

HERCA-WENRA approach for better cross-border coordination of protective actions during the early phase of a nuclear accident

Overview

- Introduction
- HERCA-WENRA-Approach
- Implementation
- Conclusions

HERCA: Heads of European Radiological protection Competent Authorities

32 countries

(the 28 EU MS + IS, NO, CH)

63 organisations

(RPA + TSO), 311 nominations

Observers

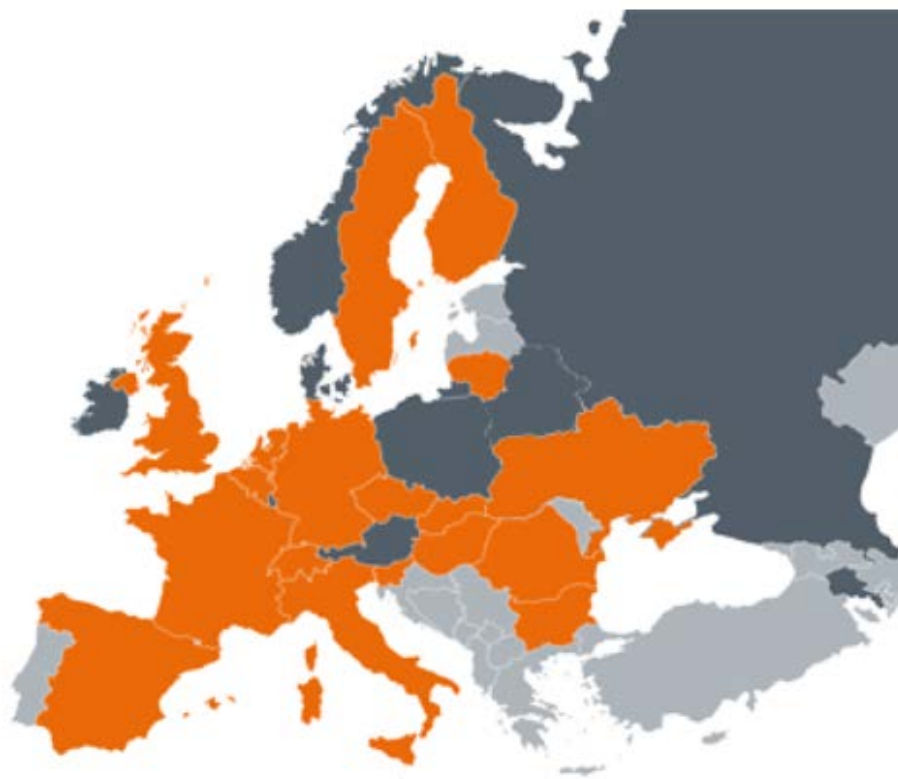
EC, IAEA, WHO, US FDA,
OECD/NEA



WENRA: Western European Nuclear Regulators Association

18 Members

- Belgium
- Bulgaria
- Czech Republic
- Finland
- France
- Germany
- Hungary
- Italy
- Lithuania
- Romania
- Slovak Republic
- Slovenia
- Spain
- Sweden
- Switzerland
- The Netherlands
- Ukraine
- United Kingdom



