IRSN
INSTITUT
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE

Enhancing nuclear safety

Emergency preparedness and response capability: a national, regional and international challenge

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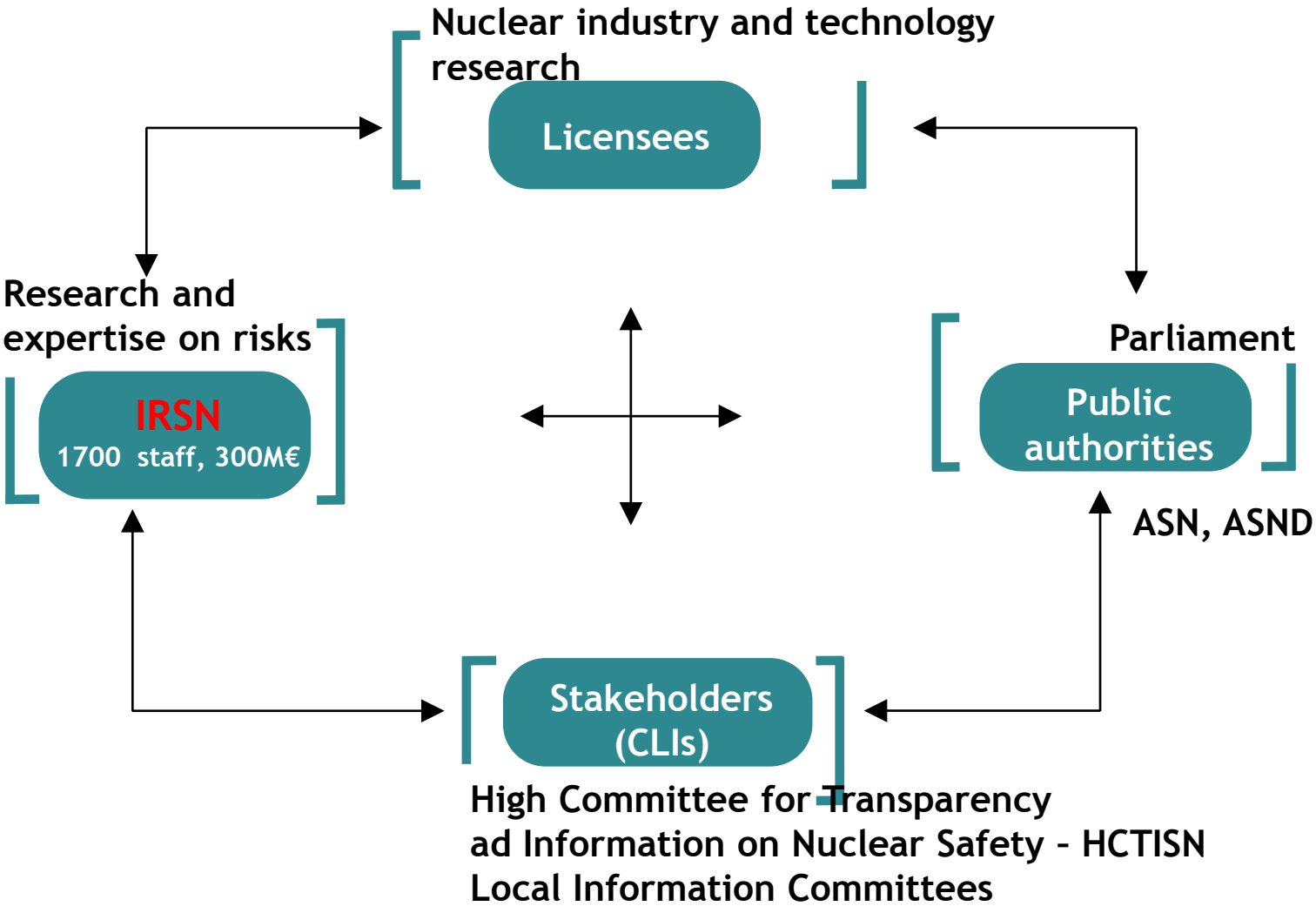
IRSN: science and values (knowledge, independence, proximity) in support to nuclear safety



IRSN: enhancing nuclear safety through 4 key missions

- Provide scientific and technical support to public policies for nuclear safety, security and radiation protection
- Provide radiological monitoring for people and the environment
- **In the event of a nuclear or radiological emergency,**
  - provide to public authorities real time independant assessments of the situation (plant safety; radiological situation), based on expert analysis , modeling, and field measurement results
  - Propose appropriate counter – measures in order to optimize the protection of the public and of economic and agricumtural activities
  - Contribute to public information
- Develop research and training programs in support to nuclear safety and radiation protection
  - Nuclear fuel safety, severe accidents, source term modelling (ASTEC)
  - Radioecology (species and ecosystems approaches)
  - Stem cell treatment of radiological burns
  - Epidemiology, and radiobiology of low dose effects (MELODI)
  - Emergency preparedness , economics of nuclear accidents

Is nuclear emergency preparedness a « real » issue?

- **Yes: core melt accidents leading to large releases cannot be totally eliminated with current power reactor technologies,**
- **As a consequence, nuclear safety policies must vigorously address not only accident prevention issues, but also emergency management** (avoiding or delaying releases) **and mitigation issues** (reducing radiological consequences)

Is preparedness robust enough?? (1)

Typical nuclear emergency preparedness measures include:

- Sheltering and evacuation of population within a maximum preset distance from the plant
- Providing stable iodine to relevant populations within this radius in order to mitigate health consequences of exposure to early releases
- Providing specialized hospital care in the event of severe irradiation or contamination cases

Is preparedness robust enough?? (2)

Lessons learnt show however that:

- The execution of planned measures can prove difficult in unforeseen complex situations,
- Significant releases may cover significantly larger distances than expected, potentially affecting several countries
- Lack of timely data and situation analysis may lead to communication problems and a loss of confidence by the public

A need to be « prepared », not only in accordance with text books and regulations, but also to *confront the unforeseeable*

Improving preparedness: The way forward is national, regional, and international

- Emergency response is a **national** prerogative
- When several neighbouring conutries are involved, **cross border coordination** is nevertheless a key success factor
- Access to information and to expertise could be facilitated by **innovative international programmes under the aegis of IAEA/IEC**
  - To provide a framework for the flow of appropriate data towards the international community
  - To provide, through dedicated networks, real time expert analysis of the ongoing situation
  - To propose added value information for use by member states

Nuclear Accidents need not be a fatality

- Nuclear technology research should focus more on safety; **a vital issue, because the perception of risks by the public is growing faster than the safety achievements of the nuclear industry.**
- The huge societal and economic costs of large nuclear accidents are in part due to a lack of understanding the radiobiological effects of chronic exposure to very low levels of radioactivity, which leads to exacerbate regulatory and societal requirements. **Multidisciplinary research on low dose effects is another top priority.**

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IRSN looks forward to enhanced international cooperation on emergency preparedness

Thank you for your attention

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