

# **Regional Cooperation on Nuclear and Radiological EPR**

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Nordic working group on Emergency Preparedness (NEP)  
NKS (guest appearance)

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***Session III: Hope for the best and prepare for the worst***



Statens strålevern  
Norwegian Radiation Protection Authority

[www.nrpa.no](http://www.nrpa.no)

# Cornerstones of Nordic cooperation

## 1. Nordic cooperation

- Joint Nordic working group on EPR (NEP)
- Joint Nordic working group communication (NPC)
- Nordic meteorological cooperation (METNET)
- Nordic Nuclear Safety Research (NKS)

## 2. Joint Nordic Manual for cooperation in EPR (NORMAN)

## 3. Joint Nordic Guidelines and Recommendations

- Protective measures
- (Monitoring)



# **NORMAN: Cooperation between the Nordic Authorities in Response to and Preparedness for Nuclear and Radiological Emergencies and Incidents**

## Cooperation in response phase

- Communication policy during emergencies
- Notification and exchange of information (threshold, means, public communication)
- Co-operation and co-ordination of actions
- Safety assessment and protective actions
- Additional exchange of information (Russian nuclear installations)
- Assistance

## Cooperation in emergency preparedness phase

- NEP, Exercises and drills, Exchange of background information, Public communication

The Nordic Manual (NORMAN):  
Co-operation between the Nordic Authorities in  
Response to and Preparedness for  
Nuclear and Radiological  
Emergencies and Incidents

20 June 2006

Revised August 2015

Denmark:	Danish Emergency Management Agency (DEMA)
	National Institute of Radiation Protection (SIS)
Finland:	Radiation and Nuclear Safety Authority (STUK)
Iceland:	Icelandic Radiation Safety Authority (DS)
Norway:	Norwegian Radiation Protection Authority (NRPA)
Sweden:	Swedish Radiation Safety Authority (SSM)

<http://www.nrpa.no/dav/1d098856f5.pdf>



# Inspiration for HERCA WGE work...



Bundesministerium  
für Umwelt, Naturschutz,  
Bau und Reaktorsicherheit

## Fact Sheets so far – Production?

### Germany EPR Fact Sheet

#### Decision maker

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. In the framework of precautionary radiation protection, the Federal Ministry for the Environment (BMU) is authorized 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 commission (SGS (Staatssicherheitskommission) and SSK (Sachverständigenrat für Strahlenschutz) as well as the (BfS) as technical support organization provide support for the (BMU).

#### Licencee

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

#### Alert

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  
Area  
357,000 km²  
Population  
82,000,000  
Time zone  
UTC + 1  
Calling code  
49  
Internet TLD  
.de  
NPPs in operation  
0/17%

#### Online Measurements

<http://www.bfs.de>

#### Bilateral agreements

(Nuclear or EPRI only)  
Austria, Belgium, Bulgaria, Czech Republic, China, Czech Republic, Denmark, France, Georgia, Hungary, Japan, Kazakhstan, Luxembourg, Moldova, Netherlands, Norway, Russia, Slovakia, South Korea, Switzerland, Ukraine, United Kingdom, Uzbekistan

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

### Belgium EPR Fact Sheet

#### Decision making/taking

Off-site emergency preparedness and response is a federal responsibility. Decision making/taking falls under the responsibility of the Management of Crisis Committee chaired by the Minister of Home Affairs (GFA) and the Ministers of Public Health, Environment and Labour, Agriculture, Foreign Affairs, Finance, Defence and Economic Affairs and Energy. The Federal Agency for the Safety of the Food Chain and possibly representatives of Regions and Communities are also members of this Committee.

#### Advice

The technical, technological and radiological aspects of the responsibility of the Evaluation Committee constituted by the Federal Agency for Nuclear Control (FCN) and the IRS (Dienst Federaal Agentschap voor de Veiligheid van de Voedselketen, Dienst Federale Agentuur voor de Veiligheid van de Voedselketen, DVA) representative of the Government of the Flemish Community, the Government of the Walloon Region and the Government of the Brussels Capital Region.

#### Licencee

The licensee is responsible for notifying the authorities in case of incident or accident. He is also responsible of all actions taken on-site to mitigate the situation, prevent or control releases and protect interventions and all other people present on site and off-site depending on the situation. The on-site response is coordinated with the national off-site response. In absence of a concordant agreement, the Emergency Director of the Authority (EDA) has the right to impose his decisions to the licensee.

