

Country Fact Sheets

Austria

BMNT - Federal Ministry of Sustainability and Tourism
BMASGK - Federal Ministry of Work, Social Affairs, Health and Consumer Protection

Belgium

FANC - Federal Agency for Nuclear Control
BEL V - Subsidiary of the FANC

Bulgaria

NRA - Nuclear Regulatory Agency
NCRRP - National Center for Radiobiology and Radiation Protection

Croatia

SORNS - State Office for Radiological and Nuclear Safety

Cyprus

MLSI - DLI - RICS - Ministry of Labour and Social Insurance - Department of Labour Inspection - Radiation Inspections and Control Service

Czechia

SUJB - State Office for Nuclear Safety

Denmark

SIS - National Institute for Radiological Protection

Estonia

KESKKONNAAMET - Environmental Board

Finland

STUK - Radiation and Nuclear Safety Authority

France

ASN - French Nuclear Safety Authority
IRSN - Institut de Radioprotection et de Sûreté Nucléaire

Germany

BMUB - Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
BfS - Federal Office for Radiation Protection

Greece

EEAE - Greek Atomic Energy Commission

Hungary

NRIRR - Frédéric Joliot-Curie National Research Institute for Radiobiology and Radiohygiene

Iceland

GR - Icelandic Radiation Safety Authority

Ireland

EPA/ORP - Environmental Protection Agency/Office of Radiological Protection
HSE - Health Service Executive

Italy

ISPRA - The Institute for Environmental Protection and Research

Latvia

RSC - Radiation Safety Centre of State Environmental Service of Latvia

Lithuania

RSC - Radiation Protection Centre

Luxembourg

MS - Ministry of Health of Luxembourg

Malta

OHSa - Occupational Health & Safety Authority

Norway

NRPA - Norwegian Radiation Protection Authority

Poland

PAA - National Atomic Energy Agency
COI - Cancer Center and Institute of Oncology, Warsaw

Portugal

COMRSIN - Comissao Reguladora para a Seguranca das Instalacoes Nucleares
UTAD - University of Trás-os-Montes e Alto Douro

Romania

CNCAN - National Commission for Nuclear Activities Control

Slovakia

PHA - Public Health Authority of Slovakia
RPHA - Regional Public Health Authority

Slovenia

SRPA - Slovenian Radiation Protection Administration
SNSA - Slovenian Nuclear Safety Administration

Spain

CSN - Spanish Nuclear Safety Council

Sweden

SSM - Swedish Radiation Safety Authority

Switzerland

FOPH - Federal Office of Public Health
ENSI - Swiss Federal Nuclear Safety Inspectorate
NEOC - National Emergency Operations Centre
SUVA - Swiss Accident Insurance Fund

The Netherlands

ANVS - Authority for Nuclear Safety and Radiation Protection
MINSZW - Ministry of Social Affairs and Employment
NDRIS - National Dose Registration and Information System
RIVM - National Institute for Public Health and the Environment

United Kingdom

ONR - Office for Nuclear Regulation
DECC - Department of Energy and Climate Change
DH - Department of Health
EA - Environment Agency
HSE - Health and Safety Executive
PHE - Public Health England

Austria

EPR Fact Sheet

Decision making

The Federal Ministry of Sustainability and Tourism (BMNT) in coordination with the Federal Ministry of Work, Social Affairs, Health and Consumer Protection (BMASGK) are responsible for decisions on protective measures in case of a nuclear/radiological emergency. In addition a coordinating mechanism, the National Crisis and Disaster Protection Management Board, with representatives of all involved ministries and Provinces will be activated.

Advice

BMNT is responsible for the operation of Decision Support Systems and the Austrian Radiation Early Warning System, which includes measurement data from the exchange with neighboring countries. Sampling and laboratory measurements are activated by BMNT and BMASGK.

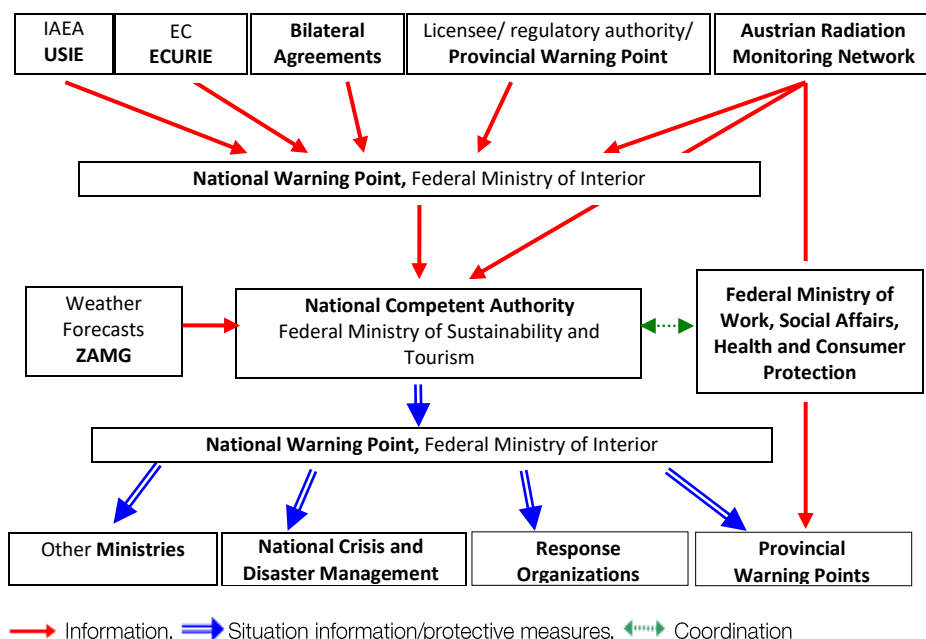
Licensee

In case of a radiological emergency during a practice in Austria the licensee has to notify immediately and further on inform the regulatory authority on this event and take mitigation measures.

Alarming

An Austrian wide acoustic sirens system has been established in the frame of civil protection by the Ministry of Interior. In case of a nuclear emergency the Austrian population will be warned in those regions where Thyroid Blocking and sheltering will be prepared or implemented. After warning, people are expected to turn on TV and radio for more detailed information.

Organizational structure



Country info

Capital	Vienna
Official language (regional)	German, Croatian, Hungarian, Slovene
Population	8.6 M
Area	84 000 km ²
Currency	Euro (€)
Time zone	UTC+1
Calling code	+43
Internet TLD	.at
NPPs /ele. share	0/0 %

NWP*

Federal Alarm Centre,
Federal Ministry of Interior

NCA*

Div. of Radiation Protection,
Federal Ministry of Sustainability and
Tourism

Emergency website

www.strahlenschutz.gv.at (public)
<https://lage.strahlenschutz.gv.at>
(password protected)

Online measurements

www.strahlenschutz.gv.at

Bilateral agreements

Belarus, Czech Republic, Germany,
Hungary, Poland, Russia, Slovak
Republic, Slovenia, Switzerland, Ukraine

RANET capabilities

- Source Search and Recovery
- Radiation Survey

Facilities and practices

The Austrian EPR arrangements are based on a national hazard assessment. Nuclear or radiological facilities of emergency category III, e.g. a research reactor and a central waste treatment and interim storage facility for low and intermediate level waste, are in operation in Austria.

In addition about 1000 partly mobile dangerous sources (emergency category IV) and potential transboundary impacts of NPP accidents in neighboring countries (emergency category V) are taken into account in the Austrian EPR arrangements.

Emergency classification

In addition to a national classification the IAEA emergency classification is used. The following emergency classes are feasible for Austria:

- Alert for category III facilities
- Facility emergency for category III facilities
- Other nuclear or radiological emergency for category IV

Protection strategy

Protection strategies for events with potential large-scale contamination are part of the Austrian catalogue of protective measures. Protection strategies for other radiological emergencies are part of the emergency plans. The documents are available in German language: <http://www.bmnt.gv.at/umwelt/strahlen-atom/notfallplanung/behoerdliche-vorkehrungen/notfallvorsorge.html>

Criteria

Protective Action	Generic Criteria	Comments
Sheltering	1 mSv	Persons < 18 years, pregnant; projected eff. dose, ext. + inh.
Sheltering	10 mSv	Adults; projected eff. dose, ext. + inh.
ITB	10 mGy	Persons < 18 years, pregnant; projected thyroid dose, inh.
ITB	100 mGy	Adults < 40 years, breast-feeding; projected thyroid dose, inh.
Evacuation	50 mSv	Whole population; avoidable effective dose, ext. + inh.
Temporary Relocation	30 mSv	Whole population; projected eff. dose, ext. for 1 month
Permanent Relocation	100 mSv	Whole population; projected eff. dose, ext. for 1 year

Comments

The maximum concentration levels for food- and feedstuff are based on EURATOM regulations.

OILs/EALs have been prepared for the case that generic criteria cannot be applied.

The reference level for emergency exposure situations is 100 mSv/yr (residual dose) with requirement for optimization also below.

Belgium

EPR Fact Sheet

Decision making

Off-site emergency preparedness and response is a federal responsibility. Decision taking falls under the responsibility of a Management Cell constituted by Ministers and State Secretaries with direct responsibilities in nuclear or radiological emergencies. The Management Cell is seconded by a Federal Coordination Committee responsible for drawing an holistic image (including radiation protection, social, economic... aspects) of the situation, proposing strategy options for protective action and following the implementation of the decisions.

Advice

The technical, meteorological & radiological aspects are of the responsibility of the Evaluation Committee constituted by the Federal Agency for Nuclear Control (chair) and its TSO (Bel V), Federal Agency for the Safety of the Food Chain, Royal Meteorological Institute, research institutes (SCK•CEN, IRE), and representative of the licensee of the concerned nuclear facility. The social, economic and any other relevant aspects are dealt with within the Crisis Cells of the federal and regional ministerial departments according to their legal competencies. The FANC operates the automatic monitoring network (Telerad) and organises the measurement strategy.

Licensee

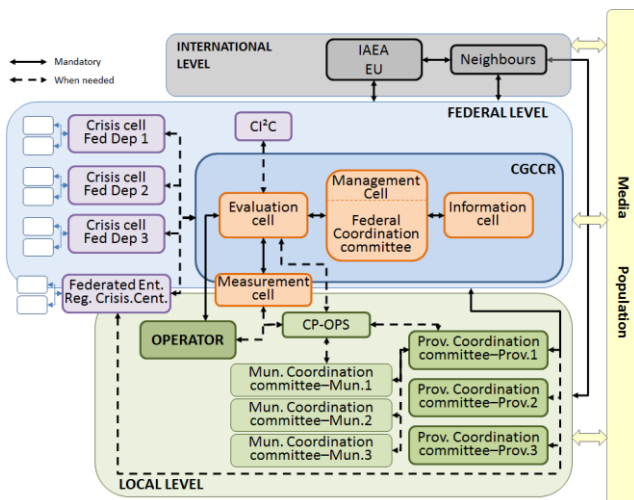
The licensee is responsible for notifying the authorities in case of abnormal event. He is also responsible of all actions taken on-site to mitigate the situation, prevent or control releases, protect its workers, off-site responders intervening on the site and any other people present on-site, and deliver relevant information and data needed to assess the situation to the authorities. The on-site response is coordinated with the national off-site response; in absence of concerted agreement, the Emergency Director of the Authorities (EDA) has the right to impose his decisions to the licensee.

Alarming

The licensee is obliged to notify the authorities with no delay of any abnormal event.

Off-site alert of the population is of the responsibility of the authorities.

Organizational structure



Country info

Capital	Brussels
Official language	French, Dutch, German
Population	11 M
Area	30 528 km ²
Currency	Euro (€)
Time zone	UTC+1
Calling code	+32
Internet TLD	.be
NPPs /ele. share	7/56%

NWP

Crisis centre of the Federal Public Service Internal (CGCCR)

NCA

NCA(A): General Directorate Crisis Centre (ADCC-DGCC)

NCA(D): Federal Agency for Nuclear Control (FANC)

Emergency website

<http://centredecrise.be/>

Online measurements

<http://telerad.fgov.be/>

Bilateral agreements

France, Netherlands, GD Luxemburg, Germany

RANET capabilities

- Source Search and Recovery
- Radiation Survey
- Environmental Sampling and Analysis
- Radiological Assessment and Advice
- Dose Assessment
- Decontamination

Nuclear facilities* and population

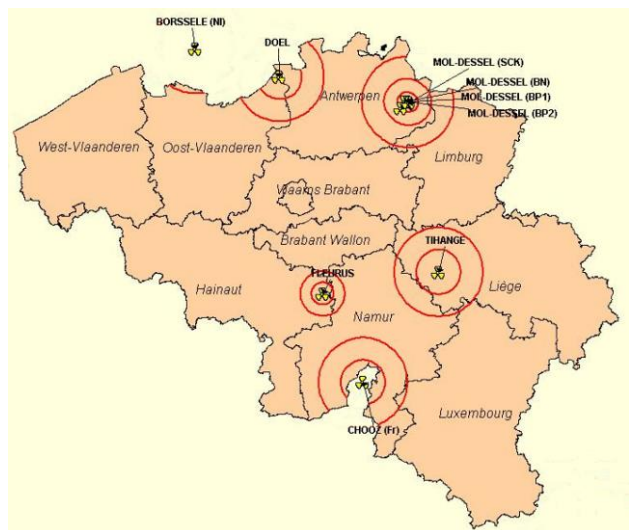
Facility	Type	MW _e	GPS coordinates	10 km ^b	20 km ^b	100 km ^b	Comments		
Doel	KCD1	PWR	433	51.322873N	4.261114E	30.000	732.000	8.037.000	
	KCD2	PWR	433	51.322873N	4.261114E				
	KCD3	PWR	1006	51.324157N	4.257593E				
	KCD4	PWR	1039	51.325719N	4.256869E				
Tihange	CNT1	PWR	962	50.534430N	5.271625E	78.000	292.000	7.684.000	
	CNT2	PWR	1008	50.535782N	5.272862E				
	CNT3	PWR	1046	50.534940N	5.276620E				
SCK-Mol	BR1	GG	[4] ^a	51.216876N	5.084202E	111.000	409.000	7.743.000	Research reactor
	BR2	PWR	[120] ^a	51.215037N	5.095933E				Research reactor
BP-Dessel	Site1	na	na	51.224565N	5.085487E				Waste management & storage
	Site2	na	na	51.218234N	5.098547E				
IRE		na	na	50.450230N	4.536214E	290.000	581.000	9.018.000	Radioisotope production

*The IAEA emergency preparedness category 1 and other relevant facilities

^a MWth

^b Population on the Belgian territory (data: National Register 2013 – CGCCR)

Planning zones



Emergency classification

Alert

Abnormal events not requesting protective actions either on-site or off-site. The off-site emergency plan is not implemented, unless otherwise decided by the Emergency Director of the authorities.

Facility emergency

Events requesting protective actions on-site only.

Site area emergency

Events requesting protective actions for the food chain but no direct protective action for the population.

General emergency

Events requesting actions for the direct protection of the population (Sheltering, ITB, evacuation).

General emergency in reflex mode

Events involving short-term radioactive releases (rapid kinetics) likely to lead to exposure that exceeds guideline intervention levels within a period of less than 4 hours and therefore require immediate actions for the direct protection of the population (Sheltering).

Protection strategy

Protective Action	Guidance Level (projected Dose)	Planning zone (implementation zone may differ)
Reflex Sheltering	Rapid kinetic accident	NPP 3.5 km SCK+BP 3.8 km; IRE 1.15 km
Evacuation	50 mSv (eff., 7d ext.+inh.)	NPP 10 km SCK+BP 4 km; IRE no evacuation planning zone
Sheltering	5 mSv (eff., 24h ext.+inh.)	NPP 20 km SCK+BP 20 km; IRE 10 km
ITB < 40 a	50 mSv (thy. inh.)	
ITB < 18 a or pregnant/breast feeding women	10 mSv (thy. inh.)	NPP 20 km SCK+BP 20 km; IRE 10 km Pre-distributed in the planning zone
Food and Feed Ban	Based on Maximum concentration levels in food products and animal feeding stuffs (Euratom Directives)	Belgium

Comments

The planning zones are divided in 12 sectors of 30 degrees numbered clockwise from 1 to 9 and A to C (with sector 1 from 0° to 30°). Outside the planning zones administrative entities (municipalities) will be used. Conform to the HWA, the response strategy foresees the possible extension of evacuation up to 20 km and of sheltering and ITB up to 100 km (i.e. the whole country).

Bulgaria

EPR Fact Sheet

Decision making

Unified Rescue System (URS) is established in Bulgaria for all hazards. Decisions on protection actions in case of nuclear or radiological emergency are made by the Ministry of Interior (MoI), supported by the National Headquarters for Coordination and Control (NHCC). The Headquarters is staffed by representatives of all relevant ministries and government bodies. Decisions are implemented through chain of command all the way down to the local level. The decision making is the same for all hazards.

Advice

The Nuclear Regulatory Agency (NRA) is part of a Unified Rescue System. NRA is regulatory authority in nuclear safety, radiation protection and safety of the radioactive waste managements. The NRA emergency team provides advises to the National Headquarters for Coordination and Control in case of nuclear or radiological emergency.

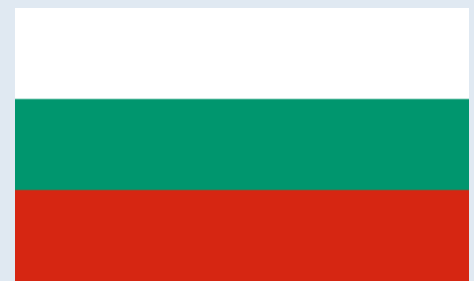
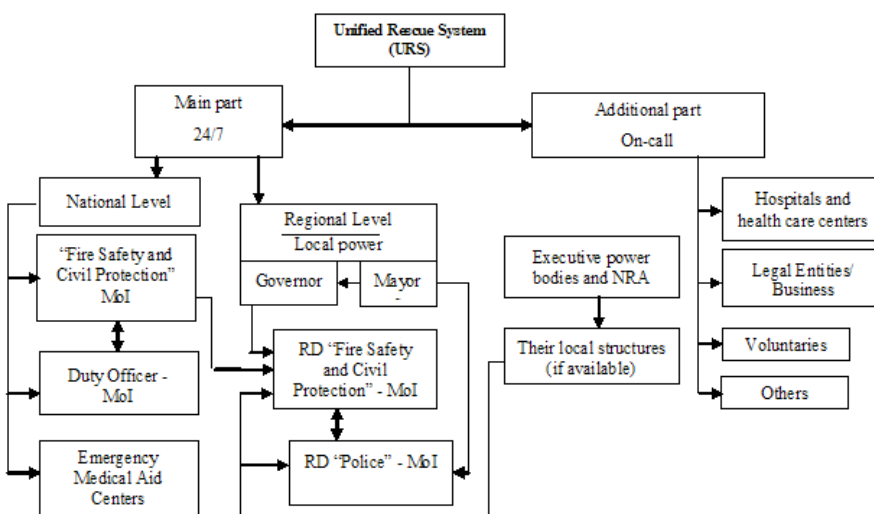
Licensee

All licensees and permit holders are obliged by the legislation to notify NRA for deviations from normal operations, incidents and emergencies. Additionally, the NPP is obliged to notify off-site authorities (municipal, regional and national notifications points and NRA) within 15 min after emergency declaration. The plant parameters are received in NRA via an online SPDS system. The NPP gives the preliminary recommendations of protection actions to the municipal levels.

Alarming

The alarming and the instructions/warning to the public regarding urgent protective actions are triggered by the NPP within the 30 km emergency planning zone. The stationary siren system is used and the media. Alarming is the same for all hazards.

Organizational structure



Country info

Capital	Sofia
Official language	Bulgarian
Population	7.2 M
Area	111 000 km ²
Currency	Lev (BGN)
Time zone	UTC+2
Calling code	+359
Internet TLD	.bg
NPPs /ele. share	1/33%

NWP*

NRA – Nuclear Regulatory Agency

NCA*

NRA – Nuclear Regulatory Agency

Emergency website

www.bnra.bg

Online measurements

<https://remap.jrc.ec.europa.eu/GammaDoseRates.aspx>

Bilateral agreements

Germany, Greece, Macedonia, Romania, Russia, Serbia, Turkey, Ukraine

RANET capabilities

None

*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates		2 km pop.	5 km pop.	10 km pop.	30 km pop.	
Kozloduy	5	WWER	1000	43.745863° N	23.768321° E	0	13 000	21 000	124 000
	6	WWER	1000	43.747368° N	23.769154° E				

*The IAEA emergency preparedness category 1 and other relevant facilities

Planning zones



- Precautionary protective action zone: 2 km
- Urgent protective action zone: 30 km

Emergency classification

General emergency

Actual or potential release and exposure of the personnel and population. Requires urgent protective actions for the population and prompt actions to reduce the accident's consequences and to protect the personnel

Site area emergency

Significant reduction of protection level of personnel on the site. Requires immediate actions to mitigate the consequences and to protect the personnel and starts preparation for taking protective actions for the population

Facility emergency

Significant reduction of the protection level of personnel without any risk for the population. Requires immediate actions to mitigate the accident's consequences and to protect the personnel

Alert

Events with uncertain or significantly decreased level of safety. Requires actions to evaluate the situation

Other emergencies

Find, loss or theft of a dangerous source, including re-entry of satellites containing dangerous sources.

Comments

Classification is based on the IAEA recommendations

Protection strategy

The protection strategy is based on values below. For emergency at the NPP protective actions are predefined and based on emergency classification. The 2 km zone is not populated. The 2 km zone is used for agricultural purposes. Evacuation of 2 km zone is ordered when general emergency is declared, which is followed by evacuation of 30 km zone. Evacuation is accompanied by ITB. The ITB is distributed to the population within the 30 km zone. In the 30 km zone protective actions are based on field measurements and dose assessments.

For radiation emergencies protective actions are based on field measurements and dose assessments. Safety perimeters are established based on the IAEA recommendations.

