Transboundary aspects of EP&R in Greece

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The national framework

Greece has no NPP and no intention to build any in the foreseeable future.

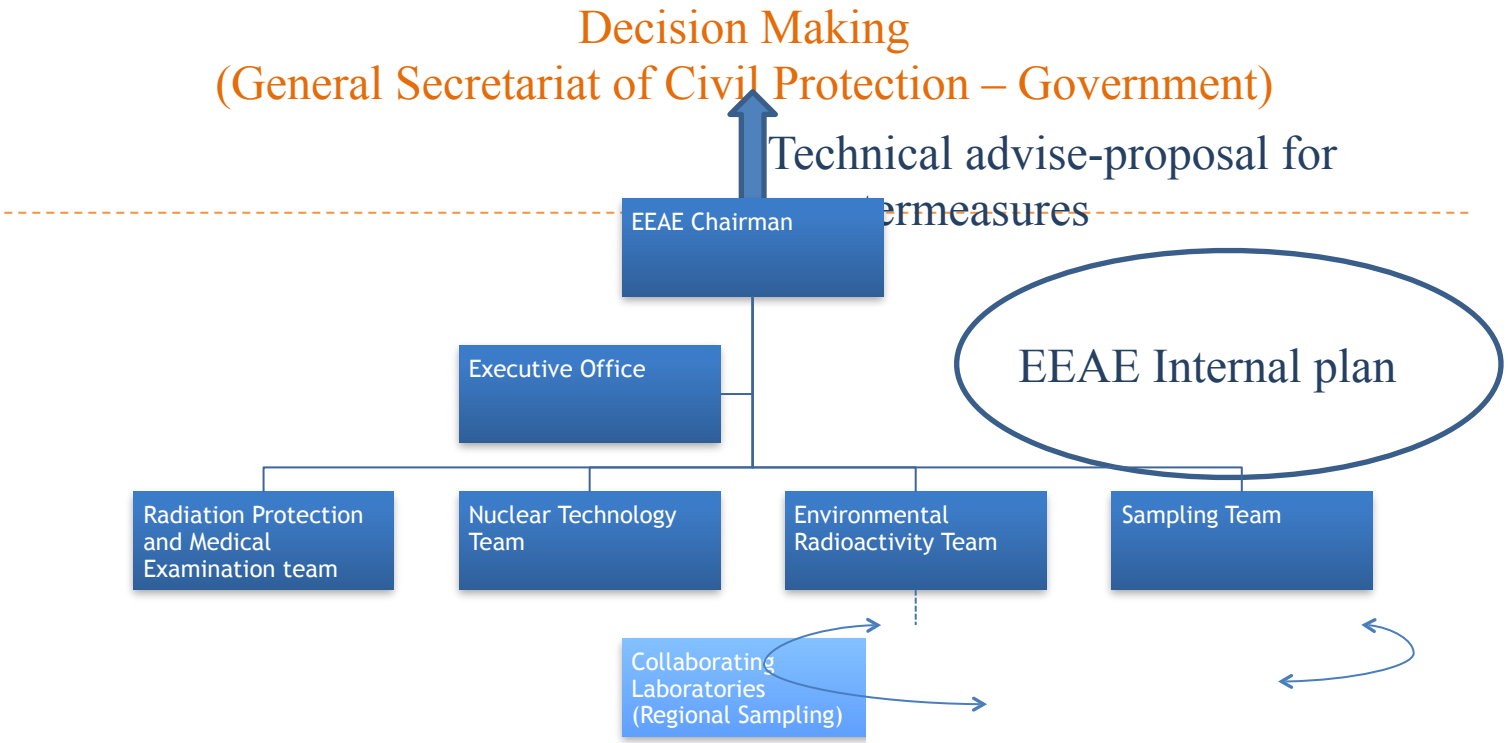
- Installations: 1 RR, 1 sub-critical assembly
- Radiological emergency preparedness regulations, plans and organization scheme
- Environmental radioactivity monitoring network covering the national territory
- Regulatory authority: Greek Atomic Energy Commission (EEAE), an autonomous public entity
- Government competent body: General Secretariat of Civil Protection

The national framework

Law 3013/2002: "Upgrade of civil protection and other issues"

- defines the nuclear accidents/threats as one of the emergency categories
- provides for a Ministerial Decision: "General Civil Protection Plan Xenokratis"
- assigns to the competent Ministry and the competent body under its supervision (EEAE) to draft a specialized action plan for nuclear emergencies
- Annex R covers nuclear technological accidents, being a part of the National Civil Protection Plan "Xenokratis".