#### Alert

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

#### Organizational structure



#### Nuclear sites

#### Planning 2

HERCA 2.1 - Emergency Preparedness and Response System  
Emergency preparedness and response system, Belgium, September 2010



#### Country Info

Capital  
Brussels  
Official language  
Dutch, French, Dutch, German  
Area  
30,528 km²  
Population  
11 M  
Currency  
Euro  
Time zone  
UTC + 1  
Calling code  
32  
Internet TLD  
.be  
NPPs in operation  
7/100%

#### Online Measurements

<http://www.bfs.de>

#### Bilateral agreements

France, Netherlands, G2 Luxembourg  
RANET capabilities  
- Source Search and Recovery  
- Radiation Survey  
- Environmental Sampling and Analysis  
- Radiological Assessment and Advice  
- Crisis Assessment  
- Decontamination

### Finland

#### Decision maker

Decision making in case of emergency is shared with those organisations normally responsible of the sector. For those protective actions that directly impact population (sheltering, evacuation), the responsible authority is the National Nuclear Safety Board. For other protective actions, the authorities remain responsible for ensuring safety and emergency. Depending on the action the role can be local, regional, or national authority.

The main authority responsible for coordinating the off-site emergency preparedness is the National Nuclear Safety Board (NNSB) and the Nuclear Safety Authority (NTA). NNSB works in close cooperation with the rescue services in the emergency preparedness arrangements.

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

#### Advice

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

#### Licencee

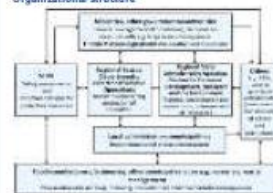
The operator is obliged to make necessary information available to the authorities, to support the authorities in assessing the situation and to activate them in taking decisions on protective actions for the public.

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

#### Alert

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

#### Organizational structure



HERCA 2.1 - Emergency Preparedness and Response System  
Emergency preparedness and response system, Finland, September 2010



#### Country Info

Capital  
Helsinki  
Official language  
Finnish, Swedish  
Area  
338,000 km²  
Population  
5,5 M  
Currency  
Euro  
Time zone  
UTC + 2  
Calling code  
358  
Internet TLD  
.fi  
NPPs in operation  
2/100%

#### Online Measurements

<http://www.bfs.de>

#### Bilateral agreements

France, Germany, Italy, Luxembourg

#### RANET capabilities

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

### Switzerland EPR Fact Sheet

#### Decision maker

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

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 organisations. 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 response situation and the FOPH those under existing and planned response situation.

#### Licencee

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.

#### Alerting

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

#### Organizational structure



HERCA 2.1 - Emergency Preparedness and Response System  
Emergency preparedness and response system, Switzerland, September 2010



#### Country Info

Capital  
Bern  
Official language  
German, French, Italian, Romansh  
Area  
41,285 km²  
Population  
8 M  
Currency  
Swiss Franc  
Time zone  
UTC + 1  
Calling code  
41  
Internet TLD  
.ch  
NPPs in operation  
5/100%

#### Online Measurements

<http://www.bfs.de>

#### Bilateral agreements

Austria, France, Germany, Italy, Luxembourg

#### RANET capabilities

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

#### Nuclear Regulatory Body

National Emergency Operations Centre (NEOC)

#### Radiation Protection

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

#### RANET capabilities

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

#### Nuclear Emergency Body

National Emergency Operations Centre (NEOC)

#### Organizational structure

The organizational structure of the Swiss Federal Nuclear Inspectorate (ENSI) is based on the following principles:

# Protective measures

## Early phase:

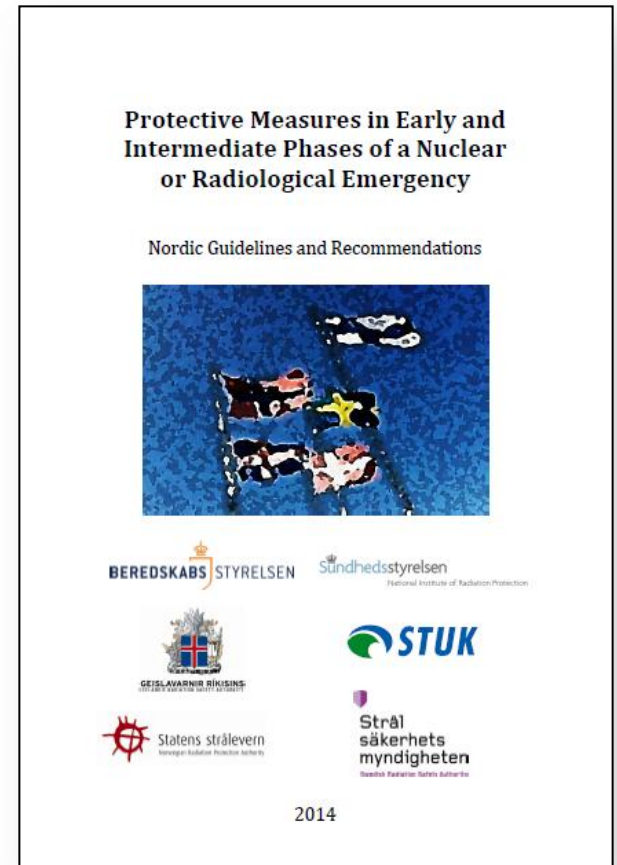
- Population and emergency workers
- Foodstuff and other goods

## Intermediate phase:

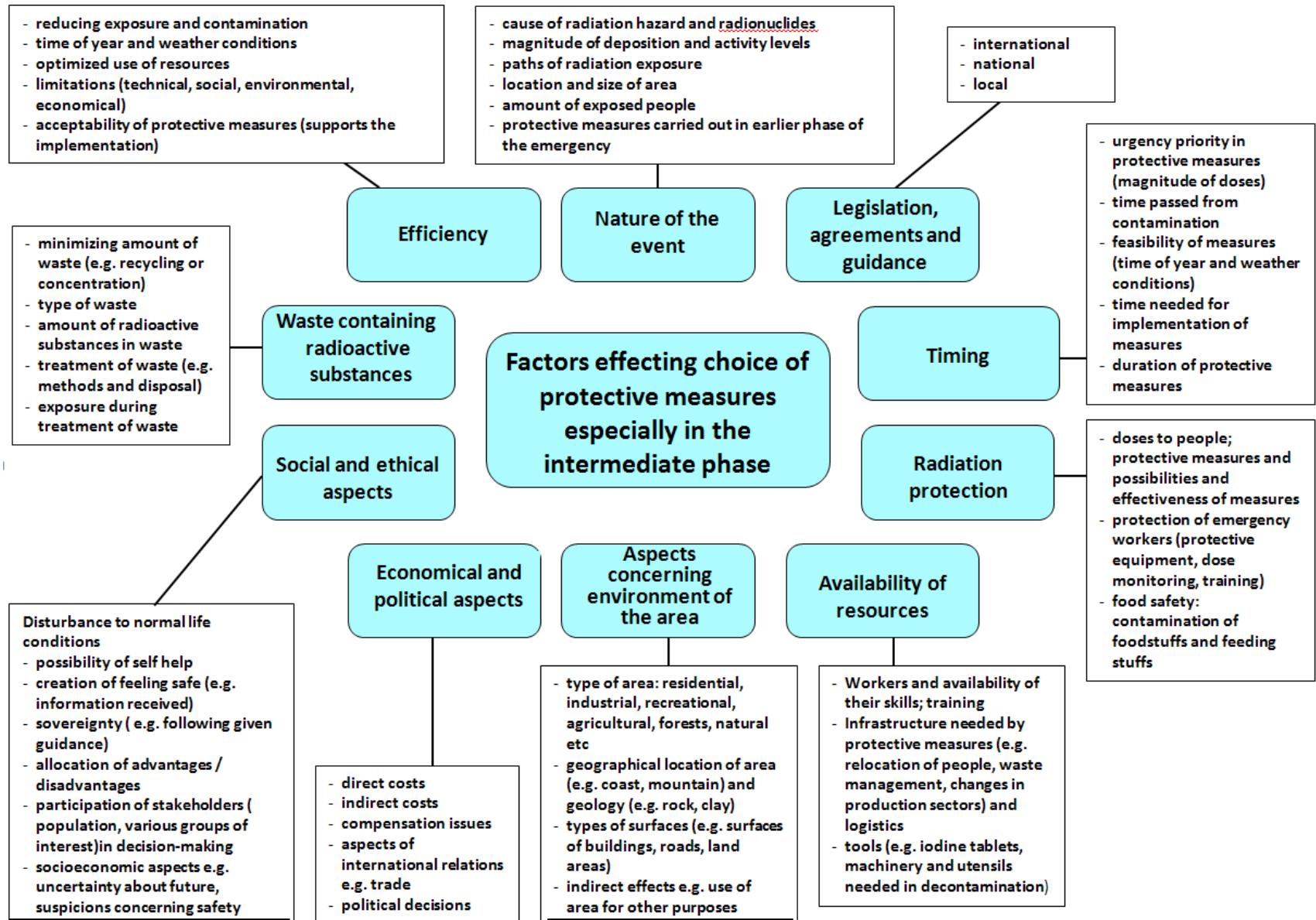
- Population and workers
- Environment and industry
- Foodstuff and water