Criteria

Protective Action	Guidance levels*	Comments
Sheltering	5-50 mSv	Avertable effective dose
Evacuation	50-500 mSv	Avertable effective dose
Thyroid blocking	5-10 mSv	Avertable dose to thyroid for pregnant, breast-feeding and children (< 18)
Thyroid blocking	50-100 mSv	Avertable dose to thyroid for all the population (except the above)
Temporary relocation	10-100 mSv	Avertable effective dose for the first month
Cease the temporary relocation	10 mSv	Avertable effective dose for the next month
Permanent relocation	1000 mSv	Avertable effective dose for the lifetime

Comments

OIL's are set in the off-site emergency response plan

EAL's are set in the on-site emergency response plan

Croatia

EPR Fact Sheet

Decision making

National Protection and Rescue Department (NPRD) is coordinating authority in case of nuclear emergency, as well as other state-level emergencies. Heads or representatives of all ministries, departments and other organizations included in response compose Crisis HQ (situated at NPRD HQ) to ensure full coordination and make strategic decisions. If civilian response organizations are unable to handle the emergency (any emergency, including nuclear one), formal request is made to the Department of Defense (also present in Crisis HQ) to include military forces in response to the emergency.

Radiological emergencies are not considered state-level emergencies and are handled by the licensee and local authorities.

Advice

SORNS provides expert advice to NPRD and Crisis HQ in case of nuclear emergency. In case of radiological emergency, SORNS provides expert advice to local authorities.

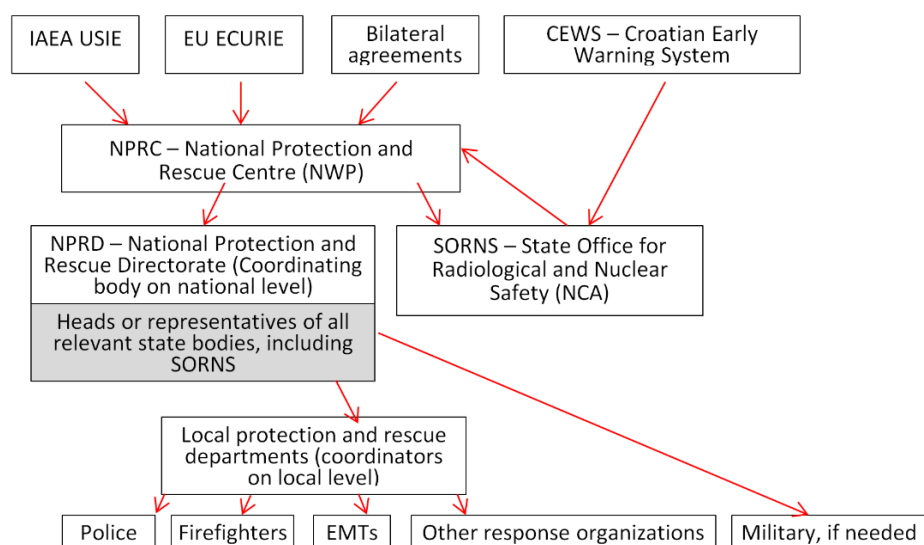
Licensee

The licensee is responsible for informing SORNS of any incident, accident or emergency situation. Licensee is further responsible for mitigating the consequences and carrying out urgent protective measures within the facility. It is not expected that urgent protective actions would need to be taken outside of the facility for operators in Croatia.

Alarming

The licensee is responsible to inform the public in the vicinity of the facility and the SORNS about any incident, accident or emergency situation. In case of nuclear emergency, NPRD is responsible for alarming the population.

Organizational structure



Country info

Capital	Zagreb
Official language	Croatian
Population	4 M
Area	56 000 km ²
Currency	Kuna (HRK)
Time zone	UTC+1
Calling code	+385
Internet TLD	.hr
NPPs /ele. share	0/0%

NWP*

National Protection and Rescue Centre (112 service)

NCA*

State Office for Radiological and Nuclear Emergency.

Emergency website

None

Online measurements

http://cms.dzrns.hr/aktivnosti/pripravnost/pravodobno_upozoravanje

Bilateral agreements

Slovenia, Hungary

RANET capabilities

None

*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and services

Croatian EPR system covers emergencies in NPP Krsko in Slovenia (10.6 km from Croatian border), NPP Paks in Hungary (around 75 km from Croatian border) and around 40 licensees operating open radiation sources or dangerous sealed radiation sources, some of them mobile, as well as transport of radiation sources.

*The IAEA emergency preparedness category 1 and other relevant facilities

Emergency classification

For neighboring NPPs, Croatia has decided to abandon its own classification system and use systems of that NPP (based on IAEA system).

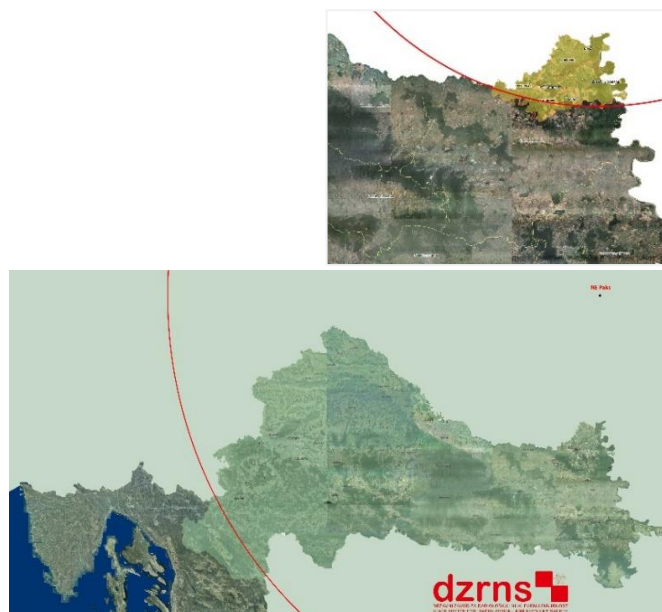
For facilities in Croatia two-step system is used:

- Class 0 – not time-sensitive (minor incidents or accidents contained or dealt with by the licensee)
- Class 1 – requires immediate response by SORNS

Planning zones



The Krsko NPP emergency planning zones



The Paks NPP emergency planning zones

Protection strategy

Protective Action	Generic criteria	Comments
Sheltering	10 mSv over 2 days	Total avertable effective dose, except the ingestion of contaminated food and drinking water
Evacuation	50 mSv over a week	
Temporary relocation (start)	30 mSv over a month	
Temporary relocation (end)	10 mSv over a month	
Permanent relocation	1 Sv over the lifetime	
ITB	100 mGy absorbed dose in thyroid	From Iodine

Cyprus

EPR Fact Sheet

Decision making

The Minister of Labour, Welfare and Social Insurance (MLWSI) is the competent authority for radiation protection and nuclear safety in the country, acting through the Radiation Inspection and Control Service (RICS) of the Department of Labour Inspection (DLI) of this Ministry.

The National General Crisis Management Plan of the Republic titled ZENON defines that the Ministerial Body for Crisis Management, which in case of a nuclear or radiological emergency is presided by MLWSI, is the decision making body in the case of a severe crisis in the country. In case of a nuclear or radiological accident or incident with severe impact to the public, the national response plan titled ELECTRA is activated.

The Ministerial Body meets at the Emergency and Crisis Centre of the Ministry of Foreign Affairs and has direct communication with all relevant emergency response stakeholders and European/International Organisations. Other Ministers, non-regular members of the Ministerial Body, may be invited to take part in the meetings, according to the nature and the development of the crisis situation. MLWSI appoints a single contact point for communication with the media and the public. Technical inputs and advice is available to the Ministerial Body as described below.

Advice

RICS/DLI is responsible for the general organization and coordination of the radiation emergency response plan ELECTRA and provides consultation to the MLWSI and the Ministerial Body on all technical and scientific issues. RICS/DLI is also the focal point for the European Commission (EURDEP, ECURIE) and the International Atomic Energy Agency (IRMS, USIE). RICS/DLI is supported by the Inter-Scientific Committee, comprising of representatives of various stakeholders, and by various scientific committees and technical teams, each having responsibilities related to radiation emergency response (Radiological Assessment; Intervention; Medical Response; Environmental Radioactivity; Sampling; Atmospheric Dispersion Modelling).

MLWSI may consult, under certain circumstances as defined in the legislation, the Council of Radiation Protection and Nuclear Safety (comprised of 23 members from scientific and professional associations; academia; and social partners).

Licensee

No nuclear power plants or other nuclear facilities operate in Cyprus. All authorized undertakings (licensees) conducting activities with ionising radiation have obligations under the legislation on radiation protection and nuclear safety and the conditions of the license granted to them by the competent authority. These obligations include having in place appropriate on-site emergency response plans, procedures and other arrangements, educating and training their personnel accordingly, and informing the competent authority in case of a radiological emergency.

Alarming

First information on a radiation emergency situation may reach the competent authority through various channels. The official national warning point for emergencies abroad (European Union, International Atomic Energy Agency) is the Centre of Operations of the Civil Defense Administration, which operates 24/7.



Country info

Capital	Lefkosia (Nicosia)
Official language	Greek / Turkish
Population	0.85 M
Area	9 251 km ²
Currency	Euro
Time zone	UTC + 2
Calling code	+357
Internet TLD	.cy
NPPs /ele. share	0/0%

NWP*

Centre of Operations,
Civil Defense Administration

NCA*

Radiation Inspection and Control
Service; Department of Labour
Inspection; Ministry of Labour, Welfare
and Social Insurance

Emergency website

www.mlsi.gov.cy/dli
(Policy area: Radiation Protection)

Online measurements

<https://radiation.dli.mlsi.gov.cy>

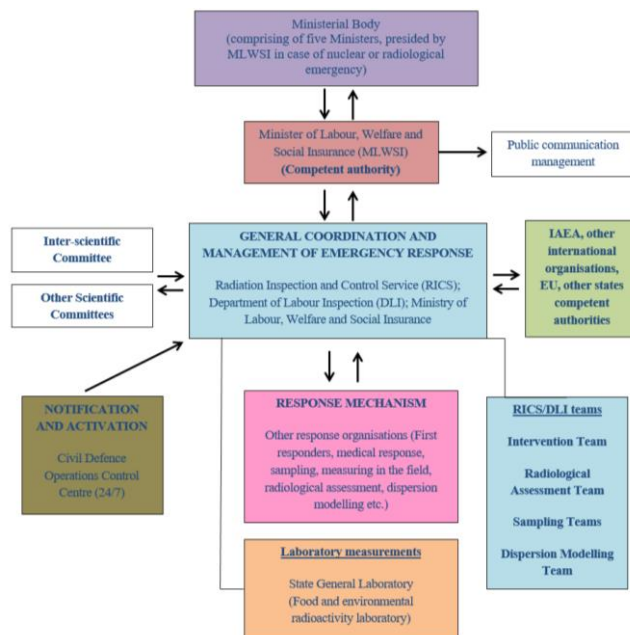
Bilateral agreements

Greece; procedure for establishing
bilateral agreements with other
neighbouring countries has been
initiated

RANET capabilities

- Not declared

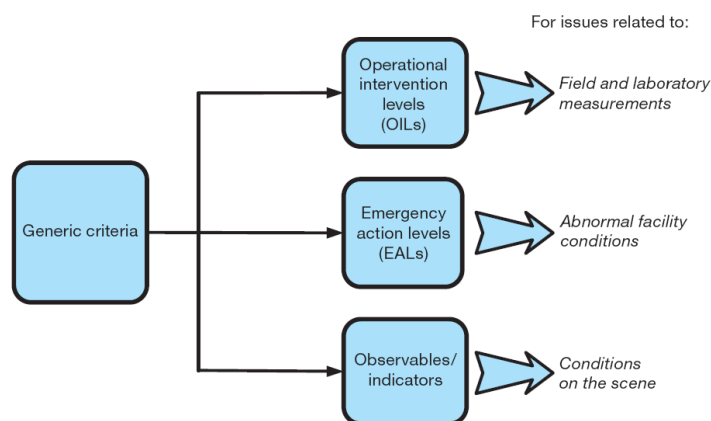
Organizational structure



Protection strategy

The most significant pathway of exposure of the local population in case of a nuclear emergency abroad is the consumption of radioactively contaminated food and through commodities (international trade). The contributed dose to members of the public can be averted through restrictions in the market, consumption and trade.

A protection strategy according to IAEA GSR Part 7 is implemented and this is reflected in the national radiation emergency response plan ELECTRA. A reference level of 20 mSv effective dose (within 1 year, all dose pathways) has been set. Operational Intervention Levels, Emergency Action Levels and Observables/Indicators are defined in the plan ELECTRA, as following:



Criteria

Protective Action	OILs /EALs	Comments
Iodine thyroid blocking	50 mSv in the first 7 days (H_{Thyroid})	Urgent, early protective and other response actions
Sheltering; evacuation; decontamination; restriction of consumption of food, milk and water; contamination control; public reassurance	100 mSv in the first 7 days (Effective dose)	
	100 mSv in the first 7 days (H_{Fetus})	
Temporary relocation; decontamination; replacement of food, milk and water; public reassurance	100 mSv per annum (Effective dose) 100 mSv for the full period of in uterine development (H_{Fetus})	Early protective and other response actions
Screening based on equivalent doses to specific radiosensitive organs (as a basis for medical follow-up), counseling	100 mSv in a month	If the received dose exceeds the following generic criteria (GC) are used these longer term medical actions to detect and to effectively treat radiation induced health effects
Counseling to allow informed decisions to be made in individual circumstances	100 mSv for the full period of in uterine development (H_{Fetus})	

Comments

- (1) Generic Criteria for protective actions and other response actions in emergency exposure situations to reduce the risk of stochastic effects.
- (2) Generic criteria are consistent with the recommended generic criteria in GSG-2.

Czechia

EPR Fact Sheet

Decision making

The National Security Council is established as a standing working body of the Government, preparing proposals for measures to ensure security of the Czech Republic. Ministry of Interior unifies procedures in the field of the crisis management and establishes the Central Crisis Staff as a working body of the Government to deal with crisis situations. During a crisis situation, the main task of the Central Crisis Staff is to coordinate activities of ministries and other offices, including the Integrated Rescue System and the Regional Authorities. The Regional Authorities elaborate a plan of rescue and remedy works in the region (Regional Emergency Plan) and the Off-site Emergency Plan for the emergency planning zone (EPZ).

Advice

The State Office for Nuclear Safety (SÚJB) receives data from the NPP operator and organizes the monitoring of the radiation situation in the affected area and on the territory of the Czech Republic. Based on this data and information, the SÚJB prepares recommendations for protective measures. The recommendations are forwarded to the Central Crisis Staff and to the Governor of the region affected by a radiation accident. The chairperson of the SÚJB is invited to the meetings of the Central Crisis Staff.

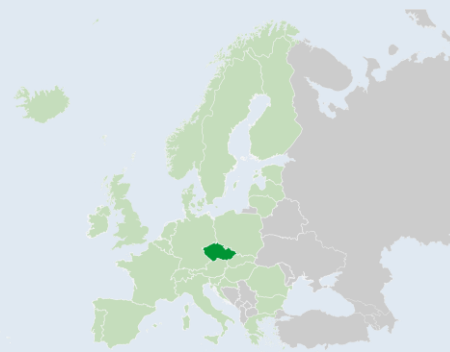
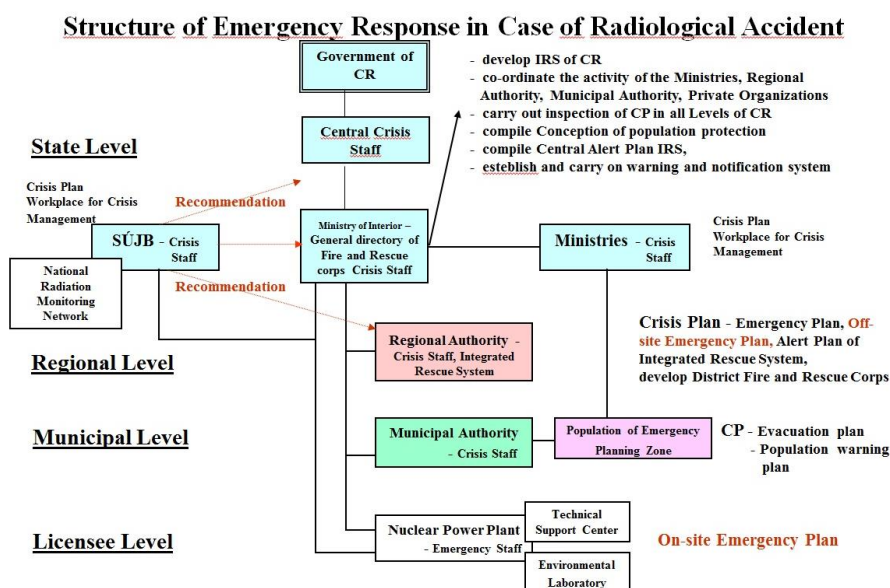
Licensee

The NPP operator proceeds by its On-site Emergency plan approved by the SÚJB. The NPP operator is obliged to provide the authorities with available data and information to support the authorities in assessing the situation and to co-operate with them in taking decisions on protective actions for the public.

Alarming

Warning of the population is ensured within the emergency planning zone by means of sirens with subsequent radio and television broadcasting of prepared information concerning the occurrence of radiation accident and urgent countermeasures to be implemented.

Organizational structure



Country info

Capital	Prague
Official language	Czech
Population	10,5 M
Area	79 000 km ²
Currency	Koruna (CZK)
Time zone	UTC+1
Calling code	+420
Internet TLD	.cz
NPPs /ele. share	2/36%

NWP*

General Directorate of the Fire Rescue Service, Ministry of the Interior of the Czech Republic

NCA*

State Office for Nuclear Safety (NCA-A, NCA-D)

Emergency website

Online measurements

<http://www.sujb.cz/en/radiation-situation-monitoring>

Bilateral agreements

Germany, Austria, Poland, Slovakia, USA, Hungary, Slovenia

RANET capabilities

- Source Search and Recovery
- Radiation Survey
- Environmental Sampling and Analysis
- Radiological Assessment and Advice
- Dose Assessment

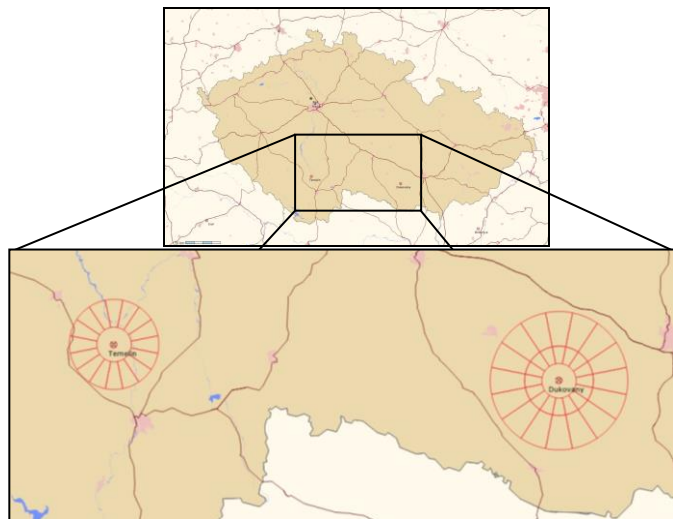
*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates	5 km pop.	20 km pop.	Comments
DUKOVANY	EDU 1	PWR	510	49.085430 N 16.148060 E	4 078	95 805
	EDU 2	PWR	510			
	EDU 3	PWR	510			
	EDU 4	PWR	510			
TEMELIN	ETE 1	PWR	1080	49.181041 N 14.384276 E	9 519	17 482 (13km)
	ETE 2	PWR	1080			

*The IAEA emergency preparedness category 1 and other relevant facilities

Planning zones



Comments

- Planning zone for Dukovany site: radius 20 km
- Planning zone for Temelin site: radius 13 km.
- The EPZs are divided into 16 sectors

Emergency classification

Radiation extraordinary event – event that leads or may lead to exceeding of exposure dose limits and requires action to prevent the exceeding of the limits or deterioration of the situation from the standpoint of radiation protection assurance. Extraordinary events are classified into three levels:

First degree radiation extraordinary event – radiation extraordinary event that can be handled by forces and means of the operators or shift personnel of the person whose activities gave rise to the radiation extraordinary event

Radiation incident – radiation extraordinary event that cannot be handled by forces and means of the operators or shift personnel of the person whose activities gave rise to the radiation extraordinary event or event that has resulted from the finding, misuse or loss of a radionuclide source, and that does not require taking urgent action to protect the general public

Radiation accident – radiation extraordinary event that cannot be handled by forces and means of the operators or shift personnel of the person whose activities gave rise to the radiation extraordinary event or has resulted from the finding, misuse or loss of a radionuclide source, and that requires taking urgent action to protect the general public

Protection strategy

Sheltering and ITB are automatically imposed on the basis of the announcement of a radiation accident. Evacuation and long-term protective countermeasures are adopted on the basis of the monitoring of the actual radiation situation and according to the development of the meteorological situation. The reference level for the exposure of an individual in an emergency exposure situation is 100 mSv for the sum of the effective dose from external exposure and the committed effective dose from internal exposure. Urgent protective measures are preplanned only for people living and working in the emergency planning zones of Dukovany NPP and Temelin NPP in accordance with relevant off-site emergency plan.