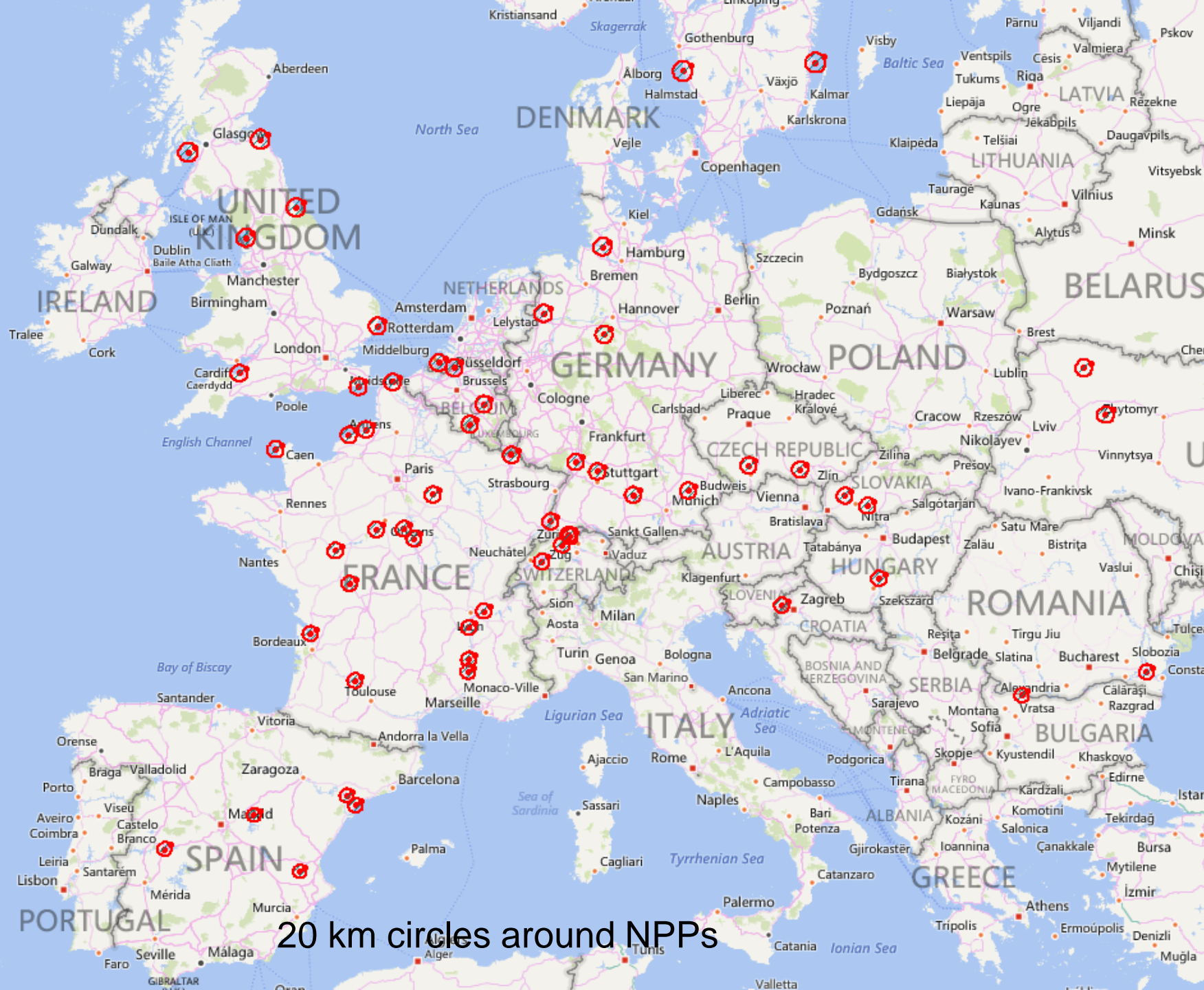
10 Observers

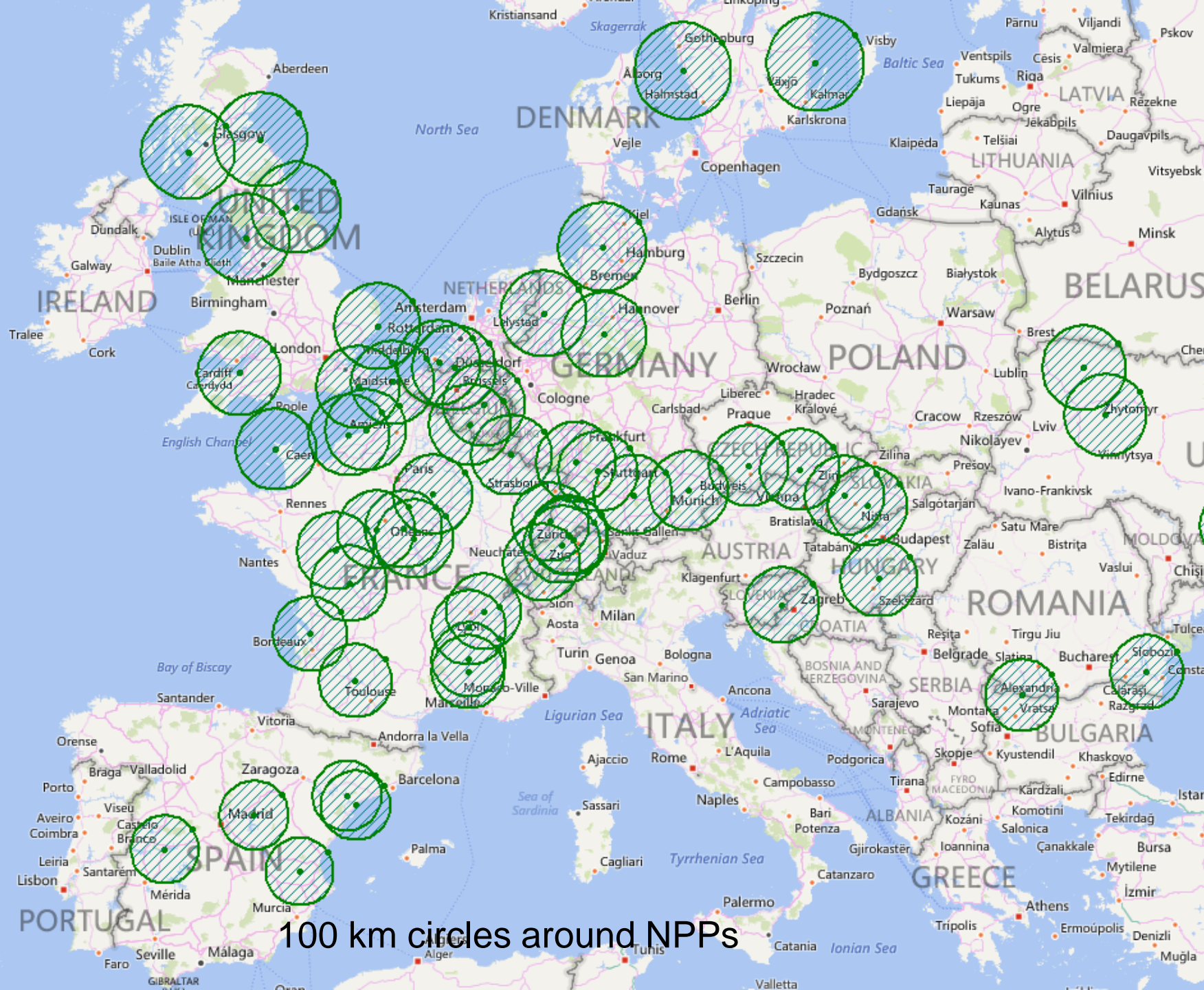
- Armenia
- Austria
- Belarus
- Canada
- Denmark
- Ireland
- Luxembourg
- Norway
- Poland
- Russian Federation

