitting EA information to the project specific Review Panel.</p> <p><b>Basic Design:</b> RD-337 Design for New Nuclear Power Plants and a host of other referenced documents and standards contained in RD-337.</p> <p><b>Review Guidance for CNSC Staff:</b></p> <p>For each project, a comprehensive EA and <i>License to Prepare Site</i> Assessment Plan is assembled to coordinate all the review elements in the most efficient order for the project’s specific timeline. Each review element is contained in a document called a Staff Review Procedure (SRP) which is a generic (non site specific) internal document specifying the scope and depth of a specific review for a topical area (e.g. seismic baseline data) The SRP provides high level review instructions such that the review is both process and expert-driven. SRPs are designed to evolve with accumulated knowledge and are routinely revised. The results of the review conducted under the Assessment Plan culminate in recommendations that will be communicated to the Review Panel<sup>10</sup> in a Panel Member Document for consideration in public hearings.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b><u>Guidance for licensee:</u></b></p> <p>Site Evaluation guidance is the same as for pre-construction but also follows provincial and municipal laws as site preparation progresses.</p> <p><b>Guidance for application for License to Construct:</b> Regulations under the <i>Nuclear Safety and Control Act</i> plus various Regulatory Documents</p>

<sup>9</sup> Site selection is not federally regulated in Canada

<sup>10</sup> The review panel members are also appointed as members of the CNSC Commission in order to make a licensing decision regarding the *License to Prepare Site* under the *Nuclear Safety and Control Act*. This is in addition to their duties with regard to making recommendations to the federal Minister of the Environment regarding the Environmental Assessment.

	<p>currently available of the CNSC website. This will soon be supplemented with a new CNSC guidance document expected to be issued by October 2010 that provides all criteria needed to successfully apply for the license. This guidance document includes staff expectations and requirement relating to design information.</p> <p><b>Review Guidance for CNSC Staff:</b></p> <p>For each project, a comprehensive <i>Licence to Construct</i> Assessment Plan is assembled to coordinate all the review elements in the most efficient order for the project's specific timeline. Each review element is contained in a document called a Staff Review Procedure (SRP) which is a generic (non site specific) internal document specifying the scope and depth of a specific review for a topical area (e.g. seismic baseline data) The SRP provides high level review instructions such that the review is both process and expert-driven. SRPs are designed to evolve with accumulated knowledge and are routinely revised. Construction license SRPs are currently under development with a plan to have all documents complete and issued in time for the first <i>License to Construct</i> application in early 2011. The results of the review conducted under the Assessment Plan culminate in recommendations that will be communicated to the Commission in a Commission Member Document for consideration in public hearings.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b><u>Guidance for licensee:</u></b></p> <p>As discussed in the above section related to the <i>License to Construct</i>, guidance and requirements around commissioning activities will be contained in a construction license application guidelines document which will be published by the CNSC in October of 2010. More detailed Phase B<sup>11</sup> commissioning criteria and requirements will be contained in an operating license application guidelines document which will be published by the CNSC in mid to late 2011.</p> <p>As discussed in the above section related to the <i>License to Construct</i>, Staff will develop Staff Review Procedures for reviewing elements of an application for a <i>License to Operate</i> in 2011 in readiness for the first anticipated application for a <i>License to Operate</i>. As was done for previous licensing phases, all review efforts will be co-ordinated in a site specific Staff Assessment Plan culminating in recommendations that will be communicated to the Commission in a Commission Member Document for consideration in public hearings.</p>

<sup>11</sup> Commissioning for the entire facility performed with fuel in the core.

<p><b>Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?</b></p>	<p><b>Czech Republic SUJB</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>SÚJB guides :</p> <p>Safety Requirements for Design of Nuclear Installation and its verification – in progress</p> <p>Requirements for Deterministic Verification of Nuclear Installation Safety</p> <p>Requirements for Quality Assurance System and Integrated Management System of Licensee of Nuclear Installation</p> <p>Requirements for Documentation for Nuclear Installation Safety Approval – Safety Reports</p> <p>Requirements for Siting of Nuclear Installation</p> <p>SAR content</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>SÚJB guides :</p> <p>Safety Culture (A Report by the International Nuclear Safety Advisory Group) – Examples of work experience</p> <p>Developing Safety Culture In Nuclear Activities - Practical Suggestions to Assist Progress</p> <p>SÚJB Attitude to Non-destructive Testing Use</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>SÚJB guides :</p> <p>Activities of Contractors in Controlled Area of Radioactive Sources Owners. QA Program Example</p> <p>Instructions and Recommendations for Assessment of Reactor Vessel Operating Life and Inside Reactor Parts of NPP VVER</p> <p>Requirements for detection of Primary Circuit Coolant Leakage in Application of LBB (Leak Before Break) Methodology</p> <p>Evaluation of Implementation and Effectiveness of Comprehensive Measures for Fire Safety of NPP</p> <p>Evaluation of Fire Risk Analyses of NPP</p> <p>Acceptability of NPP Risks</p> <p>Principles of Safety Assessment of NPP</p> <p>Acquiring and Qualification keeping for NPP Personnel</p> <p>Conception for New Fuel Types Assessment in CZ – Licensing Requirements for the Fuel and Core Design</p> <p>Manual for Professional Training of Selected Personnel of Nuclear Installations in CZ</p>

Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?	<b>Finland STUK</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Please see answers above. YVL guides present documentation requirements to the licensees. If needed, focusing information is given with decisions and during meetings between licensee and STUK (and vendors). In addition to YVL guides STUK have internal procedures called “YTV guides” where review process is described in general level. Project specific inspection procedures are written when needed, for instance for reviewing of PSAR or how to review and accept system descriptions during construction of OL3.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	See above.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	See above.

Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?	France ASN
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Technical guidelines for the design and construction of the next generation of PWR nuclear power plant: this document describes the main safety objectives, safety requirements and some safety features that the PWR must be compliant with.</p> <p>Decree 2007-1557 of 2 November 2007 concerning basic nuclear installations and the supervision of the transport of radioactive materials with respect to nuclear safety : this document describes the content of the application files and the licensing process</p> <p>Ministerial Order of 12 December 2005 concerning nuclear pressure equipments : this documents specific the design requirement for nuclear pressure equipment</p> <p>Decree No. 2007-534 of 10 April 2007 authorising the creation of the “Flamanville 3”, basic nuclear installation including an EPR nuclear power plant at Flamanville (Manche Department): this document specifies some regulatory and Flamanville 3 specific requirements</p> <p>Decision No. 2008-DC-0114 of 26 September 2008 by the French Nuclear Safety Authority setting forth specific requirements to be met by Électricité de France – Société anonyme (EDF-SA) at the Flamanville nuclear power generating station regarding the design and construction of the Flamanville-3 (INB No. 167) reactor and the operation of Flamanville-1 (INB No. 108) and Flamanville-2 (INB No. 109) reactors: this document specifies some regulatory and Flamanville 3 specific requirements</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Technical guidelines for the design and construction of the next generation of PWR nuclear power plant: this document describes the main safety objectives, safety requirements and some safety features that the PWR must be compliant with.</p> <p>Decree 2007-1557 of 2 November 2007 concerning basic nuclear installations and the supervision of the transport of radioactive materials with respect to nuclear safety: this document describes the content of the application files and the licensing process</p> <p>Ministerial Order of 12 December 2005 concerning nuclear pressure equipments : this documents specific the design requirement for nuclear pressure equipment</p> <p>Decree No. 2007-534 of 10 April 2007 authorising the creation of the “Flamanville 3”, basic nuclear installation including an EPR nuclear power plant at Flamanville (Manche Department): this document specifies some regulatory and Flamanville 3 specific requirements</p> <p>Decision No. 2008-DC-0114 of 26 September 2008 by the French Nuclear</p>

	<p>Safety Authority setting forth specific requirements to be met by Électricité de France – Société anonyme (EDF-SA) at the Flamanville nuclear power generating station regarding the design and construction of the Flamanville-3 (INB No. 167) reactor and the operation of Flamanville-1 (INB No. 108) and Flamanville-2 (INB No. 109) reactors: this document specifies some regulatory and Flamanville 3 specific requirements</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Decree 2007-1557 of 2 November 2007 concerning basic nuclear installations and the supervision of the transport of radioactive materials with respect to nuclear safety: this document describes the content of the application files and the licensing process</p> <p>Decree No. 2007-534 of 10 April 2007 authorising the creation of the “Flamanville 3”, basic nuclear installation including an EPR nuclear power plant at Flamanville (Manche Department): this document specifies some regulatory and Flamanville 3 specific requirements</p> <p>Future commissioning authorisation, with the specific ASN decisions concerning this period of time</p>

<p><b>Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?</b></p>	<p style="text-align: center;"><b>Hungary HAEA</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>In the nuclear safety licensing process, the HAEA provides guidance for applicant or licensee.</p> <p>The guidance N. 1.1 „Documentation for site licensing of nuclear power plant” gives a method of preparing application for nuclear safety site license.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The contents of Preliminary Safety Analysis Report was a part of the NSR vol.1.</p> <p>The substitution of this chapter with a detailed guideline is under way</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>None at this time.</p>

Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?	Japan NISA/JNES
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>-The draft Environmental Impact Statement (draft EIS)</b></p> <p>NISA makes use of review manual, which is open to public, for their review.</p> <p>Licensee may refer the manual when it prepares the document.</p> <p><b>- Application format for a license for establishment</b></p> <p>For the review of application, the regulatory guides listed below and other documents established by the NSC are used. These documents are open to public and may be referred by licensee.</p> <ul style="list-style-type: none"> <li>✓ Review Guide for Nuclear Reactor Siting</li> <li>✓ Review Guide for Safety Design of Light Water Nuclear Power Reactor Facilities</li> <li>✓ Review Guide for Safety Evaluation of Light Water Nuclear Power Reactor Facilities</li> <li>✓ Guide for Dose Objective Around Light Water Nuclear Power Reactor Facilities</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>- Construction Plan for establishment of electric facilities</b></p> <p>No guidance document is prepared by the regulatory body.</p> <p>But the acceptance criteria to evaluate the conformity of technical standard are publicly available.</p> <p><b>- Welding check</b></p> <p>NISA issues guideline of welding inspection that describes the way of the licensee's welding inspection and interpretation of requirement of law.</p> <p>JNES provides the format of the application to the licensee.</p> <p>JNES makes use of standard review plan, which is not open to public.</p> <p><b>- Design approval and inspection for Fuel Assembly</b></p> <p>The acceptance criteria are based on technical standard and so on.</p>

<p>Commissioning:</p> <ul style="list-style-type: none"><li>• Non-nuclear testing</li><li>• Nuclear testing</li></ul>	<p><b>- Operation Plan</b> The Ordinance on the Establishment, Operation, etc. of Commercial Nuclear Reactors, article 4 prescribes the format.</p> <p><b>- Operational Safety Program</b> NISA makes use of its review manual, which is open to public. The manual is provided to licensee. In addition, reference document for the review, which is open to public, is prepared by JNES.</p>
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Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?	<b>Korea MEST/KINS</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Article 12 (Standards for Permits) of the Atomic Energy Act(AEA) stipulates requirements for construction of nuclear power reactors and related facilities, with more detailed regulatory requirements provided in the Regulation on Technical Standards for Nuclear Reactor Facilities, etc. and the Regulation on Technical Standards for Radiation Safety Control, etc. The 82 MEST Notices prescribe specific acceptance criteria for technical details.</p> <p>In accordance with the Article 311 (Approval, etc. of Rules for Entrusted Regulatory Activities) of Enforcement Decree of AEA and Rules for Entrusted Regulatory Activities, KINS conducts safety review, inspection, and research and developments on regulation and guides that have been delegated to KINS.</p> <p>KINS has established safety review guidelines for each important review activity, and these guidelines are made available to the applicants or licensee. For the new reactor application, the Safety Review Guidelines for PWR Nuclear Power Plants (KINS/GE-N001) is developed and used its review</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	As above.
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	As above.

<p><b>Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?</b></p>	<p><b>Poland PAA</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>President of PAA is entitled to issue non-binding technical and organisational recommendations concerning nuclear safety and radiological protection.</p> <p>Set of regulatory guides focused on NPPs is under development.</p> <p>First topic to be covered refers to site characterisation issues and is under preparation in cooperation with Institute of Geophysics of Polish Academy of Sciences.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	

Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?	<b>Slovakia UJD</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	None at present.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Beside the relevant IAEA documents, UJD have been developing a set of safety guides, which is a continuous process. Completed safety guides for period of commissioning (as well as operation):</p> <p>BNS II.5.5/2009 Testing methods to be applied to the assessment of mechanical properties and chemical composition of base metals and welded joints of nuclear power plants equipments' components of VVER 440 type.</p> <p>BNS II.5.6/2009 Specifications of the quality requirements to all: design, manufacture, construction, maintenance and repairs of the machinery and technological components of nuclear power plant equipments of the VVER 440 type.</p> <p>BNS II. 5.3/2007 Welding materials for welding at nuclear power installations, technical requirements and rules of choice.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><u>BNS I.7.4/2008</u>      Periodic safety review on NPP</p> <p><u>BNS II.1.1/2008</u>      Accounting and control of nuclear materials</p> <p><u>BNS I.11.1/2008</u>      Requirements on the deterministic safety analyses</p> <p><u>BNS I.01.2/2008</u>      Scope and content of the safety report</p> <p><u>BNS I.12.1/2003</u>      Requirements to assure quality of computers information software</p> <p><u>BNS I.4.1/1999</u>      Single failure criterion</p> <p><u>BNS III.4.1/2000</u>      Requirements on UJD SR permit issue for fuel use in VVER 440 reactors</p> <p><u>BNS I.9.1/2003</u>      Safety of nuclear facilities during decommissioning</p> <p><u>BNS III.4.3/2000</u>      Requirements on assessment of fuel loading for VVER 440 reactors</p> <p><u>BNS I.6.2/2000</u>      UJD SR requirements for chapt. 4 of Safety</p>

	Analysis Report "Core design"
<u>BNS II.3.1/2007</u>	Evaluation of acceptability of faults detected during the operation inspection of nuclear installation selected equipment
<u>BNS I.9.2/2001</u>	Ageing management of nuclear power plants - requirements
<u>BNS II.5.2/2007</u>	Supervision of welding and quality of welded joints at nuclear power Installations- requirements Požiadavky
<u>BNS II.3.3/2007</u>	Metallurgical products and spare parts for nuclear power plants
<u>BNS III.4.4/2007</u>	Requirements for realisation and evaluation of results of physical tests in start-up process
<u>BNS II.5.4/2004</u>	Qualification of the systems for non-destructive testing in a nuclear power generating
<u>BNS I.8.1/2005</u>	Requirements for Preliminary Plan of Physical Protection and Plan of Physical protection
<u>BNS IV.1.3/2005</u>	Requirements for Design and Operation of Nuclear Spent Fuel Storage Facility
<u>BNS I.2.5/2005</u>	UJD SR requirements on chapt. 16 of Safety analysis report "Limits and Conditions"
<u>BNS II.3.4/2006</u>	Corrosion monitoring of safety significant components of nuclear facilities
<u>BNS I.4.2/2006</u>	Requirements for Elaboration of Probabilistic Safety Analyses
<u>BNS II.2.1/2007</u>	Requirements on Fire Safety Assurance of Nuclear Power Plants in view of Nuclear Safety

Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?	<b>Slovenia SNSA</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	On the basis of Ionising Radiation Protection and Nuclear Safety Act guidance, the draft document “Guide on the scope and content of the Special Safety Analysis” is prepared.  The SNSA also proposes the content of EIA in the part related to radiation and nuclear safety.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	None at this time.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	None at this time.

<p><b>Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?</b></p>	<p><b>Spain CSN</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Among the documentation that can be browsed on our webpage <a href="http://www.csn.es">www.csn.es</a> there is not specific documentation applicable for the siting, construction and operation licenses.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	

Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?	<b>Switzerland ENSI</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	General license - ENSI's responsibility area: Apart from the Nuclear Energy Act and Ordinance, there are no specific ENSI guidelines that give guidance to the applicants for this licensing step. The ENSI's requirements and expectations were discussed with the potential applicants in a series of meetings under the coordination of the SFOE.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Construction license - ENSI's responsibility area: Apart from the Nuclear Energy Act and Ordinance there are planned specific ENSI guidelines that will give guidance to the applicants for this licensing step: ENSI-A02 guideline: Submittal documents for the Construction and Operating License as well as for the successive permits (for clearance of the hold points). ENSI-G06 guideline: Documentation requirements for construction.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	Operating license ENSI's responsibility area: Apart from the Nuclear Energy Act and Ordinance there are planned specific ENSI guidelines that will give guidance to the applicants for this licensing step: ENSI-A02 guideline: Submittal documents for the Construction and Operating License as well as for the successive permits (for clearance of the hold points). ENSI-G09 guideline: Documentation requirements for operation.

<p><b>Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?</b></p>	<p style="text-align: center;"><b>United Arab Emirates FANR</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Regulatory Guides have been drafted for site evaluation based on the IAEA guides associated with safety series standard NS-R-3</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Regulatory guides are planned for design based on the corresponding IAEA guides under NS-R-1. Guides of the NPP vendor country of origin may also be adopted.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Regulatory guides are planned for operation based on the corresponding IAEA guides under NS-R-2. Guides of the NPP vendor country of origin may also be adopted.</p>

<b>Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?</b>	<b>United Kingdom ONR</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The Nuclear Directorate website, <a href="http://www.hse.gov.uk/nuclear/index.htm">www.hse.gov.uk/nuclear/index.htm</a>, provides a source of material for actual and potential operators of a NPP. The document “The Licencing of New Nuclear Installations,” describes the licensing process in some detail and provides further information to questions in this questionnaire.</p> <p>For the design, the Safety Assessment principles that ND staff use are also available as well as the Technical Assessment Guides.</p>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	As above.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	As above.

<p><b>Do you provide guidance documents to the applicant? What guidance documents do you use to review the documents?</b></p>	<p><b>United States USNRC</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<ul style="list-style-type: none"> <li>• ESP and DC - The applicant can use Regulatory Guide (RG) 1.206 for guidance. The staff uses the SRP's to review the application but the applicant may use it as well to make the process of review more efficient.</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<ul style="list-style-type: none"> <li>• COL - The format for the FSAR and guidance on the review can be found in the SRP's. The applicant can use the Regulatory Guide (RG) 1.206, which explains what the staff will be reviewing. The Staff uses both SRP's and RG 1.206 to review the application.</li> <li>• During Construction – the applicant can use RG 1.215 as guidance for submitting the necessary documentation.</li> </ul>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<ul style="list-style-type: none"> <li>• During “commissioning” – the applicant can use RG 1.215 as guidance for submitting the necessary documentation.</li> </ul>

## APPENDIX H

### **What is the scope of the safety assessment? Who performs it?**

For all of the phases of the safety assessment, the participant regulators are involved and perform some type of oversight of the project. In some cases, there is a heavy reliance on outside organisations (technical support organisations (TSOs)) to provide detailed technical analysis or assessment of the operator's safety information. The intent of the scope portion of this question was to more fully understand the key technical areas regulator focus on during their reviews of new NPP applications. The responses herein did not delve into the detailed areas beyond the pre-construction environmental and siting phases. Phase 2 of this report (Design) should provide additional detail as to the specific technical areas and the depth of review performed during licensing.

#### ***Pre-Construction***

Overall, there is a significant level of agreement on the scope of the preconstruction reviews. Most members perform an environmental assessment and some level of site characterisation. Topics include but are not necessarily limited to, site geography and demography, near industrial, transport and military objects, meteorology, hydrology, geology, seismology and geotechnical aspects. External hazards impact e.g. earthquake, extreme meteorological conditions, fire, airplane impact,. In addition basic reactor design parameters are developed to assure the design is enveloped by the site(e.g., source term, power outputs)

#### ***Construction***

The operator (licensee, applicant) prepares a safety assessment consistent with the approval they are seeking. For the most part this approval is a construction approval, however in two cases (USA Part 52 license and Japan) perform a complete review of the design at this time and issue an approval to construct with a conditional provision for operation. The conditional provision is focused on verification of the as built conformance of the NPP with the approved design documents. The scope of this review focuses on the demonstration of the design of the nuclear island and the postulated safety performance of the nuclear systems (including systems that support the safety functions). Most regulators observe and or review the initial testing of the NPP and the results of the pre-operational test programs including non-nuclear and nuclear testing.