Criteria

Protective Action	OILs*	Reference levels
Sheltering	0,1 mSv/h	Averted effective dose greater than 10 mSv over the period of sheltering lasting no longer than 2 days
ITB	0,1 mSv/h	Averted committed equivalent dose in the thyroid gland caused by iodine radioisotopes greater than 100 mSv
Evacuation	1 mSv/h	Sum of the effective dose so far received in an emergency exposure situation when taking into account the effect of the already implemented protective measures and the effective dose, which could be averted, greater than 100 mSv over the first 7 days
Regulation of the use of contaminated foodstuffs, water and feedstuffs		Averted annual committed effective dose greater than 1 mSv
Relocation		It is not possible to ensure an effective dose for the members of the public, after their return to the affected territory, of lower than 20 mSv over the following 12 months

* The value of photon or ambient dose equivalent rate measured at a distance of 1 m above the ground

Denmark

EPR Fact Sheet

Decision making

Off-site emergency preparedness and response in case of a nuclear accident with consequences for Denmark and/or Danish citizens abroad is the responsibility of the Danish state. The Nuclear Division at Danish Emergency Management Agency (DEMA) is responsible for emergency planning and preparedness, including online radiation surveillance and consequence assessment. In case of a nuclear incident, The National Operational Staff at the National Police will coordinate the response with DEMA and other relevant authorities. For all Danish authorities, the rule of sector responsibility applies, which means that the department or agency which has the daily responsibility for a given sector retains responsibility for that sector during a crisis.

Advice

Nuclear Division at DEMA operate the decision support system, ARGOS, and the Nuclear Measurement System (NSM) with 14 stations throughout the country. The Danish Health Authority is responsible for radiation protection, and Danish Veterinary and Food Administration and the Danish AgriFish Agency are responsible for food supply and food safety.

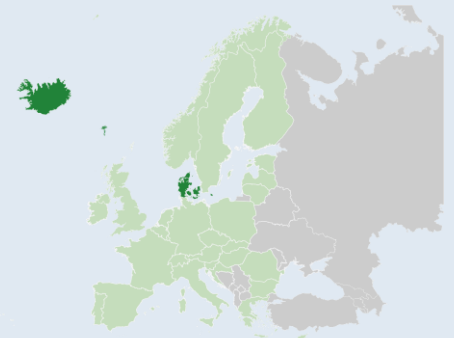
Licensee

The Danish Health Authority (DHA) regulates and issues licenses to users of radioactive material. The Nuclear Regulatory Authority (DHA and DEMA) regulates and issues licenses for decommissioning of the research reactor facilities. DEMA regulates and issues licenses for nuclear security.

Alarming

The National Police will alarm the public in case of a nuclear or radiological emergency

Organizational structure



Country info

Capital	Copenhagen
Official language	Danish
Population	5,6 M
Area	42 925 km ²
Currency	DKK
Time zone	UTC + 1
Calling code	45
Internet TLD	.dk
NPPs /ele. share	0/0%

NWP

Danish National Police
Ejby Industrivej 135, 2600 Glostrup
Denmark, phone +45 33148888

NCA

Danish Emergency Management Agency
Datavej 16, DK-3460 Birkerød
Denmark, Phone +45 4590600

Emergency website

<http://brs.dk/eng/operations/nuclear/Pages/nuclear.aspx>

Bilateral agreements

Nordic Countries, Germany

RANET capabilities

- Source Search and Recovery
- Radiation Survey
- Radiological Assessment and Advice
- Dose Assessment

Nuclear facilities

Denmark does not have nuclear power plants. The former research reactor facilities are under decommissioning at the Risø site near Roskilde.

Protection strategy

Protective Action	Generic Criteria	Operational Criteria
Evacuation	20 mSv	Dispersion calculations, plant conditions
Sheltering	10 mSv	Dispersion calculations, dos rates >100 µSv/t measured 1 m above ground after cloud passage
ITB < 40 a	50 mSv	Dispersion calculations, plant conditions
ITB < 18 a or pregnant	10 mSv	Dispersion calculations, plant conditions

Comments

Denmark has decided on a reference level of 20 mSv for emergency exposure situations. In special situations the level can be adjusted up to 100 mSv.

Finland

EPR Fact Sheet

Decision making

Decision making in case of emergency rests with those organisation normally responsible of the sector. For those protective actions that directly impact population (sheltering, evacuation), the responsible authority is the Regional Rescue Service. For other protective actions, the authorities normally responsible for ensuring safety are responsible. Depending on the action this may be a local, regional, or national authority.

The main authority responsible for coordinating the off-site emergency preparedness is the Regional Rescue Service. Finnish Radiation and Nuclear Safety Authority (STUK) works in close cooperation with the rescue services in the emergency preparedness arrangements.

STUK prepares the Operational Intervention Levels and other criteria for protective actions, which are enacted by Ministry of Interior.

Advice

STUK provides advice and expert assistance to other authorities in case of radiological or nuclear emergency. STUK also operates the automatic radiation measurement network and would coordinate radiation measurements in case of emergency.

Licensee

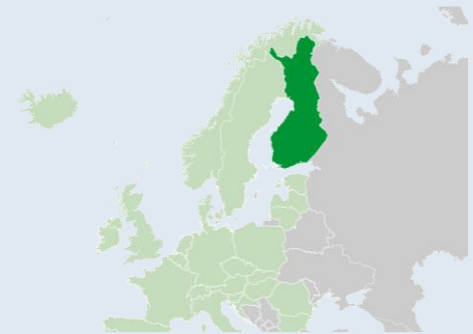
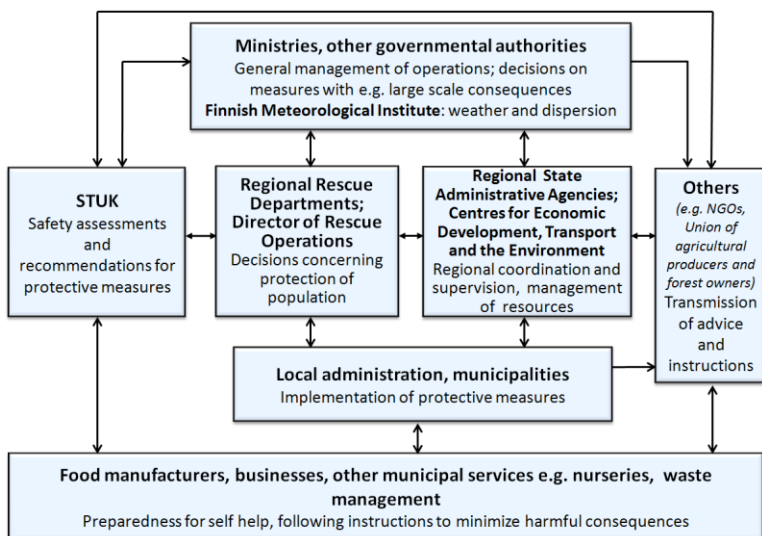
The operator is obliged to make necessary information available to the authorities, to support the authorities in assessing the situation and to advise them in taking decisions on protective actions for the public.

The operator is also responsible for actions needed on-site to prevent or mitigate consequences from accident.

Alarming

The licensee is obliged to inform the emergency dispatch centre and STUK with no delay of any on-site anomalies. The rescue authority will inform the public.

Organizational structure



Country info

Capital	Helsinki
Official language	Finnish Swedish
Population	5.5 M
Area	338 000 km ²
Currency	Euro (€)
Time zone	UTC+2
Calling code	+358
Internet TLD	.fi
NPPs /ele. share	2/33%

NWP, NCA*

Finnish Radiation and Nuclear Safety Authority (STUK)

Emergency website

www.stuk.fi (public)

<https://finri.stuk.fi> (password protected)

Online measurements

www.stuk.fi/sateily-ymparistossa/sateilytilanne/en_GB/sateilytilanne/

Bilateral agreements

Denmark, Germany, Iceland, Norway, Russia, Sweden, Ukraine

RANET capabilities

- Radiation Survey
- Environmental Sampling and Analysis
- Radiological Assessment and Advice
- Dose Assessment
- Decontamination

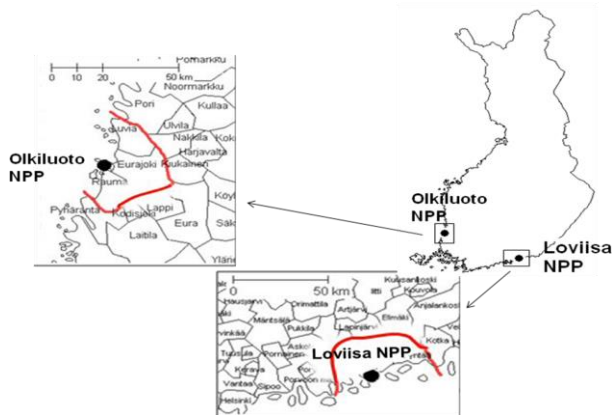
*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

Facility	Type	MW _e	GPS	5 km pop.	20 km pop.	Comments	
Loviisa	LO1	PWR	60.370844° N 26.346775° E	44	12 400		
	LO2	PWR					440
Olkiluoto	OL1	BWR	61.236421° N 21.444172° E	70	46 200	Under construction	
	OL2	BWR					800
	OL3	PWR					1600

*The IAEA emergency preparedness category 1 and other relevant facilities

Planning zones



- precautionary action zone: 5 km
- urgent protective action zone: 20 km

Emergency classification

- **General Emergency:** a situation when there is danger of radioactive substance releases that may require protective measures in the vicinity of the nuclear power plant
- **Site Area Emergency:** a situation when the nuclear power plant's safety deteriorates or is in the danger of deteriorating significantly
- **Alert:** a situation where the nuclear power plant's safety level needs to be ensured in an exceptional situation

Comments

Finnish emergency classification is largely same as the IAEA's classification in GSR Part 7. However, the IAEA's Facility Emergency and Site Area Emergency are combined into single class, for which the term Site Area Emergency is used in international communications. Also the criteria are somewhat lower than GSR Part 7.

Protection strategy

Reference level of 20 mSv (eff. dose all pathways, 1 year) is a target for protection strategy during nuclear or radiological emergencies. The protection strategy is described in detail in [Nordic Flag Book](#).

Criteria in emergency planning zones

Protective Action	OILs /EALs	Comments
Evacuation of Urgent Protective Action Zone (5 km)	General Emergency	In addition, access and traffic restrictions (road, marine, rail, aviation).
Sheltering in Precautionary Action Zone (20 km downwind)	General Emergency	In addition, access and traffic restrictions (road, marine, rail, aviation).
ITB	With sheltering and/or evacuation	Iodine tablets pre-distributed within 5 km of plant

Criteria outside emergency planning zones

Protective Action	OILs /EALs	Comments
Evacuation	Sheltering anticipated to be needed for more than 2 days	In addition, access and traffic restrictions (road, marine, rail, aviation).
Sheltering	100 microSv/h	In addition, access and traffic restrictions (road, marine, rail, aviation).
Partial Sheltering	10 microSv/h	
ITB	With sheltering and/or evacuation	
ITB for children under 18 and pregnant women	With partial sheltering	
Protection of food and livestock production	1 microSv/h	

France

EPR Fact Sheet

Decision making

The Prime minister is in charge of managing a serious nuclear emergency situation at national level. He can appoint a Minister to ensure the operational management of the crisis, generally the Minister of Interior (in charge of homeland security and civil protection) or the Minister of Foreign Affairs for emergencies abroad. The Interministerial Crisis Cell is activated by the authorities in charge of the emergency management at the national level.

At the local level, the management is steered by the "Prefect of Département" who is responsible for the implementation of population protective actions, the security of the vicinities and the logistics. He acts according to an "Off-site Emergency Plan" (PPI) with the advice of ASN.

Advice

ASN provides recommendations to the authority in charge of deciding the protective actions: the Prefect if the crisis is managed at local level and the Prime minister if the crisis is managed at national level. The recommendations of ASN deal with the safety of the accidented facility, radiation protection of the population and the environment. ASN bases its recommendations on the technical support of IRSN.

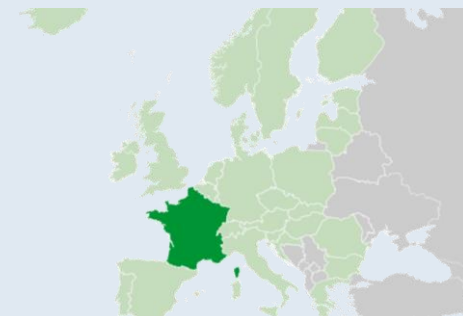
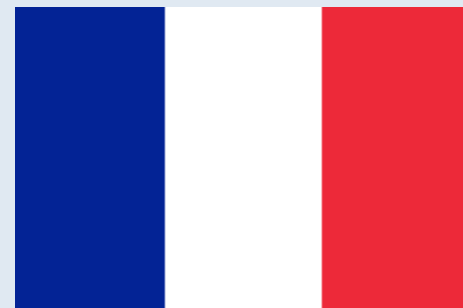
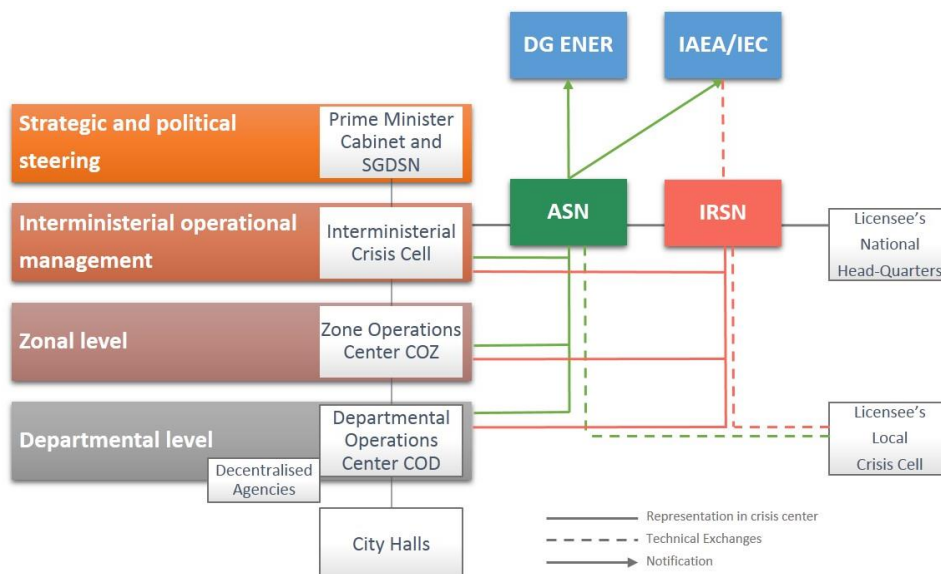
Licensee

The licensee is responsible for the crisis management on site, based on an "On-site Emergency Plan" (PUI). He regularly informs the authorities of the evolution of the situation.

Alarming

The main channels of alert diffusion are the followings: the licensee alerts immediately the Prefect of Département and ASN. ASN alerts IRSN. The Prefect alerts the Ministry of Interior (and the Prefect of Defense and Security Zone) who alerts the Prime Minister, if necessary.

Organizational structure



Country info

Capital	Paris
Official language	French
Population	70 M
Area	640 000 km ²
Currency	Euro (€)
Time zone	UTC+1
Calling code	+33
Internet TLD	.fr
NPPs /ele. share	58/75%

NWP*

Ministry of Foreign Affairs

NCA*

ASN

Emergency website

www.asn.crise **

Online measurements

www.criter.irsn.fr **

www.mesure-radioactivite.fr

Bilateral agreements

Belgium, Luxembourg, Spain, Switzerland

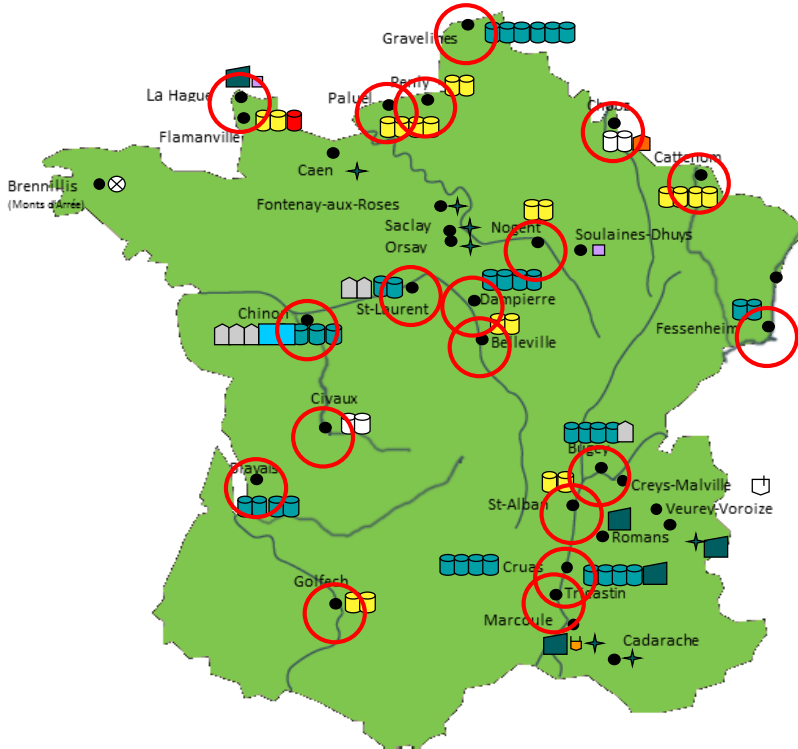
RANET capabilities

- Source Search and Recovery
- Radiation Survey
- Environmental Sampling and Analysis
- Radiological Assessment and Advice
- Medical Support
- Dose Assessment
- Decontamination
- Nuclear Installation Assessment and Advice

*National Warning Point and Competent Authority under the Emergency Conventions

** Available only during emergencies

Planning zones



Reference scenarios

The French National Response Plan to a Major Nuclear or Radiological Accident, published in 2014, defines eight “Reference Situations”:

1. Situation of uncertainty,
2. Facility accident resulting in an immediate and short-term release,
3. Facility accident resulting in an immediate and long-term release,
4. Facility accident resulting in a delayed and long-term release,
5. Accident during the transportation of radioactive materials with potential release,
6. Accident occurring abroad and with a potential significant impact in France,
7. Accident occurring abroad and having little impact in France,
8. Offshore accident with a potential release.

Comments

- France does not use the IAEA concept of “Emergency Classification”.

Protection strategy

In an emergency, leading to a threat of radioactive release off site, the Prefect activates the PPI and decides the protective measures, based on ASN recommendations and possibly other factors. He can order sheltering, evacuation, ingestion of iodine or food restrictions. The area covered in the PPI, specific to each facility, is designed to cover the first 24 hours of an emergency. In this area, iodine tablets are pre-distributed to the population. There is also a zone of 2 km for reflex sheltering. The extension of the current radius of the PPI zone (10 km) to a radius of 20 km and the setting up of a 5 km radius area for immediate evacuation is ongoing. In case releases affect areas beyond the scope of the PPI, the Prefect implements the zonal version of the national plan and also specific organizations like ORSEC, covering the whole territory of the country.

These protective actions are decided on the foreseeable exposure to the radioactive risk and may change as the situation evolves. If necessary, radiological control measures and prohibitions on the harvesting, consumption and distribution of foodstuffs are taken.

Post-accident phase

Policy elements for post-accident management are available on the website (<http://post-accidentel.asn.fr/Gestion-post-accidentelle/Elements-de-doctrine>). It includes the definition of the post-accident zoning (public protection zone on projected effective dose of 10 mSv or equivalent dose of 50 mSv at the thyroid for one month, heightened territorial surveillance zone if contamination exceeds European NMAs on the next month), the protective actions (consumption of foodstuffs, the placing on the market of foodstuffs, products...) and the population information and support.

Criteria

Protective Action	Intervention levels	Comments
Sheltering	10 mSv	Immediately applicable. Public alerted by sirens or automated landline phone message sent by licensees
Evacuation	50 mSv	Also possible as an immediate protective action in particularly serious and urgent situation.
Ingestion of iodine tablets	50 mSv (thyroid)	Most effective when taken at the required dosage two hours before exposure. Stable iodine may be administered a second time after 24 hours.

Comments

The protective actions are implemented in affected areas that are either identified as reflex zone, during the preparedness phase or proposed based on the evaluation of the projected dosimetric consequences for the population.

Nuclear facilities* and population

Facility	Type	MW _e	GPS		10 km pop.	20 km pop.	Comments	
Belleville	BEL1	PWR	1300	47° 32' N	2° 50' E	29 000	64 000	
	BEL2	PWR	1300					
Blayais	BLA1	PWR	900	45° 08'	0° 40'	28 000	82 000	
	BLA2	PWR	900					
	BLA3	PWR	900					
	BLA4	PWR	900					
Bugey	BUG2	PWR	900	45° 50' N	5° 19' E	68 000	284 000	
	BUG3	PWR	900					
	BUG4	PWR	900					
	BUG5	PWR	900					
Cattenom	CAT1	PWR	1300	49° 26' N	6° 13' E	101 000	353 000	
	CAT2	PWR	1300					
	CAT3	PWR	1300					
	CAT4	PWR	1300					
Chinon	CHI-B1	PWR	900	47° 14' N	0° 10' E	87 000	113 000	
	CHI-B2	PWR	900					
	CHI-B3	PWR	900					
	CHI-B4	PWR	900					
Chooz	CHO-B1	PWR	1500	50° 06' N	4° 47' E	24 000	96 000	
	CHO-B2	PWR	1500					
Civaux	CIV1	PWR	1500	46° 26' N	0° 40' E	22 000	65 000	
	CIV2	PWR	1500					
Cruas	CRU1	PWR	900	44° 38' N	4° 45' E	63 000	142 000	
	CRU2	PWR	900					
	CRU3	PWR	900					
	CRU4	PWR	900					
Dampierre	DAM1	PWR	900	47° 43' N	2° 33' E	40 000	74 000	
	DAM2	PWR	900					
	DAM3	PWR	900					
	DAM4	PWR	900					
Fessenheim	FES1	PWR	900	47° 55' N	7° 33' E	62 000	379 000	
	FES2	PWR	900					
Flamanville	FLA1	PWR	1300	49° 34' N	1° 53' E	50 000	117 000	
	FLA2	PWR	1300					
Golfech	GOL1	PWR	1300	44° 07' N	0° 51' E	22 000	121 000	
	GOL2	PWR	1300					
Gravelines	GRA1	PWR	900	51° 02' N	2° 13' E	138 000	342 000	
	GRA2	PWR	900					
	GRA3	PWR	900					
	GRA4	PWR	900					
	GRA5	PWR	900					
	GRA6	PWR	900					
Nogent	NOG1	PWR	1300	48° 30' N	3° 30' E	21 000	78 000	
	NOG2	PWR	1300					
Paluel	PAL1	PWR	1300	49° 51'	0° 38'	20 000	73 000	
	PAL2	PWR	1300					
	PAL3	PWR	1300					
	PAL4	PWR	1300					
Penly	PEN1	PWR	1300	49° 57' N	1° 12' E	58 000	116 000	
	PEN2	PWR	1300					
Saint-Alban	STA1	PWR	1300	49° 51'	0° 38'	70 000	306 000	
	STA2	PWR	1300					
Saint-Laurent	STL1	PWR	900	47° 43'	1° 35'	35 000	94 000	
	STL2	PWR	900					
Tricastin	TRI1	PWR	900	44° 21' N	4° 43' E	73 000	187 000	
	TRI2	PWR	900					
	TRI3	PWR	900					
	TRI4	PWR	900					

*The IAEA emergency preparedness category 1 and other relevant facilities

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Germany

EPR Fact Sheet

Decision making

Off-site emergency preparedness and response is mostly a local responsibility. Upon request, the Federation will support and coordinate the Länder activities in disaster response.