HERCA-WENRA Approach

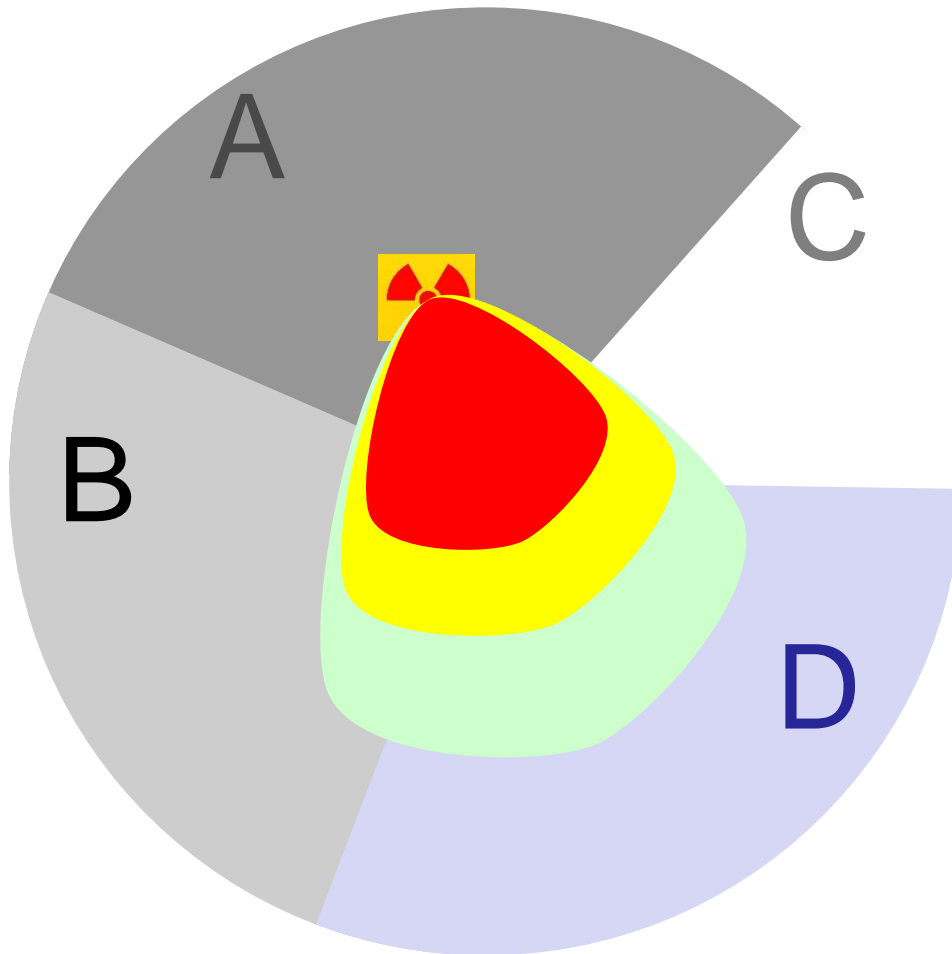
Adopted in October 2014 in Stockholm







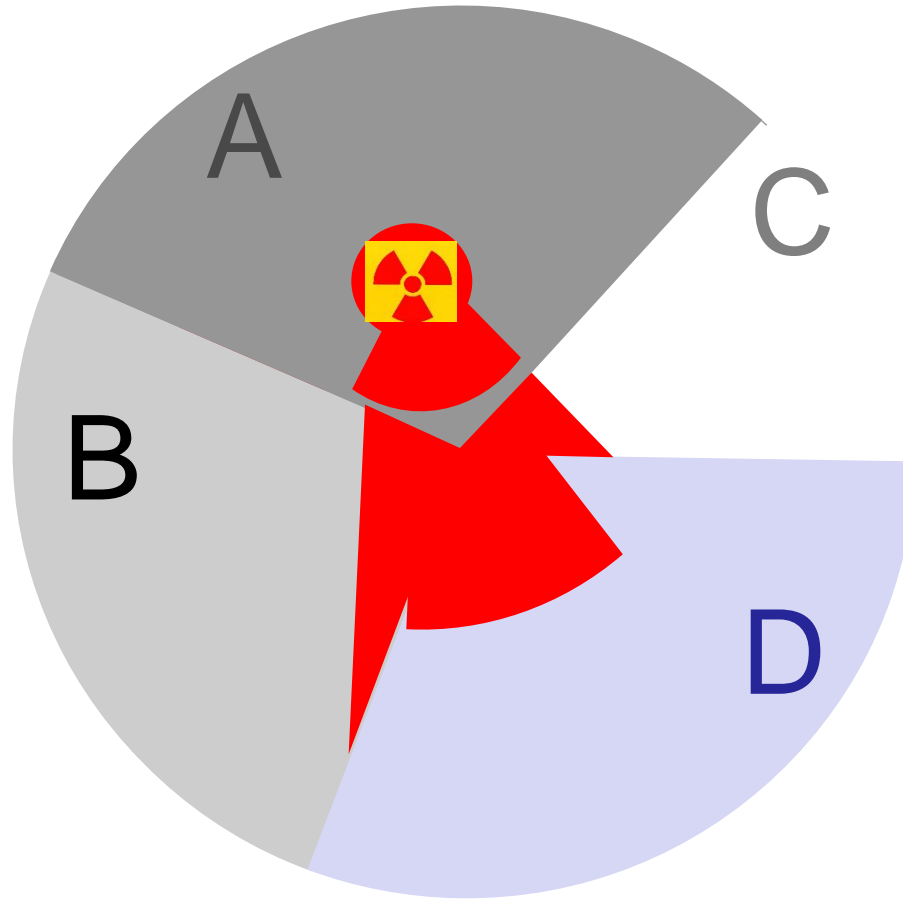
Nuclear Accident Situation



A nuclear accident occurs in country A that affects the territories of neighbouring countries

All countries are fully sovereign in organizing the emergency

Possible Implementation of Protective Actions



Differences

- Types of protective actions
- Criteria for intervention levels for introducing protective actions (in terms of projected dose)
- Operational intervention levels (action levels based on measurements)