#### ***Commissioning***

The operator (licensee) provides a Safety Analysis Report (SAR) that demonstrates the safety case for the nuclear power plant. All regulators either perform or have performed a review of this SAR. In some cases, the review is performed with assistance from a technical support organisation and in the case of Slovenia, the opinion of the TSO (or an authorised expert in radiation and nuclear safety) is mandatory for approval.

<p><b>What is the scope of the safety assessment? Who performs it?</b></p>	<p><b>Canada CNSC</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>For the project Environmental Assessment: Assessment covers all issues around public and worker health, safety and the environment and is driven, from a project standpoint by CNSC Environmental Assessment Staff. Federal and provincial departments, as needed are involved where their expertise is needed to drive reviews around specific technical areas where CNSC Staff expertise is not available. (e.g. review of specific seismic data, review of effects on local fish species etc.) Review of the proponent’s proposed bounding environmental envelope (which is expected to utilise basic design information for the technologies being considered) for the project over its full lifecycle is performed at this stage by CNSC Staff in order to determine whether the site is acceptable for the project’s full lifecycle.</p> <p>For the <i>License to Prepare Site</i>: Site selection case review information from the Environmental Assessment is used by CNSC Staff along with more specific site preparation safety case information. That is to say that once it is known that the site is suitable, plant design information does not play a further role in <i>License to Prepare Site</i> Safety Case as no plant Structures or Systems are permitted to be constructed on site in this licensing stage. The Safety Case for the <i>License to Prepare Site</i> is based only on site preparation activities.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>In addition to the information already provided in the Environmental Assessment (EA) and <i>License to Prepare Site</i>, the applicant for the <i>License to Construct</i> is expected to demonstrate continued ongoing site characterisation efforts and to continue to link the results to site safety case for the facility. (The facility design must be chosen at this stage) As part of submissions for the <i>License to Construct</i>, the applicant is expected to submit a site specific Preliminary Safety Analysis Report (PSAR) that demonstrates the facility will remain within the EA bounding envelope for the full lifecycle of the facility.</p> <p>The applicant is expected to demonstrate they will comply with all applicable regulations (related to application for the license) per the <i>Nuclear Safety and Control Act</i> to a level of detail sufficient to enable the Commission to reach a final licensing decision in the public hearings for the license.</p> <p>CNSC Staff perform the entire licensing review for the <i>License to Construct</i>, using external contractors and / or other federal / provincial agencies where expertise is needed. This includes a review of the overall commissioning plan. The results of the review are then sent as Staff Recommendations to the Commission for consideration at the public hearings. The <i>License to Construct</i> may contain appropriate hold points for CNSC compliance activities such as witnessing tests.</p>

	<p>During Construction, a combination of CNSC field compliance officers, technical specialists and construction specialists (in addition to provincial and municipal agencies within their areas of jurisdiction) will perform field compliance activities to confirm compliance with the conditions of the licence. The licensee will also have a license condition that addresses reporting to the regulator.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Non-Nuclear (Phase A Testing) is covered under the <i>License to Construct</i>. (see above for further details)</p> <p>Nuclear Testing (Phase B) is covered under the <i>License to Operate</i>.</p> <p>As part of submissions for the <i>License to Operate</i>, the applicant is expected to submit a site specific Final Safety Analysis Report (FSAR) that demonstrates the full safety case of the facility and that the facility will remain within the EA bounding envelope for the full lifecycle.</p> <p>CNSC Staff perform the entire licensing review for the <i>License to Operate</i>, using external contractors and / or other federal / provincial agencies where expertise is needed. This includes a review of the all activities remaining in the commissioning plan. The results of the review are then sent as Staff Recommendations to the Commission for Consideration at the public hearings. The <i>License to Operate</i> will contain appropriate hold points for CNSC compliance activities such as witnessing tests during Phase B commissioning.</p>

<b>What is the scope of the safety assessment? Who performs it?</b>	<b>Czech Republic SUJB</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Assessment and inspections are performed by SUJB inspectors with support of contracted experts</p> <p>Geography and demography</p> <p>Near industrial, transport and military objects</p> <p>Meteorology</p> <p>Hydrology</p> <p>Geology, seismology and geotechnical aspects</p> <p>Containment and other safety related constructions – external hazards impact e.g. earthquake, extreme meteorological conditions, fire, airplane drop, tightens functions of safety barriers</p> <p>Basic design features – reactor type, power output, contractor</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>NPP design and project including drawings, descriptions, analyses, calculations results, components qualification, prove the compliance with set criteria, QA of suppliers and their control by utility,</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Additional information and project changes, procedures and test programs, tests results,</p>

What is the scope of the safety assessment? Who performs it?	<b>Finland STUK</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>Decision in Principle (DIP)</b></p> <p>STUK prepares the preliminary safety assessment. Areas of STUK review see answers above.</p>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>Construction license</b></p> <ul style="list-style-type: none"> <li>• STUK prepares the safety assessment. STUK uses technical support organisations for example to perform accident and transient analyses. The main documents (and areas of review) are presented in answers above.</li> </ul> <p><b>During construction</b></p> <p>STUK reviews and approves the detailed design of systems, structures and components in safety classes 1 and 2. In other safety classes inspection organisations (IOs) are used. Same applies to inspections performed during manufacturing and installations.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>Operating license</b></p> <ul style="list-style-type: none"> <li>• STUK prepares the safety assessment. STUK uses technical support organisations for example to perform accident and transient analyses. The main documents (and areas of review) are presented in answers above.</li> </ul> <p><b>Commissioning</b></p> <p>STUK evaluates commissioning programs and procedures. Aim is to ensure that plant fulfils its safety requirements and behave as expected during normal and transient situations.</p>

What is the scope of the safety assessment? Who performs it?	France ASN
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>ASN with its TSOs is in charge of site evaluation and basic design assessment on the basis of the applicant files. The scope covers all the interests mentioned in I of article 28 of the Act of 13 June 2006: nuclear safety, radiation protection, civil security actions in the event of an accident, public health and salubrity or protection of nature and the environment.</p> <p>The prevention and fight against malicious acts is assessed by a specific governmental office.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>ASN with its TSOs is in charge of site evaluation and basic design assessment on the basis of the applicant files. The scope covers all the interests mentioned in I of article 28 of the Act of 13 June 2006: nuclear safety, radiation protection, civil security actions in the event of an accident, public health and salubrity or protection of nature and the environment.</p> <p>The prevention and fight against malicious acts is assessed by a specific governmental office.</p> <p>For on-site activities, in the nuclear installation perimeter, ASN is in charge of health and safety.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>ASN with its TSOs is in charge of site evaluation and basic design assessment on the basis of the applicant files. The scope covers all the interests mentioned in I of article 28 of the Act of 13 June 2006: nuclear safety, radiation protection, civil security actions in the event of an accident, public health and salubrity or protection of nature and the environment.</p> <p>The prevention and fight against malicious acts is assessed by a specific governmental office.</p> <p>ASN is in charge of health and safety.</p>

What is the scope of the safety assessment? Who performs it?	Hungary HAEA
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The Environment Inspectorate assesses the preliminary documentation, which is regulated by decree No. 314/2005.</p> <p>After this, the detailed environmental impact assessment (EIA) is assessed in accordance with the same decree No. 314/2005,</p> <p>The document for nuclear safety site license is assessed by HAEA according to the government decree No. 89/2005.</p> <p>The details of this assessment will be written in special procedure according to Quality Manual of the HAEA.</p>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The safety requirements on the construction of new reactors are elaborated by HAEA. After due discussions, they will be issued as an attachment to the governmental decree No.89/2005.</p> <p>The procedure for the assessment of Preliminary Safety Analysis Report will be written on the basis of the assessment of FSAR of Paks NPP.</p> <p>The procedure of inspections during construction phase haven't been elaborated yet.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>The procedure for the FSAR of Paks NPP covers the assessment steps.</p> <p>The procedure of inspections during commissioning phase haven't been elaborated yet.</p>

What is the scope of the safety assessment? Who performs it?	Japan NISA/JNES
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>-The draft Environmental Impact Statement (draft EIS)</b></p> <p>To make sure current status of the environment and measures to protect it. (Assessments on air, water, and soil pollution due to radioactive substances are exempted since they are performed under the Reactor Regulation Law)</p> <p>METI conducts the review, soliciting experts' opinion.</p> <p><b>-The application format for a license for establishment</b></p> <p>NISA conducts an examination to determine the adequacy of the site (considering savior weather and earthquake), and the basic design of structure and equipment from the points of prevention of radiological hazards, focusing on the evaluation of the safety of the reactor core and the radiation exposure due to establishment of the nuclear installation. In addition, NISA confirms that the nuclear installation should be used for peaceful purpose and in line with the planned development and utilisation of nuclear energy, and the applicant has sufficient technical capability to ensure safety and sufficient financial basis to execute the plan.</p> <p>JNES supports NISA technically.</p> <p>The Minister of METI consults with the AEC and the NSC on the results of its examination. During the review process of METI's results, the NSC reviews independently focusing on safety problems specific to the installation, and gives its views to the Minister of METI. The AEC also reviews the items other than those NSC reviews independently, and gives its views to the Minister of METI. The Minister of METI considers these views, asks for the consent of the Minister of MEXT, and then issues the license.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p><b>- Construction Plan for establishment of electric facilities and Pre-service examination</b></p> <p>NISA examines the Construction Plan to confirm that the detailed design of electric facilities is consistent with the basic design and design policies approved at the stage of licensing for establishment, and is in conformity with the technical standards based on the Electricity Utilities Industry Law.</p> <p>After obtaining an approval or notification of the Construction Plan, the licensee shall undergo the Pre-Service Inspection by NISA at each process of construction and at the completion of all construction works, which confirms that construction is conducted in accordance with the construction plan and is in conformity with the technical standards.</p> <p>Part of Pre-Service Inspection items are done by JNES.</p> <p><b>- Design approval and inspection for Fuel Assembly</b></p> <p>NISA performs the design review and inspection to identify the conformity to technical standard, for the shake of verifying the integrity of fuel assembly. JNES is also involved in the inspection for part of items.</p>

	<p><b>- Welding check</b></p> <p>Welding check is performed by JNES to confirm the licensee's QA system for the welding and conformity of technical standards.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p><b>- Operation Plan</b></p> <p>NISA reviews licensee's annual operational plan. (licensee do not need to obtain approval)</p> <p><b>- Operational Safety Program</b></p> <p>NISA reviews licensee's operational safety program to confirm safety during the operation, such as procedures of operational management, operational limits and safety education of personnel and so on.</p> <p>JNES supports NISA technically for part of items.</p>

What is the scope of the safety assessment? Who performs it?	<b>Korea MEST/KINS</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>Safety reviews and assessment for nuclear power reactors and related facilities have been entrusted to the Korea Institute of Nuclear Safety (KINS) as per Article 111 (Delegation of Authority) of the AEA, and KINS accordingly reviews and assesses whether the submittals comply with the relevant regulatory requirements.</p> <p>KINS develops safety review guidelines that prescribe acceptance criteria, and review procedures, etc. for nuclear reactor facilities and activities, and applies them during a safety review and assessment. In KINS, the reviews and assessments for authorisation of nuclear reactors and related facilities are primarily carried out by the nuclear regulation division having regulation project managers, and 11 technical departments. These technical departments are engaged in both review and inspection activities, and as such, the connectivity between two different types of regulatory activities has been strengthened.</p> <p>To engage in a certain phase of construction work before obtaining a Construction Permit, the applicant for Early Site Approval submits to MEST an application for Early Site Approval with a Site Investigation Report and a Radiation Environmental Report. MEST then decides whether to grant the early site approval based on the results of the KINS Staff's safety review of the early site approval application, which is conducted with regard to adequacy of the site for the nuclear reactor facilities and the associated radiological impact analysis.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The applicant for a Construction Permit of nuclear reactor facilities should submit an application to MEST with attached documents, including a Radiation Environmental Report, a Preliminary Safety Analysis Report, Quality Assurance Program, etc. MEST then decides whether to grant the Construction Permit through deliberation of the Nuclear Safety Committee, based on the results of the KINS staff's safety review of the construction permit application.</p> <p>The safety review of the Construction Permit application is focused on ensuring that the safety characteristics of the site of the nuclear reactor facilities and its preliminary design comply with the relevant regulatory requirements and technical guidelines. This review also assesses the preliminary design including the design principles and concepts for the reactor facilities, as well as the methods presented to minimise the associated radiological impact on the environment. The Radiation Environmental Report, submitted when applying for the Early Site Approval and Construction Permit, incorporates the opinions of the local residents of the nuclear power plant areas (called the 'opinions collection areas'), and public hearings should be held if local residents so request.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> </ul>	<p>The applicant for an Operating License should submit an application with attached documents including Technical Specifications for operation, a Final</p>

<ul style="list-style-type: none"><li>• Nuclear testing</li></ul>	<p>Safety Analysis Report, Quality Assurance Program for operation, a Radiation Environmental Report, etc. to MEST. MEST decides whether to grant the Operating License through deliberation of the Nuclear Safety Committee, based on the results of the safety review and pre-operational inspection conducted by KINS. The safety review for the Operating License application is focused on ensuring that the final design of the nuclear reactor facilities complies with the acceptance criteria, and that the facilities could be safely operated during their design life.</p>
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What is the scope of the safety assessment? Who performs it?	Poland PAA
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	The licence can be given to applicant who: <ul style="list-style-type: none"> <li>– complies with the requirements of nuclear safety, radiological protection, physical protection and nuclear material safeguards;</li> <li>– has sufficient funding to finish the construction and cover the costs of safe operation;</li> <li>– employs personnel suitably qualified to execute activities stated in the application.</li> <li>– PAA is responsible for verification if above mentioned conditions are fulfilled. During review PAA can</li> <li>– request assistance of authorised laboratories and expert organisations (TSOs)</li> <li>– co-operate with other administrative authorities, in accordance with their respective competences, grouped in so called Co-ordination System which consist of: Office of Technical Inspection, Chief Environmental Protection Inspector, Chief Sanitary Inspector, State Fire Service, General Inspector of Building Control Office, Chief Labour Inspector and Internal Security Agency (nuclear security and physical protection matters)</li> </ul>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	

What is the scope of the safety assessment? Who performs it?	<b>Slovakia UJD</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Safety report of reference, performed by licensee (future nuclear power plant operator). UJD SR reviews the report.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Preliminary safety report providing evidence for the meeting of the legal requirements on nuclear safety based on the data considered in the project. The document is performed by licensee (future nuclear power plant operator). UJD SR reviews the report.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>UJD have been developing a set of regulations, which is a continuous process. For period of commissioning (as well as operation), at the moment there are regulations completed as follows:</p> <ol style="list-style-type: none"> <li>1. Regulation No. 50/2006 Coll. on details concerning the nuclear safety requirements for nuclear installations in respect of their siting, design, construction, commissioning, operation, decommissioning and closure of repository, as well as criteria for categorisation of classified equipment into safety classes</li> <li>2. Regulation No. 49/2006 Coll. on periodic nuclear safety review</li> <li>3. Regulation No. 52/2006 Coll. on professional competency</li> <li>4. Regulation No. 53/2006 Coll. on details concerning requirements for management of nuclear material, radioactive waste and spent fuel</li> <li>5. Regulation No. 54/2006 Coll. on accountancy for and control of nuclear material as well as notification of selected activities</li> <li>6. Regulation No. 55/2006 Coll. on details concerning emergency planning in case of nuclear incident or accident</li> <li>7. Regulation No. 56/2006 Coll. on details concerning requirements for quality system documentation of authorisation holder, as well as details concerning quality requirements for nuclear installations, details concerning quality requirements for classified equipment and details concerning the scope of their approval</li> <li>8. Regulation No. 57/2006 Coll. on details concerning the requirements for shipment of radioactive material</li> <li>9. Regulation No. 58/2006 Coll. on details concerning the scope, content and method of preparation of nuclear installation documentation needed for certain decisions.</li> </ol> <p>Safety assessment is performed by UJD SR and TSO.</p>

What is the scope of the safety assessment? Who performs it?	<b>Slovenia SNSA</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>The Ionising Radiation Protection and Nuclear Safety Act stipulates that an area for the location of nuclear facility is selected through the Special Safety Analysis (SSA). The SSA shall be used to assess all factors in the area for the location of nuclear facility, which may affect the nuclear safety of the facility during its operating lifetime, and also the effects of the operation of the facility on the population and the environment. The SNSA determines the detailed contents and the scope of the SSA during the preparation of the National Spatial Plan.</p> <p>The SSA review and assessment are carried out by the SNSA.</p> <p>The Environment Impact Assessment (EIA) is prepared in the course of environment protection approval for the new NPP. The SNSA proposes the content of EIA in the part related to radiation and nuclear safety. The conditions, scope and content of the EIA shall be drawn up by the Environmental Agency of Slovenia on the basis of the proposal by the SNSA.</p> <p>The review and assessment of the EIA is carried out by the Environmental Agency of Slovenia and the SNSA.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>The Preliminary Safety Analysis Report (PSAR) is required to approve the construction of the new NPP. The content of the SAR is determined in the regulation.</p> <p>The opinion of a technical support organisation or an authorised expert for radiation and nuclear safety is mandatory for its approval. The review and assessment of Preliminary Safety Analysis Report is carried out by the SNSA.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>The Safety Analysis Report (SAR) is required to approve the trial operation of the new NPP. The content of the SAR is determined in the regulation.</p> <p>The opinion of a technical support organisation or an authorised expert for radiation and nuclear safety is mandatory for its approval. The review and assessment of SAR is carried out by the SNSA.</p>

What is the scope of the safety assessment? Who performs it?	Switzerland ENSI
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>General License -</p> <p>The safety assessment by the ENSI covers the aspects of</p> <ul style="list-style-type: none"> <li>• Siting, including: <ul style="list-style-type: none"> <li>▪ geography and population distribution</li> <li>▪ traffic routes and industry</li> <li>▪ logistics and construction site</li> <li>▪ meteorology</li> <li>▪ hydrology and ground water</li> <li>▪ geology, foundation material and seismology</li> <li>▪ connection to the power grid</li> </ul> </li> <li>• Selected plant parameters, including: <ul style="list-style-type: none"> <li>▪ maximal reactor power</li> <li>▪ main cooling system</li> <li>▪ arrangement of the main buildings</li> </ul> </li> <li>• Radioprotection, including: <ul style="list-style-type: none"> <li>▪ source related dose limit for routine releases</li> <li>▪ expected yearly releases in normal operation</li> </ul> </li> <li>• Human and organisational factors, including: <ul style="list-style-type: none"> <li>▪ Project management</li> <li>▪ New NPP's future organisation</li> <li>▪ Human factors engineering</li> </ul> </li> <li>• Security</li> <li>• Decommissioning, including: <ul style="list-style-type: none"> <li>▪ choice of the facility final state</li> <li>▪ choice of the decommissioning concept</li> </ul> </li> <li>• Waste disposal, including: <ul style="list-style-type: none"> <li>▪ Inclusion in the national waste disposal program</li> </ul> </li> </ul> <p>The safety assessment is performed by the ENSI staff. Additional expertise on behalf of the ENSI may be provided by external technical support organisations.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Construction License and permits:</p> <p>The safety assessment by ENSI covers the reactor design on the specified site through the evaluation of the planned concepts in the different topical areas (Overall plant design, Reactor technology, Civil engineering, System engineering, HFE, quality and project management, etc.) and of the corresponding execution plans.</p>

	<p>The safety assessment is performed by the ENSI staff. Additional expertise on behalf of the ENSI may be provided by external technical support organisations.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Operating License and permits:</p> <p>The safety assessment by ENSI covers the evaluation of the as-built plant, all the provisions for operation and the commissioning/start-up tests.</p> <p>The safety assessment is performed by the ENSI staff. Additional expertise on behalf of the ENSI may be provided by external technical support organisations.</p>

<b>What is the scope of the safety assessment? Who performs it?</b>	<b>United Arab Emirates FANR</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Review and assessment of the application will be carried out by FANR staff and TSO.  FANR review plan is being developed using the guidance in IAEA GS-R-1 and GS-G-1.2.  The review will be comprehensive but will seek to utilise the safety assessments carried out by the regulatory body in the vendor country of origin (RBCoO) where applicable to improve safety and efficiency.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	See above
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	See above

<b>What is the scope of the safety assessment? Who performs it?</b>	<b>United Kingdom ONR</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>A separate team of experts in Division 6 of ND has been set up to assess the GDA and is also responsible for issuing a DAC.</p> <p>The Licencing and Permissioning of operations on site is managed by Division 1 of ND. Division 1 assesses the site specific aspects of any design. Division 1 also manages any regulatory aspects to new build.</p>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Regulatory control of the construction or installation of new NPP is managed by ND Division 1 using powers under Licence Condition (LC)19 of the NSL. Changes to design will also be managed by Division 1 using powers under LC20 of the NSL. However, no aspects of the design that have a DAC will be revisited.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Regulatory control of the commissioning of new NPP is managed by ND Division 1 using powers under Licence Condition (LC) 21 of the NSL.</p>

<b>What is the scope of the safety assessment? Who performs it?</b>	<b>United States USNRC</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<ul style="list-style-type: none"> <li>• Scope           <p>ESP- the safety assessment covers the seismic, meteorological, hydrologic, and geologic characteristics of the proposed site with appropriate consideration of the most severe of the natural phenomena. Its also includes a detail description of the facilities in an around the site, including industrial, military and transportation facilities.</p> <p>DC – the safety assessment covers the design bases and the limits on its operation, and presents a safety analysis of the structures, systems, and components and of the facility as a whole.</p> </li> <li>• The Staff in the Office of New Reactors (NRO) performs the majority of the review. As needed, the NRO staff may get support from contractors (private and/or national laboratories) and staff from other offices (Office of Research, office of Nuclear security and incident response)</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<ul style="list-style-type: none"> <li>• Scope           <p>COL- the safety assessment covers all of the information cover in the ESP and DC. The applicant must provide all of that information at a level of detail sufficient to enable the Commission to reach a final conclusion on all safety matters that must be resolved before issuance of a COL.</p> </li> <li>• During construction, NRC’s regional construction inspection office will perform the safety assessment of the inspections, test and analysis with the technical experts from NRO as needed.</li> </ul>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<ul style="list-style-type: none"> <li>• During commissioning, NRC’s regional construction inspection office will perform the safety assessment of the inspections, test and analysis with the technical experts from NRO as needed.</li> </ul>



## APPENDIX I

### **What type of public participation is required by law? How is it performed?**

- All member states have some form of public participation. The degree varies between member states and all are unique to some extent.
- The greater part of public consultation for most member states takes place during the pre construction phase. Generally some level of public participation is mandated by law. Often this is led by a government department which is not the nuclear regulatory body but equally there are many instances when the nuclear regulatory body leads the consultation. In many cases there are a range of government bodies who consult with the public. In these instances it is common for the nuclear regulatory body to be a statutory consultee.
- Not all public participation is a legal requirement. In some member states some elements of public participation are by invitation. This may supplement the public participation mandated by law.
- In many cases it is necessary for the prospective Licencee to produce an Environmental Impact Assessment which is publicly available.
- Public participation varies from being informed by letter or other means, being provided with information, being able to raise issues, to a full public enquiry.
- Further public participation can take place in the construction and commissioning phase although this is not always the case.