The Federal Ministry for the Environment (BMU) is responsible for the national radiological situation report and is authorised to specify limits and measures for the public.

The implementation of disaster control measures falls under the responsibility of the authorities of the Länder and, depending on the respective *Land*, is delegated to the regional or even to the local level.

Advice

The Federal Office for Radiation Protection ([BfS](#)) operates decision support systems and the Integrated Measurement and Information System for the Monitoring of Environmental Radiation ([IMIS](#)).

The advisory committees RSK (Reactor Safety Commission) and SSK (Commission on Radiological Protection) as well as the [GRS](#) as technical support organisation provide support for the BMU.

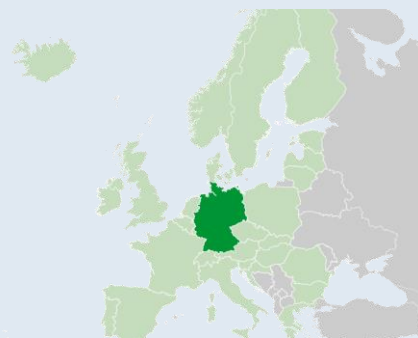
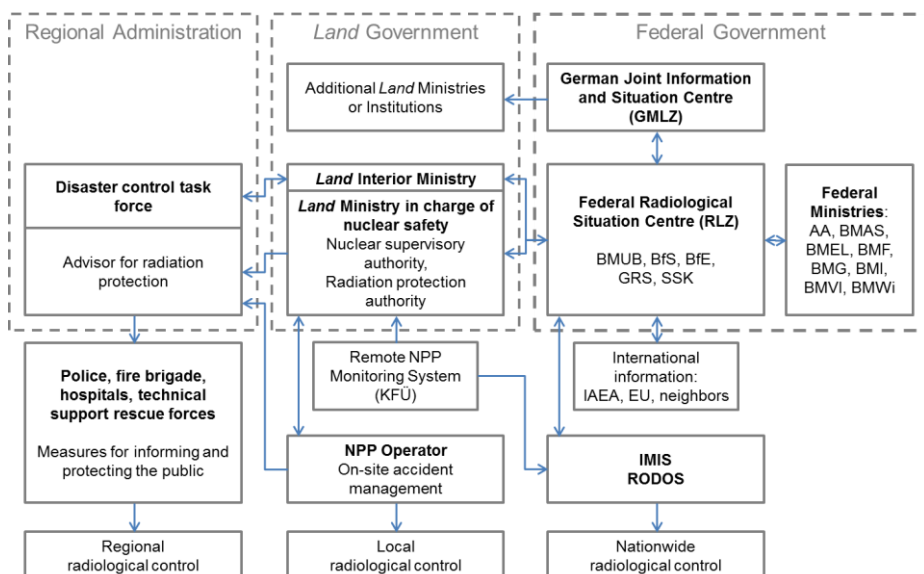
Licensee

The licensee is obliged to make necessary information available to the authorities, to support the authorities in assessing the situation and to advise them in taking decisions on protective actions for the public.

Alarming

The licensee is obliged to inform the civil protection authority with no delay of any event beyond design limits. The civil protection authority will inform the public.

Organizational structure



Country info

Capital	Berlin
Official language	German
Population	80 M
Area	360 000 km ²
Currency	Euro (€)
Time zone	UTC+1
Calling code	+49
Internet TLD	.de
NPPs /ele. share	9/17%

NWP*

German Joint Information and Situation Center, Federal Office of Civil Protection and Disaster Assistance (GMLZ)

NCA*

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)

Emergency website

None

Online measurements

<http://odlinfo.bfs.de/>

Bilateral agreements**

Austria, Belarus, Belgium, Brazil, Bulgaria, China, Czech Republic, Denmark, France, Georgia, Hungary, Japan, Kyrgyzstan, Luxembourg, Moldova, Netherlands, Norway, Russia, Slovakia, Spain, Sweden, Switzerland, Ukraine, United Kingdom, Uzbekistan

RANET capabilities

- Source Search and Recovery
- Radiation Survey
- Environmental Sampling and Analysis
- Radiological Assessment and Advice
- Medical Support
- Dose Assessment
- Decontamination

*National Warning Point and Competent Authority under the Emergency Conventions

** Nuclear EPR only

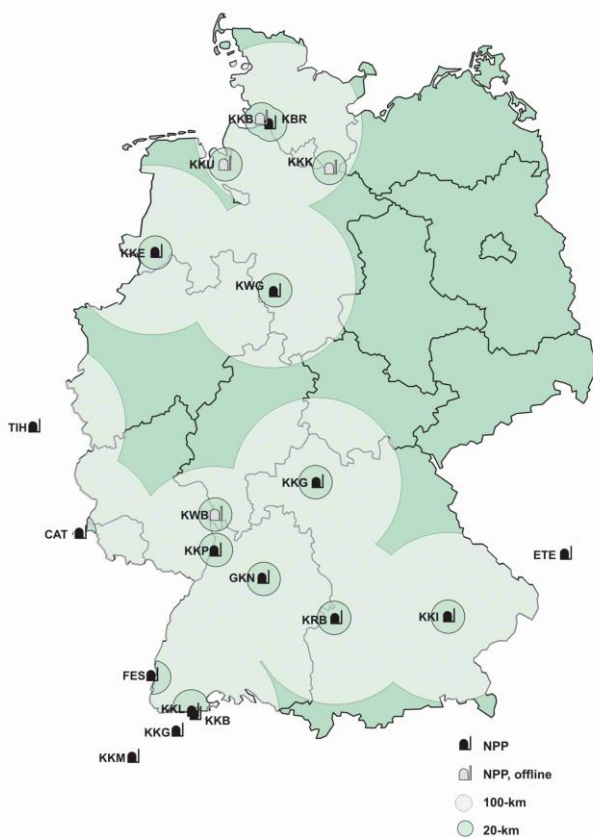
Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates		5 km pop.	20 km pop.	100 km pop.
Brunsbüttel	KKB BWR	806	53.891667° N	9.201667° E	7 000	120 000	5.8 M
Brokdorf	KBR PWR	1480	53.850833° N	9.344722° E	11 000	170 000	6.1 M
Krümmel	KKK BWR	1402	53.410000° N	10.408889° E	13 000	390 000	5.5 M
Unterweser	KKU BWR	1410	53.427778° N	8.480278° E	9 000	120 000	4.4 M
Emsland	KKE PWR	1400	52.474167° N	7.317778° E	9 000	150 000	5.4 M
Grohnde	KWG PWR	1430	52.035278° N	9.413333° E	16 000	250 000	7.3 M
Grafenrheinfeld	KKG PWR	1345	49.984167° N	10.184722° E	29 000	220 000	5.7 M
Biblis	KWB-A PWR	1225	49.710000° N	8.415278° E	32 000	570 000	10.5 M
	KWB-B PWR	1300					
Philippsburg	KKP-1 BWR	926	49.252778° N	8.436389° E	25 000	480 000	11.3 M
	KKP-2 PWR	1468					
Neckarwestheim			49.041111° N	9.175000° E	42 000	860 000	10 M
	GKN-1 PWR	840					
	GKN-2 PWR	1400					
Gundremmingen			48.514722° N	10.402222° E	10 000	200 000	7.5 M
	KRB-B BWR	1344					
	KRB-C BWR	1344					
Isar	KKI-2 BWR	1,485	48.605556° N	12.293056° E	16 000	210 000	5.6 M

Research Rector		W _{th}	GPS coordinates		Actions	Type
Berlin	BER II	10 M	52.409722° N	13.128333° E	≤ 20km	Swimming pool/ MTR
Garching	FRM-II	20 M	48.265833° N	11.6758333° E	≤ 2km	Swimming pool/ Compact Core
Mainz	FRMZ	100 k	49.992500° N	08.237222° E	≤ 250m	TRIGA Mark II

*The IAEA emergency preparedness category 1 and other relevant facilities

Planning zones



Protection Strategy

Protective Action	OILs /EALs	Zone
Reflex Evacuation	General Emergency	5 km
Evacuation	100 mSv (eff., 7d, ext.+inh.)	20 km
Sheltering	10 mSv (eff., 7d, ext.+inh.)	100 km
ITB < 45 a	250 mSv (thy., 7d, inh.)	100 km
ITB <18 a or pregnant	50 mSv (thy. 7d, inh.)	Germany
Food/Feed Ban	General Emergency or OIL	Germany

Comments

- In addition reference level of 100 mSv (eff. dose all pathways, 1 year) is set for emergency exposure situations.
- Any of the above measures goes along with traffic and access restrictions.
- The protection strategy is described [here](#), planning zones are discussed [here](#).
- The planning zone up to 20 km is divided in 12 sectors of 30 degrees with sector 1 to the north (except for Biblis with 12 to the north).
- ITB is pre-distributed in some *Länder*

Greece

EPR Fact Sheet

Decision making

Emergency preparedness and response in case of nuclear accident abroad is described in the Emergency Plan "Xenokratis", Annex "R". The Secretary General for Civil Protection has the overall responsibility for response coordination, including the decision and the implementation of protective measures.

Advice

The Greek Atomic Energy Commission (EEAE) is responsible for information collection, radioactivity monitoring and measurements, assessment of the emergency and advice to the Secretary General for Civil Protection on protective measures. EEAE is supported by expert groups, with members from EEAE and other organizations, which implement and coordinate the response actions.

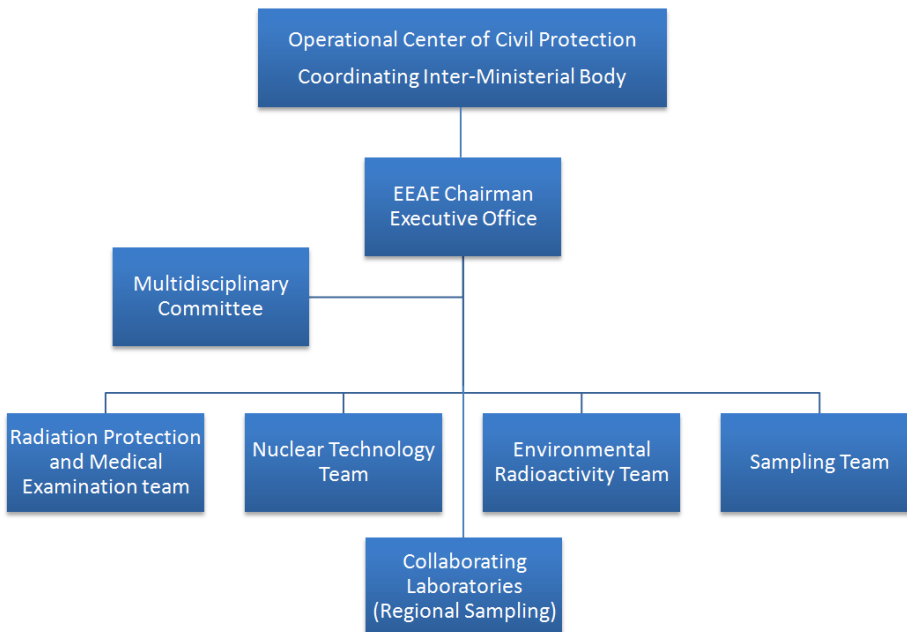
Licensee

There are no nuclear power plants in Greece. According to the national radiation protection and nuclear safety regulations the licensees are obliged to inform EEAE in case of radiological events and emergencies. Licensees are also obliged to have in place an emergency response plan.

Alarming

EEAE has the responsibility to activate the Emergency Plan "Xenokratis", Annex "R" in case of radiological or nuclear emergency, based on measurements of the radioactivity monitoring network and on information through ECURIE, ENATOM, bilateral agreements, competent authorities of other countries and media.

Organizational structure



Country info

Capital	Athens
Official language	Greek
Population	11 M
Area	132 000 km ²
Currency	Euro (€)
Time zone	UTC+2
Calling code	+30
Internet TLD	.gr
NPPs /ele. share	0/0%

NWP*

Greek Atomic Energy Commission (EEAE)

NCA*

Greek Atomic Energy Commission (EEAE)

Emergency website

www.eeae.gr

Online measurements

www.eeae.gr

Bilateral agreements

Bulgaria, Romania

RANET capabilities

None

*National Warning Point and Competent Authority under the Emergency Conventions

Protection strategy

In case of a nuclear accident abroad no significant impact is expected in the early phase of accident during the plume passage. The most significant impact is expected to be in relation with doses to the public through ingestion of contaminated food. A large-scale measurement campaign will be implemented, if necessary, by the help of the network of cooperating laboratories, to assess the contamination of food countrywide.

Criteria

Protective Action	OILs /EALs	Comments
Sheltering	3-30 mSv	Sheltering is not applied for effective dose lower than 3 mSv and is necessarily applied for dose higher than 30 mSv.
Relocation	30-300 mSv	Relocation is not applied for effective dose lower than 30 mSv and is necessarily applied for dose higher than 300 mSv.
Iodine prophylaxis	30-300 mSv thyroid dose	Iodine prophylaxis is not applied for thyroid dose lower than 30 mSv and is necessarily applied for dose higher than 300 mSv.

Comments

- The radiological and nuclear emergency framework is currently under revision in the light of the new European BSS Directive transposition.
- There are no NPPs in Greece. There is a research reactor in extended shutdown (fuel removed from the core).
- The nearest NPP is Kozloduy NPP in Bulgaria, which is located about 250 km from the northern borders of Greece.

Hungary

EPR Fact Sheet

Decision making

At central level, the Disaster Management Interministerial Coordination Committee (DMCC) is responsible for decision making in case of nuclear/radiological emergency situations. The DMCC consists of appointed representatives of the ministries. The head of the DMCC is the Minister of Interior. At the regional level, there are 19 County Defence Committees (CDC), according to the 19 administrative counties, plus the Budapest Defence Committee. At the local level, the local governments (the mayors) have the responsibility for local disaster management.

Advice

DMCC's National Emergency Response Centre (DMCC NERC) is the professional decision support organ, which is giving advises for DMCC. For the support of the decision making process of DMCC NERC, it operates the Nuclear Emergency Response Working Committee (DMCC NERWC). DMCC NERWC uses the analysis results of the Hungarian Atomic Energy Authority (HAEA) and the Nuclear Emergency Information and Analysis Centre (NEIAC) of the National Directorate General for Disaster Management (NDGDM).

Licensee

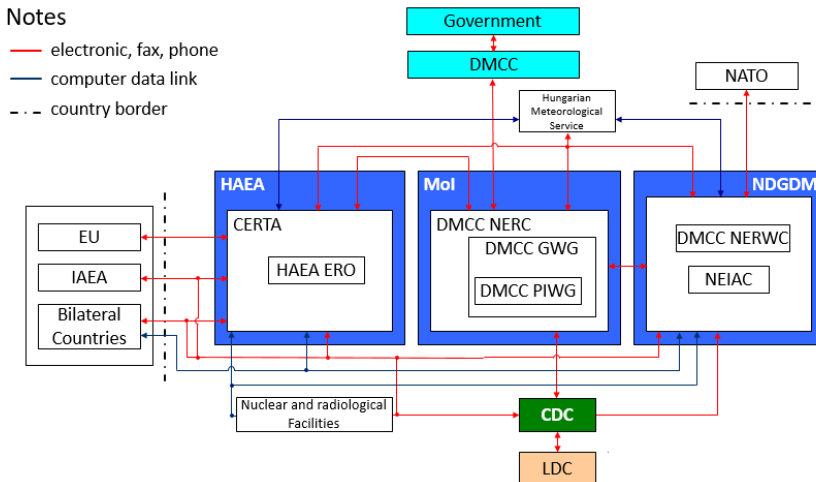
All licensees are responsible to initiate notification to authorities for radioprotection, nuclear safety and disaster management in case of an emergency. Also, the licensee should be prepared to handle the local emergency situations, i.e. should prepare proper emergency plans, make provisions to have enough and appropriate local resources, etc.

Alarming

In case of a domestic emergency event, both HAEA and NDGDM are designated points of notifications. The alarm process is conducted by the NDGDM. The activation time for full response mode is 4 hours during the official working hours and 8 hours beyond the official working hours.

In case of events with potential or real international consequences, HAEA is responsible for both sending and receiving official notifications at international level.

Organizational structure



Country info

Capital	Budapest
Official language	Hungarian
Population	9,78 M
Area	93,028 km ²
Currency	Forint (HUF)
Time zone	GMT + 1
Calling code	36
Internet TLD	.hu
NPPs /ele. share	1/50%

NWP*

National Directorate General for Disaster Management

NCA*

Hungarian Atomic Energy Authority

Emergency website

<http://www.haea.gov.hu>

Online measurements

http://www.katasztrofavedelem.hu/index_2.php?pageid=monitor_nbiek_index

Bilateral agreements

Austria, Slovakia, Ukraine, Romania, Croatia, Slovenia, Germany, Czech Republic, Serbia

RANET capabilities

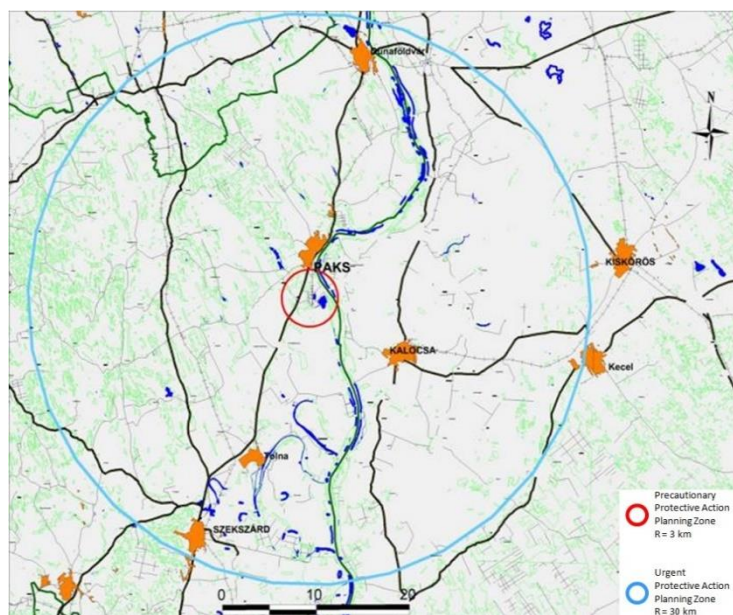
- NAC#2: Radiation monitoring
- NAC#3: Environmental measurements
- NAC#5: Assessment and advice
- NAC#7: Public health protection
- NAC#8: Biosimetry
- NAC#9: Internal dose assessment
- NAC#10: Bioassay

Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates	1 km pop.	3 km pop.	30 km pop.	Comments		
NPP Paks	Unit 1	PWR	500	46,574N	18,853E	0	148	201 202	EPC-I
NPP Paks	Unit 2	PWR	500	46,574N	18,853E	0	148	201 202	EPC-I
NPP Paks	Unit 3	PWR	500	46,574N	18,853E	0	148	201 202	EPC-I
NPP Paks	Unit 4	PWR	500	46,574N	18,853E	0	148	201 202	EPC-I
Interim Storage of Spent Fuel Paks	n/a	n/a	46,570N	18,851E	0	148	201 202		EPC-II

*The IAEA emergency preparedness category 1 and other relevant facilities

Planning zones



Emergency classification

General Emergency

Upon declaration of a General Emergency, the consequences shall be immediately mitigated, the actions required for protecting the people staying in the designated protective action zone shall be immediately implemented.

Local Emergency

Upon declaration of Local Emergency immediate actions shall be taken for the mitigation of the consequences, protection of the persons staying in the vicinity, and preparation should be made for the implementation of the necessary public protective actions.

Facility Emergency

Upon declaration of this class of emergency, actions shall be promptly taken to mitigate the consequences and to protect people on the site. Emergencies in this class can never give rise to an off-site threat.

Alerts

Upon declaration of this class of emergency, actions shall be promptly taken to assess and mitigate the consequences and to increase the readiness of the on-site and off-site response organizations, as appropriate.

Protection strategy

The protection strategy is based on range of reference levels which are in Decree of Government No. 487/2015. Korm. The National Nuclear Emergency Response Plan contains reference levels, generic criteria and OILs. The reference levels for emergencies of emergency preparedness category 1 and 2, inside urgent protective action planning zone (UPZ) in the first 7 days are 100 mSv acute or annual effective dose, while in any other cases the reference levels are 20 mSv/year.