- Methods for assessing source terms
- Methods for radiological impact assessment and dispersion modelling
- Definitions of emergency planning zones
- ...

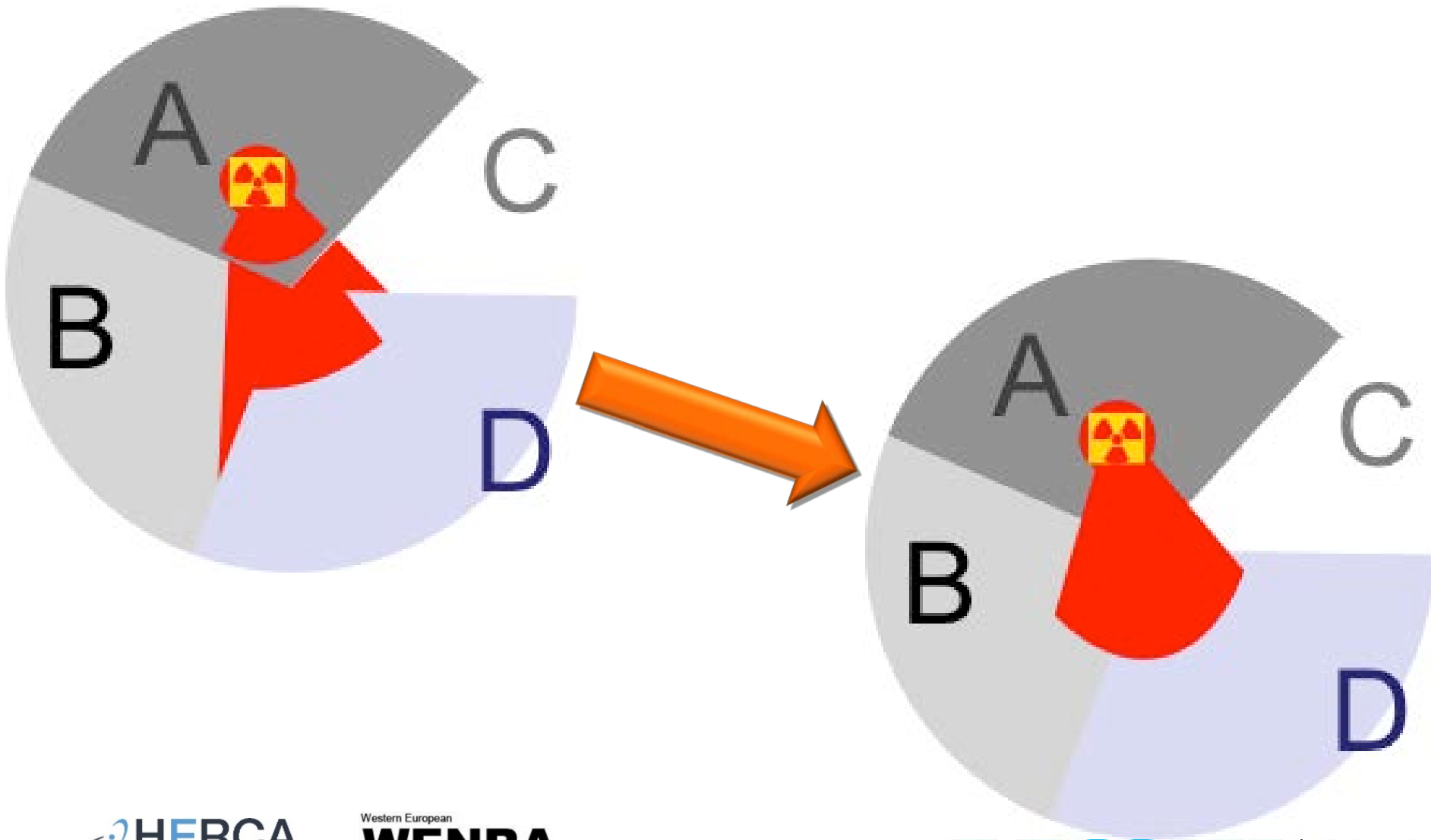
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General Objective of the HERCA - WENRA Approach

- Coordination of response in the early phase of an accident between the impacted country with the aim of a coherent response across borders
- Approach jointly approved by HERCA and WENRA on 21 October 2014

How to coordinate?