<p><b>What type of public participation is required by law? How is it performed?</b></p>	<p><b>Canada CNSC</b></p>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>Government Led Consultation (mandatory)</b></p> <p>Both the Environmental Assessment (EA) per the <i>Canadian Environmental Assessment Act</i> and the CNSC Licensing Process under the <i>Nuclear Safety and Control Act</i> require public consultation. This is accommodated through a variety of means such as:</p> <ul style="list-style-type: none"> <li>- Aboriginal consultation by the Crown is enshrined in the Canadian Constitution and is performed by a lead federal agency (now CNSC) with assistance from other federal agencies where expertise is needed.</li> <li>- All documents that will be utilised by the EA and licensing Review Panel for the Environmental Assessment are maintained in a public registry for unfettered access by the public. This includes minutes of meetings, presentations by the applicant and related correspondence between federal agencies, and the applicant.</li> <li>-Public information sessions at the potential host community when requested by the host community.</li> <li>- Intervener comments are actively sought by the CNSC as a matter or process.</li> <li>-Public hearings held by the Review Panel (for new NPPs there are two as articulated in INFO-0756 <i>Licensing Process for New Nuclear Power Plants</i>)</li> </ul> <p><b>Proponent Led Consultation (strongly recommended)</b></p> <p>CNSC recommends proponent led consultation with potentially affected stakeholders well in advance of triggering the EA and licensing process as a good practice and a demonstration of good corporate citizenship. This is articulated in RD-346 <i>Site Evaluation for New Nuclear Power Plants</i>. The regulations under the <i>Nuclear Safety and Control Act</i> require the applicant to demonstrate adequate site characterisation and proposed measures to communicate with affected stakeholders. The EA Guidelines produced specifically for the project assess the proponent’s consultation efforts with these potential stakeholders including how the stakeholder list was determined.</p> <p>Stakeholder comments about basic design are collected through the Environmental Assessment through an assessment of effects of the environment on the project and vice-versa.</p>

<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>Same as for Pre-Construction</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site Evaluation</li> <li>• Basic Design</li> </ul> <p>Except there is only one process, namely the <i>License to Construct</i> conducted solely by the CNSC.</p> <p>- Aboriginal consultation by the Crown is enshrined in the Canadian Constitution and is performed by a lead federal agency (now CNSC) with assistance from other federal agencies where expertise is needed.</p> <p>-Public information sessions at the potential host community when requested by the host community.</p> <p>- Intervener comments are actively sought by the CNSC as a matter of process.</p> <p>-Public hearings held by the Review Panel (for new NPPs there are two as articulated in INFO-0756 <i>Licensing Process for New Nuclear Power Plants</i>)</p> <p>- for the applicant, the public information program receives scrutiny from the CNSC based on performance during the <i>License To Prepare Site</i> activities and the communication program under the <i>License to Construct</i> is expected to evolve to prepare the public for both the construction activities and, at a high level, future operations activities.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>Non-Nuclear (Phase A Testing) is covered under the <i>License to Construct</i>. (see above for further details)</p> <p>Nuclear Testing (Phase B) is covered under the <i>License to Operate</i>. The process of aboriginal and public consultation for licensing by both the CNSC and the applicant is the same as that for the <i>License to Construct</i>.</p>

<b>What type of public participation is required by law? How is it performed?</b>	<b>Czech Republic SUJB</b>
<p>Pre-Construction</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site Evaluation</li> <li>• Basic Design</li> </ul>	<p>Administrative procedures involve any subject who is potentially impacted or declares that could be impacted (local authority, organisation, private person).</p> <p>Public is generally informed in compliance with special Act. Those who are expected to being impacted according to Administrative Act are informed by letters, which give them legal term for sending their objections to. The announcement on initial administrative procedure is published on the authority's official panel in the location (or web site).</p> <p>No public participation in Atomic Act procedures - applicant is the only participant in administrative procedure</p>
<p>Construction</p> <ul style="list-style-type: none"> <li>• Site Evaluation</li> <li>• Site Specific Design</li> </ul>	<p>Other procedures involve any subject who is potentially impacted or declares that could be impacted (state body, company, organisation, private person or representatives of neighbor state)</p> <p>No public participation in Atomic Act procedures - applicant is the only participant in administrative procedure</p>
<p>Commissioning</p> <ul style="list-style-type: none"> <li>• Non-Nuclear Testing</li> <li>• Nuclear Testing</li> </ul>	<p>No public participation in Atomic Act procedures - applicant is the only participant in administrative procedure</p>

What type of public participation is required by law? How is it performed?	Finland STUK
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<b>Environmental Impact Assessment (EIA):</b> <ul style="list-style-type: none"> <li>• The MEE asks public statements and organises public hearings.</li> </ul> <b>Decision in Principle (DIP)</b> <ul style="list-style-type: none"> <li>• The Ministry of Employment and the Economy (MEE) arranges public hearings.</li> <li>• Public can submit statements to the MEE.</li> </ul>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<ul style="list-style-type: none"> <li>• Public can submit statements to the MEE.</li> </ul>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<ul style="list-style-type: none"> <li>• Public can submit statements to the MEE.</li> </ul>

What type of public participation is required by law? How is it performed?	France ASN
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>There are two different major public consultations.</p> <p>1) Prior to the authorisation application and for any major project in France as a NPP for instance, a national public debate is organised by a dedicated national independent commission.</p> <p>The national public debate is mandatory according to the act of February 27, 2002 related to the democracy of proximity for any major installation. It is not a specific nuclear regulation and can concern other project such as motorways, electric line of transport. The licensee has to consider the conclusions in its file.</p> <p>2) Subsequent to applying for the authorisation, the corresponding file is submitted to a public enquiry. The public enquiry is opened in at least each of the cities which are less than five kilometres from the site proposed by the applicant.</p> <p>The public enquiry procedure is mainly described in the articles 12 and 13 of the decree 2007-1557 of 2 November 2007 and is mandatory to authorise a new NPP. The aim is :</p> <ul style="list-style-type: none"> <li>• to inform and to consult the public about the nuclear installation and its impact</li> <li>• to get some elements of information about the environment to include in the review of the application</li> </ul> <p>The licensee has to answer to the conclusions of this public inquiry.</p> <p>The authorising decree for creation is published, as well the specific ASN decisions.</p> <p>Added to these two regulatory specific public consultations, local information committees are created for each future or existing nuclear plant. Regular information is provided to that committee by the licensee and ASN.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>See above</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>No public participation required by the law prior to ASN commissioning decision.</p> <p>Nevertheless, ASN publishes the commissioning authorisation in its <i>Official Bulletin</i> and communicates it to the local information committee (these committees are tasked by the law with a general follow-up, information and dialogue mission in the field of nuclear safety, radiation protection and the impact of nuclear activities on persons and the environment as far as the site installations are concerned)</p>

<b>What type of public participation is required by law? How is it performed?</b>	<b>Hungary HAEA</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>According to the government decree No. 314/2005, the public consultation must be held in case of activities for which needs EIA. The site licensing by EPA includes the public consultation.</p> <p>Due to possible trans boundary environmental effects, the public participation of the neighboring countries is also considered according to the Espoo-treaty and 85/337/EU Directive</p> <p>This public hearing is organised by the Environmental Protection Inspectorate (according to government decree: 148/1999 )</p>
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>No special provisions are in place for the public participation.</p>
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>No special provisions are in place for the public participation.</p>

What type of public participation is required by law? How is it performed?	<b>Japan NISA/JNES</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p><b>-The draft Environmental Impact Statement (draft EIS)</b></p> <p>Once the licensee submits the draft EIS to METI, the document will be sent to the related local governments to be disclosed for public comments simultaneously. (The utility prepares their views addressing residents' comments.)</p> <p>NISA, after examining the draft EIS, taking into account the opinion of the Minister of Environment and the related Governors as well as the comments of the residents and the views of the licensees regarding such comments, and receiving the view of advisers on the environment protection, gives recommendations on the environmental assessment to the licensee if needed.</p> <p>Meanwhile, concerning the items other than those with little environmental impact, licensees shall check and provide the necessary measures for protecting the environment so that the environmental impact by the project would be reduced as far as practical, considering the project plan and the state of the area environmentally impacted by the project.</p> <p><b>-The application format for a license for establishment</b></p> <p>In order to have opportunities to invite the opinions from the general public widely on various issues concerning establishment of the installation, 2 public hearings are held. These hearings are not requirements of the law.</p> <p>The first public hearings with explanation of the licensees are held by METI to obtain deeper understanding and co-operation of residents in the vicinity. The results of public hearings are taken into consideration in the safety examination..</p> <p>The second public hearing is held by the NSC to hear the opinions of residents in the vicinity on the safety specific to the facilities and take the opinions into consideration at the time when the NSC investigate and review the result of safety review and assessment by METI for the application of reactor establishment or alteration license applied by the electric power company. At the second public hearing, METI will explain the overview of safety review and assessment and present the view on the stated opinions.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>No public participation is required by law in this stage.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<p>No public participation is required by law in this stage.</p>

<b>What type of public participation is required by law? How is it performed?</b>	<b>Korea MEST/KINS</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	When an applicant is going to construct ‘nuclear power plants and related facilities’, ‘radioactive waste disposal facility or spent fuel storage facility’, it prepares and submits a draft radiation environmental report to MEST and the relevant local government per AEA Article 104-5 (Gathering of Residents’ Opinion). Then the local government releases the draft report to the local residents and opens a Public Hearing upon request, also according to the law. The applicant shall incorporate public opinions into the radiation environmental report.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	No public participation is required by the AEA.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	No public participation is required by the AEA.

<b>What type of public participation is required by law? How is it performed?</b>	<b>Poland PAA</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	Act of Parliament upon “giving access to information about environment and its protection, participation of society in environment protection and about environmental impact assessments” assures public participation in any EIA procedure.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Additional provisions related to public participation is required by amended Atomic Law.  President of PAA has an obligation to publish in the Public Information Bulletin information on received construction license application together with summary of Safety Assessment Report. It’s also obligatory to organise public hearing according to rules set out by Code of Administrative Proceedings.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	Investor is also obliged to create Local Information Centre. On the other hand local community can establish a Local Information Committee which shall provide community supervision over the investment implementation (i.e. the construction of nuclear power facility) and inform the local community on the activities of the nuclear power facilities.

<b>What type of public participation is required by law? How is it performed?</b>	<b>Slovakia UJD</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	All relevant activities are managed by Ministry of Environment based on the law 24/2006 Coll. as amended. The partial EIA has to be performed for each individual stage. At present, an amended version of the mentioned law is being prepared at the Slovak parliament. Based on this amended law, the public (a person or a non-governmental organisation – NGO) is a participant of the all process. This procedure assures that the public has the access to the documentation. Slovak Republic signed the international Aarhus Convention as well as Espoo EIA Convention.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	See the above section.

What type of public participation is required by law? How is it performed?	Slovenia SNSA
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<p>After the preparation of the Environmental Report and the Special Safety Analysis, these documents, together with the draft of the National Spatial Plan (NSP), are subject to public hearing and consultation with neighbouring states and become public documents. The public hearing must last at least 30 days. The public can give its opinions and proposals, which must then take into consideration by the Ministry of the Environment and Spatial Planning when supplementing the proposal of NSP. After the consent of all stakeholders (including various ministries, also the SNSA, municipal bodies and agencies and non-governmental organisations) is reached, the NSP is issued and made public.</p> <p>A similar procedure is in place for the Environmental Impact Assessment, which is required for obtaining the Environmental protection consent.</p>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<p>At this stage, the investor shall obtain the construction license with the Safety Analysis Report attached, which is also a public document. No special provisions are in place for the public exhibition of the Safety Analysis Report. However, in accordance with the General Administrative Procedure Act (Official Gazette RS, No. 24/06), any person that demonstrates their legal interest shall have the right to participate in the licensing process.</p>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	

What type of public participation is required by law? How is it performed?	<b>Spain</b> <b>CSN</b>
Pre-Construction <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site Evaluation</li> <li>• Basic Design</li> </ul>	<p>The public intervenes mostly in the site license because there is period of one month to answer questions, allegations, etc. On the other hand, in the Regulation on Nuclear and Radioactive Facilities, there is a new article that establishes Article 13. Information committee</p> <ol style="list-style-type: none"> <li>1. During the construction, exploitation and dismantling of nuclear power plans, an Information Committee shall operate, whose character shall be that of a collegiate organs, as foreseen in Article 40.3 of Law 6/1997, of the 14th of April, on the Organisation and Operation of the General State Administration.</li> <li>2. The members of the Committee shall be appointed by the Director General of Energy. It shall be presided by a representative of the Ministry of Industry and Energy, and shall be integrated by a representative of the installation's title-holder, of the Nuclear Safety Council, of the Government Delegations, of the Autonomous Communities and of the municipalities in whose territory the installation is located. Furthermore, other representatives of public administrations may be part of the committee, when the nature of the matters that are to be dealt with so requires.</li> <li>3. The functions of this Committee shall be to inform the different represented parties of the development of the activities that are regulated in the corresponding authorisations, and to deal jointly with those other issues that may be of interest to the aforementioned parties.</li> </ol>
Construction <ul style="list-style-type: none"> <li>• Site Evaluation</li> <li>• Site Specific Design</li> </ul>	
Commissioning <ul style="list-style-type: none"> <li>• Non-Nuclear Testing</li> <li>• Nuclear Testing</li> </ul>	

What type of public participation is required by law? How is it performed?	Switzerland ENSI
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	General License Participation of the public in the process is both direct and indirect. Direct: the Application and the review by the authorities are published for 3 months during which anybody can raise an issue; at the end of the process, the granting of the License has to be approved by a national popular vote (optional referendum). Indirect: since cantonal opinions as well as the approval of the federal parliament are required in the process, the public can exercise its political influence through the elected representatives at cantonal as well as federal level.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	Construction License Participation of the public in the process is foreseen: the Application and the review by the authorities are published for one month during which involved parties can raise an issue; the involved parties can also appeal into two court instances.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	Operating License Participation of the public in the process is foreseen: the Application and the review by the authorities are published for one month during which involved parties can raise an issue; the involved parties can also appeal into two court instances.

<b>What type of public participation is required by law? How is it performed?</b>	<b>United Arab Emirates FANR</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	The UAE policy commits to “complete operational transparency.” The Law requires FANR to publish information on licence applications and reasons for decision and to make available safety information that is not protected for other reasons.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	See above
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	See above

<b>What type of public participation is required by law? How is it performed?</b>	<b>United Kingdom ONR</b>
Pre-construction: <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	ND are not required by UK to perform any public consultation when issuing a NSL.
Construction: <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	As above.
Commissioning: <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	As above.

<b>What type of public participation is required by law? How is it performed?</b>	<b>United States USNRC</b>
<p>Pre-construction:</p> <ul style="list-style-type: none"> <li>• Siting</li> <li>• Site evaluation</li> <li>• Basic design</li> </ul>	<ul style="list-style-type: none"> <li>• Early Site Permit (ESP) – As prescribe in 10 CFR 52.21, the NRC must perform a hearing. The NRC's hearing process makes it possible for the public to get a full and fair hearing on civilian nuclear matters. Administrative judges from the NRC's Atomic Safety and Licensing Board Panel (ASLBP) generally conduct these hearings. Individuals or entities whose interests are affected by the granting of the license may participate in hearings.</li> <li>• Design certification – As prescribe in 10 CFR 52.51, a notice of a proposed certification must be published and an opportunity for the submission of comment by the public must be given.</li> </ul>
<p>Construction:</p> <ul style="list-style-type: none"> <li>• Site evaluation</li> <li>• Site-specific design</li> </ul>	<ul style="list-style-type: none"> <li>• COL – As prescribe in 10 CFR 52.85, The NRC must perform at least one hearing and will follow the same process as for an ESP.</li> <li>• All of the inspections reports are publicly available. If the licensee submits a license amendment, an opportunity for a hearing would be available.</li> </ul>
<p>Commissioning:</p> <ul style="list-style-type: none"> <li>• Non-nuclear testing</li> <li>• Nuclear testing</li> </ul>	<ul style="list-style-type: none"> <li>• As prescribe by 10 CFR 52.103b, an opportunity for a hearing is required before the Commission gives permission for fuel load.</li> </ul>