## Criteria for implementing and lifting:

- Dose in defined time period
- Triggers
- Operational intervention levels

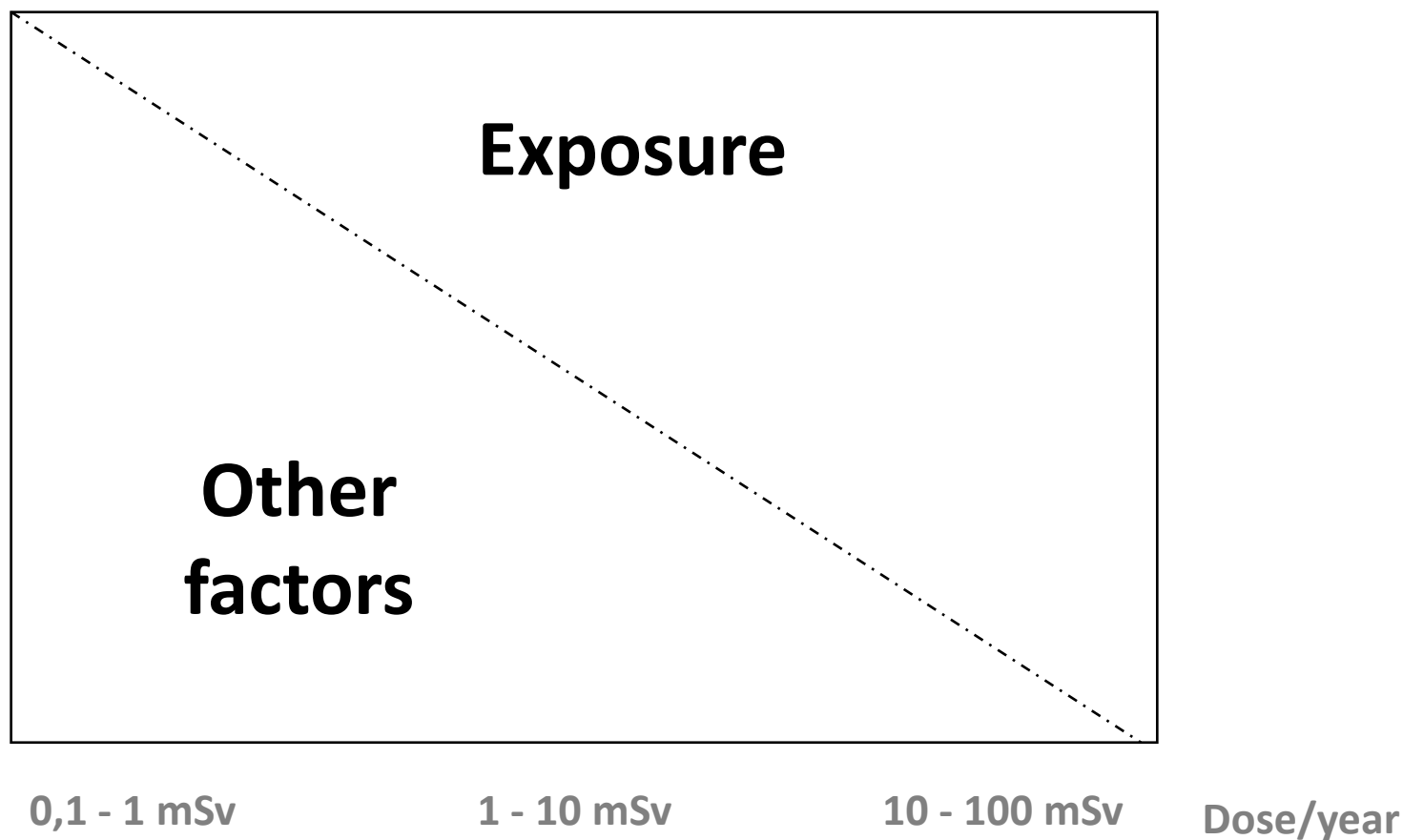


# Factors affecting decision making



# Exposure vs other factors

Proportions  
of various  
factors