The County Defence Committees around the Paks Nuclear Power Plant have elaborated the evacuation and acceptance plans. These plans include a two-step evacuation. Those living within the 9 km radius around the nuclear power plant are evacuated in the first step, while those living in the radius of 9-30 km around the nuclear power plant are evacuated in the second step, if appropriate. Around the Paks NPP (30 km radius) the iodine tablets required for the first two days are stored in the mayors' offices.

Criteria

Generic Criteria [projected dose]		Typical OILs	Levels for optimization [averted dose]
EPC 1&2, UPZ, first 7 days	100 mSv eff. dose	Dose rate at 1 m	Thyroid blocking: 50 mSv
	50 mSv for thyroid	Dose rate on the skin	Sheltering: 10 mSv within 2 days
EPC 1&2, UPZ, after 7 days	20 mSv/year	Dose rate above thyroid	Evacuation: 50 mSv within 7 days
EPC 1&2, outside UPZ		Activity concentration in foodstuff, milk and water	Temporary relocation: 30 mSv/week, 100 mSv/year
EPC 3,4,5			

Ireland

EPR Fact Sheet

Decision making

In the case of a nuclear or radiological emergency, the Department of Communications, Climate Action and Environment (DCCAE) is the lead government department with responsibility for coordinating and leading Ireland's response to the emergency. Decision making and oversight of the implementation of protective actions would be performed by a National Emergency Coordination Group made up of officials from key government departments and other public authorities and chaired by DCCAE.

Advice

Under the National Emergency Plan for Nuclear Accidents, the Environmental Protection Agency (EPA) has responsibility for technical assessment, monitoring and measurement of radioactivity and for the provision of advice to the National Emergency Coordination Group on the potential consequences of any accident and on the measures to be taken.

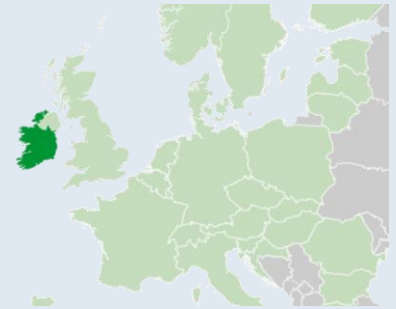
Licensee

In the event of a radiological emergency, the licensee is required to inform EPA and the local emergency services immediately. The licensee is also required to make an initial provisional assessment of the emergency and its possible consequences.

Alarming

The licensee is required to inform EPA and the local emergency services immediately in the event of a radiological emergency arising. The dissemination of information to the public will be done through Government Information Services in consultation with the National Emergency Coordination Group.

Organizational structure



Country info

Capital	Dublin
Official language	Irish, English
Population	4.76 M
Area	70 000 km ²
Currency	Euro (€)
Time zone	UTC
Calling code	+353
Internet TLD	.ie
NPPs /ele. share	0/0%

NWP*

An Garda Síochána
www.garda.ie

NCA*

Environmental Protection Agency
www.epa.ie

Emergency website

<http://www.emergencyplanning.ie>

Online measurements

<http://www.epa.ie/radiation/monassess/mapmon/>

Bilateral agreements

United Kingdom

RANET capabilities

-Sampling and Analysis
-Radiological Assessment and Advice

*National Warning Point and Competent Authority under the Emergency Conventions

Protection strategy

Following a nuclear accident abroad the most significant route of potential exposure for members of the Irish public would be from the consumption of radioactively contaminated food. Most of the ingestion dose could be averted by the restriction of sale of contaminated food and other measures taken to reduce transfer of radioactivity to food products.

Criteria

Protective Action	Guidance Level (Projected Dose)	Comments
Evacuation	International guidance: 100 mSv in first 7 days	Not recommended for use in for Ireland due to distance from nearest nuclear facilities
Sheltering	50 mSv in first 7 days	Most effective during passage of the plume
Temporary relocation	100 mSv in first year	Largely from groundshine pathway
Food controls	1 mSv per annum from food ingestion	EU MPLs would be adopted.

Comments

Ireland has no nuclear facilities or research reactors. The nearest nuclear facility is over 100 km away in the United Kingdom.

Italy

EPR Fact Sheet

Decision making

The Operational Committee of the Civil Protection is responsible for the emergency management at national level. It is chaired by the Head of the Department of Civil Protection (DPC) of the Presidency of the Council of Ministers and composed by representatives from Ministries, Regions and local Authorities, National Corp of Fire Brigades, military forces, relevant agencies, volunteers, and public/private operators of critical infrastructures. At local level, the Prefect of the province, supported by the local emergency committee, is responsible of the emergency response.

Advice

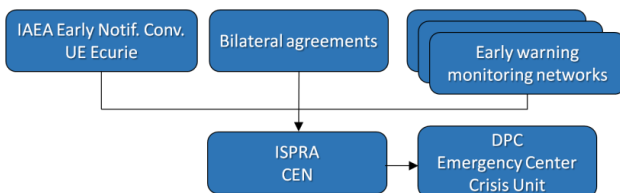
ISPRA - National Institute for Environmental Protection and Research is responsible of the emergency support system through its CEN - Nuclear Emergency Centre. The Committee for data analysis and radiological assessment (CEVaD), established at ISPRA Headquarters, provides the operational procedure for sampling and measurement activities performed by the regional radiological laboratories. CEVaD is coordinated by ISPRA and is composed by experts from national organization.

Licensee

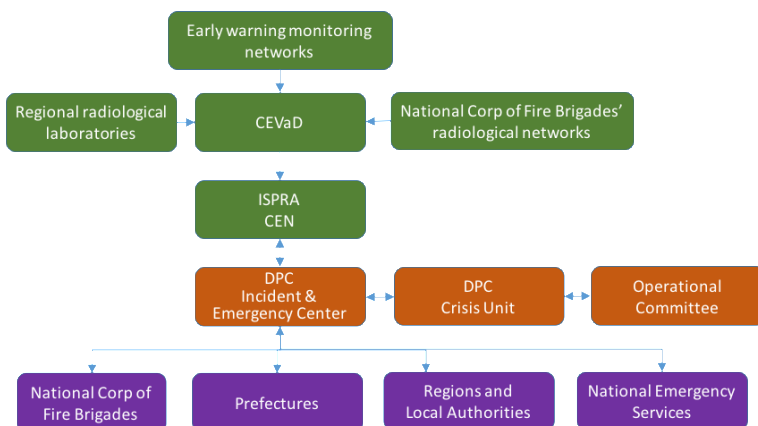
In case of nuclear or radiological emergency the operator must immediately notify the event and the measures taken to face it, reporting any relevant information and data for the implementation of the off-site emergency response.

Alarming

At local level, the licensee (Category II and III) is responsible for notifying the off-site Authorities (Prefect) in case of abnormal event. The following scheme describes the alarming flow of the National Plan (Category V):



Organizational structure



Country info

Capital	Rome
Official language	Italian
Population	60.7 M
Area	301 000 km ²
Currency	Euro (€)
Time zone	UTC+1
Calling code	+39
Internet TLD	.it
NPPs /ele. share	0/0%

NWP*

ISPRA - National Institute for the environmental protection and research

NCA*

NCA-A & NCA-D: Department of Civil Protection of the Presidency of Council of Ministers;
NCA-D: ISPRA

Emergency website

www.protezionecivile.gov.it (public)

Online measurements

None

Bilateral agreements

Switzerland (Governmental level)
Slovenia and France (between Regulatory Authorities)

RANET capabilities

None

*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities and practices

At local level, EPR arrangements are in place for former NPP & Fuel-Cycle facilities, now in decommissioning, for research reactors, nuclear powered vessels in Italian harbours, waste storage facilities, practices using radiation sources, transport of radioactive materials and in case of discovery of orphan sources. Regarding the the National Plan, the hazard assessment is related to an accident to an abroad NPP within 200 km from the Italian borders.

Emergency classification

The national plan provides for two levels of activation:

- **Warning:** following the notification of an accident to an abroad NPP within 200 km from the Italian borders; this level requires the warning of national and regional authorities (especially for the northern regions of Italy);
- **Alarm:** worsening of the situation with the possibility that a radioactive release could affect the country; this level could entail the adoption of the protective actions.

Protection strategy

The protective actions provided by the National Plan include food chain protection, ITB (age <18, pregnant and breast feeding women) and sheltering. The potentially affected territories extend along large areas of the northern Italy.

Intervention levels are defined by law for specific protective action, taking into account the relevant exposure pathways, and are expressed in terms of avertable dose; they are related to reference groups of the population likely to be affected by emergency, taking into proper account the prevailing circumstances (i.e. number and characteristics of the people affected, weather conditions).

The above strategy will be reviewed within the transposition process of the EURATOM BSS

An handbook for the radiological assessment and for the sampling and measurement of the environmental and food matrices during a nuclear or radiological emergency was issued by the CEVaD and is published in Italian language:

<http://www.isprambiente.gov.it/it/pubblicazioni/manuali-e-linee-guida/emergenze-nucleari-e-radiologiche-manuale-per-le>

Criteria

Protective Action	Intervention Levels	Comments
Sheltering	a few - a few tenth	mSv of averted effective dose
ITB	a few tenth- a few hundreds	mSv of averted thyroid equivalent dose
Evacuation	a few tenth- a few hundreds	mSv of averted effective dose

Comments

Concerning the ranges of the intervention levels, the lower values represents the level below which it is not considered justified the adoption of the countermeasure, while the upper one indicates the level above which the activation of the countermeasure should be guaranteed. It is worth to mention that the 1999 WHO guidelines for ITB were also taken into account by the hazard assessment which ISPRA performed for the implementation of the National Plan.

The maximum concentration levels for food and feedstuff are based on EURATOM regulations.

The above criteria will be reviewed within the transposition process of the EURATOM BSS.

Lithuania

EPR Fact Sheet

Decision making

In case of state level of nuclear or radiological emergency the Government Emergency Commission is authorized to manage the situation and make final decisions on implementation of protective actions.

Advice

Radiation Protection Centre (RPC) is responsible institution to organize, coordinate and control radioactive contamination of residents and environment; to provide recommendations on protective actions to the state and municipality institutions. RPC director could be appointed by the Prime Minister as State Operation Leader.

The State Nuclear Power Safety Inspectorate (VATESI) provides urgent information to the state and municipality institutions about the radiological situation in the nuclear facilities; forecasts the development of the nuclear or radiological accident; issues recommendations on protective actions and other information relevant to the event at the nuclear facility.

Licensee

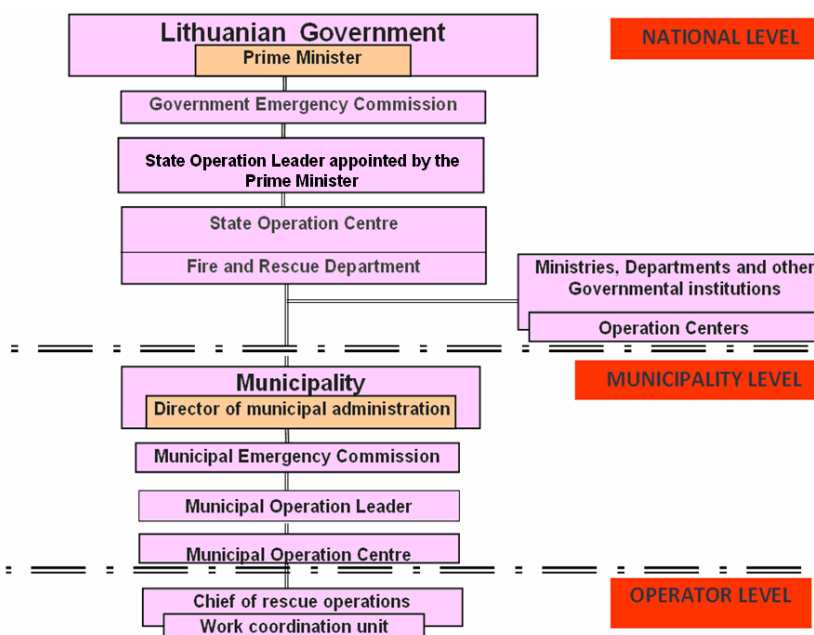
Licensee notifies RPC, informs population and local government; evaluates and eliminates causes, circumstances and consequences, and takes corrective actions.

Licensee provides necessary information to VATESI and other concerned state authorities, to support the authorities in assessing the situation and to advise them on protective actions. Licensee is responsible for implementation of protective actions in sanitary protection zone (3 km).

Alarming

The Fire and Rescue Department is responsible for warning and informing the public. Residents are warned by using public sirens and SMS messaging.

Organizational structure



Country info

Capital	Vilnius
Official language	Lithuanian
Population	2.9 M
Area	65 000 km ²
Currency	Euro (€)
Time zone	UTC+2
Calling code	+370
Internet TLD	.lt
NPPs /ele. share	0/0%

NWP and NCA*

The State Nuclear Power Safety Inspectorate (VATESI)

Regulatory bodies

Radiation Protection Centre (RPC)
The State Nuclear Power Safety Inspectorate (VATESI)

Emergency website

None

Online measurements

<http://193.219.133.13>

Bilateral agreements

Denmark, Norway, Latvia, Poland and also exchange information under the cooperation agreements with the Swedish Radiation Safety Authority (SSM)

RANET capabilities

None

*National Warning Point and Competent Authority under the Emergency Conventions

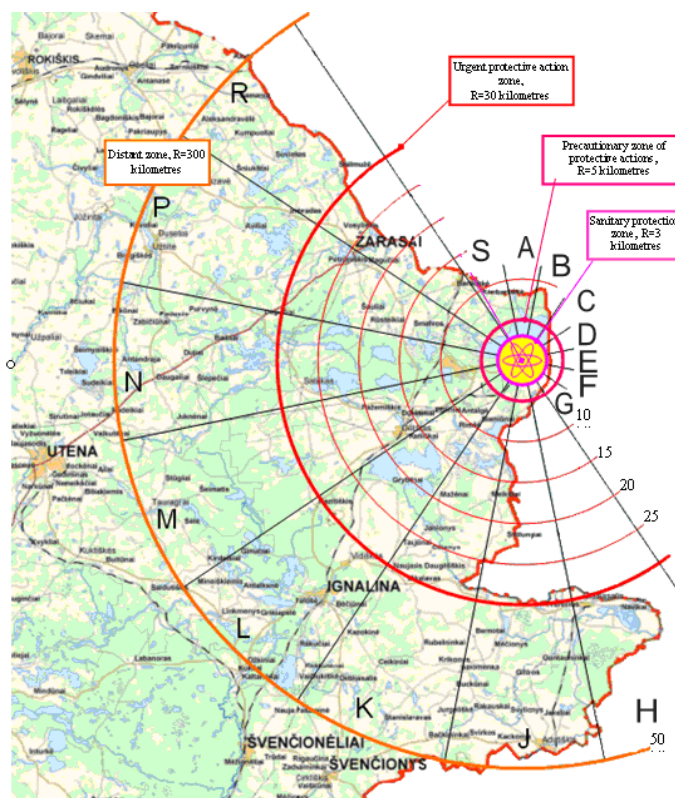
Nuclear facilities* and population

Nuclear facility	Type	MW _e	GPS coordinates	5 km pop.**	30 km pop.**	Comments
Ignalina NPP	2 Units	RBMK	55,3616° N 26,3336° E	~ 0	66 000	Under decommissioning

*The IAEA emergency preparedness category 1 and other relevant facilities

** Population in Lithuania territory only.

Planning zones



Emergency classification

- **Alert at facilities** in threat category I, II or III involving an uncertain or significant decrease in the level of protection for the public or for people on the site.
- **Facility emergencies** are at facilities in threat category I, II or III involving a major decrease in the level of protection for people on the site.
- **Site area emergencies** at facilities in threat category I or II involving a major decrease in the level of protection for those on the site and near the facility.
- **General emergencies** at facilities in threat category I or II involving risk of release of radioactive material or radiation exposure that warrants taking urgent protective action off the site. Protective actions shall be promptly taken to mitigate the consequences of the event and to protect people.

Zone sizes

- Sanitary protection zone (SPZ) – 3 km
- Precautionary action zone (PAZ) – 5 km
- Urgent protective action planning zone (UPAZ) – 30 km
- Distant zone (DZ) – 300 km

Criteria

Protective Action	Generic criteria ^{(1) (2)}	Comments
Iodine thyroid blocking	50 mSv in the first 7 days (H_{Thyroid})	Urgent, early protective and other response actions
Sheltering; evacuation; decontamination; restriction of consumption of food, milk and water; contamination control; public reassurance	100 mSv in the first 7 days (Effective dose) 100 mSv in the first 7 days (H_{Fetus})	
Temporary relocation; decontamination; replacement of food, milk and water; public reassurance	100 mSv per annum (Effective dose) 100 mSv for the full period of in utero development (H_{Fetus})	Early protective and other response actions
Screening based on equivalent doses to specific radiosensitive organs (as a basis for medical follow-up), counseling	100 mSv in a month	If the received dose exceeds the following generic criteria (GC) are used these longer term medical actions to detect and to effectively treat radiation induced health effects
Counseling to allow informed decisions to be made in individual circumstances	100 mSv for the full period of in utero development (H_{Fetus})	

Comments

(1) Generic Criteria for protective actions and other response actions in emergency exposure situations to reduce the risk of stochastic effects.

(2) Generic criteria are consistent with the recommended generic criteria in GSG-2.

Luxembourg

EPR Fact Sheet

Decision making

The national crisis cell (CC) prepares all decisions on protective actions for approval by the Government. A member of the Government (typically the Minister of Interior) or a person designated by him presides over the national crisis center.

The CC is composed of 12 regular members, heads of all directly concerned ministries and administrations. It can be extended to another 8 members, depending on the situation. The head of the Radiation Protection Department (radiation safety authority) is one of the regular members.

The CC is further responsible for the coordination and the control of the protective and other response actions. Support is given by a communication cell (CCI), a radiological evaluation cell (CER) and, as appropriate, by one or more operational cells (mostly placed within the ministries).

Advice

The radiological evaluation cell (CER) consists of experts of the Radiation Protection Department (DRP) and of the Rescue Services Agency (ASS). The missions of the CER are to monitor and assess the radiological situation, to propose protective and other response actions to the CC and to prepare for hosting international assistance.

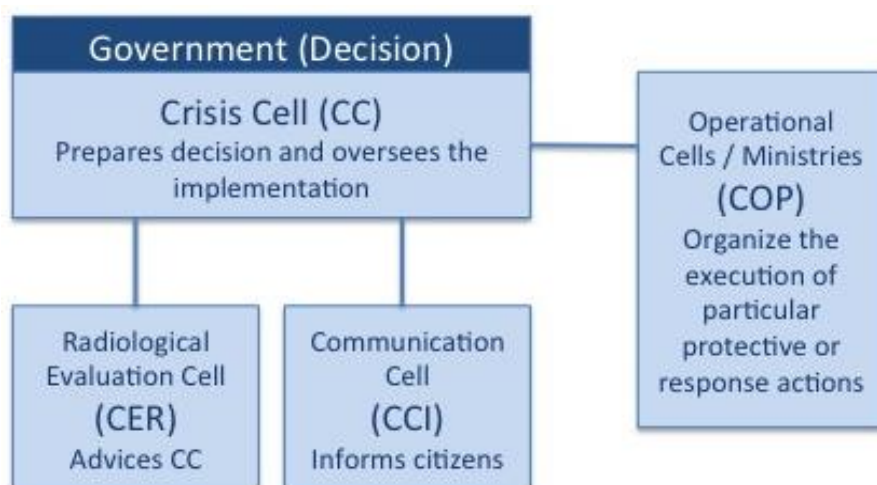
Licensee

There is no nuclear installation in Luxembourg. Through a bilateral agreement, the licensee of the closest foreign NPP has committed to inform the DRP without delay of any event fulfilling defined criteria.

Alarming

The alarming and the instructions regarding urgent protective actions and other response actions are triggered by the CC. The sirens are activated and the instruction are broadcasted by national and private radio stations and other media, including a dedicated website.

Organizational structure



Country info

Capital	Luxembourg
Official language	Luxembourgish, French, German
Population	0,55 M
Area	2 586 km ²
Currency	Euro (€)
Time zone	UTC+1
Calling code	+352
Internet TLD	.lu
NPPs /ele. share	0/0%

NWP*

Rescue Services Agency (ASS)

NCA*

Radiation Protection Department (DRP)

Emergency website

<http://www.infocrise.public.lu>

Online measurements

<http://www.sante.public.lu/fr/prevention/radioactivite/surveillance-environnement-alimentation/radioactivite-monitoring/index.html>

Bilateral agreements

France, Belgium

RANET capabilities

None

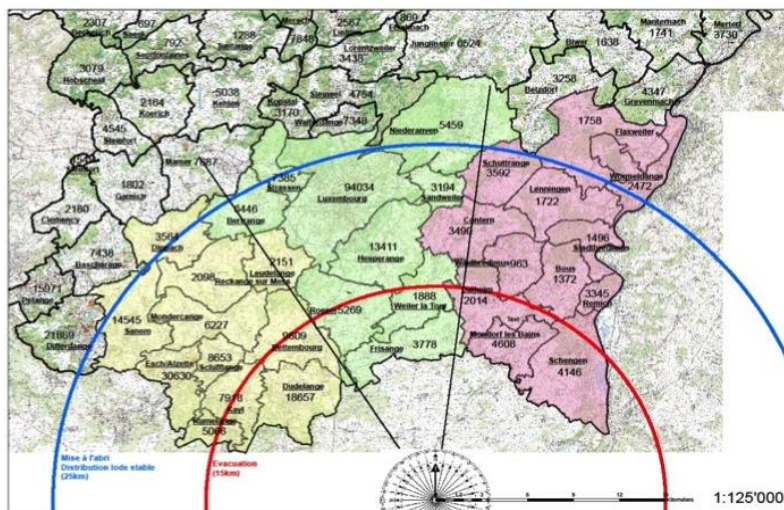
*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates	15 km pop.	25 km pop.	Comments
Cattenom	1	PWR	1300	49.4167° N	6.25° E	NPP in France at 8.5 km from LU border. Population numbers are given for Luxembourg.
	2	PWR	1300			
	3	PWR	1300			
	4	PWR	1300			

*The IAEA emergency preparedness category 1 and other relevant facilities

Planning zones



Emergency classification

The emergency is declared following the advise of the radiation protection authority or rescue services agency in situations with potential releases relevant from a health protection point of view.