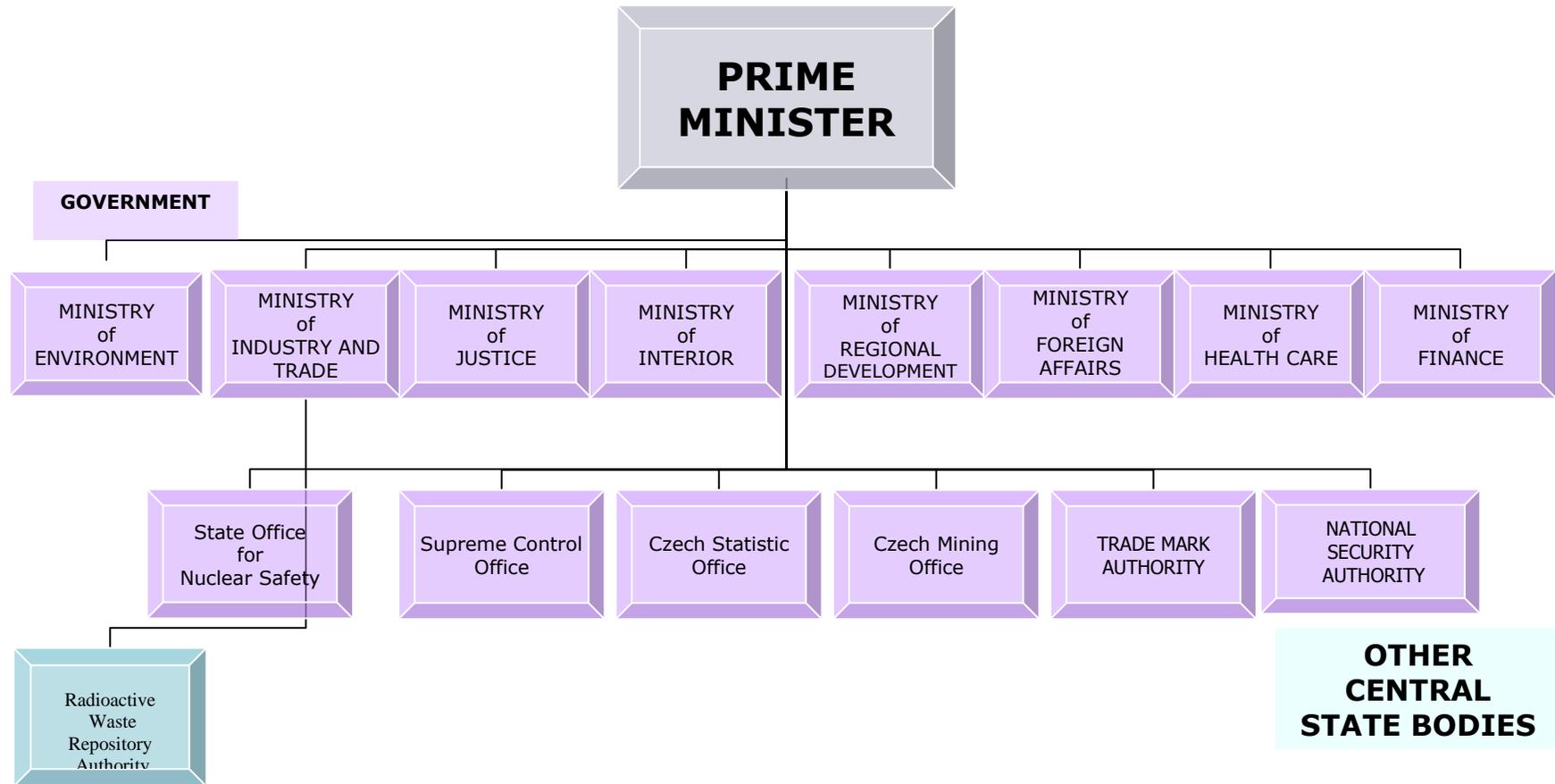


## **APPENDIX J**

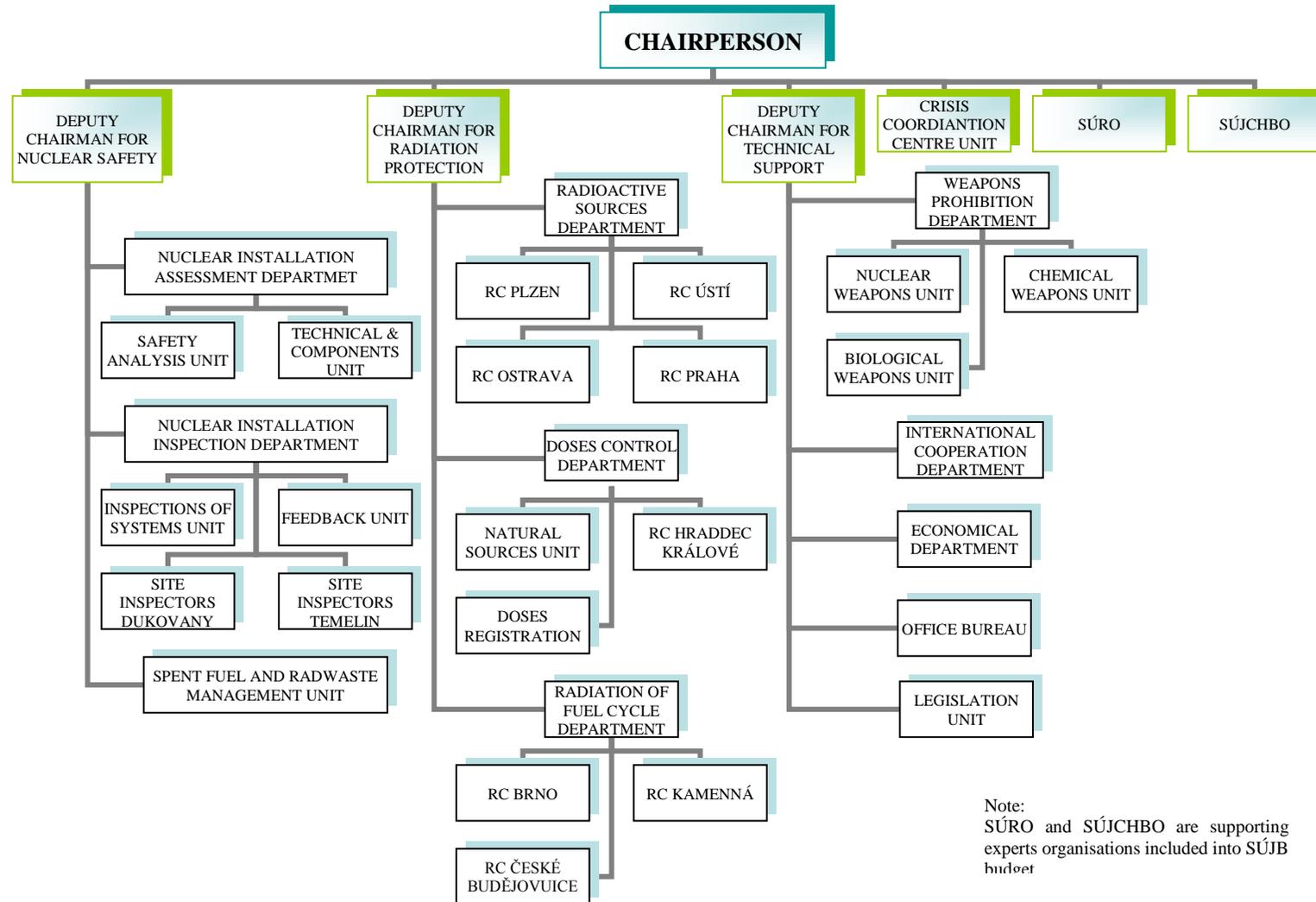
### **Organisation/infrastructure**

Please, provide an Organisational Chart of all the participants (e.g., regulator, government, TSO, project manager, technical staff, and advisory committees) during the review of the application including roles of each.

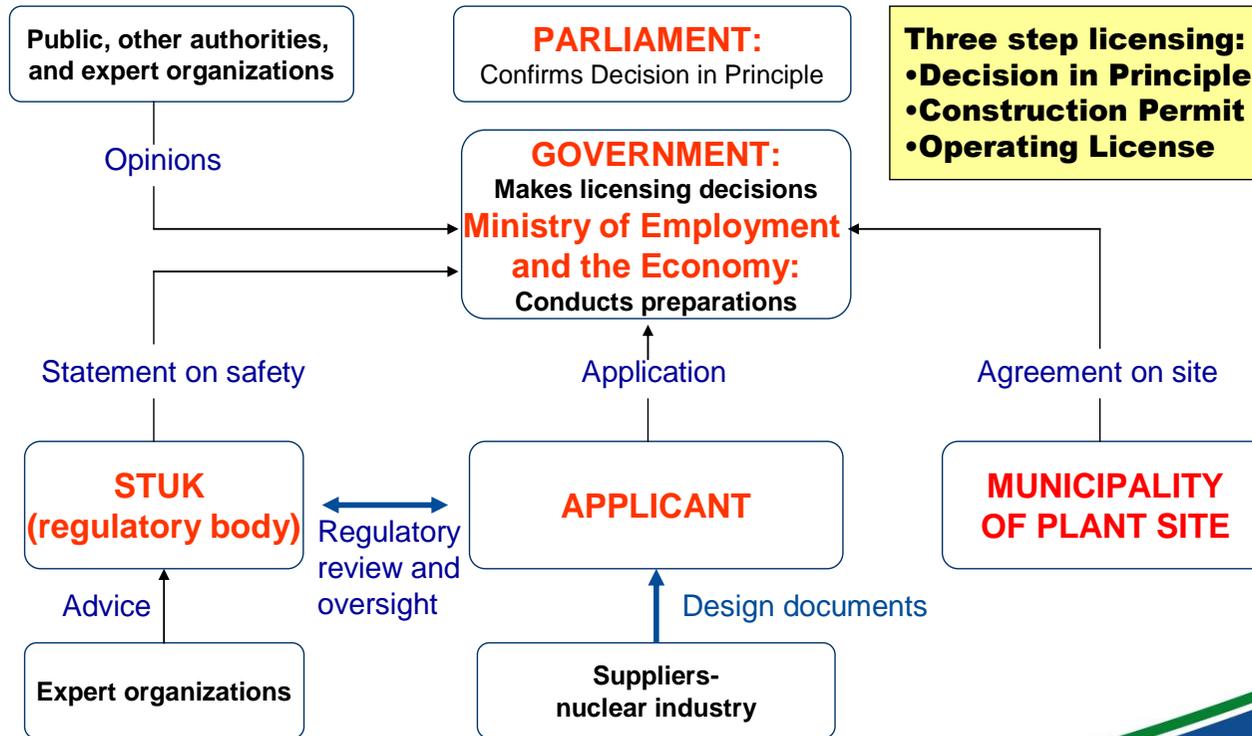
**Czech Republic**  
**State Office for Nuclear Safety (SUJB) Position**



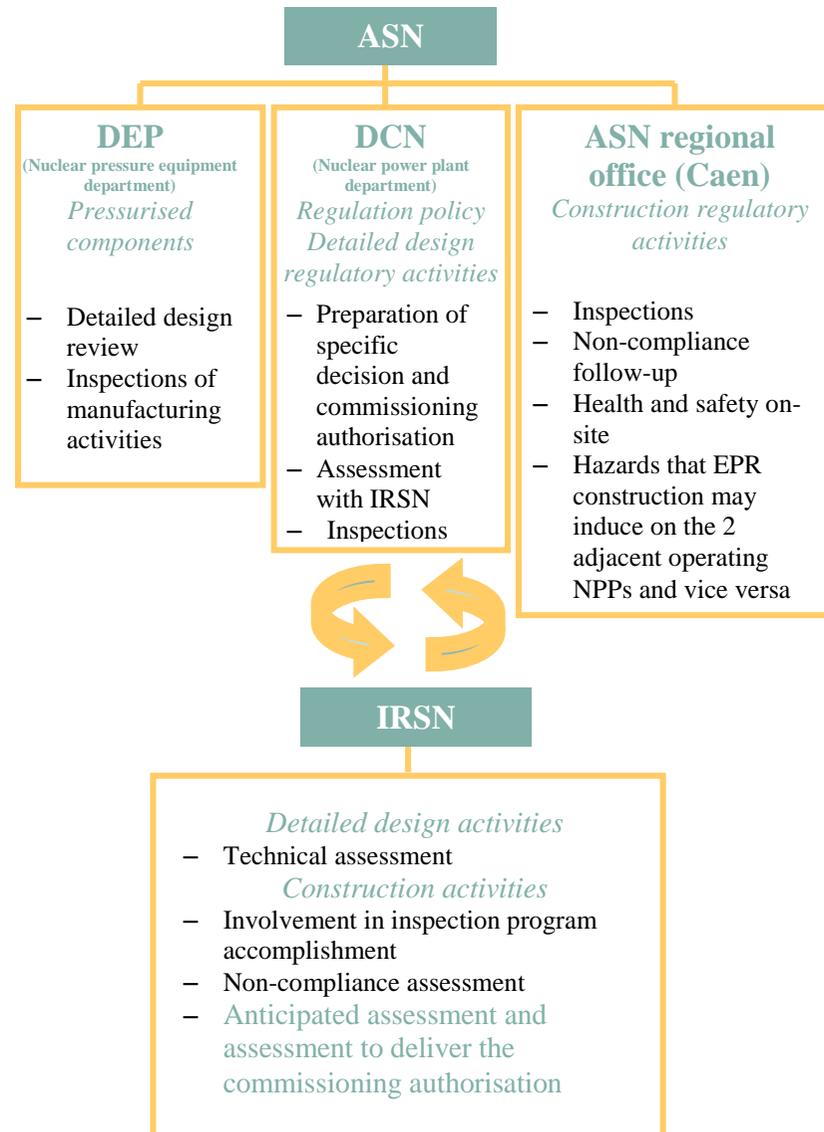
**Czech Republic**  
**State Office for Nuclear Safety (SUJB) Organisational Chart**



## Stakeholders in Licensing of nuclear facilities

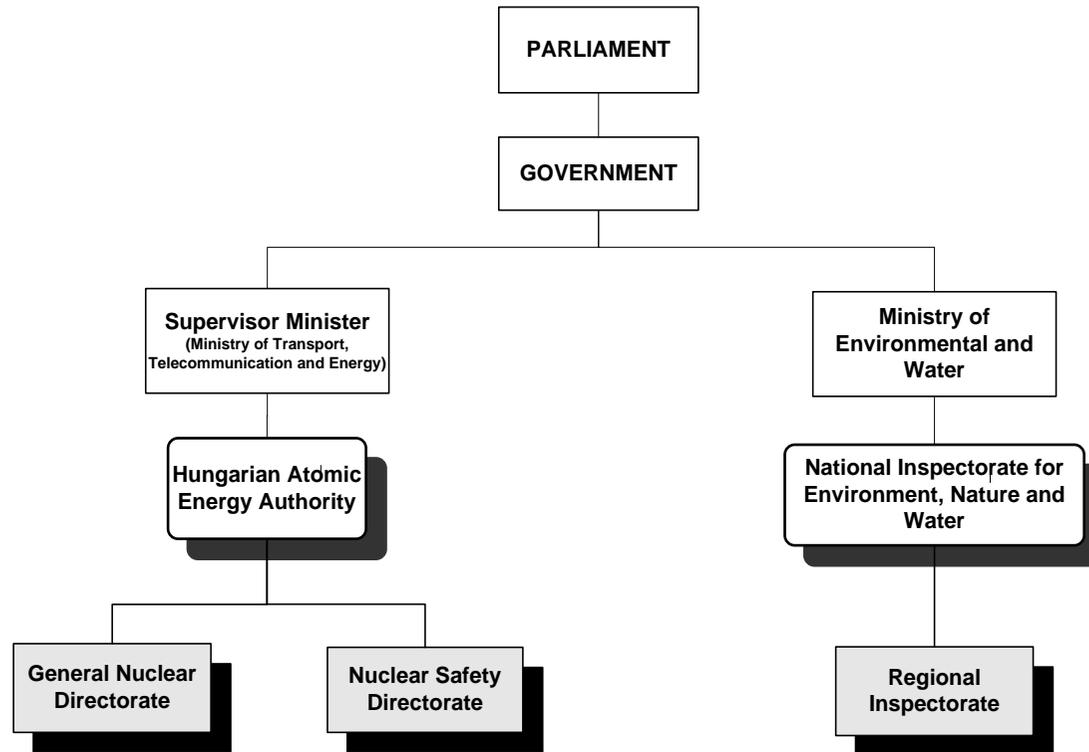


**France**  
**Nuclear Safety Authority (ASN)**



**Hungary**

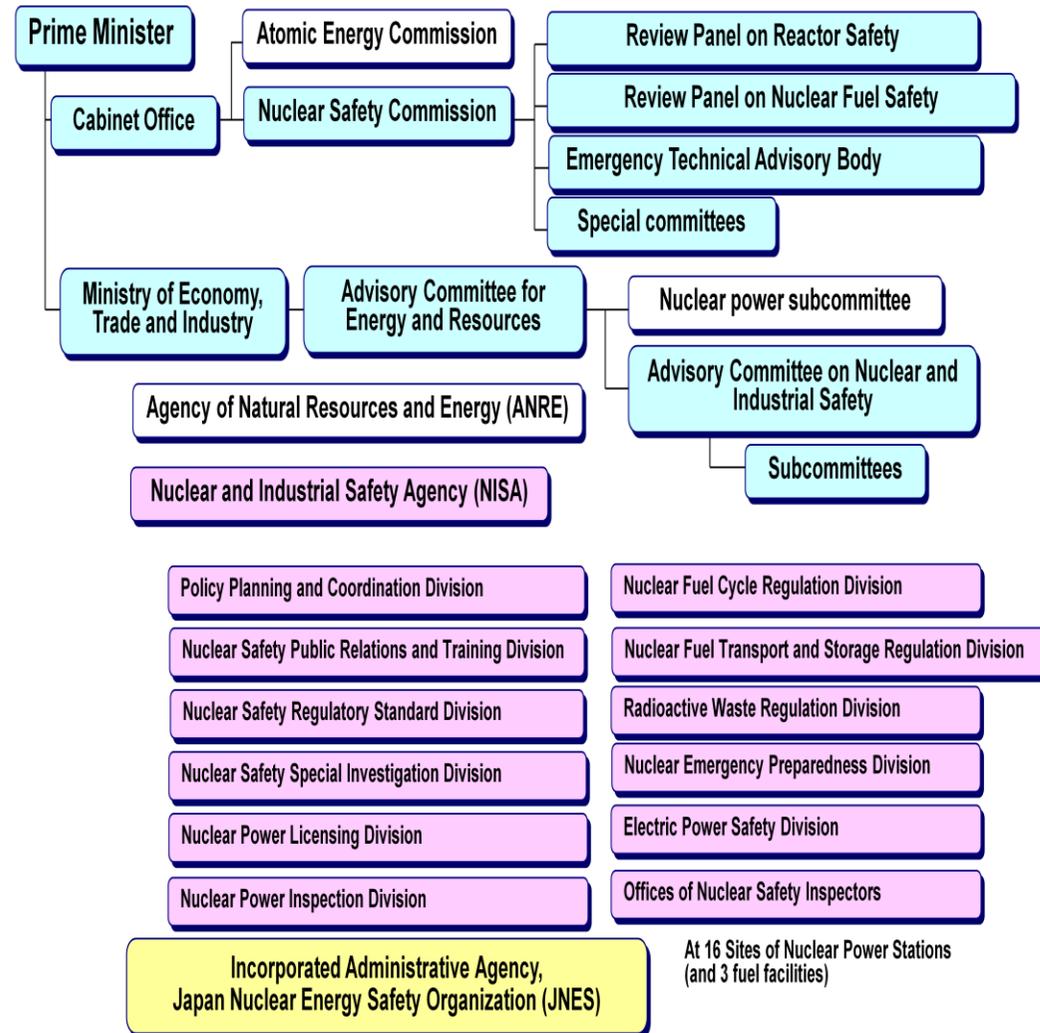
**HAEA and environmental authorities within the governmental structure**



- **The Parliament:** made the decision in principle to build new NPP unit(s) at Paks site.
- **The Government:** issued the NSR for operating reactors and will issue the nuclear safety requirements to new reactors.
- **HAEA:** issues the nuclear safety site license as well as construction license.
- **Environmental Inspectorate:** (local area authority for environmental licensing, inspection and environmental impact assessment) issues the environmental license.
- **Chief-Inspectorate of Environment, Nature and Water:** co-authority in nuclear safety licensing procedures.
- **Technical Support Organisations:** Technical Support Organisations are not legal entities on the licensing process, however both the licensees and the regulator often use them for the preparation (or assessment) of certain licensing documents.