National EP&R Arrangements

- Before an accident
 - Enhance mutual understanding
 - Build trust

- In case of an accident
 - Early phase of an accident (first hours)
Do the same as the country where the accident occurred
 - Mid-term (after the first hours)
Development of a common situation report

Protective Actions

Protective Action	Distance
Evacuation + ITB	up to 5 km
Sheltering + ITB	5 to 20 km

Sheltering is preferred against evacuation under the plume

Protective Action	Distance
Evacuation + ITB	up to 20 km
Sheltering + ITB	up to 100 km

Develop general strategy if extended protective actions would become necessary

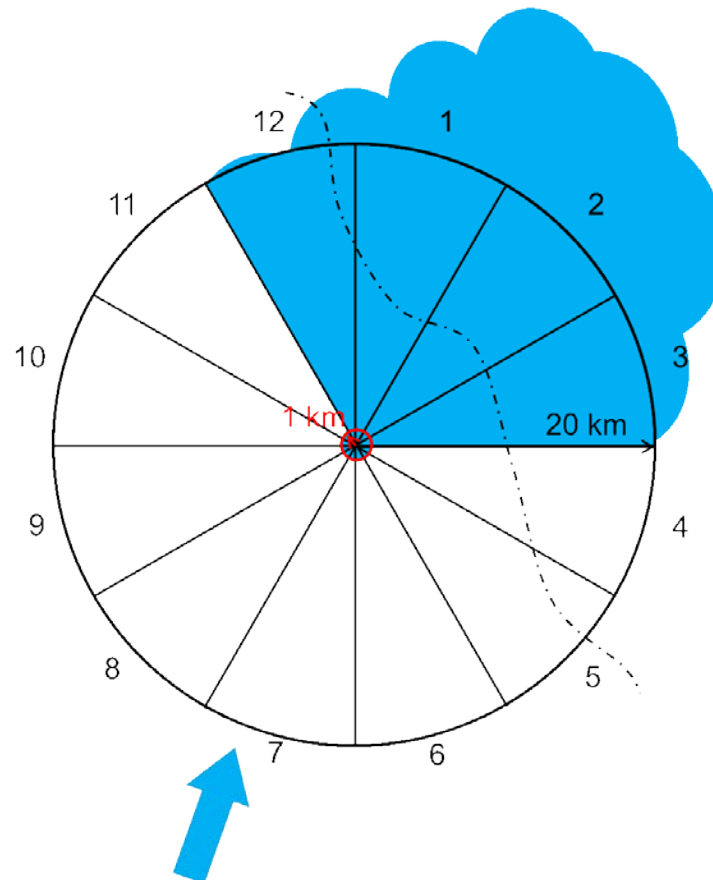
Special case of an extreme event with insufficient Information

- Knowledge of an extreme event or situation creating a risk of core melt and large radioactive release (extreme natural hazard, terrorist attack, ...)
- Lack of sufficient information to rely on the use the regular EP&R arrangements
- Necessity for the safety Authorities to decide and possibly recommend immediate and consistent protective actions to the relevant national Authorities
- Use of «Judgment Evaluation Factors (JEFs)»

Evaluation of the Situation

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

Weather conditions



Overview

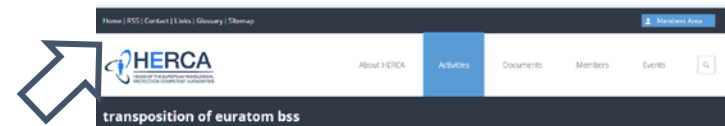
- Introduction
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- **Implementation**
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HERCA's Working Group on Emergencies Action Plan 2015-2017

- Continue to develop a comprehensive approach to coordinate issues of common interest of importance for a good and trustful EP&R.
- Follow-up of the implementation of previous achievements in HERCA member's countries
- Transposition and implementation of the Directive 2013/59/Euratom (Euratom BSS)
- New activities on request and decision of HERCA's BoH

Guidance for Bilateral Arrangements

- Collect good practices from existing arrangements
- Develop simple messages
- Effective coordination of protective actions during the early phase of a nuclear accident
- Help to transpose article 99 “Elaboration of a Guidance for Bilateral Arrangements”



Available on www.herca.org

Country fact sheets

- Give an overview of emergency preparedness and response in a country
- Help to progress in International Cooperation
- Available also in extreme cases
- Country Fact Sheets available for Austria, Belgium, Bulgaria, Croatia, Czechia, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, The Netherlands and United Kingdom
- Regular updates necessary

Country Fact Sheets



Heads of the European Radiological Protection Competent Authorities



Country Fact Sheets

Emergency Preparedness and Response

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 NDCN Management Board. The heads of all concerned federal offices (ministries) and other representatives are members of the 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 ENS (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



HERCA Heads of the European Radiological Protection Competent Authorities

Emergency preparedness and response country fact sheet: Switzerland, Version 1, March 2015



Country info

Capital: Bern
Official language: German, French, Italian, Romansh
Population: 8 M
Area: 41 000 km²
Currency: Swiss franc (CHF)
Time zone: UTC+1
Calling code: +41
Internet TLD: .ch
NPP's / rel. 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