Arrangements are in place for direct alert of the LU-authorities by the French licensee.

Planning radii:

Evacuation: 15 km (UPZ) can be extended to 30 km in the post-accidental phase.

ITB and sheltering: 25 km (UPZ), full country (EPD)

Ingestion and commodity planning distance: Full country

Protection strategy

The aim is to consider the affected area as a whole, and to coordinate protective actions with the neighboring states. Generic reference levels (RLs) and operational reference levels (OILs) are defined as given in the table below. These values allow for the necessary flexibility in decision taking for coordinating and aligning protective actions along the borders with the neighboring countries.

Protective actions may be taken at levels of effective or equivalent dose below an RL. In duly justified cases, actions may not be taken in exposure situations above the RL's. OILs serve as orientation values during the release phase.

No criteria exist for automatically triggering actions.

Criteria

Protective Action	RLs	OILs
Evacuation	100 mSv (eff., 7d, ext.+inh.)	
Sheltering **	10 mSv (eff., 7d, ext.+inh.)	100 microSv/h
ITB **	50 mSv (Thy., 7d, inh.)	100 microSv/h
Protection of food and livestock		1 microSv/h

** Sheltering and ITB are combined

Norway

EPR Fact Sheet

Decision making

During the acute phase of a nuclear or radiological incident, the Crisis Committee for Nuclear Preparedness has the King's executive power and authority to make decisions and give orders concerning certain specified mitigating actions. As the leader of the Crisis Committee, the Norwegian Radiation and Nuclear Safety Authority (DSA) can as required make decisions on behalf of the Crisis Committee from the point in time when there is knowledge of a nuclear incident and until the Crisis Committee has assembled. DSA is also the secretariat for the Crisis Committee, and staffs and operates its Operations Centre.

During the acute phase of a nuclear or radiological incident, the Crisis committee can use its authority as it deems necessary to protect lives, health, environment, or other important public interests. The Crisis Committee shall ensure that the incident is managed with coordinated measures and information at the national level. The members of the Crisis Committee are responsible for the implementation of measures within their sectors, and report back to the Crisis Committee and the secretariat on the status of implementation. The County Governors are responsible for coordinating preparedness at the regional level.

Advice

DSA provides advice and expert assistance to the Crisis Committee. DSA can also call upon the expertise of the Crisis Committee's advisors.

In addition, DSA operates the automatic radiation measurement network and would coordinate nationally the radiation measurements in case of emergency.

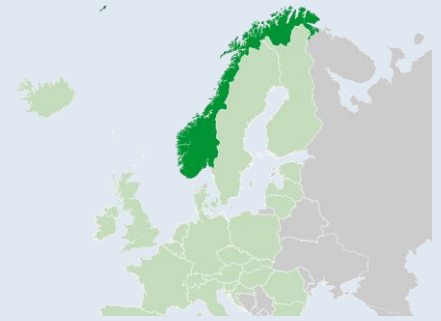
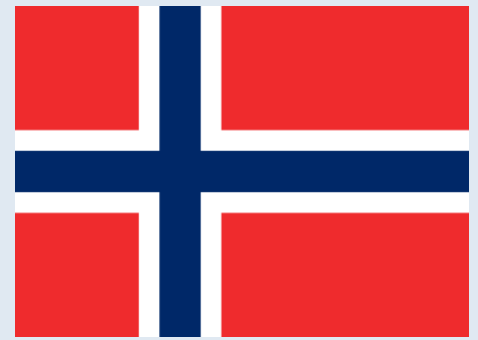
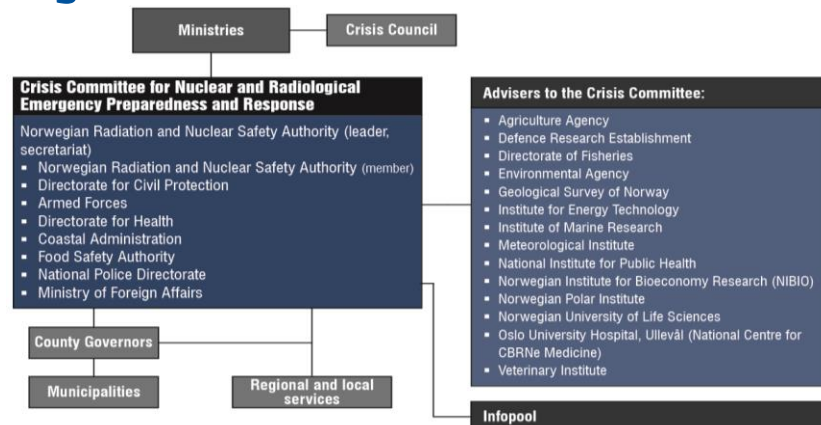
Licensee

The licensee is obliged to make necessary information available to the authorities, to support the authorities in assessing the situation and to advise them in taking decisions on protective actions for the public.

Alarming

In the event of a nuclear or radiological incident, the licensee shall notify DSA immediately as well as emergency services. DSA will begin coordinating the national response to the incident, as well as coordinate with on-site personnel.

Organizational structure



Country info

Capital	Oslo
Official language	Norwegian
Population	5.3 M
Area	385 178 km ²
Currency	Krone (NOK)
Time zone	UTC+1
Calling code	+47
Internet TLD	.no
NPPs /ele. share	0/0%

NWP, NCA*

Norwegian Radiation and Nuclear Safety Authority (DSA)

Emergency website

<http://www.dsa.no/en>

Online measurements

<http://radnett.dsa.no>

Bilateral agreements

Nordic countries (Sweden, Finland, Iceland, Denmark), Lithuania, Netherlands, Poland, Russia, UK, Germany, Ukraine.

RANET capabilities

- Source Search and Recovery
- Radiation Survey
- Environmental Sampling and Analysis

*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

Research reactor	Type	MW _e	GPS coordinates		Comments
HBWR	HWR	25	59°07'36.4"N	11°24'04.8"E	Permanently shut down as of March 2018
JEEP-II	TANK	2	59°58'28.3"N	11°03'07.7"E	

*The IAEA emergency preparedness category 1 and other relevant facilities

Protection strategy

Reference levels of 20 mSv (eff. dose all pathways, 1 year) is a target for the protection strategy during nuclear or radiological emergencies. The protection strategy is described in detail in the [Nordic Flag Book](#).

Criteria

Protective Action	OILs /EALs	Comments
Evacuation	Sheltering anticipated to be needed for more than 2 days	In addition, access and traffic restrictions (road, marine, rail, aviation)
Sheltering	100 microSv/h	In addition, access and traffic restrictions (road, marine, rail, aviation)
Partial Sheltering	10 microSv/h	
ITB for all <40 y	With sheltering and/or evacuation	
ITB only for children under 18 y, pregnant and breast feeding women	With partial sheltering	
Protection of food and livestock	1 microSv/h	

Poland

EPR Fact Sheet

Decision making

Depending on the extent of emergency responsibility for mitigating its consequences belongs to the licensee, relevant provincial governor or the Minister of Interior.

Advice

In case of radiological or nuclear emergency the National Atomic Energy Agency (PAA) provides expert assistance to other authorities. PAA operates the national radiation monitoring network and decision support systems. PAA also coordinates radiation measurements in case of emergency.

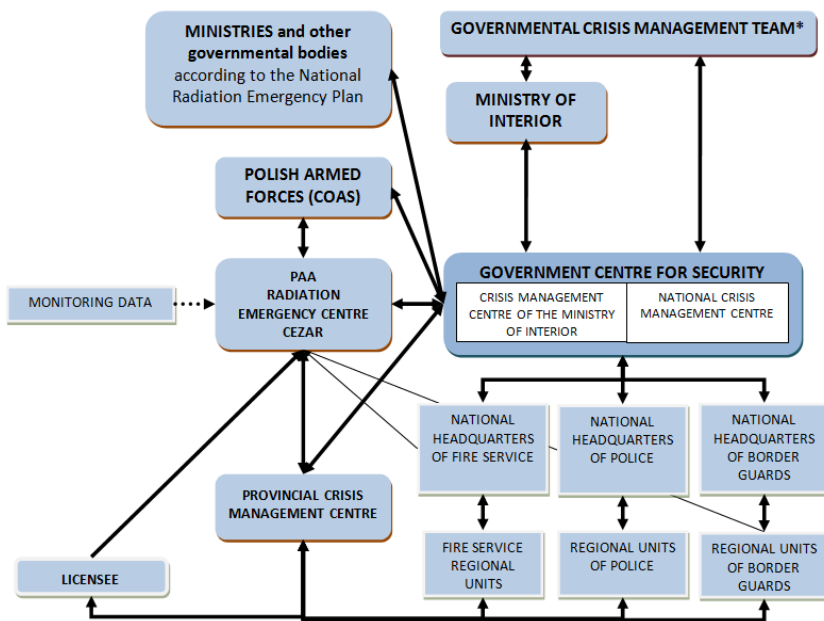
Licensee

Secures the emergency site and provides first aid for victims of the emergency. Notifies the PAA and relevant emergency services of the emergency. Notifies the provincial governor if the emergency extends beyond the site boundaries.

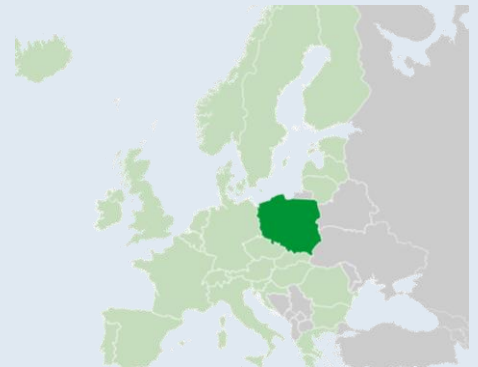
Alarming

In case of radiation or nuclear emergency the licensee is obliged to notify PAA and other relevant authorities according to the radiation emergency plan. Provincial governor or/and the Minister of Interior informs the public.

Organizational structure



* The PAA President is a member of the Governmental Crisis Management Team in case of crisis situation due to radiation emergency on national scale



Country info

Capital	Warsaw
Official language	Polish
Population	38.5 M
Area	313 000 km ²
Currency	Zloty (PLN)
Time zone	UTC+1
Calling code	+48
Internet TLD	.pl
NPPs /ele. share	0/0%

NWP and NCA*

Radiation Emergency Centre CEZAR,
National Atomic Energy Agency

Emergency website

www.paa.gov.pl

Online measurements

<http://paa.gov.pl/ocena-sytuacji-radiacyjnej-kraju/rozklad-mocy-dawki-promieniowania-gamma>

Bilateral agreements

Austria, Belarus, Czech Republic, Denmark, Lithuania, Germany, Norway, Russia, Slovakia, Ukraine

RANET capabilities

None

*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

Research Reactor		MW _{th}	GPS coordinates		Actions	Type
Otwock-Świerk	MARIA	30	52.122981° N	21.344094° E	≤ 1 km	pool reactor

*The IAEA emergency preparedness category 1 and other relevant facilities

Emergency classification

On-site emergency – radiation emergency occurring on the site of organizational entity, with the impact limited to the area within the site boundaries of this organizational entity

Provincial scale public emergency – radiation emergency occurring on the site of organizational entity, or beyond this site during field works or during the transport of nuclear materials, ionizing radiation sources, radioactive waste or spent nuclear fuel, with the impact limited to the territory of a single province

National scale public emergency – radiation emergency similar to provincial scale public emergency, if its impact extends, or may extend, over the territory larger than that of a single province or extends beyond the state territory

Protection strategy

Protective Action	OILs /EALs	Comments
Evacuation	100 mSv (eff., 7d, ext.+inh.)	
Sheltering	10 mSv (eff., 2d, ext.+inh.)	
Temporary relocation	30 mSv (eff., 30d, ext.+inh.)	
Permanent resettlement	1 Sv (eff., lifetime)	
ITB	50 mGy (thyroid absorbed dose)	
Withdrawal and substitution of foodstuffs and drinking water	Radionuclide specific OILs	

Romania

EPR Fact Sheet

Decision making

According to the current legislation, the National System for the Management of Emergencies has three types of structures:

- the decisional structure – the committees for emergencies,
- the executive structure,
- the operational structure – the operative centres for emergencies.

All the decisional, executive and operational structures are established on three levels: national, county and local.

As a decision structure, at national level is organized the National Committee for Special Emergency Situations. The National Committee for Special Emergency Situations is set-up under the co-ordination of the Prime Minister and managed by the Minister of Internal Affairs. All the ministerial, county and local Committees are subordinated to the National Committee for Special Emergency Situations.

Advice

Advice to the decision-making bodies and the responding organization is provided by the national competent authority (CNCAN) and some specific technic support organization. The assessment of the plant conditions and the possible off-site consequences is performed by the National Commission for Nuclear Activities Control CNCAN (regulatory body).

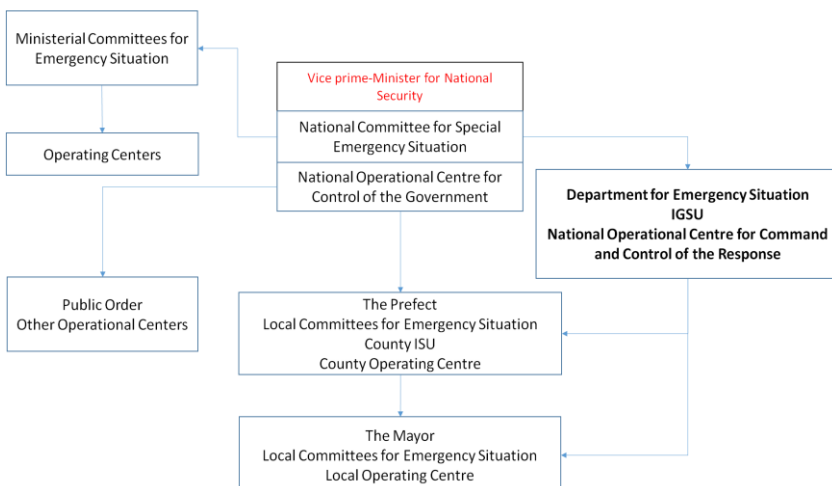
Licensee

The licensee has to notify CNCAN, without delay, of any event fulfilling defined criteria. The licensee has to transmit all relevant and available information to CNCAN, in order for the regulatory body to assess the situation and to recommend off-site protective actions for the public.

Alarming

The licensee has to report the emergency to CNCAN, Local Authorities and IGSU immediately if a facility, site or general emergency was classified. The sirens are activated by the local authorities and instructions are broadcasted throughout national and private Radio/TV stations.

Organizational structure



Country info

Capital	Bucharest
Official language	Romanian
Population	20 M
Area	238 391 km ²
Currency	Leu (RON)
Time zone	UTC+2
Calling code	+40
Internet TLD	.ro
NPPs /ele. share	2/18%

NWP*

National Commission for Nuclear Activities Control

NCA*

National Commission for Nuclear Activities Control (CNCAN)

Emergency website

www.cncan.ro

www.igsu.ro

Online measurements

<http://www.anpm.ro/debit-doza-gama>

Bilateral agreements

Bulgaria, Ukraine, Hungary, Turkey, Serbia, Greece, Russia

RANET capabilities

- Source Search and Recovery
- Radiation Survey
- Environmental Sampling and Analysis
- Radiological Assessment and Advice
- Dose Assessment
- Decontamination

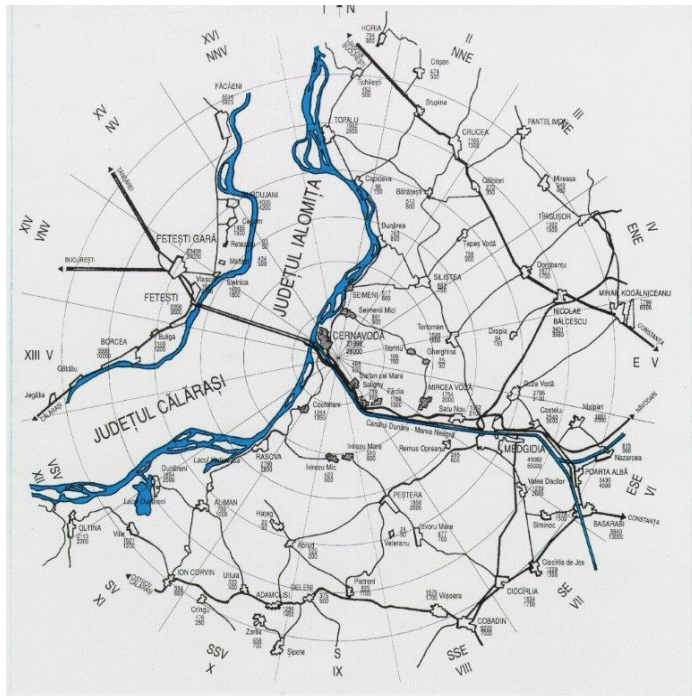
*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates	5 km pop.	15 km pop.	100 km pop.	Comments
Cernavoda 1	PHWR	700	44.320431° N 28.059873° E	15 000	25 000	600 000	
Cernavoda 2	PHWR	700	44.321448° N 28.058512° E	15 000	25 000	600 000	

*The IAEA emergency preparedness category 1 and other relevant facilities

Planning zones



Emergency classification

- 0 – Alert
- 1 – Facility Emergency
- 2 – Site Emergency
- 3 – General emergency

Comments

- Romanian emergency classification is according to IAEA's classification from GSR Part 7
- Precautionary action zone: 5 km
- Urgent protective action zone: 15 km

Protection strategy

Reference level of 100 mSv (eff. dose all pathways, 1 year) is a target for protection strategy during nuclear or radiological emergencies. The protection strategy is according to GSR part 7 (Generic Criteria).

Criteria

Protective Action	OILs /EALs	Comments
Evacuation in PAZ (5 km)	General Emergency	In addition, access and traffic restrictions (road, naval, rail, aviation)
Sheltering in UPZ (15 km)	General Emergency	In addition, access and traffic restrictions (road, naval, rail, aviation)
ITB	With sheltering and/or evacuation	Iodine tablets pre-distributed within 5 km of plant

Comments

Other protective actions outside the planning zones in emergency planning distance and food restriction and commodities distance (100km):

- Restrict consumption, distribution and sale of non-essential food, milk and drinking water and restrict the use and distribution of other commodities

Slovakia

EPR Fact Sheet

Decision making

The level of decision making is dependent on the territory that is affected by the emergency. If only local areas are affected, regional crisis headquarters will serve as a coordinating body and the chairman of the regional county office is responsible for decision making. In case the emergency exceeds territory of one region, Central Crisis Headquarters (CCH) is responsible for coordination of activities. CCH provides advice to the Government of the Slovak Republic that takes decisions.

Advice

For assessing of course and consequences of incidents and accidents at nuclear installations and for preparation of recommendations for actions licensee, NRA SR and PHA SR are responsible.

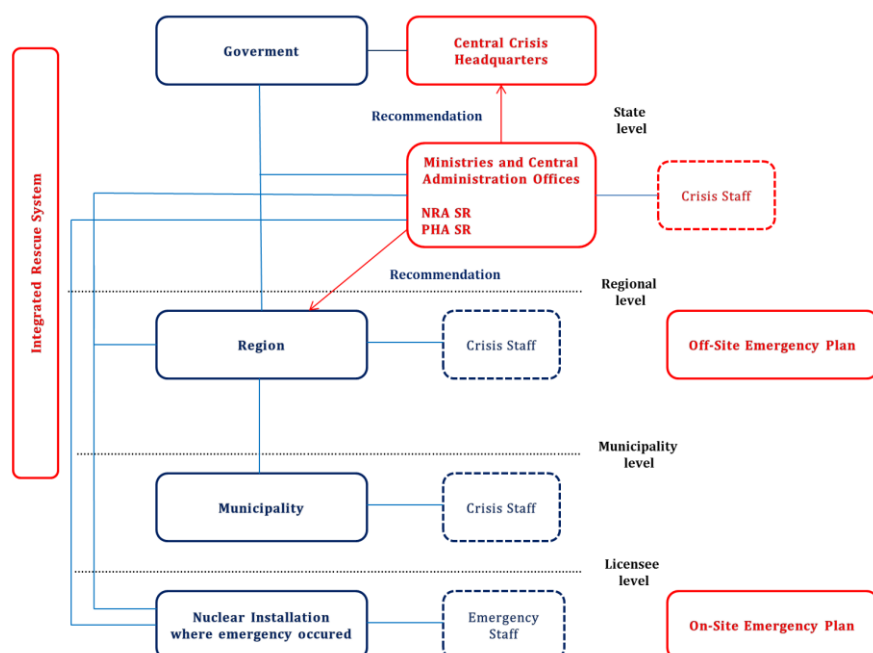
Licensee

Licensee declares emergency and takes protective and mitigatory actions on-site to prevent or to control releases and is responsible for its workers as well as for all other persons on the premises of the nuclear installation. Licensee has some further practical responsibilities relevant for EPZ area.

Alarming

The licensee shall notify the NRA SR of incidents or accidents over the telephone without delay. For event classified as "alert", the licensee is also obliged to inform the Ministry of Interior, Ministry of Health, PHA SR and other responding organizations with no delay. Licensees are required to update the information as soon as it is known to have changed. The operator, in co-operation with the civil protection, provides warning (sirens) and notification (radio, TV) to the population.