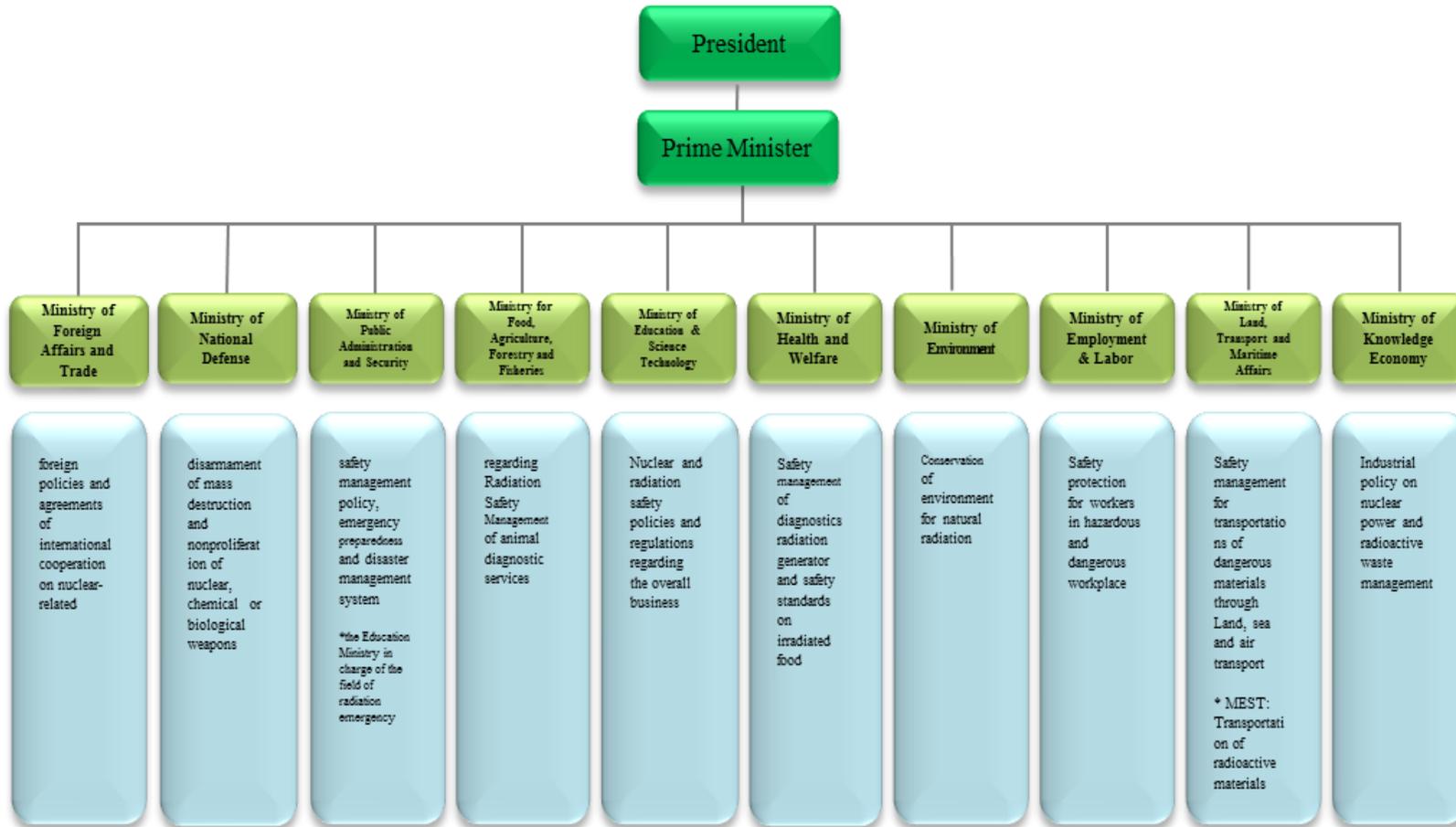
Japan

Japan Nuclear Energy Safety Organisation (JNES)



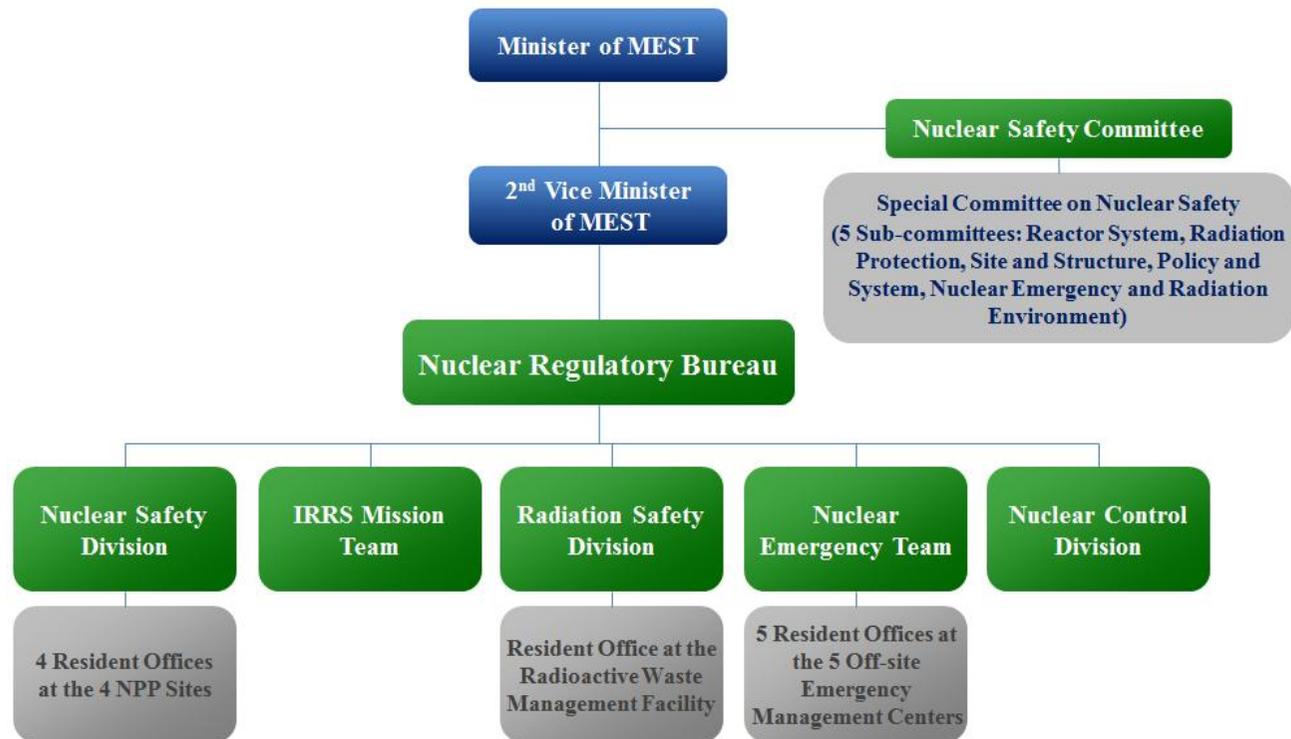
Korea

Schematic Diagram of Administrative Organisations Relating to Nuclear Safety Management



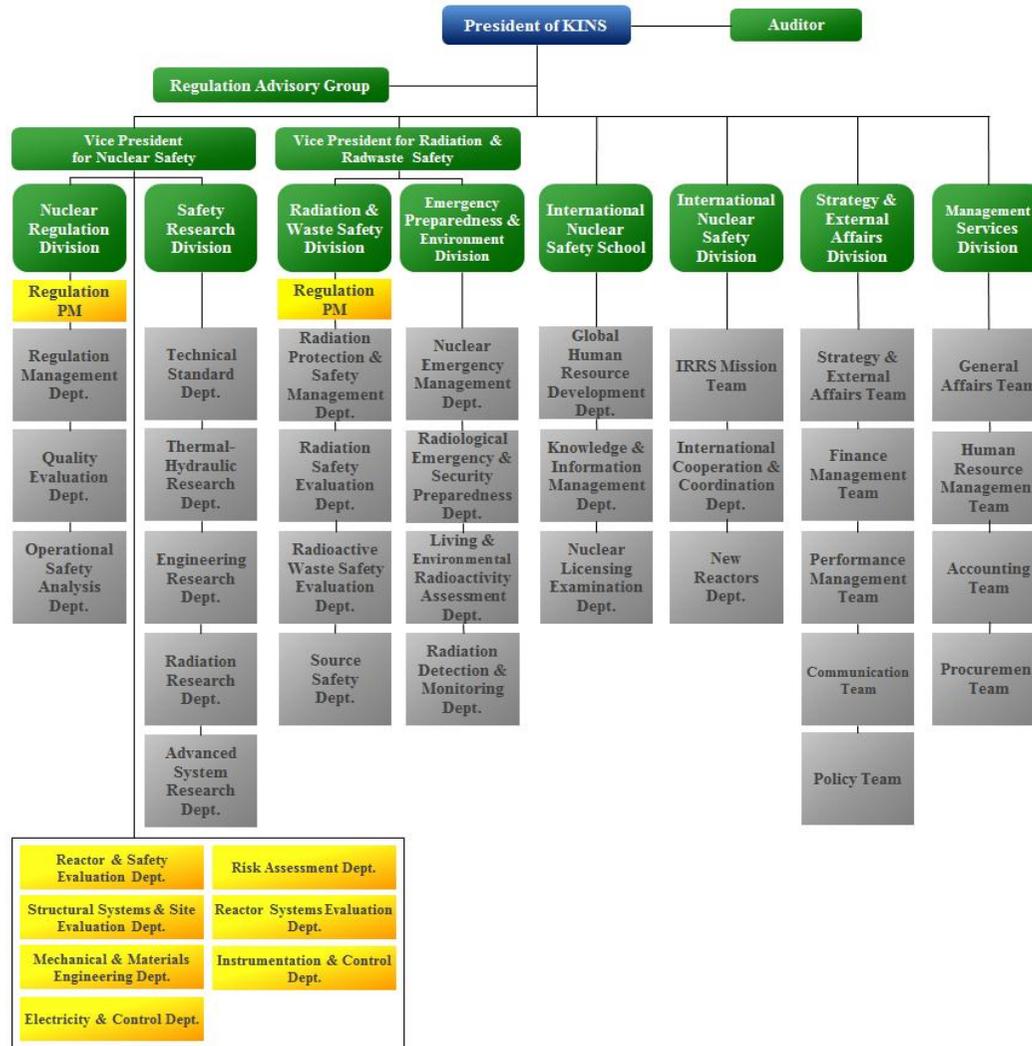
**Korea**

**Organisational Structure of the Nuclear Regulatory Bureau**



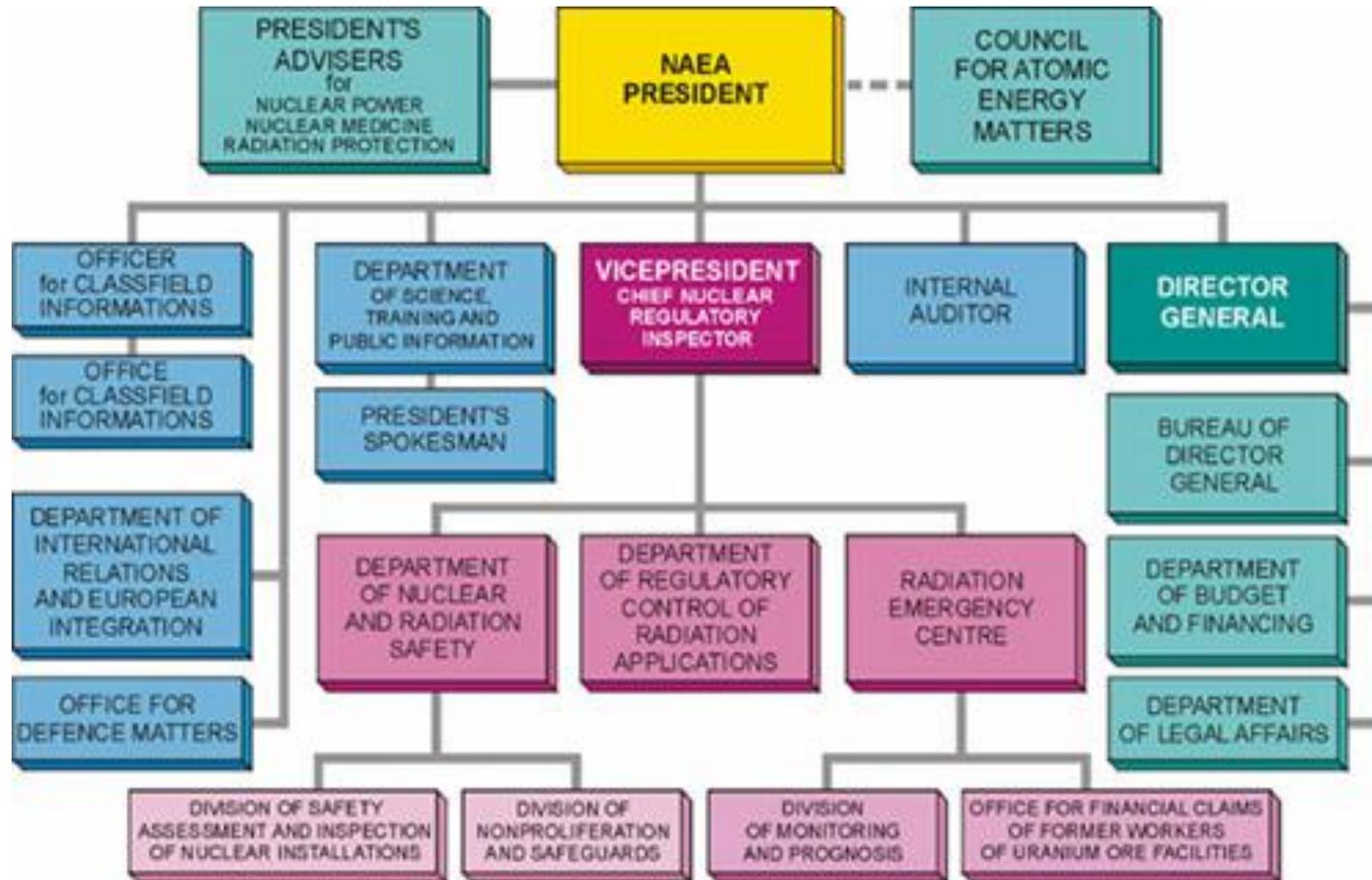
Korea

Organisation Chart of Korea Institute of Nuclear Safety (KINS)



Poland

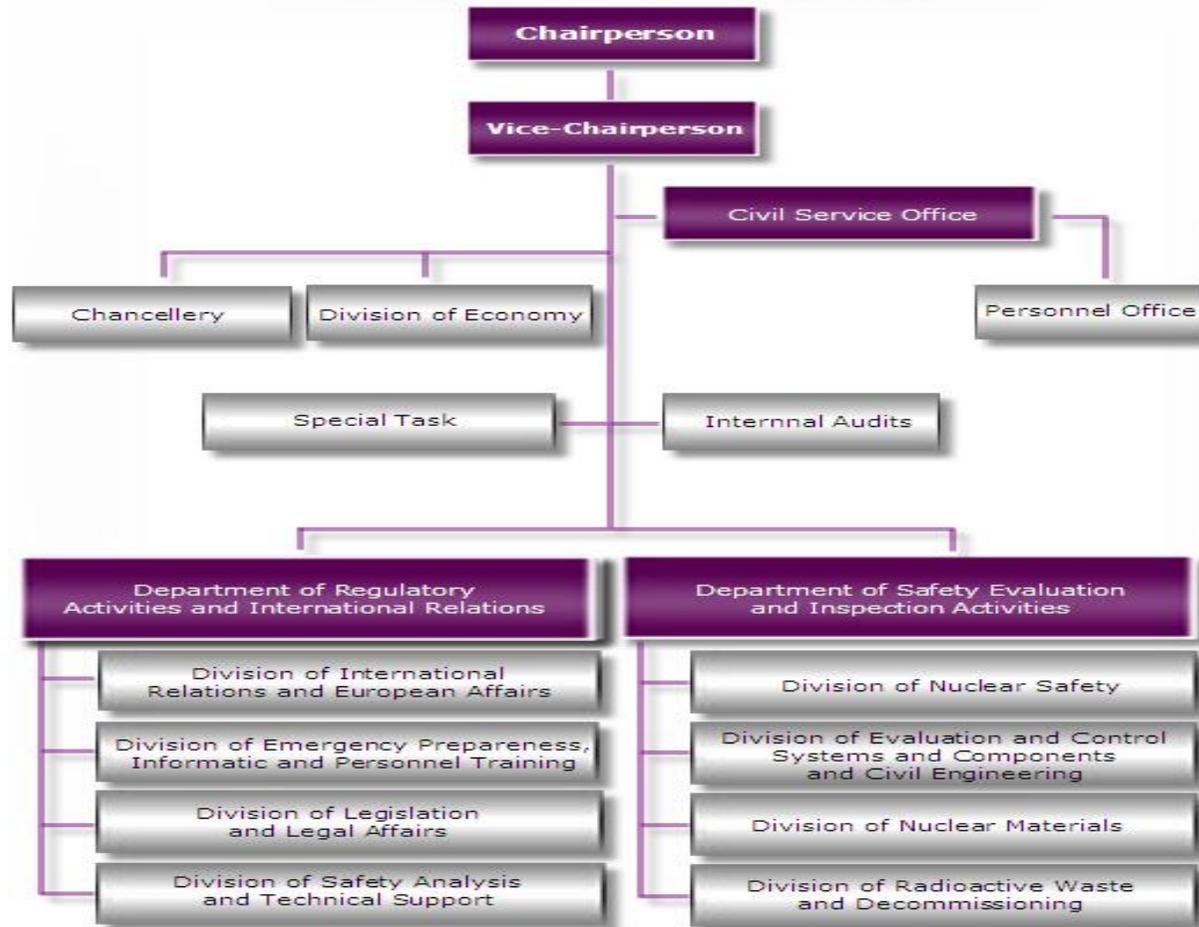
National Atomic Energy Agency (PAA)



Slovakia

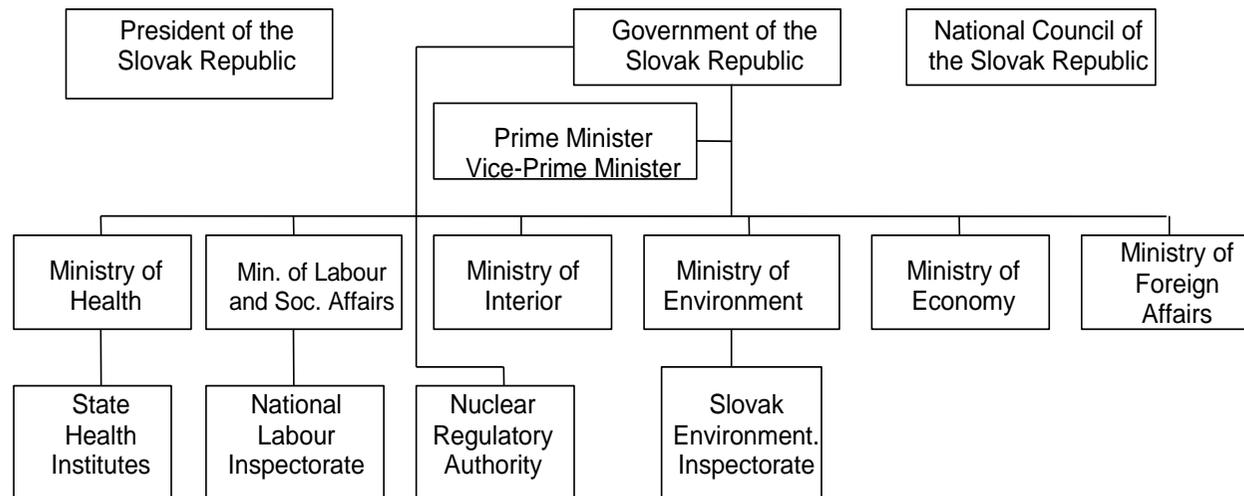
Nuclear Regulatory Authority of the Slovak Republic (UJD SR)