<http://www.ens.ch/en/home/measurements/about-us/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

*National Working Body and Competent Authority under the Emergency Conventions

Nuclear facilities* and population

NPP	Type	MW _e	GPS coordinates	5 km pop.	20 km pop.	Comments
Beznau I	KKB I	BWR	47.552192° N 8.231454° E	25 000	250 000	
Beznau II	KKB II	PWR	47.552192° N 8.231454° E	25 000	250 000	
Gösggen	KKG	BWR	47.386494° N 7.827952° E	30 000	420 000	
Liebfeld	KKB	BWR	47.603295° N 8.184862° E	25 000	250 000	
Mühleberg	KKB	PWR	46.969162° N 7.269328° E	3 500	580 000	

*The table emergency preparedness category 1 and other relevant facilities

Planning zones



Planning zone 1 with radius 5 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 intervention levels 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	OILs /EALs	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	General Emergency	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.

HERCA Heads of the European Radiological Protection Competent Authorities

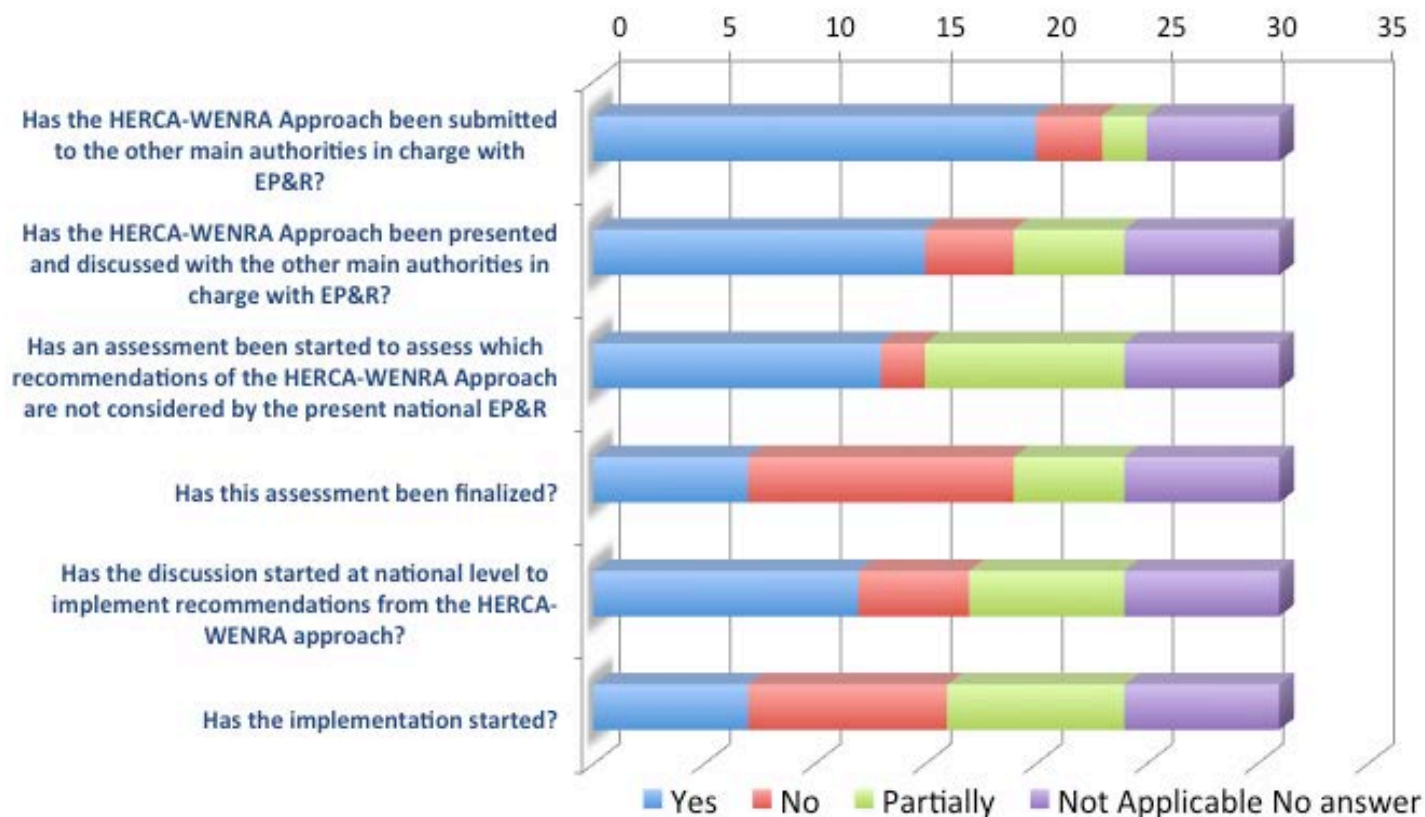
Emergency preparedness and response country fact sheet: Switzerland, Version 1, March 2015

Common Situation Report

- Initial idea was “second opinion” to the assessment of the accident country
- IAEA-IEC works on a single independent assessment
- IAEA launched EPRIMS (Emergency Preparedness and Response Information Management System)
- Follow-up IAEA’s work with regard to
 - EPRIMS
 - Assessment and Prognosis