Organizational structure



Country info

Capital	Bratislava
Official language	Slovak
Population	5.4 M
Area	49 000 km ²
Currency	Euro (€)
Time zone	UTC+1h
Calling code	+421
Internet TLD	.sk
NPPs /ele. share	2/51%

NWP*

Ministry of Interior of the Slovak Republic

NCA*

Nuclear Regulatory Authority of the Slovak Republic (NRA SR)

Radiation protection

Public Health Authority of the Slovak Republic (PHA SR)

Emergency website

www.ujd.gov.sk/

Online measurements

www.shmu.sk/sk/?page=1894

Bilateral agreements

Czech Republic, Poland, Ukraine, Hungary, Austria, Germany, Slovenia

RANET capabilities

None

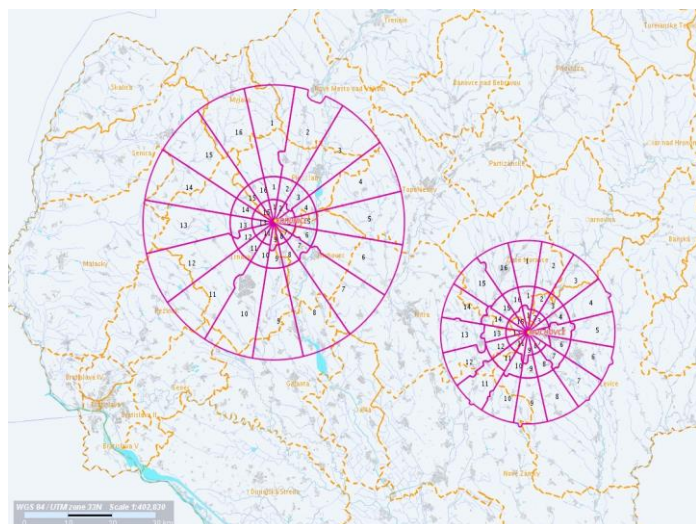
*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates		5 km pop.	20 km pop.	Comments
Bohunice	3	PWR	505	48.4944° N 17.6819° E	14 804	266 922	
	4	PWR	505	48.4944° N 17.6819° E	14 804	266 922	
Mochovce	1	PWR	470	48.2639° N 18.4569° E	3 147	139 798	
	2	PWR	470	48.2639° N 18.4569° E	3 147	139 798	

*The IAEA emergency preparedness category 1 and other relevant facilities

Planning zones



Emergency classification

1st degree – “alert” – for the condition upon which performance of safety functions is threatened or compromised, safety barriers are compromised or non-functioning, radioactive substance release is imminent or already occurred, which may lead or leads to unacceptable irradiation of persons within building structures of the nuclear facility and in the case of adverse development of the event, release of radioactive substances outside of the nuclear facility premises is imminent

2nd degree – “on-site emergency” – for a condition that may lead or leads to a release of radioactive substances outside of the nuclear facility building structures and to its area,

3rd degree – “off-site/general emergency” – for a condition that may lead or leads to a severe release of radioactive substances to the nuclear facility surroundings

Comments

The EPZ is defined based on analysis of the source term and radiological consequences of selected severe accidents and represents a circle with the centre in the nuclear facility and further divided into 16 sectors (of 22.5° each). The radius is NPP-specific and is defined as 20 km for Mochovce and 21 km for Bohunice. In case that the boundary demarcating the EPZ interferes with an inhabited area, the whole inhabited area is considered as a EPZ

Protection strategy

The important measures connected with the protection of population are as follows: monitoring of the radiation situation; iodine prophylaxis (iodic preparations are provided by the licensee for all inhabitants within a radius of 21 km (Jaslovské Bohunice) or 20 km (Mochovce) from the NPPs; sheltering, which is carried out immediately after the warning and notification of the population about the radiation accident; evacuation, from the areas endangered by the radiation gradient. Performing of an intervention must be carefully considered if intervention levels are exceeded

Criteria*

Protective Action	Value of projected dose	Comments
Sheltering	100 mSv / 7 days (effective dose / equivalent dose to fetus)	10 mSv / 48 hours effective dose in practical arrangements
Iodine prophylaxis	50 mSv / 7 days (equivalent dose to thyroid)	
Evacuation of people	100 mSv / 7 days (effective dose / equivalent dose to fetus)	

* Criteria in this table are generic criteria

Slovenia

EPR Fact Sheet

Decision making

Decisions on protective actions are made by the Civil Protection Commander, who is supported by the Civil Protection National Headquarters. The headquarters is staffed by representatives of all relevant ministries and government bodies. Decisions are implemented through chain of command all the way down to the local level. The decision making is the same for all hazards.

Advice

Slovenian Nuclear Safety Administration (SNSA) is competent authority in Slovenia on radiation matters during an emergency. Its emergency team provides advice on protective actions to the Civil Protection Commander. SRPA staff are members of the SNSA emergency team as well.

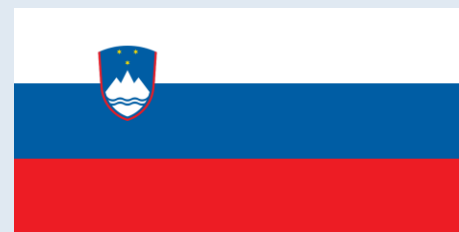
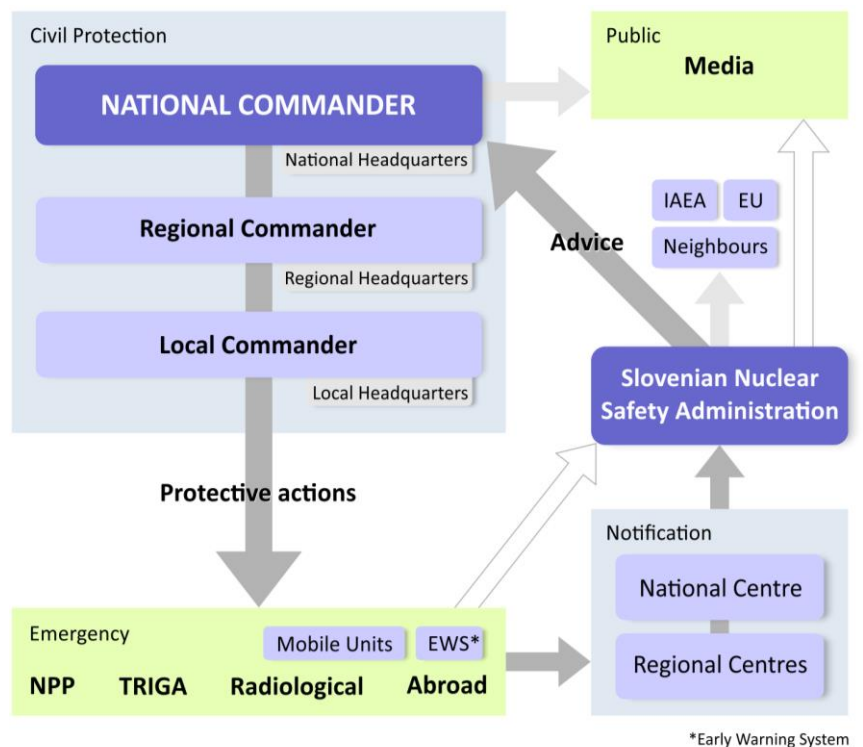
Licensee

The NPP is obliged to notify off-site authorities (Regional Notification Centre, National Notification Centre and Slovenian Nuclear Safety Administration) within 15 min of emergency declaration. They have to report in writing every 30 min during an emergency. They have to make available plant parameters via an on-line system. They have to give recommendation of protective actions.

Alarming

Instructions and warnings to the public are provided by stationary siren system and through the media. Alarming is the same for all hazards.

Organizational structure



Country info

Capital	Ljubljana
Official language	Slovenian
Population	2 M
Area	20 000 km ²
Currency	Euro (€)
Time zone	UTC+1
Calling code	+386
Internet TLD	.si
NPPs /ele. share	1/24%

NWP*

Notification Centre of the Republic of Slovenia

NCA*

Slovenian Nuclear Safety Administration (SNSA)

Radiation protection

Slovenian Radiation Protection Administration (SRPA)

Emergency website

www.ursjv.gov.si/

Online measurements

www.radioaktivnost.si/#trenutne

Bilateral agreements

Austria, Croatia, Hungary, Italy

RANET capabilities

- Source Search and Recovery
- Radiation Survey
- Environmental Sampling and Analysis
- Radiological Assessment and Advice
- Nuclear Installation Assessment and Advice

*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates	3 km pop.	10 km pop.	25 km pop.	Comments		
Krško	NEK	PWR	700	45.93811° N	15.51523° E	11 000	27 000	55 000	

Research reactor	Type	kW _{th}	GPS coordinates	Comments		
Ljubljana	TRIGA	Mark II	250	46.09426° N	14.59769° E	Located in Brinje, 8 km outside Ljubljana

*The IAEA emergency preparedness category 1 and other relevant facilities

Planning zones



Emergency classification

0 - Unusual Event: potential degradation of safety; no releases requiring offsite response are expected

1 - Alert: actual or potential substantial degradation of safety; limited releases possible with no risk to environment

2 - Site Emergency: actual or likely major failure of plant functions; any releases are not expected to exceed exposure limits beyond the site boundary; the NPP site is evacuated

3 - General Emergency: actual or imminent substantial core degradation or melting with potential for loss of containment integrity, releases requiring off-site protective actions can be expected

Comments

Classification is based on the US classification (the NPP is a Westinghouse PWR).

Protection strategy

The protection strategy is based on 100 mSv reference level. For emergency at the NPP protective actions are predefined and based on emergency classification. Evacuation of 3 km zone is ordered when general emergency is declared, which is followed by evacuation of 10 km zone. Evacuation is accompanied by ITB. In the 25 km zone protective actions are based on field measurements and dose assessments.

For other radiation emergencies protective actions are based on field measurements and dose assessments. Safety perimeters for radiological emergencies are based on the IAEA recommendations.

Criteria

Protective Action	OILs /EALs	Comments
Evacuation	General Emergency	For the NPP only.
ITB	General Emergency	
Evacuation	1000 μ Sv/h	Dose rate is measured 1 m above surface or source.
ITB	1000 μ Sv/h	OILs are based on the IAEA recommendations.
Relocation	100 μ Sv/h	
Food chain restrictions	1 μ Sv/h	

Spain

EPR Fact Sheet

Decision making

Decision making in case of emergency rests in local authorities. The main position for decision making is the Plan Director, filled by the State Government Delegate at the province. This position is aided by an Executive Committee composed of five to seven posts responsible for radiation protection (filled by CSN), public health, security, logistics and local civil protection, as well as a representative of the local municipalities.

Upon request, help can be provided by the State Government through the Central Response and Help Plan, which is coordinated by State Civil Protection and encompasses the rest of the State resources.

Advice

The Nuclear Safety Council (CSN – Consejo de Seguridad Nuclear) is the only authority responsible for providing advice and recommendations regarding radiological protection and nuclear safety in case of emergency. CSN advice to decision makers encompasses emergency assessment, prognosis, protection measurements to the public and environment, etc.

CSN operates information systems for the monitoring of environmental radiation as well significant plant parameters and status.

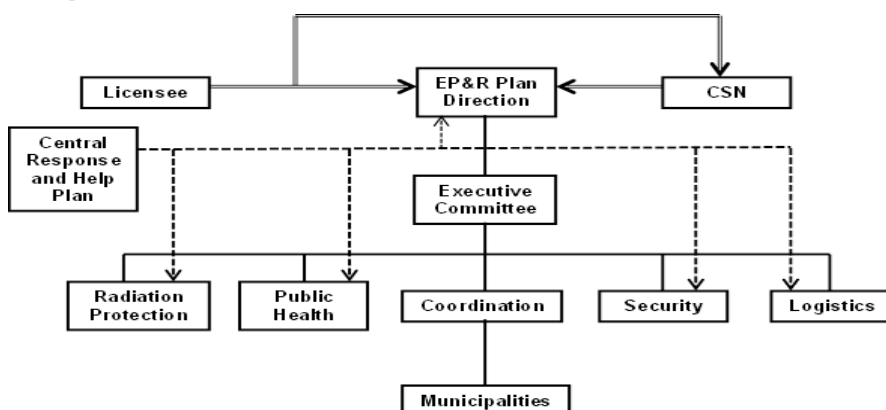
Licensee

Additionally to the notifying requirements in case of an emergency event, licensees must make the necessary information available (including external dose predictions) to the CSN in order to assess plant status and possible consequences. Licensees are also required to update the information as soon as it is known to have changed.

Alarming

Licensees are obliged to notify the CSN and the Plan Director (see Decision making paragraph) Emergency Centre any event that fulfills predefined criteria that requires activation of EP&R Plans.

Organizational structure



Country info

Capital	Madrid
Official language	Spanish
Population	46 M
Area	504 000 km ²
Currency	Euro (€)
Time zone	UTC+1
Calling code	+34
Internet TLD	.es
NPPs /ele. share	6/20%

NWP*

CSN - Nuclear Safety Council (Salem-Emergency Centre)

NCA*

CSN - Nuclear Safety Council (Salem-Emergency Centre) Emergencies and Civil Protection Office (DGPCE)

Emergency website

www.csn.es

Online measurements

www.csn.es

Bilateral agreements

Portugal, France

RANET capabilities

Ongoing process to complete registration

*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates	5 km pop.	20 km pop.	50 km pop.		
Almaraz	AL1	PWR	1035	39.807008° N	5.698364° EW	1 500	27 100	162 500
	AL2	PWR	1044					
Ascó	AS1	PWR	1032	41.201058° N	0.567850° E	6 700	33 800	448 100
	AS2	PWR	1027					
Cofrentes	COF	BWR	1092	39.213227° N	1.050972° W	2 000	11 000	366 700
Garóña	GAR	BWR	466	42.775442° N	3.207159° W	270	8 200	403 300
Trillo	TRI	PWR	1066	40.701573° N	2.622687° W	1 300	6 300	120 700
Vandellós2	VA2	PWR	1087	40.950718° N	0.865283° E	630	57 000	461 000

*The IAEA emergency preparedness category 1 and other relevant facilities

Planning zones



On-site emergency classification

Category I.- Pre-Alert

A situation with a potential degradation of plant safety

Category II.- Emergency Alert

An event that can cause an important degradation of plant safety

Category III.- Site Area Emergency

An event that can induce important failures in plant safety functions

Category IV.- General Emergency

An event that can cause important damage to plant core

Off-site emergency classification

Off-site emergency can be classified in four different groups (Situation 0, 1, 2 and 3) according to the protection measures required by the on-site emergency and its off-site consequences.

Protection strategy

Protective Action	On-site classification	Off-site classification
None	I	Situation 0
Access Control	II, III	Situation 1
Situation 1 measures plus Sheltering, Thyroid Blocking, Food and Water Restrictions	IV	Situation 2
Situation 2 measures plus Evacuation and Personnel Decontamination	IV	Situation 3

Criteria

Protective Action	OILs /EALs	Comments
Sheltering	10 mSv	Avertable dose in 48 h (up to 10 km)
Thyroid Blocking	100 mGy	Equivalent avertable dose
Evacuation	50 mSv	Avertable dose in 1 week. Greater or minor levels can be justified (weather conditions, easy evacuation, large population, etc., up to 5 km)
Long term protection measures		
Temporal Relocation	30 mSv the first month and 10 mSv the following months	
Permanent Relocation	Projected dose for one month > 10 mSv after 1 or 2 years of temporal relocation, or life projected dose > 1 Sv	

Comments

Planning zones are divided in 16 sectors of 22° 30' named after the compass rose.

Sweden

EPR Fact Sheet

Decision making

In the event of an emergency at a nuclear installation, decision making rests with the organisations that are normally responsible for the sector and for administrative regions. In the case of protective actions that have an impact on the population (e.g. sheltering and evacuation), the responsible authority is the County Administrative Board. The Swedish Civil Contingencies Agency (MSB) has a mandate for coordination and supervision of emergency preparedness at national level and assists with the coordination of relevant authorities' response actions during crises. The Swedish Radiation Safety Authority (SSM) issues regulations applying to nuclear installations and supervises regulatory compliance. This includes provisions for licensees' emergency planning.

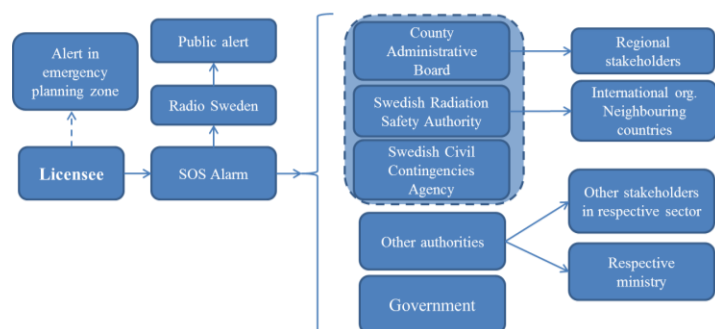
Advice

SSM provides advice and expert assistance to other government agencies. SSM operates a fixed radiation monitoring network and a network of air sampling stations. A national expert response organisation for radiological monitoring and sampling is also maintained by SSM. The Swedish Meteorological and Hydrological Institute (SMHI) assists SSM by providing weather forecasts and data for dispersion calculations.

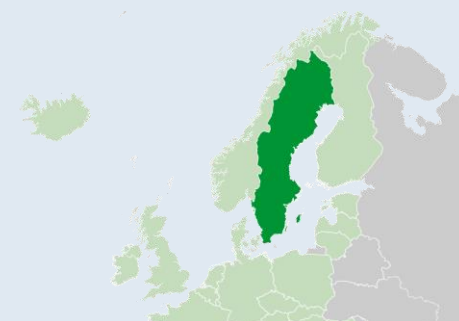
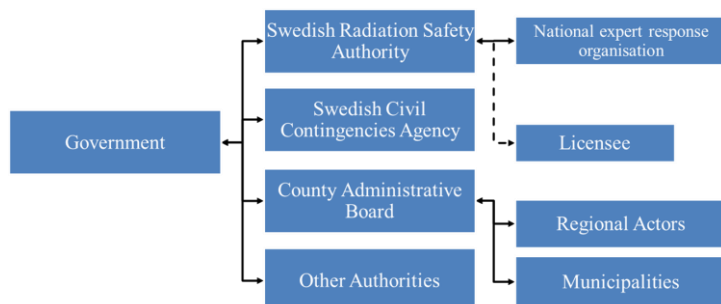
Licensee

In the event of an emergency, a licensee is required to take prompt actions in order to classify the event according to the alarm criteria, alert the facility's emergency response organisation and responsible authorities, assess possible releases and time-related aspect, and restore the facility to a safe and stable state.

Alarm sequence



Organizational structure



Country info

Capital	Stockholm
Official language	Swedish
Population	10.1 M
Area	447 000 km ²
Currency	Krona (SEK)
Time zone	UTC+1
Calling code	+46
Internet TLD	.se
NPPs /ele. share	3/40%

NWP*

Swedish Meteorological and Hydrological Institute (SMHI)

NCA*

Swedish Radiation Safety Authority (SSM)

Emergency website

www.krisinformation.se

Online measurements

<http://eurdepweb.jrc.ec.europa.eu/EurdepMap/Default.aspx>

Bilateral agreements

Denmark, Finland, Germany, Norway, Russia, Ukraine

RANET capabilities

- Source Search and Recovery
- Radiation Survey
- Environmental Sampling and Analysis
- Radiological Assessment and Advice

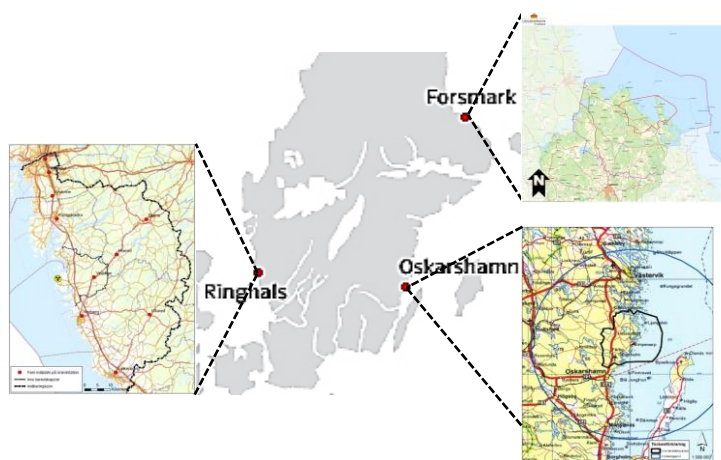
*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear power plants and population

Facility	Type	MW _e	GPS coordinates	5 km pop.	20 km pop.	Comments		
Forsmark	F1	BWR	1000	60.405 N	18.161 E	60	9 100	Permanent residents
	F2	BWR	1200					
	F3	BWR	1200					
Oskarshamn	O3	BWR	1500	57.416 N	16.673 E	200	6 200	
Ringhals	R1	BWR	900	57.256 N	12.108 E	3 300	59 000	
	R2	PWR	1000					
	R3	PWR	1100					
	R4	PWR	1200					

* Gross electrical capacity reported in IAEA PRIS

Planning zones



Planning zones: In the maps, the inner (approx. 12-15 km) and outer (approx. 50 km) emergency planning zones are shown. The emergency planning zones are currently [under revision](#).

Protection strategy

The national protection strategy in Sweden is based on two different reference levels for the public in emergency exposure situations. In the case of an event at a nuclear power plant without functioning mitigation systems, SSM applies a reference level of 100 mSv residual effective dose. For all other events 20 mSv residual effective dose is used in accordance with the Nordic Flag Book. Dose criteria and intervention levels have been derived from the reference levels, and are described further in [this report](#).

Criteria

Protective Action	Comments
Evacuation	Precautionary evacuation of the innermost 5 km. Evacuation in areas where the projected effective dose is likely to exceed 100 or 20 mSv during one week, or in areas where prolonged sheltering is foreseen.
Sheltering	Sheltering in the inner emergency planning zone is recommended when a general emergency has been declared and in areas where the projected effective dose is likely to exceed 10 mSv during one week.
ITB	Predistribution of ITB in the inner emergency planning zone. Recommended intake of predistributed iodine tablets by children and adults (< 40 years of age) if the projected equivalent dose to the thyroid is likely to exceed 10 mSv.