**ORGANIZATIONAL CHART**



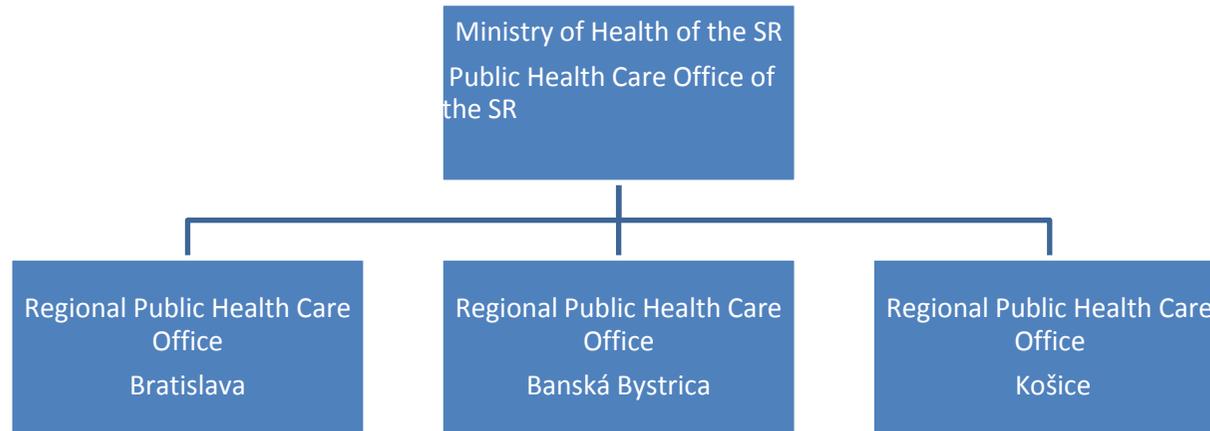
**Slovakia**

**UJD SR within the governmental structure**



**Slovakia**

**Structure of state regulation in the field of health protection against radiation**



**Technical Support Organisations**

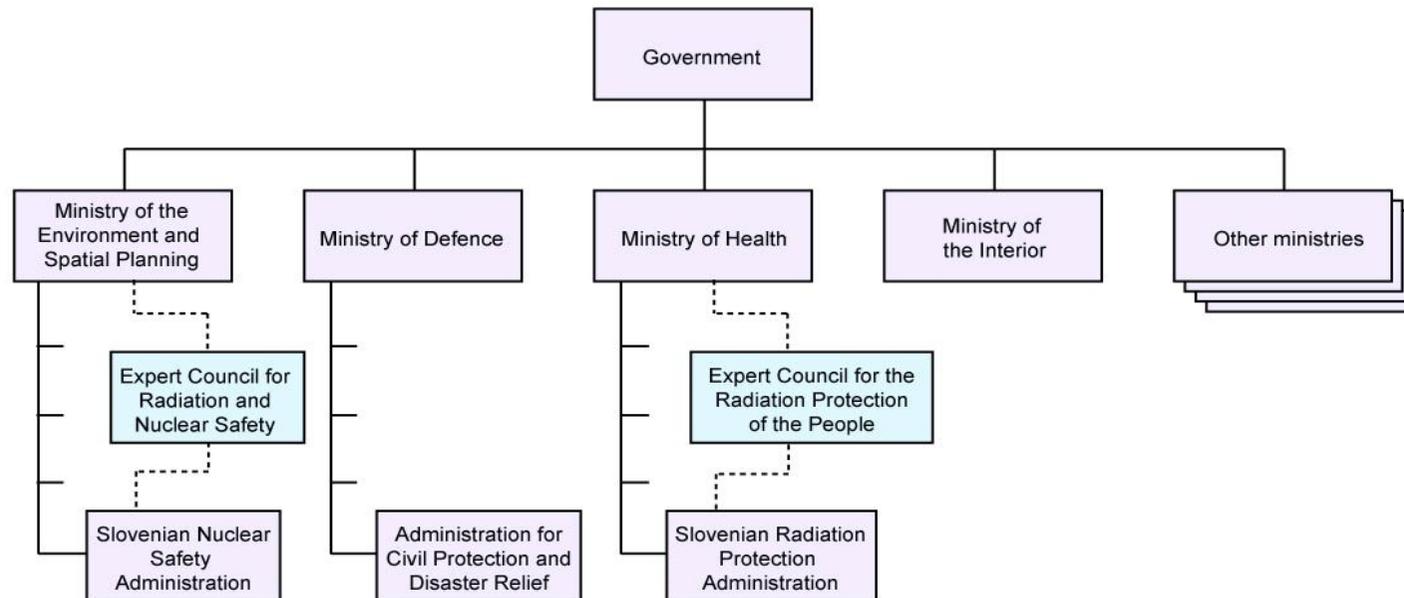
The Department/Section for safety analysis and technical support provides a technical support to UJD SR. The support is focused primarily on the review and assessment of safety analyses, safety analysis reports, and other technical documentation submitted to UJD SR for reviewing and assessment. The department/section is a part of the organisation structure of UJD SR (see the organisational chart above).

In addition, the UJD SR uses for technical support of regulatory activities domestic legal and personal entities that are working in the area, have implemented quality management system and have necessary technical and personal capability as in particular universities, then engineering organisations as VUJE Trnava, Relko Bratislava, VUEZ Levice, and others.

Co-operation with foreign entities on various bases is performed as well: under intergovernmental agreements on co-operation and information exchange e.g. SUJB, Czech Republic, HAEC (Hungary), Bundeskanzleramt (Austria), NAEA (Poland), BMU (Germany), etc.; under international agreements on co-operation (US NRC, USA, etc.); on the basis of membership in the international organisations: (IAEA, OECD/ NEA, EC, CTBTO, WENRA, VVER FORUM, NERS); and on an informal basis (Armenia, Japan, Finland, etc.).

## Slovenia

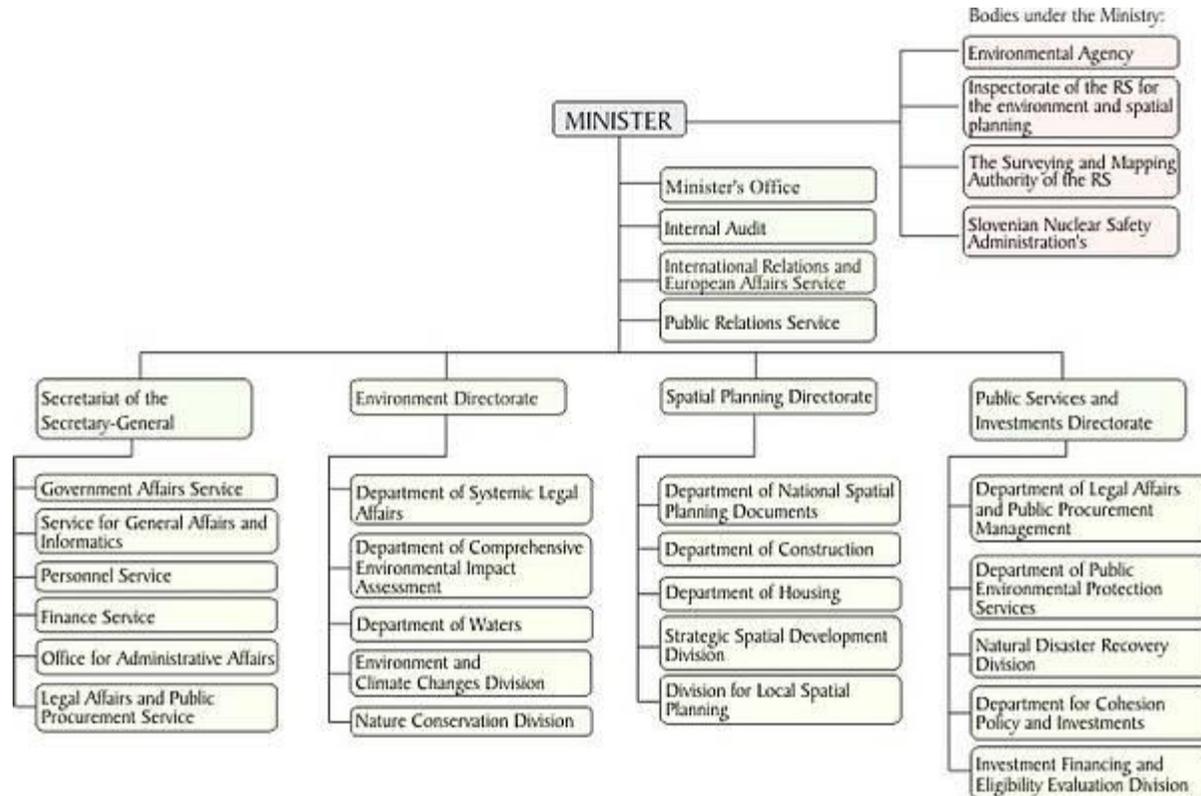
## SNSA within the governmental structure



- **The Parliament:** the National Strategic Spatial Plan.
- **The Government:** the National Spatial Plan.
- **The Ministry of Economy:** the energy permit.
- **The Ministry of Environment and Spatial Planning:** leads the preparation of the NSP, the construction license.
- **Expert Council for Radiation and Nuclear Safety:** opinions on issues relating with regulations, work plans, expertise.

Slovenia

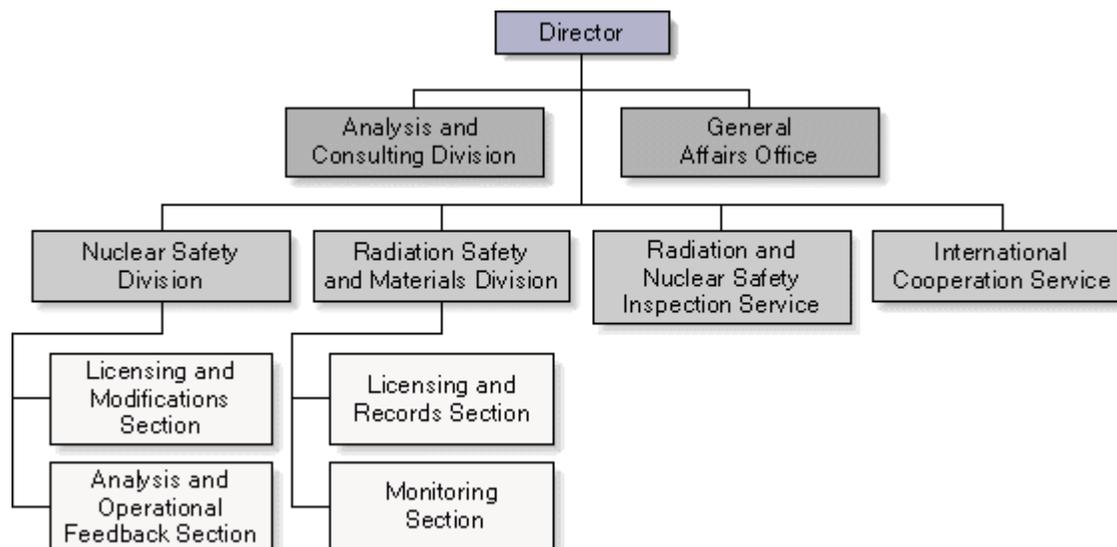
Organisational Chart of Ministry of Environment and Spatial Planning



- **Environmental Agency:** the environmental protection consent.
- **Slovenian Nuclear Safety Administration:** guidelines and regulations for Special Safety Analysis preparation, preliminary Consent on Radiation and Nuclear Safety for the environmental consent, Consent on Construction, Consent on trial operation.
- **Spatial Planning Directorate:** trial operation license.

## Slovenia

## Organisational Chart of SNSA



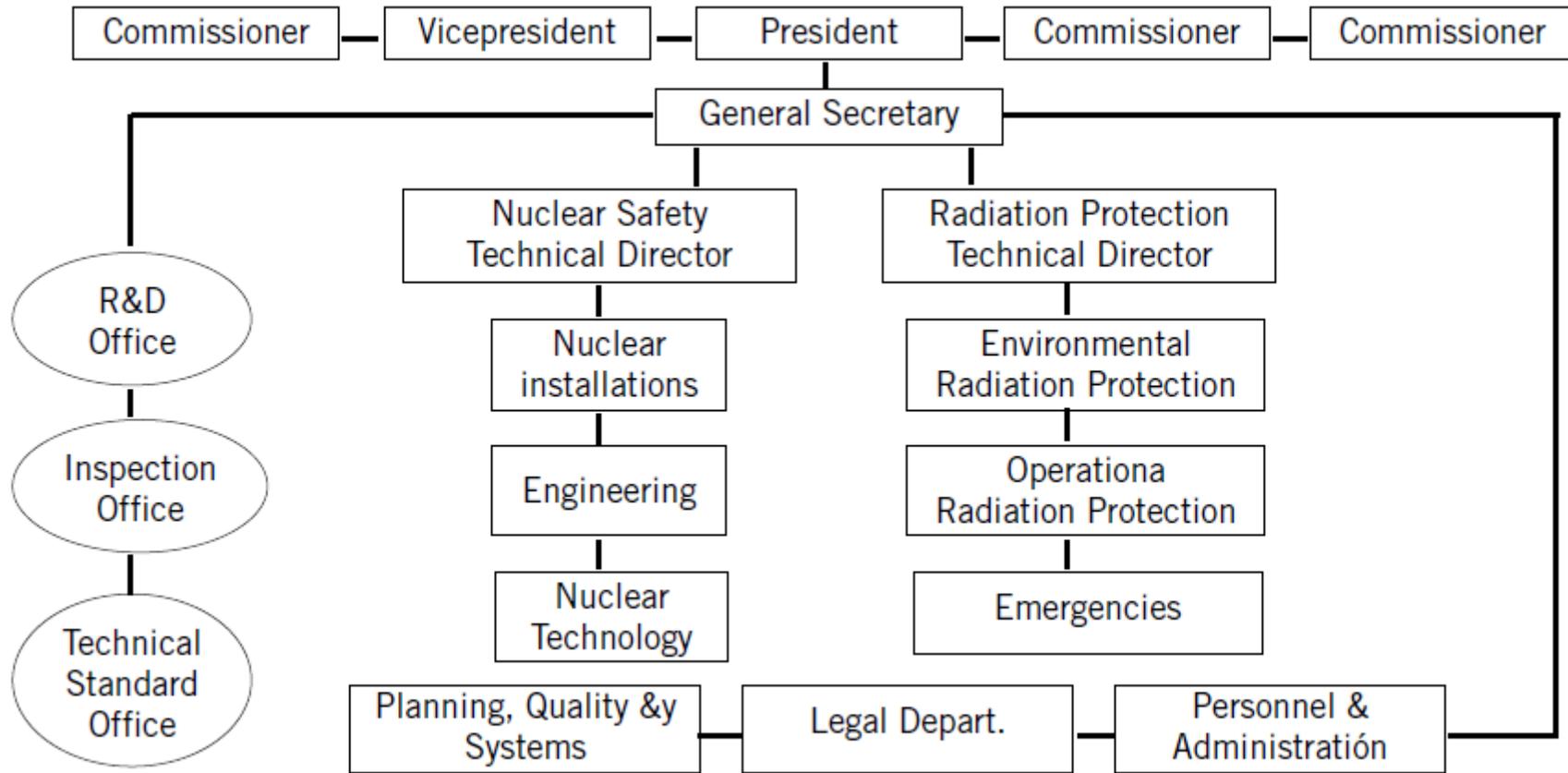
- **Nuclear Safety Division:** licensing process, supervision, audits.
- **Radiation Safety and Materials Division:** licensing process.
- **Radiation and Nuclear Safety Inspection Service:** supervisions, audits.
- **Project group for new build:** a special project team with the task to prepare the SNSA for the possible start of the new nuclear build.

## Technical Support Organisations

Technical Support Organisations shall be legal entities or natural persons who have obtained a licence from the ministry competent for the environment. The licence is issued for individual fields of radiation and nuclear safety or for a number of fields of radiation and nuclear safety together for a maximum period of five years. A foreign legal person or natural person shall obtain a licence for carrying out the work of an authorised expert for radiation and nuclear safety when pursuant to the regulations of the country, in which the aforementioned person is registered for assessing radiation and nuclear safety, this person has licence as required for authorised experts for radiation and nuclear safety equal to that in accordance with Slovene legislation.

Operators of radiation or nuclear facilities must consult Technical Support Organisation with regard to specific issues related to radiation and nuclear safety in accordance with the Ionising Radiation Protection and Nuclear Safety Act.

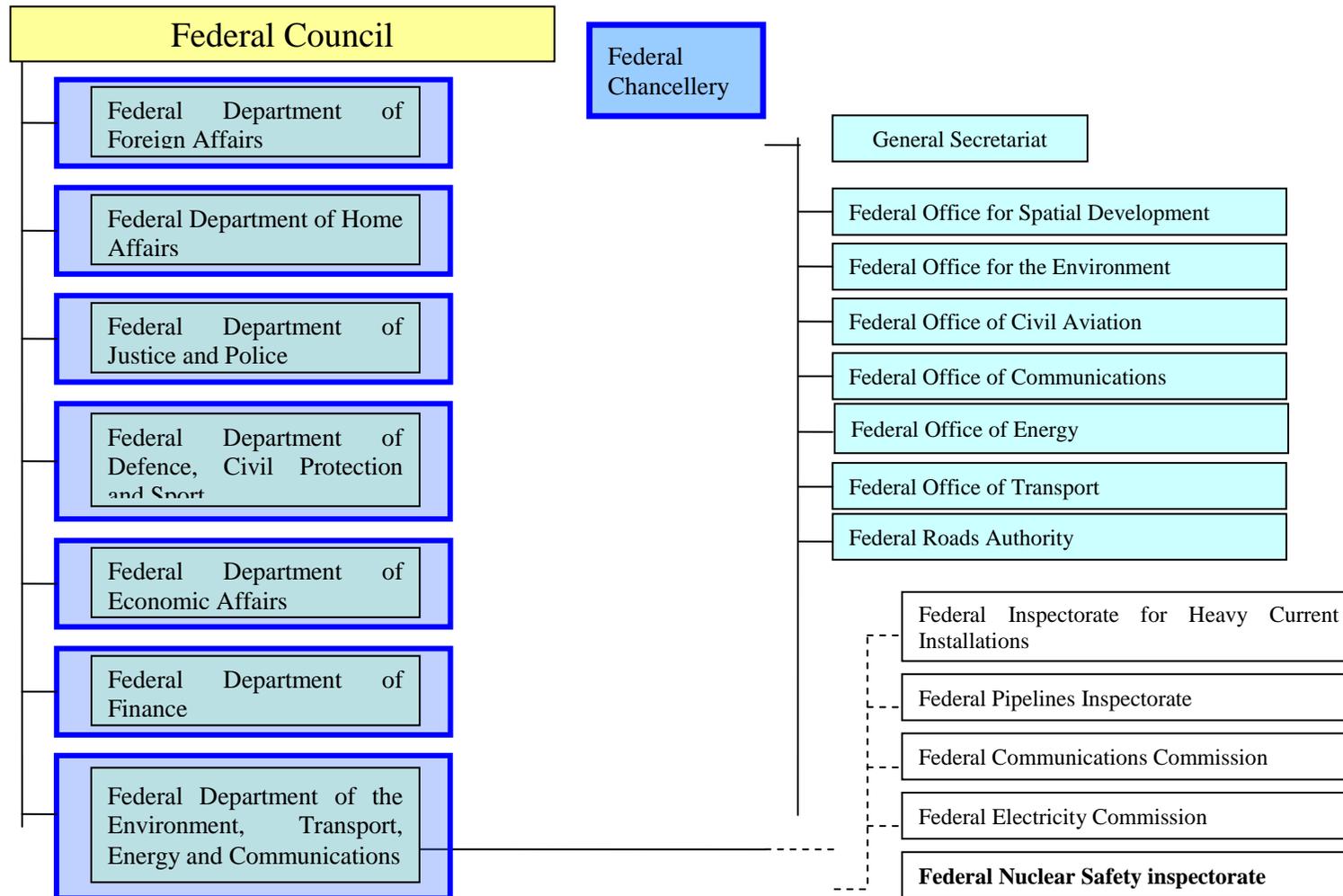
Spain  
CSN



CSN has to report to Parliament. Although the licensees are granted by the Ministry of Industry, this Institution needs the CSN report on safety issues to grant the license. CSN conditions on the license are legally binding for the Ministry so they can not be discarded. Regarding TSO, CSN relies on some issues in the technical support of the CIEMAT.