HWA Implementation Status

ENSREG Quick Survey 2016



HWA Implementation Status

HERCA-WGE Regular Survey

- HERCA-WGE has developed tracking sheets
- 18 out of 26 member countries already filled them up
- Inhomogeneous answers
- Use CNS-like Procedure in future

HERCA-WENRA Workshop with Civil Protection



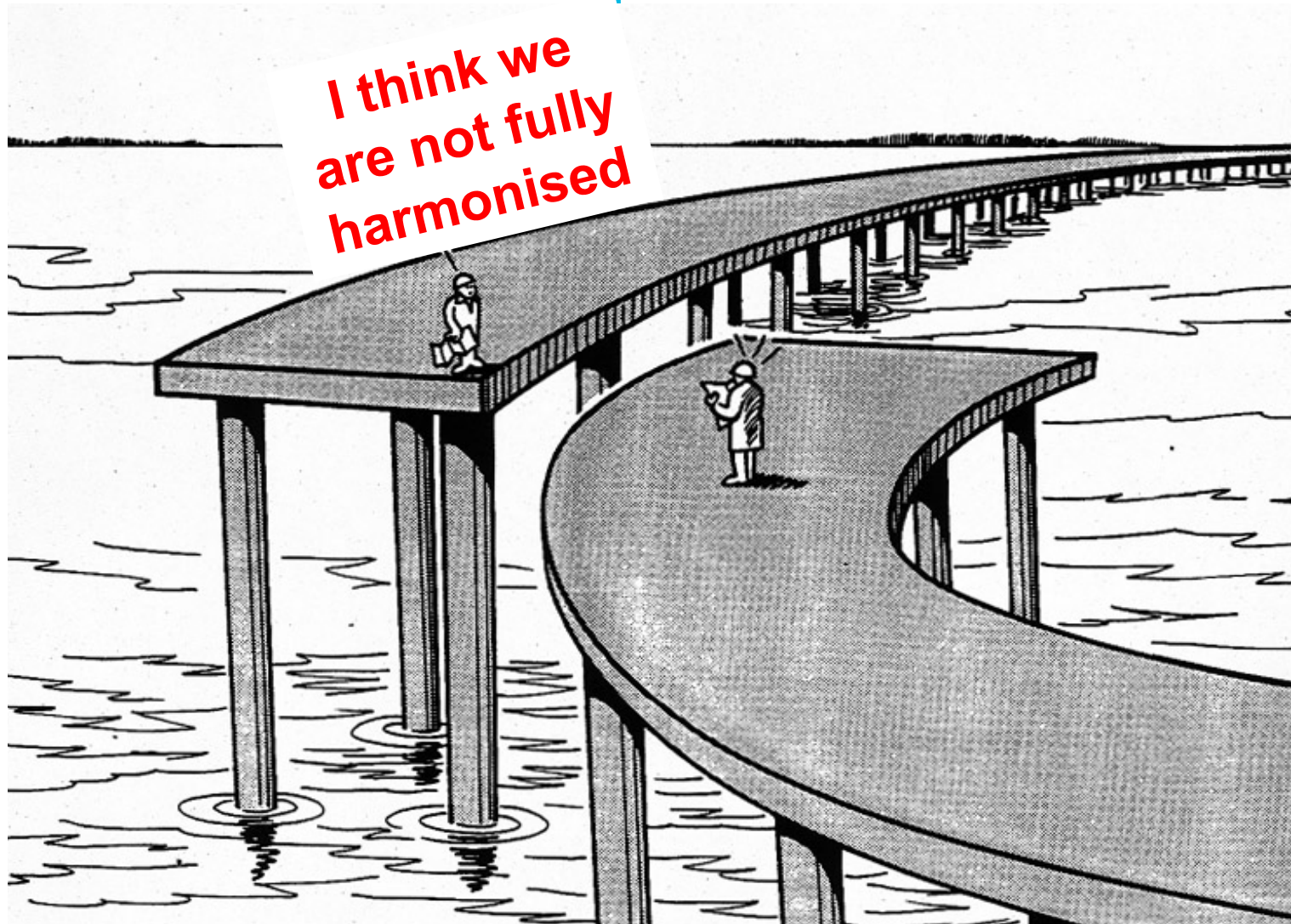
Objectives

- To present the HERCA-WENRA Approach
- To explain the main paradigm shift of the Approach
- To associate civil protection and other actors to the implementation process
- To discuss ways to implement the approach at national, bilateral and multinational level

HERCA-WENRA Workshop with Civil Protection

- Further investigations needed
 - The food chain protection, the extension of protective actions at distances beyond the emergency planning zones and the use of non-radiological criteria for deciding on protective actions
 - Prioritization of NPPs near national borders
 - Authorities competent in radiation protection, nuclear safety and civil protection need to continue to work on the implementation of the HWA while taking into account existing international mechanisms, standards etc.
 - Support of EC DG ECHO