# The next step in NEP: Measurements

## Work planned:

Common planning for how to sample and measure: What **has to be** measured, what **should** be measured, what **can** be measured?

- Scenariobased approach
- Optimizing use of available resources

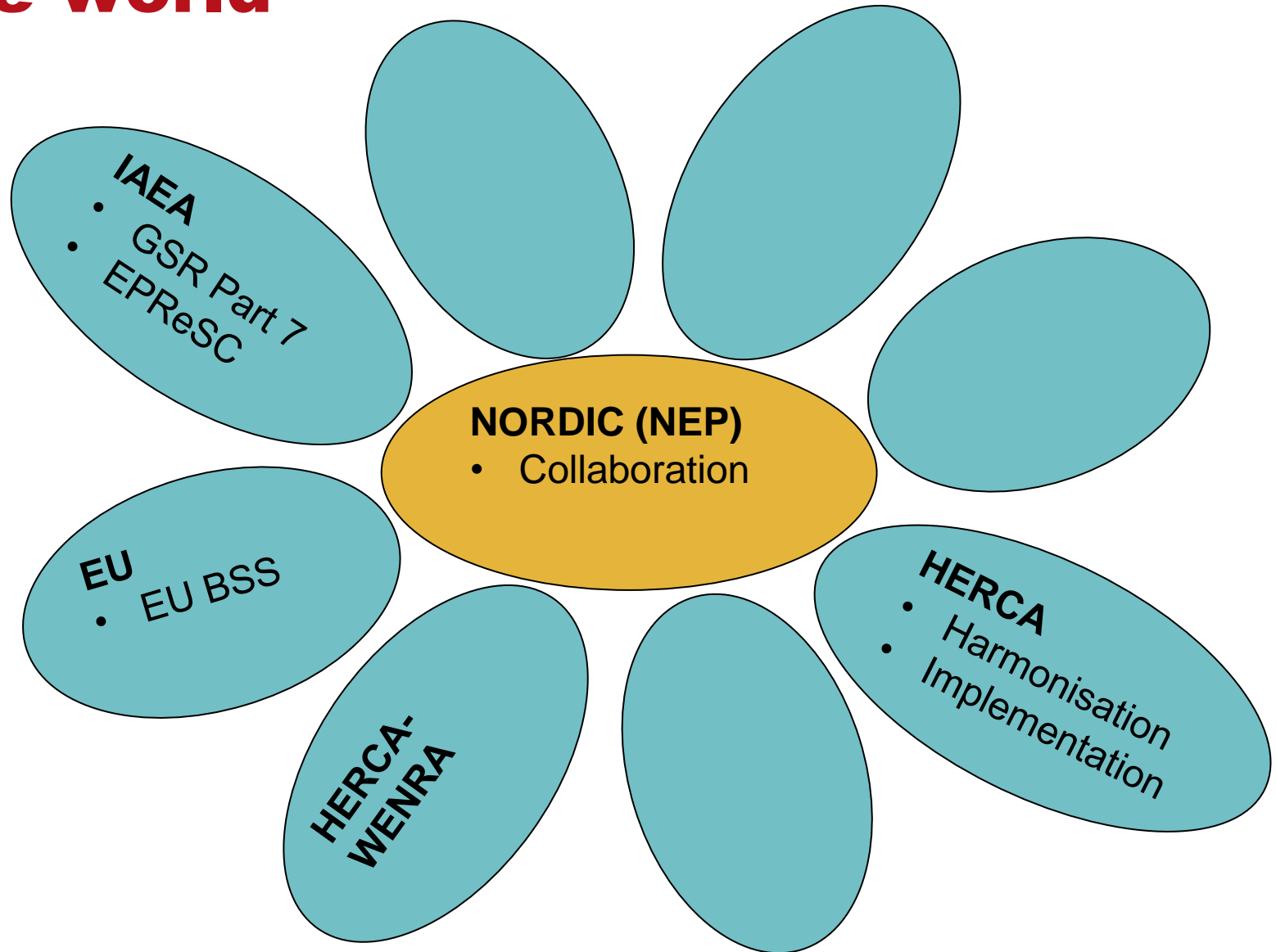
## Can improve i.e.:

- The basis for decision making
- The basis for upgrading and developing capacities
- The possibilities for assisting each other

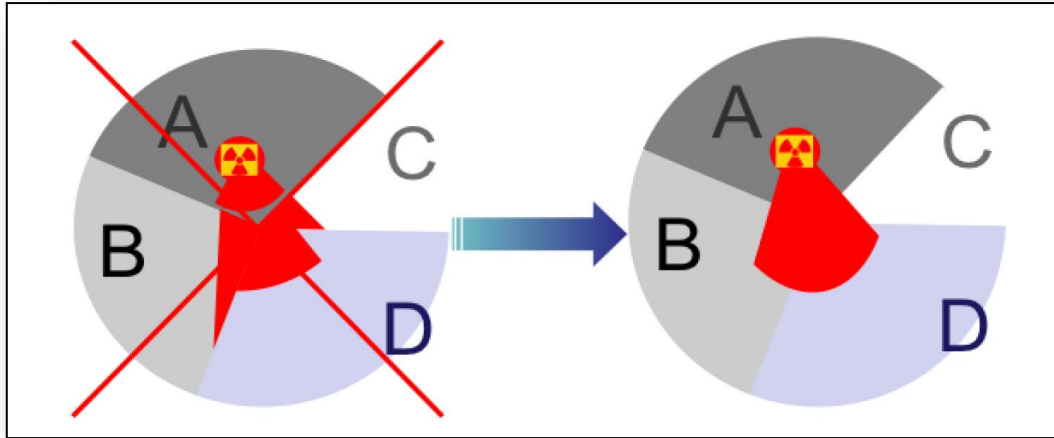




# Nordic cooperation and the rest of the world



# HERCA-WENRA approach (I)



Better cross-border coordination:

1. Preparedness
  - Bilateral or multilateral arrangements
2. Early phase
  - «we do the same»
3. Development of a common situation report



# HERCA-WENRA approach (II)

Severe Accident – little is known

JEF	Description	Possible values of JEF		
1	Is there a risk of core melt?	Yes	No	Unknown
2	Is the containment integrity maintained?	Yes	No	Unknown
3	Is the wind direction:	Steady	Variable	Unknown