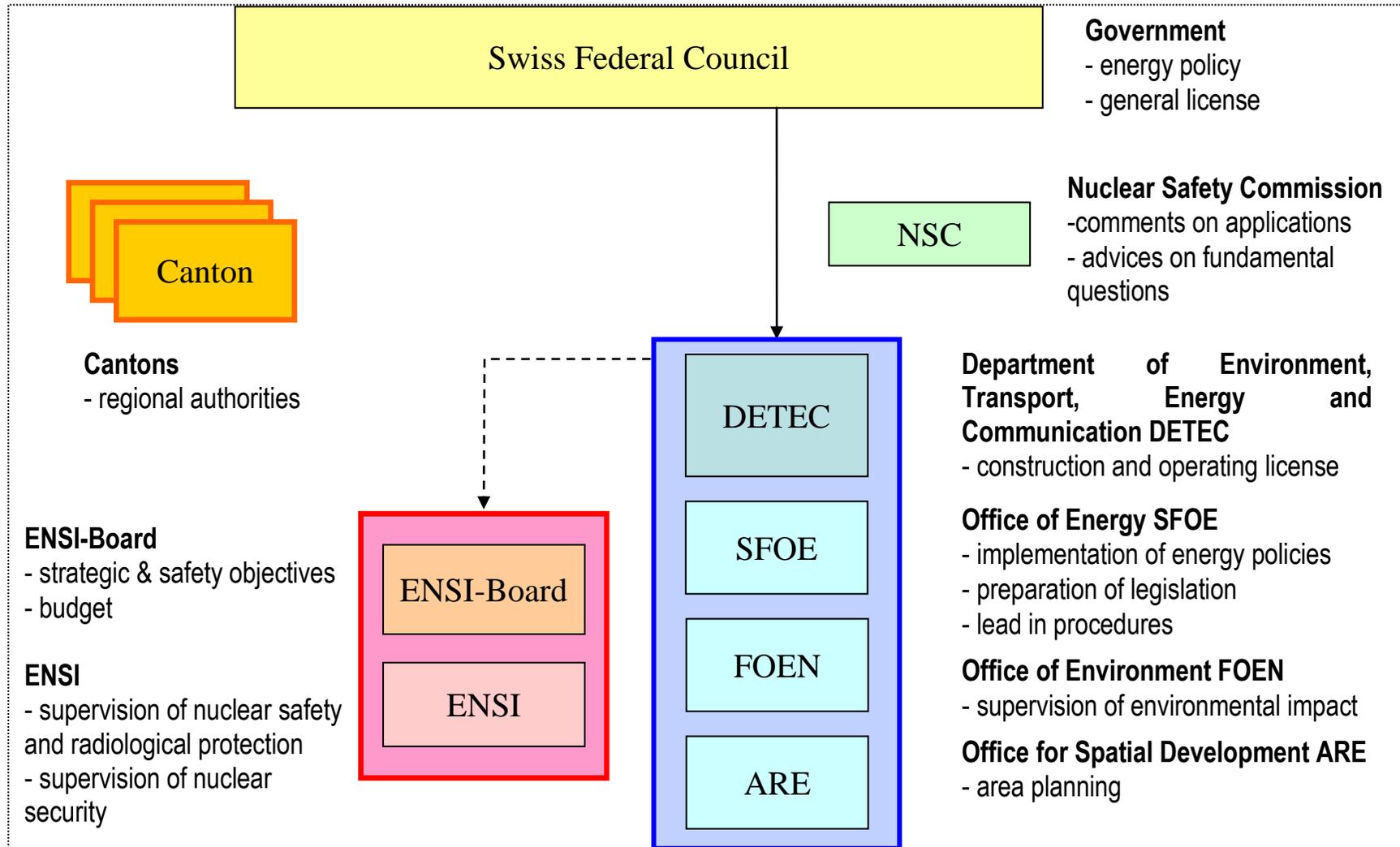
Switzerland

The ENSI within the federal administration



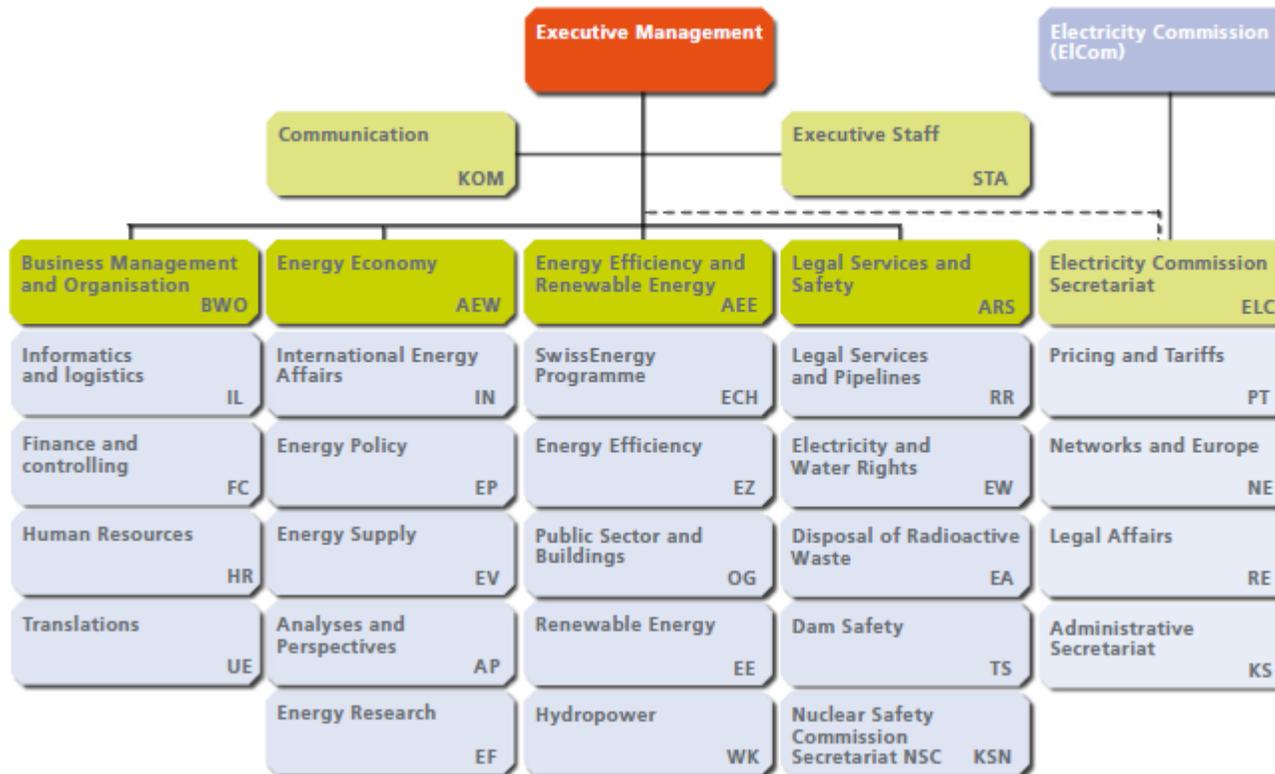
Switzerland

The federal and cantonal authorities involved in the licensing of new nuclear power plants



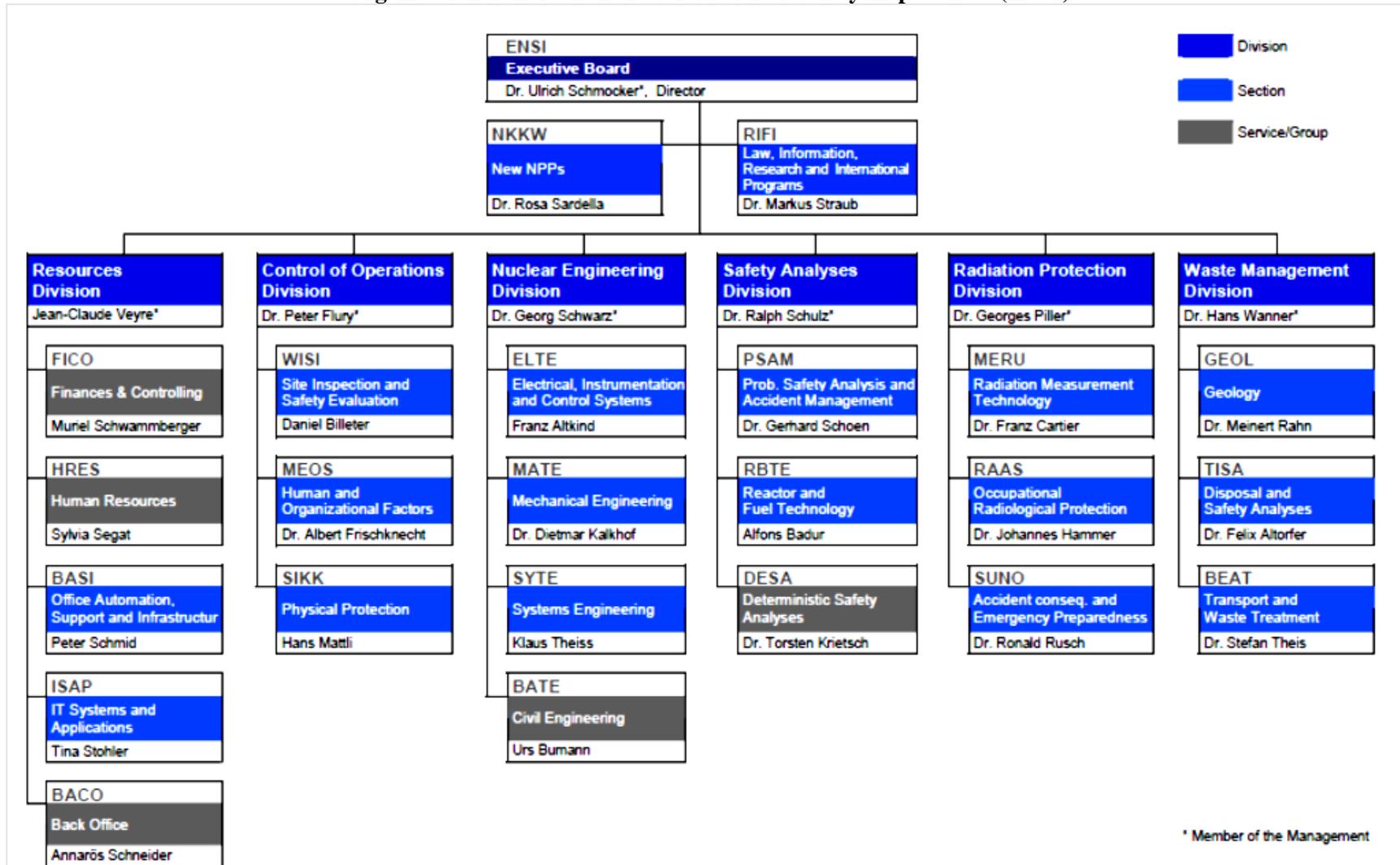
Switzerland

Organisational chart of the Swiss Federal Office of Energy (SFOE)

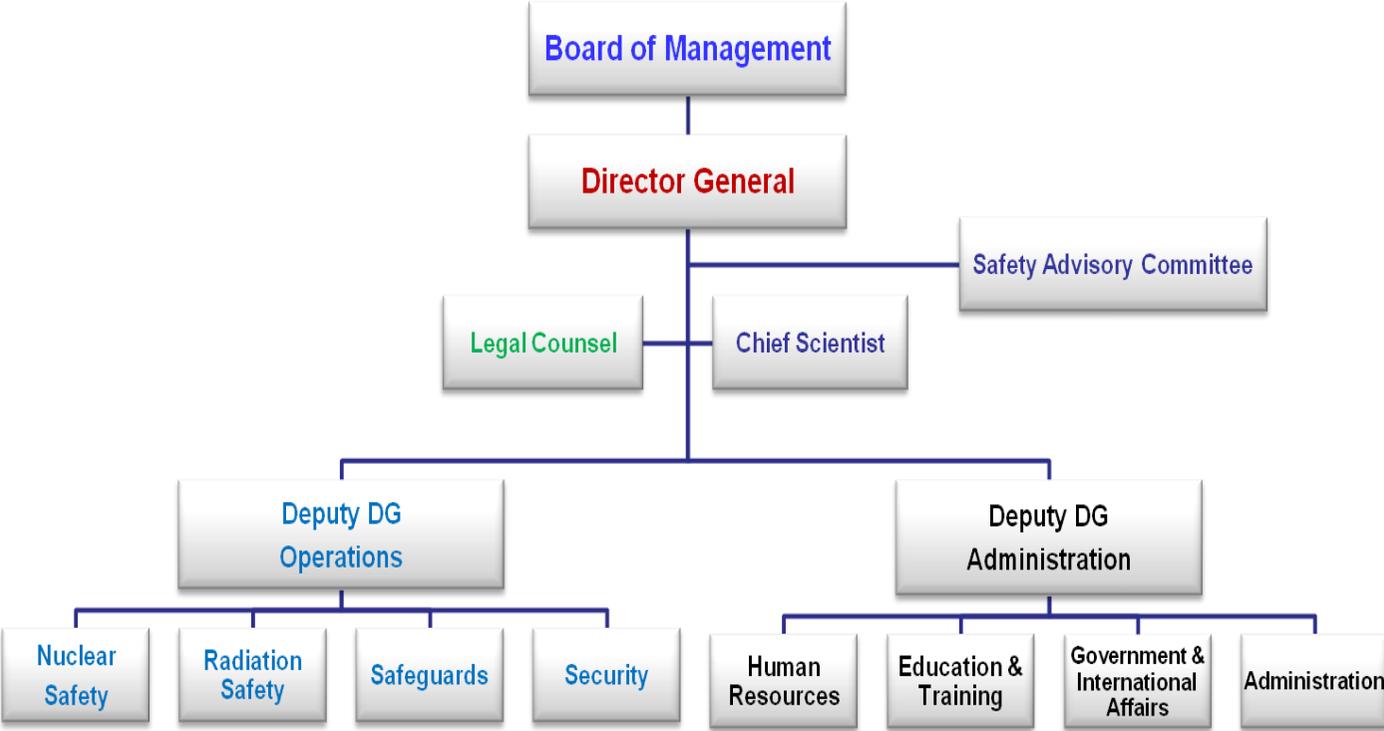


Switzerland

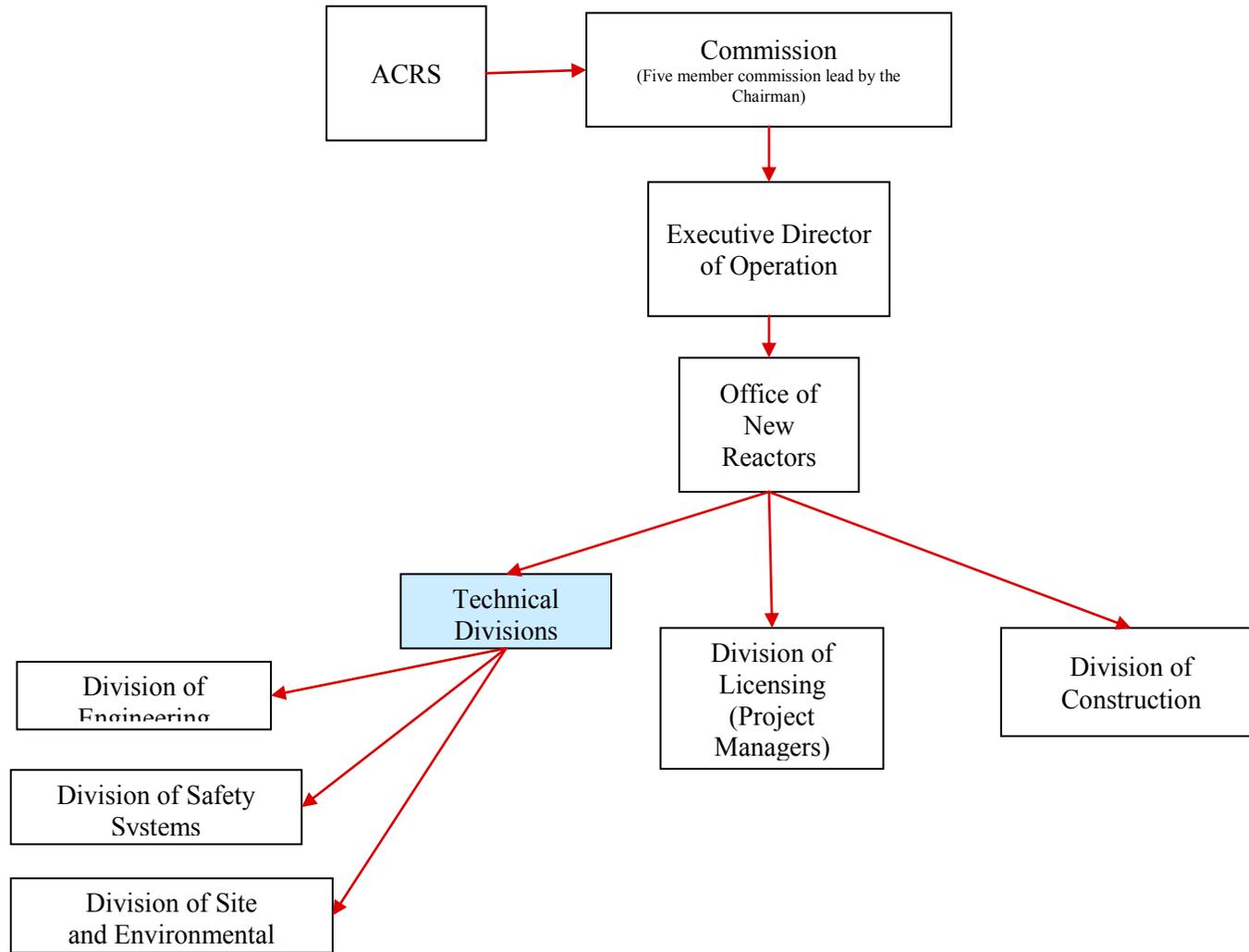
Organisational chart of the Federal Nuclear Safety Inspectorate (ENSI)



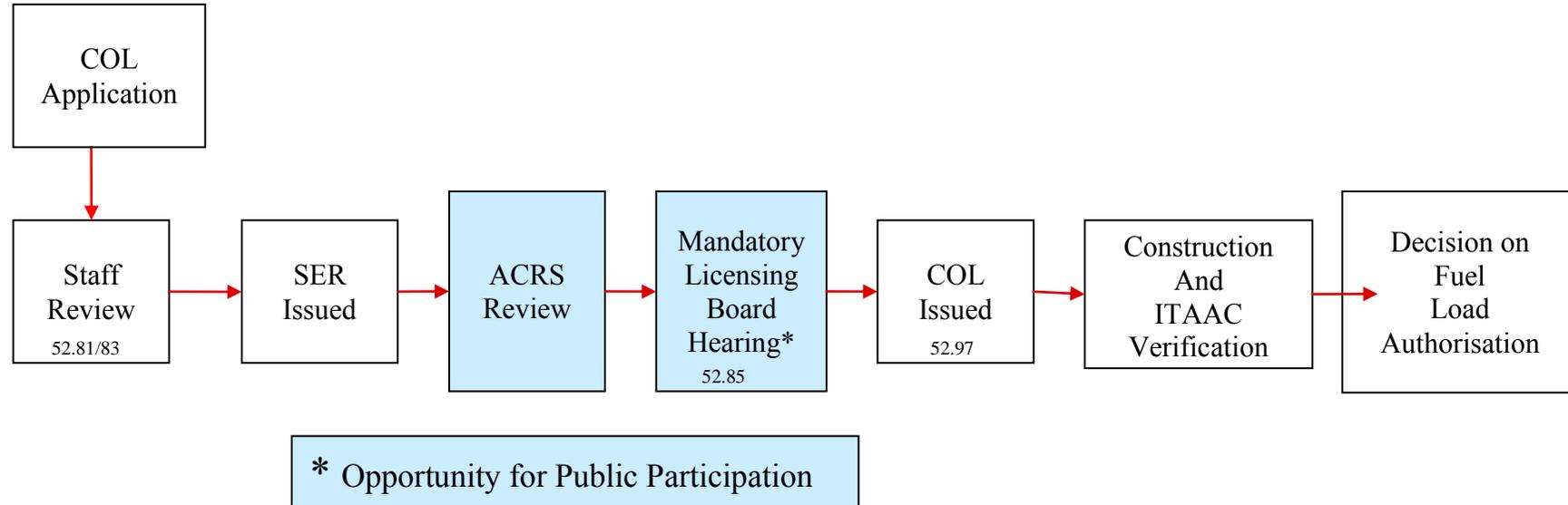
**United Arab Emirates  
FANR**



**United States**  
**USNRC New Reactors Organisation**



United States  
USNRC COL Review Process





## APPENDIX K

### Who performs the oversight?

- Each member state was asked to explain who performs the oversight during construction and during operation.
- In most of the member states the accountable stakeholder during construction as well as during operation is the respective regulatory authority. Especially during construction in many member states there are also further experts like TSOs on site who support the regulatory authority. In some member states like France or Japan experts from the TSOs join the inspections during operation, too. In Switzerland and UK, for example, there are also other authorities beside the regulator that have oversight roles during construction.
- In Slovakia the members of the Slovak Chamber of Civil Engineers perform the construction oversight and UJD SR performs the operation oversight.
- In Canada the licensee is accountable for oversight by law, but the regulatory oversight of the licensee is performed by the regulator.
- In Finland the construction oversight is performed by all parties. During operation the oversight is performed by the licensee, but the regulator verifies that the other stakeholders perform their functions.