HERCA-WENRA Workshop with Civil Protection

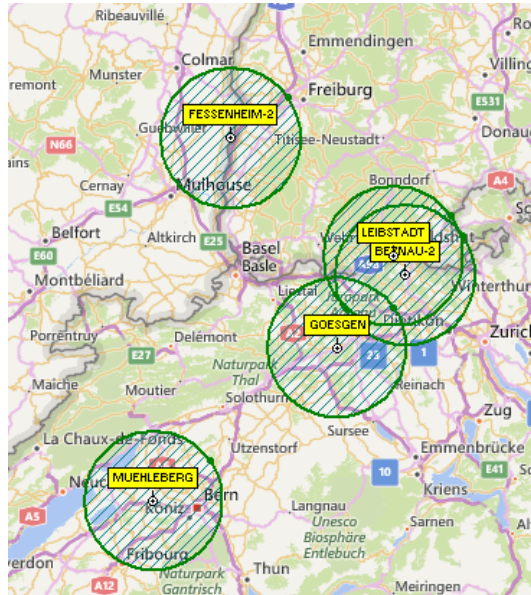


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The “20 km problems“

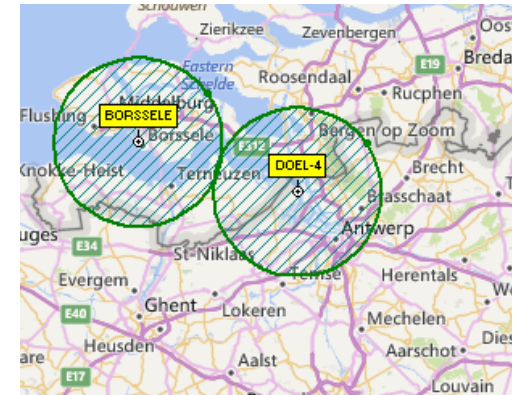
CH-D-F



F-B-LUX



B-NL



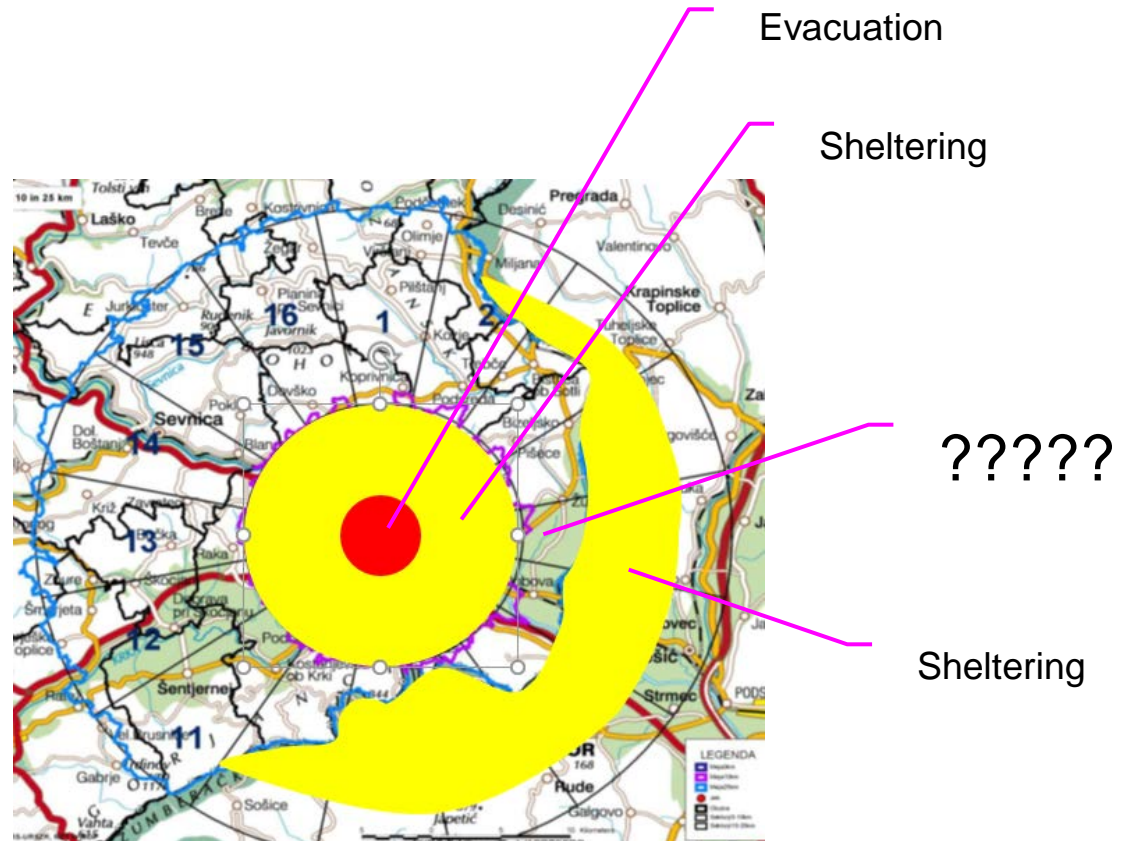
SI-CRO



BG-RO



What we do not want ...



Conclusions (1/2)

- HERCA and WENRA adopted a common position on EP&R for the case of a core melt accident
- Also for the improbable case of a very severe accident with limited information and the need of fast decisions
- Cross border coordination of protective actions, mutual understanding and trust building are on a good way
- Further efforts are needed, let us do it !!

Conclusions (2/2)

- Radiation and nuclear safety Authorities will continue to promote compatible response arrangements and protection strategies in Europe
- These Authorities are committed to engage discussion with their national Authorities in charge of Civil Protection, in view of the implementation of the HERCA-WENRA approach
- A first step was done with the Workshop in Bled, Slovenia and the involvement of Civil Protection Competent Authorities