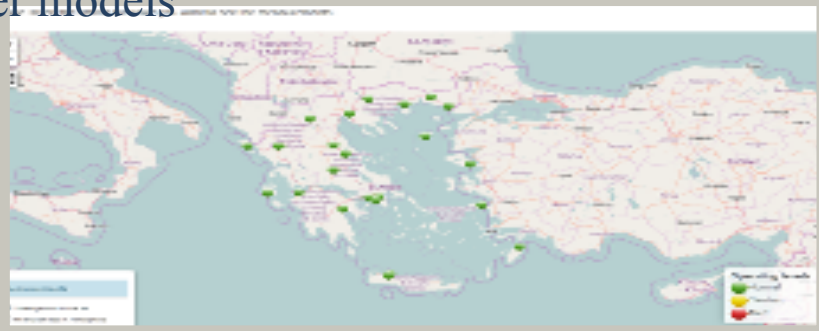
Existing EP&R plans-national arrangements



✓ **revision in progress, in the context of new BSS directive 2013/59/Euratom**

Existing EP&R plans-national infrastructure

- Telemetric environmental radioactivity monitoring network:
  - *-- online access to measurements results 24/7*
  - *-- EURDEP*
- EEAE laboratories (e.g. internal dosimetry, mobile equipment)
- National network of collaborating laboratories (research centers, universities)
- Atmospheric dispersion and dose estimation computer models
  - Training of first responders, exercises, intercomparisons among laboratories
  - International peer review (IRRS mission, 2012)
  - Information actions – communication strategy



Existing EP&R plans-international framework

- Convention on Nuclear Safety
- Convention on Assistance in case of a Nuclear Accident or Radiological Emergency
- Convention on Early Notification of a Nuclear Accident
- Bilateral agreements with neighbors on early notification in case of a nuclear accident and on information exchange about nuclear installations
  - Bulgaria (to be updated)
  - Romania
- Participation in international & European emergency response exercises
- Participation in research projects (PREPARE, IMAGES) and networks (NERIS) related to EP&R

Potential transboundary impact

- The initiatives taken at European level after the Fukushima accident strengthened the level of nuclear safety in Europe.
- A major nuclear accident in Europe, although very improbable cannot be totally ruled out.
- Such an accident is likely to have a significant transboundary impact due to the high density of countries in Europe.
- A more homogeneous and coordinated response among the countries (e.g. HERCA-WENRA approach) is of particular importance for European countries.

Potential transboundary impact - Greece

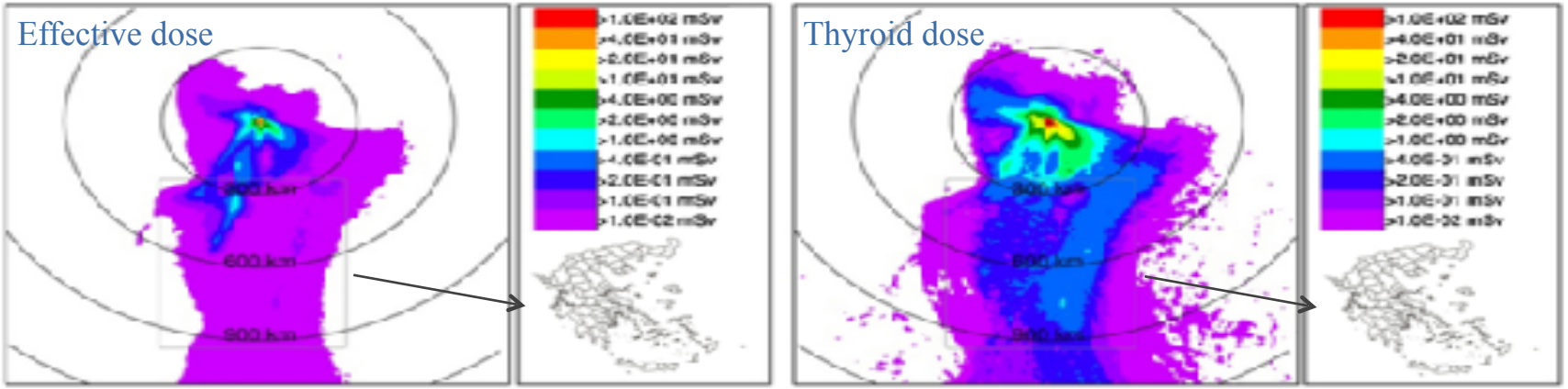
- The nearest NPP is about 270 km from the country's borders .
- Greece is out of the typical, internationally applied emergency planning zones.
- It is not covered by the new HERCA-WENRA approach.
- However, even at such distances the authorities will be under significant pressure in case of a nuclear accident.
- Preparedness can be very helpful for distant countries as well, in terms of public trust.