Question	Canada CNSC
<b>Who performs the construction oversight?</b>	<p>The Licensee is accountable for oversight per the <i>Nuclear Safety and Control Act</i> and the terms of the <i>License to Construct</i>.</p> <p>Regulatory oversight of the licensee will be performed by CNSC resident inspectors with assistance from head office regional office specialists. The inspectors may ask for additional technical experts depending on the inspection, test, or analysis being performed.</p>
<b>Who performs the operation oversight?</b>	<p>Same response as for construction, but under a <i>License to Operate</i>. Specific divisions within CNSC that will lead licensee oversight efforts are still under discussion.</p>

Question	Czech republic SUJB
<b>Who performs the construction oversight?</b>	<p>The construction oversight is performed by SUJB inspectors (nuclear safety, radiation protection). There are inspectors on site and in regional centers for radiation protection. Inspectors use experts support from research institutes, universities, special organisations (e.g. welding association, mechanical engineers association).</p>
<b>Who performs the operation oversight?</b>	<p>The operation oversight is performed by SUJB inspectors (nuclear safety and radiation protection) primarily from site units and regional centers.</p>

Question	Finland STUK
<b>Who performs the construction oversight?</b>	<p>The construction oversight is performed by all parties - contractors itself, vendor, licensee and STUK/Inspection Organisations verify that the other stakeholders perform their functions as described to STUK.</p>
<b>Who performs the operation oversight?</b>	<p>The operation oversight is performed by licensee itself, and STUK/Inspection Organisations verify that the other stakeholders perform their functions as described to STUK.</p>

Question	France ASN
<b>Who performs the construction oversight?</b>	<p>Construction oversight is performed by ASN inspectors (regional direction and national direction).</p> <p>IRSN experts can join the inspections and may be required to undertake further technical reviews of findings arising from an inspection. In addition, an assessment would be performed by ASN and IRSN depending on the inspection findings or the non compliance observed during the inspection.</p>
<b>Who performs the operation oversight?</b>	<p>Operation oversight is performed by ASN inspectors (regional direction and national direction).</p> <p>IRSN experts can join the inspections and may be required to undertake further technical reviews of findings arising from an inspection. In addition, an assessment would be performed by ASN and IRSN depending on the inspection findings or the non compliance observed during the inspection.</p>

Question	Hungary HAEA
<b>Who performs the construction oversight?</b>	Hungarian Atomic Energy Authority
<b>Who performs the operation oversight?</b>	Hungarian Atomic Energy Authority

Question	Japan NISA/JNES
<b>Who performs the construction oversight?</b>	NISA inspector and JNES inspector oversee the construction.
<b>Who performs the operation oversight?</b>	NISA inspector (both resident and dispatched) and JNES inspector oversee the operation.

Question	Korea MEST/KINS
<b>Who performs the construction oversight?</b>	<p>The types of regulatory inspection include Pre-operational Inspection that is conducted to verify construction and associated performance of a nuclear power reactor and related facilities, Periodic Inspection performed during the operation period of the facilities, Quality Assurance Inspection, Resident office's Daily Inspection, Special Inspection, and so on.</p> <p>MEST is running an on-site resident office at each site of nuclear power plants (NPPs), and the MEST inspectors of the office perform daily inspection on the nuclear power plants under construction or in operation.</p> <p>MEST Resident inspectors perform the Daily Inspection, KINS Inspectors perform the Pre-operational Inspection.</p>
<b>Who performs the operation oversight?</b>	<p>MEST Resident inspectors perform the Daily Inspection, KINS Inspectors performs the Periodic Inspection to verify whether the nuclear reactor facilities: 1) are operated in compliance with the conditions upon which the operating license was granted, 2) can withstand the pressure, radiation, or other operational environments; and 3) are maintained in the same state as the one for which the result of the pre-operational inspection was satisfactory.</p>

Question	Poland PAA
<b>Who performs the construction oversight?</b>	<p>President of PAA in co-operation (if needed) with other administrative authorities, in accordance with their respective competences, grouped in so called Co-ordination System which consist of: Office of Technical Inspection, Chief Environmental Protection Inspector, Chief Sanitary Inspector, State Fire Service, General Inspector of Building Control Office, Chief Labour Inspector and Internal Security Agency.</p>
<b>Who performs the operation oversight?</b>	

Question	Slovakia UJD
<b>Who performs the construction oversight?</b>	The members of Slovak Chamber of Civil Engineers.
<b>Who performs the operation oversight?</b>	UJD SR

Question	Slovenia SNSA
<b>Who performs the construction oversight?</b>	SNSA: Supervision of construction, together with other competent inspection bodies.
<b>Who performs the operation oversight?</b>	SNSA: Supervision of trial operation, operation.

Question	Spain CSN
<b>Who performs the construction oversight?</b>	Mainly through headquarters inspectors.
<b>Who performs the operation oversight?</b>	Operation of Nuclear Power Plants is carried out with the SISC (integrated system for reactor oversight).

Question	Switzerland ENSI
<b>Who performs the construction oversight?</b>	The responsibility of construction oversight is with the ENSI, which may resort to external support. Some areas, such as industrial safety and fire protection are not within the ENSI's responsibility. The interfaces between the different authorities have to be clearly defined.
<b>Who performs the operation oversight?</b>	The responsibility of operation oversight is with the ENSI, which may resort to external support.

<b>Question</b>	<b>United Arab Emirates FANR</b>
<b>Who performs the construction oversight?</b>	FANR
<b>Who performs the operation oversight?</b>	FANR

<b>Question</b>	<b>United Kingdom ONR</b>
<b>Who performs the construction oversight?</b>	<p>There are a number of interested parties within ND who perform oversight during construction. These tend to reflect their areas of competence.</p> <p>Other Public Bodies such as the Environment Agency also have an oversight role during construction.</p>
<b>Who performs the operation oversight?</b>	The oversight for operations continues with ND.

<b>Question</b>	<b>United States USNRC</b>
<b>Who performs the construction oversight?</b>	The Construction oversight is performed by the residents inspectors and regional specialists. The inspectors may ask for additional technical experts depending on the inspection, test, or analysis being performed.
<b>Who performs the operation oversight?</b>	At the moment, the Nuclear Power Plant goes into Operation, the operation oversight passes to the reactor oversight program with the inspection oversight by the regional office where the plant is located.

## APPENDIX L

### **Independent advisory committee**

Most of the countries use an independent advisory committee. Some are required to have one and take the Committee's advice into consideration during their licence review, while others have a committee for consultation not part of their regulatory framework. It all depends on how each country's regulations are written.

Mainly, the advisory committee performs the following tasks:

- a) examines some of the fundamental issues concerning nuclear safety;
- b) evaluates the regulatory agency's work during licensing steps;
- c) for some cases the committee even participates in legislative work in the field of nuclear safety.

Most of the committees are composed of members representing different academic circles dealing with very broad range of topics related to the nuclear field.

Question	Canada CNSC
If used, how is an independent advisory committee used?	

Question	Czech republic SUJB
If used, how is an independent advisory committee used?	

Question	Finland STUK
If used, how is an independent advisory committee used?	<p>An advisory committee is used in Finland. The committee independently selects its objects of interest. Committee mainly evaluates STUK work during licensing steps (resources, results of reviews etc.) by reviewing STUK's safety assessments and asking presentations from different areas.</p>

Question	France ASN
<p><b>If used, how is an independent advisory committee used?</b></p>	<p>When preparing its decisions, ASN relies on opinions and recommendations from Advisory Committees of experts (GPE). These consultations are not regulatory. The GPEs are consulted by the ASN Director-General concerning the safety and radiation protection of installations and activities within their particular field of competence.</p> <p>For instance, concerning EPR safety options assessment (conceptual safety features review file and basic design report assessments) between 1994 and 2006, ASN required 40 GPE's meetings. The technical guidelines for the design and construction of the next generation of PWR nuclear power plant was one of the outcomes.</p> <p>During the assessment of the authorisation draft and final file between 2001 and 2006, ASN required 8 GPE's meetings. Each meeting dealing with specific issues such as core catcher design, radiation protection of workers, heterogeneous-dilution risk of the boron concentration in order to ensure that the design comply with the technical guidelines.</p> <p>During the construction phases up to the commissioning decision, ASN will consult GPE on topic for which the assessment raises issues or on topic with high safety stakes (for instance I&amp;C, man-machine interface in the control room). In parallel, yearly GPE meeting are organised in order to keep experts informed about the assessment underway and the position taken by ASN on specific topics.</p> <p>ASN will consult GPE in order to take position for the commissioning decision.</p>

Question	Hungary HAEA
<p><b>If used, how is an independent advisory committee used?</b></p>	<p>Scientific Committee of the Hungarian Atomic Energy Authority</p>

Question	Japan NISA/JNES
<p><b>If used, how is an independent advisory committee used?</b></p>	<p><b>-Advisory committee</b></p> <p>METI(NISA) has advisory committee, named the Nuclear and Industrial Safety Subcommittee (NISS) that proposes policies on nuclear safety and safety of electric power.</p> <p>In the course of review on draft EIS and the application format for a license for establishment, METI solicits experts' opinion.</p> <p><b>- Nuclear Safety Commission</b></p> <p>The NSC conducts its own review of the results of NISA's examination on the application from the view points of the licensee's technical capability and non hindrance to the prevention of radiological hazards. The NSC audits the appropriateness of NISA's regulatory administration in construction and operation stages after issuance of the license, from the viewpoint of reasonableness, effectiveness and transparency. Thus, the framework that confirms the quality of the safety administration is maintained.</p> <p>When the NSC deems it necessary as a part of its assigned duties, the NSC may recommend and may request reports and co-operation concerning the submission of materials, statements of viewpoint, and explanation to the heads of relevant administrative organisations, by way of the Prime Minister.</p> <p>The NSC also has the authority to inquire directly of the licensees, maintenance and inspection contractors in order to supervise and to audit the safety regulation implemented by regulatory body</p> <p><b>- Atomic Energy Commission</b></p> <p>The Minister of METI, before issuing a license to establish nuclear installations, shall receive views of the AEC with regard to the following items: (1) the nuclear installations will not be used for any purposes other than peaceful purposes, (2) the license will cause no hindrance to the planned development or utilisation of nuclear energy, and (3) the applicant has an adequate financial basis to construct and maintain the nuclear installations.</p>

Question	Korea MEST/KINS
<p><b>If used, how is an independent advisory committee used?</b></p>	<p>The Nuclear Safety Committee (NSC), under the direct control of the Minister of MEST, has been organised and operated pursuant to the Atomic Energy Act (AEA) Article 5 (Nuclear Safety Committee) for objective and transparent deliberation and decision on important matters of nuclear safety, based on the principles of independence and fairness of the safety regulation in accordance with the AEA. The NSC operates the Special Committee on Nuclear Safety (SCNS) for professionally conducting in-depth investigation and deliberation of tasks of its concern.</p> <p>The Nuclear Safety Committee (NSC) consists of the Minister of MEST (as the chairman) and eight members. Any person who is working for NPPs or other regulated facilities shall not be appointed as a member, in order to strengthen the independence of the nuclear safety regulation activities. The key matters deliberated and decided by the NSC are as follows:</p> <ul style="list-style-type: none"> <li>- Integration and co-ordination of the matters on nuclear safety control</li> <li>- Matters on the regulation of nuclear reactors and materials</li> <li>- Matters on the protection of hazards caused by radiation exposure during the utilisation of nuclear energy</li> <li>- Estimation and allocation plans of expenditures for nuclear safety control expenses</li> <li>- Promotion of experimentation and research activities concerning nuclear safety control</li> <li>- Fostering and training of researchers and engineers for nuclear safety control</li> <li>- Matters on the safety control of radioactive wastes</li> <li>- Matters on the countermeasures for radiation disaster</li> </ul> <p>The NSC organised the Special Committee on Nuclear Safety (SCNS) to technically review and deliberate its tasks. The SCNS consists of 25 experts, and operates five subcommittees for efficiently operating itself and for strengthening its competence for deliberation of the issues in specialised areas including reactor systems; radiation protection; siting and structure; policy and system; and nuclear emergency and radiation environment. In addition, the SCNS can organise and operate special investigation committees when nuclear or radioactive incidents occur.</p>

Question	Poland PAA
<p><b>If used, how is an independent advisory committee used?</b></p>	<p>Atomic Law amendment created new body - The Council for Nuclear Safety and Radiological Protection which is consulting and opinion-giving body of the PAA's President.</p> <p>Council consist of chairman, deputy chairman, secretary and no more than 7 members - experts in nuclear safety, radiation protection, physical protection, nuclear material safeguards etc.</p> <p>Tasks of the Council will cover among the others:</p> <ul style="list-style-type: none"> <li>- reviewing of draft licenses,</li> <li>- reviewing of draft legal acts and regulatory guides prepared by PAA,</li> <li>- formulating opinions and assessments on request of President of PAA,</li> <li>- submitting suggestions of improvements in supervising activities involving exposure.</li> </ul> <p>The Council will be elected for the period of 4 years. The first council term will begin on 1 January 2012.</p>

Question	Slovakia UJD
<p><b>If used, how is an independent advisory committee used?</b></p>	<p>There is the International Advisory Committee established as an advisory body of Slovak Power Plants – ENEL company executive board. The committee is an external part of independent assessment of nuclear safety. Based on experience of the best nuclear power plant operators in the world, the members of the committee submit recommendations for continuous enhancement of nuclear safety to the executive board of Slovak Power Plants – ENEL company.</p>

Question	Slovenia SNSA
<p><b>If used, how is an independent advisory committee used?</b></p>	<p>An expert council on issues relating to radiation and nuclear safety, to the physical protection of nuclear materials and facilities, to the safeguards of nuclear goods, to radioactivity in the environment, to the radiation protection of the environment, to intervention measures, to the mitigation of the consequences of emergencies, and to the use of radiation sources other than those used in health and veterinary care is the expert council for the provision of expert help to the SNSA, as well as to competent authorities and inspectors.</p> <p>The expert council has the following duties:</p> <ul style="list-style-type: none"> <li>- giving opinions and making proposals during the drawing up regulations,</li> <li>- giving opinions on the annual work plans of the competent administrative authorities and inspectors,</li> <li>- giving opinions and proposals on issues relating to the topics they are experts for requested by authorities competent for administrative and inspectorial decision-making.</li> </ul>

Question	Switzerland ENSI
<p><b>If used, how is an independent advisory committee used?</b></p>	<p>An independent advisory committee is the Federal Nuclear Safety Commission (NSC). The NSC may be invited by the ENSI, the DETEC or the Federal Council to perform the following advisory tasks:</p> <ol style="list-style-type: none"> <li>a. examination of fundamental issues concerning nuclear safety.</li> <li>b. participation in legislative work in the field of nuclear safety. Additionally the NSC may give a second opinion on the safety evaluations of the ENSI if required to do so by the the DETEC or the Federal Council.</li> </ol>

Question	United Arab Emirates FANR
<b>If used, how is an independent advisory committee used?</b>	A safety advisory committee is not yet established.

Question	United Kingdom ONR
<b>If used, how is an independent advisory committee used?</b>	Currently ND does not take advice from an independent committee.

Question	United States USNRC
<b>If used, how is an independent advisory committee used?</b>	As prescribe in 10 CFR 52.23, 52.53 and 52.87, the NRC must refer the applications for ESP, DC, and COL to the Advisory Committee on Reactor Safeguards (ACRS). The ACRS will then review and report to the commission the portions of the application which concern safety. The ACRS provides the NRC with independent and timely technical advice on issues of public safety related to nuclear reactors, reactor safeguards, and nuclear waste and materials management issues.

**APPENDIX M**

**Which codes and standards are accepted by your agency?**

Question	Canada CNSC
<b>Which codes and standards are accepted by your agency?</b>	It is a standard regulatory philosophy that CNSC accepts any code and standards proposed by the applicant as long as the applicant can clearly demonstrate their proposed codes and standards are equivalent or exceed accepted Canadian codes and standards.

Question	Czech republic SUJB
<b>Which codes and standards are accepted by your agency?</b>	<p>IAEA Safety Standards:</p> <ul style="list-style-type: none"> <li>– IAEASS No. SF-1 Fundamental Safety Principles</li> <li>– IAEA SS No. 116 Design of Spent Fuel Storage Facilities</li> <li>– IAEA SS No. 117 Operation of Spent Fuel Storage Facilities</li> <li>– IAEA SS No. 118 Safety Assessment for Spent Fuel Storage Facilities</li> <li>– IAEA SSS No. GS-G-4.1 Format and Content of the Safety Analysis Report for Nuclear Power Plants</li> <li>– IAEA SSS No. NS-G-1.2 Safety Assessment and Verification for Nuclear Power Plants</li> <li>– IAEA SSS No. WS-G-1.1 Safety Assessment for Near Surface Disposal of Radioactive Waste</li> <li>– IAEA SSS No. TS-R-1 Regulations for the Safe Transport of Radioactive Material</li> <li>– WS-G-1.1 Safety Assessment for Near Surface Disposal of Radioactive Waste</li> <li>– WS-G-2.1 Decommissioning of Nuclear Power Plants and Research Reactors</li> <li>– WS-G-2.4 Decommissioning of Nuclear Fuel Cycle Facilities</li> <li>– NS-G-2.7 Radiation Protection and Radioactive Waste Management in the Operation of Nuclear Power Plants</li> <li>– TS-G-1.1 Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (2002)</li> <li>– TS-G-1.2 Planning and Preparing for Emergency Response to Transport Accidents Involving Radioactive Material</li> <li>– WENRA reference levels specification</li> </ul> <p>U.S.NRC Rg.1.70 &amp; NUREG</p> <p>European Technical Standards (IEEE, IEC, ISO)</p> <p>National technical standards</p>

Question	Finland STUK
<b>Which codes and standards are accepted by your agency?</b>	Some codes and standards are referred in YVL guides and so far directly adapted. Otherwise the suitability of the standard (series) shall be presented before or during the principle design phase (during DIP or construction license phases). When using not well known standards, comparison to the usually used standards is needed.

Question	France ASN
<b>Which codes and standards are accepted by your agency?</b>	ASN does not formally endorsed codes and standards. Any codes and standards can be proposed by the applicant insofar as the applicant can demonstrate that these codes and standards allow to reach the objectives fixed in the French regulation in particular by : - the Ministerial Order of 12 December 2005 concerning nuclear pressure equipments - the technical guidelines for the design and construction of the next generation of PWR nuclear power plant

Question	Hungary HAEA
<b>Which codes and standards are accepted by your agency?</b>	The Nuclear Safety Regulation of the new reactors is under expert discussion. It will define the scope and method of using codes and standards.

Question	Japan JNES
<b>Which codes and standards are accepted by your agency?</b>	The technical standard only provides performance requirements which are necessary for safety and the detailed specifications for conforming to these performance requirements are to be defined by using standards of academic societies and associations as listed below; <ul style="list-style-type: none"> <li>✓ Guidelines and Rules of the Japan Society of Mechanical Engineers</li> <li>✓ Guidelines and Rules of the Atomic Energy Society of Japan</li> <li>✓ Guidelines and Rules of the Thermal and Nuclear Power Engineering Society</li> </ul> Guidelines and Rules of the Japan Electric Association

Question	Korea MEST/KINS
<b>Which codes and standards are accepted by your agency?</b>	The Korea Electric Power Industry Codes (KEPIC Codes) has been developed taking into account the international industry standards such as ASME or IEEE standards, and is applied upon endorsement by the MEST Notice No.2010-28 (Guideline for Application of Korea Electric Power Industry Codes as Technical Standards of Nuclear Reactor Facilities, MEST.Reactor.021).
Question	Poland PAA
<b>Which codes and standards are accepted by your agency?</b>	Decision on adoption of specific codes and standards will be taken after vendor of nuclear technology is selected.
Question	Slovakia UJD
<b>Which codes and standards are accepted by your agency?</b>	Codes: any relevant internationally accepted/used codes (ANS, EU), e.g. MELCOR, RELAP, ASTEC, CAFTA, RISK SPECTRUM, etc, etc. Standards: any relevant internationally accepted/used standards of IAEA, ANSI, EU, Slovak Technical Standards (STN).
Question	Slovenia SNSA
<b>Which codes and standards are accepted by your agency?</b>	The codes and standards used in state of origin is used and they are approved through the process of the safety analysis report approval (construction phase).
Question	Spain CSN
<b>Which codes and standards are accepted by your agency?</b>	Codes and standards endorsed by CSN as needed.

Question	Switzerland ENSI
<b>Which codes and standards are accepted by your agency?</b>	The accepted codes are listed in the ENSI guidelines, for example: ASME, KTA rules. SIA, DIN, EN, IEC. Other codes (e.g. from the vendor's country) may be accepted from the ENSI as needed.

Question	United Arab Emirates FANR
<b>Which codes and standards are accepted by your agency?</b>	The choice of codes and standards will be proposed by the applicant and will depend on the practices in the NPP vendor country of origin.

Question	United Kingdom ONR
<b>Which codes and standards are accepted by your agency?</b>	As a non prescriptive organisation ND does specify which codes and standards should be used. However, it is expected that any code and standards used with the requirements in our Safety Assessment principles and Technical Assessment Guides.

Question	USA USNRC
<b>Which codes and standards are accepted by your agency?</b>	As prescribed in 10 CFR 50.55a, NRC accepts ASME, ANSI, IEEE and other codes and standards endorsed by the staff as needed.