Emergency classification

Site area emergency

The facility deviates from expected operation in such a way that at least two barriers have been compromised or threatened, the facility has been effected in such a way that the consequences have not yet been analysed, or for any other reason are not possible to foresee. No release of radioactive substances has taken place that warrants off-site protective actions.

General emergency

An event resulting in an ongoing release, or a situation where a release within 12 hours cannot be ruled out. The release warrants off-site protective actions.

Switzerland

EPR Fact Sheet

Decision making

Decisions on protective actions are basically taken by the Federal Council on the basis of application of the Federal NBCN Management Board. The heads of all concerned federal offices (ministries) and other representatives are members of this board. The meetings of this board constitute an accelerated consultation mechanism similar to the one in normal situation.

For urgent protective actions the competence is delegated to the National Emergency Operations Centre (NEOC).

The implementation of the protective and other response actions is in the responsibility of the local authorities (cantons).

Advice

Advice to the decision-making bodies and the responding organisations is provided by the competent federal offices and some specific technical support organisation. The assessment of the plant conditions and the possible off-site consequences is performed by the Nuclear Safety Inspectorate ENSI (regulatory body). The radiological situation is monitored and assessed by NEOC and the Federal office of public health (FOPH), where NEOC is leading the actions in areas under emergency exposure situation and the FOPH those under existing and planned exposure situation

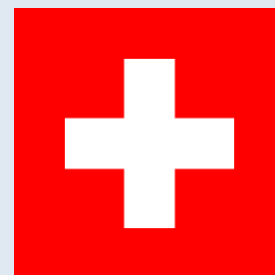
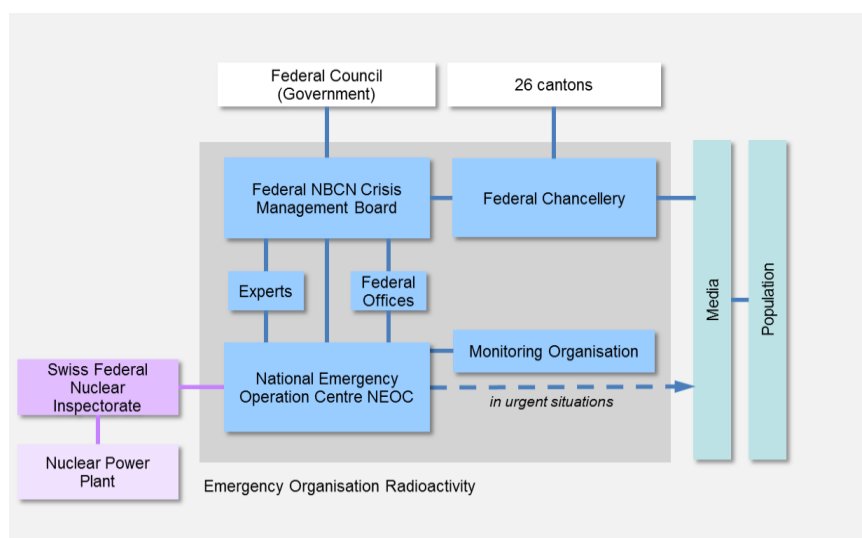
Licensee

The licensee is obliged to notify the Regulatory Body with no delay of any event fulfilling defined criteria. It is obliged to make information available to the Regulatory Body needed to assess the situation and to determine the necessary protective actions for the public

Alarming

The alarming and the instructions regarding urgent protective actions and other response actions is triggered by NEOC. The sirens are activated by the local authorities and the instruction is broadcasted by national and private radio stations.

Organizational structure



Country info

Capital	Bern
Official language	German, French, Italian, Romansh
Population	8 M
Area	40 000 km ²
Currency	Swiss franc (CHF)
Time zone	UTC+1
Calling code	+41
Internet TLD	.ch
NPPs /ele. share	5/40%

NWP and NCA*

National Emergency Operations Centre (NEOC)

Nuclear regulatory body

Swiss Federal Nuclear Inspectorate (ENSI)

Radiation protection

Federal Office of Public Health (FOPH)
Swiss Federal Nuclear Inspectorate (ENSI)

Emergency website

None

Online measurements

<https://www.naz.ch>
www.ensi.ch/en/topic/measured-value-about-swiss-nuclear-power-plants/

Bilateral agreements

Austria, France, Germany, Italy, Liechtenstein

RANET capabilities

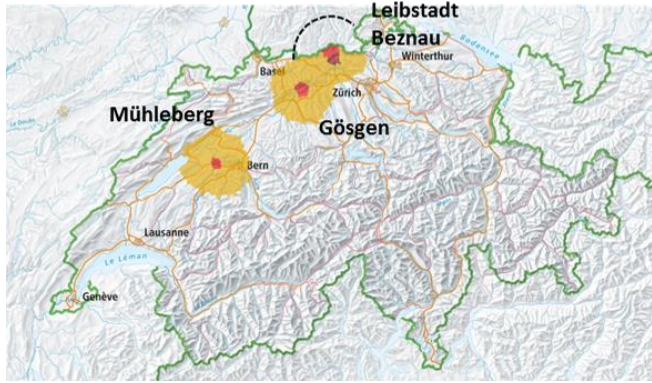
- Source Search and Recovery
- Radiation Survey
- Environmental Sampling and Analysis
- Radiological Assessment and Advice
- Medical Support
- Dose Assessment
- Decontamination

Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates	5 km pop.	20 km pop.	Comments
Beznau I	KKB I	BWR	1130	47.552192° N 8.231454° E	25 000	250 000
Beznau II	KKB II	PWR	1130	47.552192° N 8.231454° E	25 000	250 000
Gösgen	KKG	BWR	3000	47.366494° N 7.972052° E	30 000	420 000
Leibstadt	KKL	BWR	3600	47.602285° N 8.184662° E	25 000	250 000
Mühleberg	KKM	PWR	1100	46.969160° N 7.269328° E	3 500	580 000

*The IAEA emergency preparedness category 1 and other relevant facilities

Planning zones



Planning zone 1 with radius 3 to 5 km and zone 2 with radius of 20 km, divided in 6 overlapping sectors of 120 degrees

Protection strategy

For each type of radiological or nuclear events a predefined strategy is defined. For a nuclear accident this predefined strategy is based on a reference level of 100 mSv. From this protection goal the generic criteria and the operational intervention levels are derived. The generic criteria are given in the table below. The predefined strategy will be implemented in concepts of operations describing the actions to be taken by the different responding organisations (including e.g. special instructions for schools, access control, traffic deviations, etc.)

As soon as the consequences can be assessed the strategy is adapted by a process of justification and optimisation. The new strategy will lead to an optimised Reference Level which will be used to derive new generic criteria and operational intervention levels.

Criteria

Protective Action	Generic Criteria	Comments
Precautionary evacuation	100 mSv eff., 2d, ext.+inh.	Zone 1 as an urgent protective action and if safely feasible, in a second step endangered sectors of zone 2 if necessary
Stay indoors for children and pregnant women	1 mSv eff., 2d, ext.+inh.	
Sheltering	10 mSv eff., 2d, ext.+inh.	If not enough information zone 1 and zone 2 (endangered sectors)
ITB	50 mSv thy., 2d, inh.	Pre-distributed to the households up to 50 km
Precautionary harvesting and grazing ban	---	No Generic Criterion defined. Specific criterion: Where protective actions were ordered and up to the Swiss border and up to the alps

Comments

For protective actions not listed in the table a dose level of 100 mSv is set as a criteria. This criteria will serve as a criteria for an evacuation as an early protective action.

Emergency classification

The emergency classes are triggered by specific plant parameters

Alert

Situation where special measures have to be taken by the operator to insure the safety of the power plant but without any actual threat offsite.

Site Area Emergency

Loss of defense in depth in the plant requiring an activation of off-site emergency organisations but still without an actual threat off-site.

General Emergency

Situation with a potential threat off-site requiring protective actions for the population and other protective actions.

The Netherlands

EPR Fact Sheet

Decision making

The Minister of Infrastructure and Water Management (I&W) and the minister(s) concerned are responsible for the preparation of radiological protective actions and the coordination and the implementation of those actions. Intersectoral crisis management will be coordinated in the *Interdepartmental Crisis Management Committee (ICCb)* and the *Ministerial Crisis Management Committee (MCCb)*. They are responsible for (strategic) decision making.

In the initial phase of an emergency the local authorities (Safety Regions) may initiate protective actions, such as evacuation, sheltering, ITB etc, as described in the Safety Regional nuclear emergency response plans.

Advice

The *Crisis Expert Team radiation & nuclear (CETsn)* is responsible to collect and assess information about the technical, meteorological and radiological situation and to advice on radiological protective actions. The CETsn consists of a front office, the Crisis Organisation of the Authority for Nuclear Safety and Radiation Protection (ANVS-CO), and a back office with eight organisations (a.o. the ANVS Task Force, the National Institute of Public Health and the Environment, the Royal Netherlands Meteorological Institute, RIKILT). The CETsn is chaired by the ANVS.

Information and advice from the CETsn will be provided to the relevant (inter)national authorities as well as the local authorities.

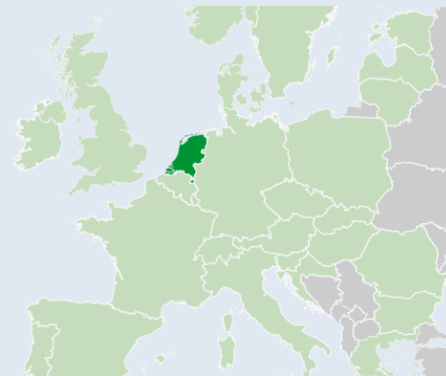
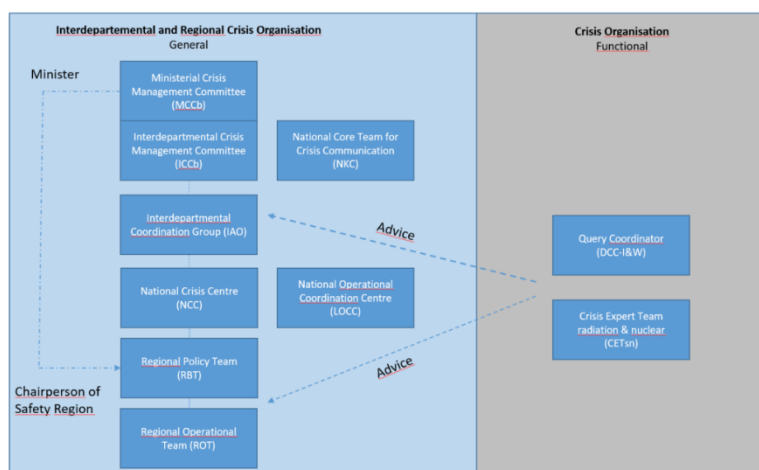
Licensee

The licensee is responsible for actions taken on-site to mitigate the situation. The licensee is obliged to provide all information required for crisis management to the ANVS, the mayor and the Safety Region.

Alarming

In case of a radiation incident the licensee is obliged to notify the ANVS, the mayor and the Safety Region.

Organizational structure



Country info

Capital	Amsterdam
Official language	Dutch
Population	17 M
Area	41 500 km ²
Currency	Euro (€)
Time zone	UTC +1
Calling code	31
Internet TLD	.nl
NPPs /ele. share	1/3%

NWP*

ANVS (Authority for Nuclear Safety and Radiation Protection)

NCA*

ANVS (Authority for Nuclear Safety and Radiation Protection)

The NCA for RANET is DCC-I&W (Ministry of Infrastructure and Water Management - Crisis Management Centre)

Emergency website

<http://www.crisis.nl>

Online measurements

http://www.rivm.nl/Onderwerpen/N/Nationaal_Meetnet_Radioactiviteit/Resultaten

Bilateral agreements

Belgium, Germany

RANET capabilities

None.

*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates	5 km pop.	10 km pop.	20 km pop.	100 km pop.	Comments	
Borssele	KCB	PWR	490	51.43126° N 3.717364° E	4 400	57 000	240 000	4.8 M	
Petten ^b	HFR	Pool	45 ^a	52.78786° N 4.677731° E	4 700	48 000	344 000	8.0 M	
	MPF	n.a.	n.a.						
Delft ^c	HOR	Pool	2 ^a	51.99119° N 4.381675° E	152 000	882 500	2 470 000	11.2 M	
NPP (foreign)			GPS coordinates	5 km pop.	10 km pop.	20 km pop.	25 km pop.	100 km pop.	Comments
Doel	Be		51.3239° N 4.2592° E	37	5 800	100 000	171 000	6.5 M	In total 4 reactors
Tihange	Be		50.5351° N 5.2737° E	n.a.	n.a.	n.a.	n.a.	1.1 M	In total 3 reactors
SCK-Mol	Be		51.2160° N 5.0901° E	n.a.	n.a.	24 000	60 000	7.5 M	Research Reactor
Emsland	De		52.4742° N 7.3178° E	n.a.	n.a.	n.a.	11 000	2.9 M	

* The IAEA emergency preparedness category 1 and other relevant facilities

^a MW_{th}

^b Petten: 3 km population=2 400.

^c Delft: 0.5 km population=2.

Planning zones



Emergency classification

Emergency Standby: Situation requiring increased vigilance. No protective actions off-site are required.

Plant Emergency: Event with possible on-site radiological effects. No protective actions off-site are required.

Site Emergency: Event with possible radiological effects on-site and in the near surrounding.

No direct protective actions (sheltering, ITB or evacuation) are required. Protective actions for the food chain might be required.

Off-site Emergency: An emergency requiring direct protective actions (sheltering, ITB or evacuation), as well as actions to protect the food chain.

Protection strategy

The protection strategy is based on the reduction of the projected dose.

The Netherlands has a harmonized approach for a nuclear accident in a neighbouring country. Initially the protective actions in the neighbouring country will be followed. For this, planning zones have been aligned with the neighbouring countries.

The Default Guidance Levels are set for an emergency situation with a Dutch nuclear facility. For an emergency situation with cross border effects or with a NPP in a neighbouring country for each Protective Action a range of intervention levels is established which includes the intervention levels of our neighbouring countries.

For emergency exposure situations a reference level is set of 100 mSv effective dose (acute or annual).

ITB has been pre-distributed in both the planning zones.

Criteria

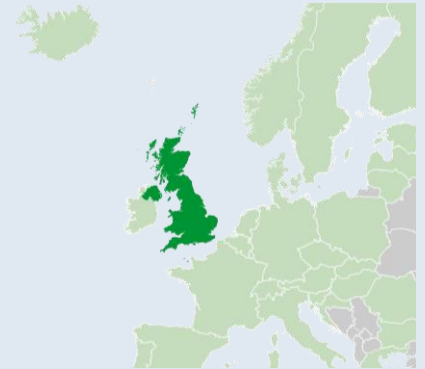
Protective Action	Default Guidance Level [range] (projected dose*)	Planning Zone (km)		
		KCB (Borssele)	HFR (Petten)	HOR (Delft)
Evacuation	100 [50-100] mSv (E)	10**	3	
Sheltering	10 [5- 10] mSv (E)	20	3	0.5
ITB ≤ 40 a	100 [50-250] mSv (H _{thy})	20		
ITB < 18 a or pregnant	50 [10- 50] mSv (H _{thy})	100	3	0.5
Water, food and feed protection	Radionuclide specific OIL's			

*Time period for dose integration is 48 hours.

** The evacuation of the inner circle (5 km) is given priority.

United Kingdom

EPR Fact Sheet



Decision making

Response to a major UK emergency is managed primarily at the local level by the Strategic Coordinating Group (SCG), which would normally be chaired by the police during the emergency phase and the local authority during the recovery phase. The operator, local and national agencies, and Government support the local strategic decision-making process.

At a national level, a nominated Government Department leads the national response. This Department is responsible for briefing the UK Parliament, the media and the public at a national level, and for providing information to the UK's international partners. Where necessary, specialist advice and assistance is provided to support the local response, together with the provision of any necessary extra resources.

Advice

A Scientific and Technical Advice Cell (STAC) is formed locally to provide advice to the Strategic Coordinating Group (SCG), particularly on public health matters. STAC comprises representatives from local and national agencies who use their expert knowledge and the available information (e.g. plant status and environmental monitoring results) to form a common view of the situation and provide appropriate advice. At a national level, Government is advised by the Scientific Advisory Group for Emergencies (SAGE).

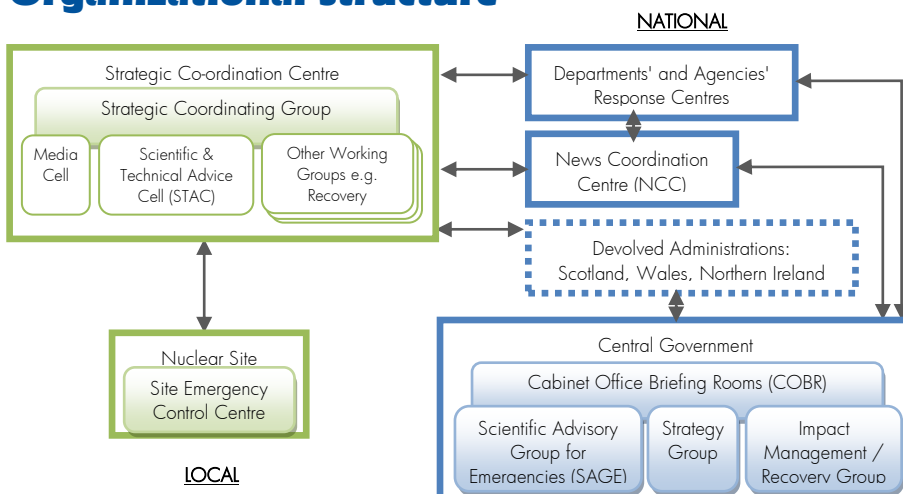
Licensee

The licensee's role includes: providing radiological data and plant information, which are used to formulate public protective advice; ensuring the safety of onsite personnel; configuring the plant or process in a safe condition; terminating the release of radioactivity as quickly as possible; providing compensation.

Alarming

The licensee notifies the nuclear regulator, supporting agencies, Government and the public through a well-defined notification chain.

Organizational structure



Country info

Capital	London
Official language	English
Population	64 M
Area	243 000 km ²
Currency	Pound (£)
Time zone	UTC
Calling code	+44
Internet TLD	.uk
NPPs /ele. share	8/18%

NWP* / NCA*

Department for Business, Energy and Industrial Strategy (BEIS)
Scottish Government

Nuclear Regulatory Body

Office for Nuclear Regulation (ONR)

Emergency website

<https://www.gov.uk/guidance/emergency-response-and-recovery>

Online measurements

RIMNET

Bilateral agreements

Denmark, France, Ireland, Norway, Russia

RANET capabilities

- Radiation Survey (EBS)
- Environmental Sampling and Analysis (EBS)
- Radiological Assessment and Advice (EBS)
- Dose Assessment (EBS)

*National Warning Point and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

NPP	Reactors	Type	MW _e †	GPS coordinates	5 km pop.‡	20 km pop.‡	Planning zone size (km) [°]
Dungeness B	2	GCR	1230	50.913° N 0.961° E	2 000	54 000	2.4
Hartlepool	2	GCR	1310	54.635° N 1.179° W	29 000	684 000	1
Heysham 1	2	GCR	1250	54.029° N 2.915° W	29 000	275 000	1
Heysham 2	2	GCR	1360				
Hinkley Point B	2	GCR	1310	51.208° N 3.127° W	2 000	199 000	3.5
Hunterston B	2	GCR	1288	55.722° N 4.889° W	10 000	153 000	2.4
Sizewell B	1	PWR	1250	52.214° N 1.621° E	9 000	61 000	Approx 2-3 km
Torness	2	GCR	1360	55.968° N 2.408° W	1 000	19 000	3
Other facilities							
Sellafield	Nuclear fuel reprocessing, decommissioning, waste management			54.421° N 3.498° W	5 000	68 000	Approx 6-7 km

* The IAEA emergency preparedness category 1 and other relevant facilities.

† MW_e is the gross output totalled over all reactors at each site.

‡ Usual resident night time population.

° Greater distances are used for restrictions on food and commodities.

Planning zones

At present, detailed [emergency planning zones](#) are undergoing redetermination by the Office for Nuclear Regulation (ONR). Detailed Emergency Planning Zones are not necessarily coterminous with urgent countermeasure areas. Urgent countermeasure areas are based on the application of the UK Emergency Reference Levels.

Protection strategy

Consideration of site-specific action levels, emergency reference levels of averted dose, and reference levels of residual dose all play a part in determining where and when emergency actions are required, e.g. evacuation, sheltering, taking stable iodine tablets.

Criteria

National guidance on the use of short term or urgent countermeasures is provided through the "Emergency Reference Levels" (ERLs) defined by Public Health England (PHE). The ERLs set out the scale of radiation dose reduction (ie benefit) that would be sufficient to justify the use of a particular type of countermeasure in response to a nuclear emergency. Because the potential impacts from introducing a particular countermeasure will vary according to the circumstances in which they are invoked, PHE provides a range of ERL doses for each type of countermeasure. The lower end of this range represents the scale of dose reduction that would justify use of that countermeasure under conditions where the detriments of the countermeasure were least – ie the circumstances for enacting the countermeasure were at their most favorable. Conversely the upper ERL in the range for a particular countermeasure is the level of dose reduction that PHE advises would be likely to justify that countermeasure even when its implementation could be more challenging.

Emergency classification

The classification for nuclear emergencies is either 'on-site incident' (not classified as an emergency) or 'off-site nuclear emergency'.

Existing and proposed sites for nuclear power stations



Protective Action	Emergency Reference Levels (mSv)		
	Lower	Upper	
Sheltering	3	30	Averted effective dose
Evacuation	30	300	Averted effective dose
Stable iodine	30	300	Averted thyroid dose