Potential transboundary impact - Greece

- A prior assessment of the potential impact is part of such preparedness.
- We have performed an assessment employing a simple approach based on evaluating the role of the meteorological condition on the radiological impact both in the early phase and in the longer term.
- A couple of characteristic meteorological conditions were selected among real meteorological data of a whole year for a Fukushima-like release at a location of about 300 km north of Greece.
- Doses from cloud shine, ground shine and inhalation were calculated.

Potential transboundary impact

Early phase radiological impact (plume passing)

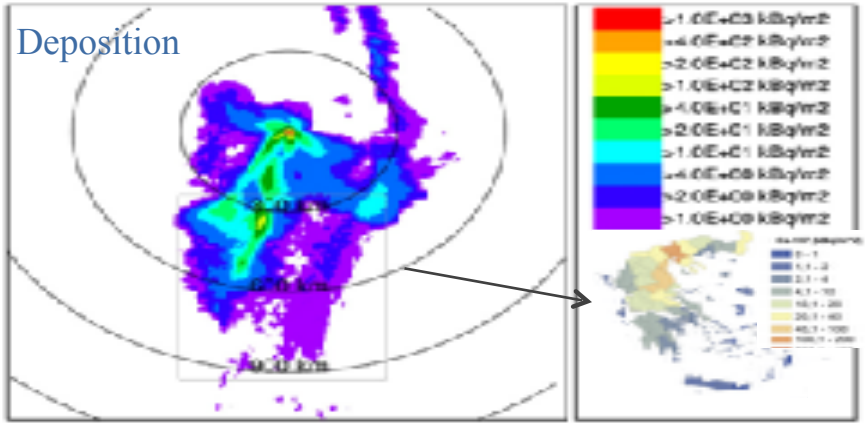


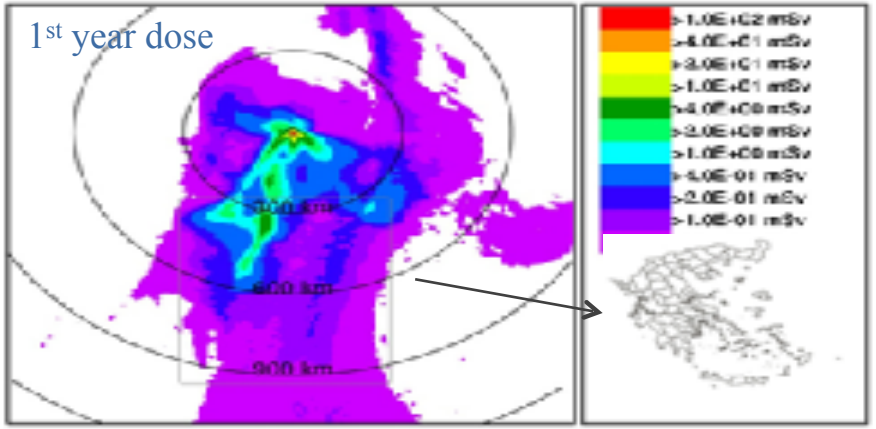
✓ Maximum dose is expected, even in most adverse conditions, to be lower than the reference levels (new EU BSS- or IAEA-based).

✓ Only simple measures, such as sheltering or food consumption restrictions, are, eventually, to be decided at maximum.

Potential transboundary impact

Longer term radiological impact





✓ Maximum effective dose level is in the "grey zone". Decision making is a complicated process: in addition to radiation protection other factors shall be considered.

✓ Under adverse, nevertheless realistic, meteorological conditions the radiological impact in the longer term may be higher than the impact within the 300 km "food restriction planning zone" (according to IAEA) .

Conclusions

- Distance may not be the only decisive parameter.
- Meteorological conditions may cause at relatively long distances an important radiological impact in longer term that is not addressed/covered by existing plans.
- This impact may reach levels requiring activation of some response, such as an extensive measurement campaign and food control.
- A harmonised preparedness and response in European level covering larger distances and longer term impact (e.g. transition from emergency to existing exposure situations) may result to more uniform views of the possible response needs and further increase public confidence across EU.

Thank you!

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