# Protection strategy for an emergency

## IAEA GSR Part 7:

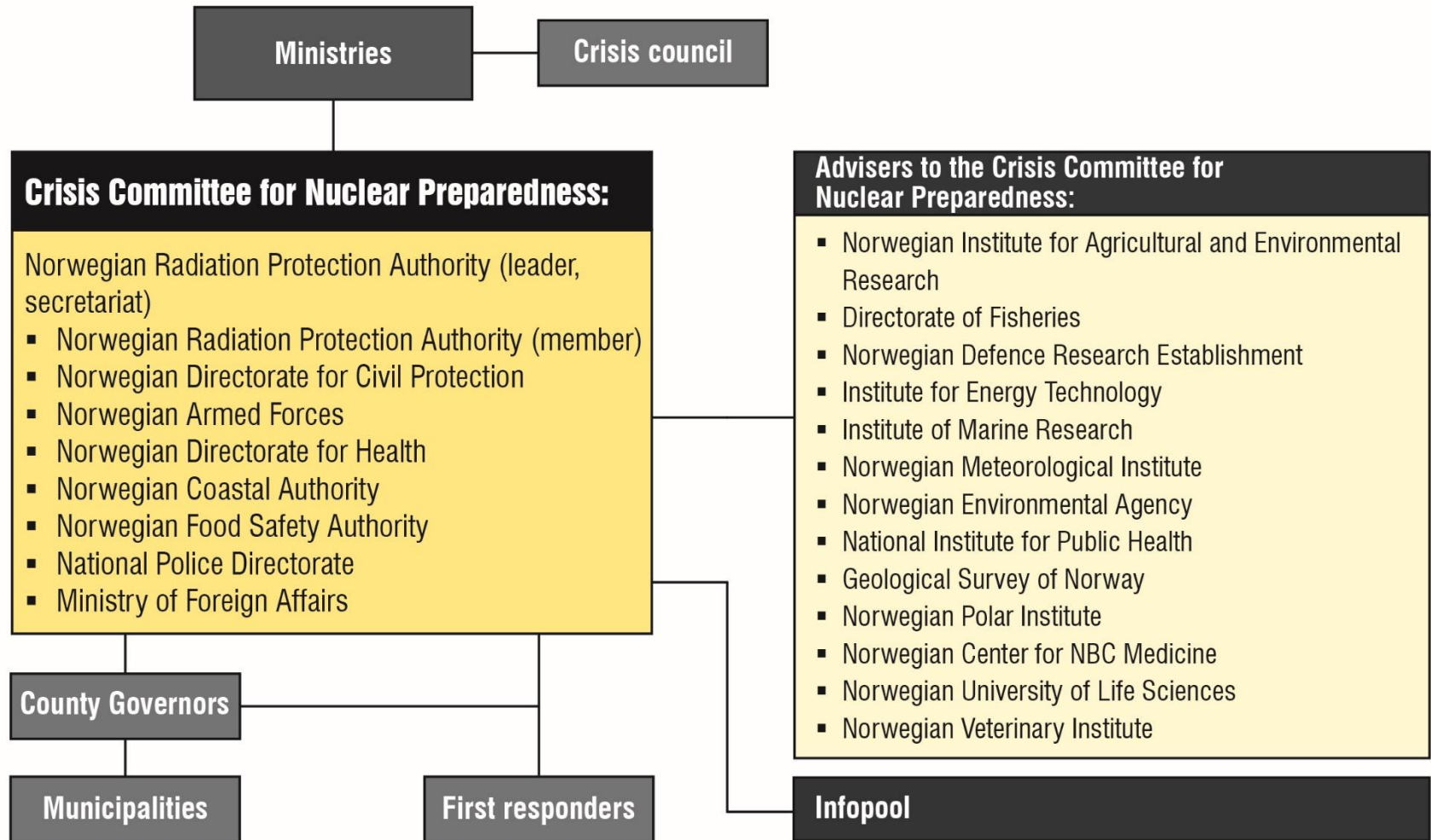
*«...protection strategies ... for taking **protective actions and other response actions** effectively in a nuclear or radiological emergency.»*

*«On the basis of the ... **protection strategy**, national generic criteria for taking protective actions and other response actions, **expressed in terms of projected dose or dose that has been received**, shall be developed...»*

*«... justified ..., with account taken not only of those detriments that are associated with radiation exposure **but also of those associated with impacts of the actions taken on public health, economy, society and the environment.**»*



# Norway: Nuclear and radiological EPR



# Mandate of the Crisis Committee

Delegated from the Government (August 2013)

- Give coordinated advice or order implementation of **protective actions** to protect **life, health, the environment, and other important public interests** in the acute phase of an event.
- Order and process **information, prognoses and monitoring** data to assess the situation and its development
- Provide **information** to authorities, media and the public.
- **Advises** ministries and other authorities in all phases of events.



# Protection strategies in emergencies

Scope:

Life

Health

Environment

Society

Objectives:

Avoid  
deterministic  
effects

Reduce  
stochastic  
effects

Reduce  
psycho-social  
effects

Reduce other  
consequences

Strategies:

Protective  
actions

Crisis  
Committee  
for Nuclear  
Prepared-  
ness

Commu-  
nication

Situation  
assess-  
ment



# Cornerstones of Nordic cooperation

## 1. Nordic cooperation

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- Nordic meteorological co-operation (METNET)
- Nordic Nuclear Safety Research (NKS)

## 2. Joint Nordic Manual for co-operation in EPR (NORMAN)

## 3. Joint Nordic Guidelines and Recommendations

- Protective measures
- (Monitoring)

Communi-  
cation

Protective  
actions

Situation  
assessment





# Summing up – thoughts for the future

The Nordic (EPR) collaboration is important!

After the Fukushima accident: new standards, revised Nordic documents

The future:

- Strong, pragmatic and even more efficient collaboration between Nordic authorities – focus on implementing common results
- Closer co-operation between different sectors
- NKS work meeting stakeholder's needs even better
- Hope for the best (but acknowledge the risk) and prepare for the worst



# Thank you for your attention!

