

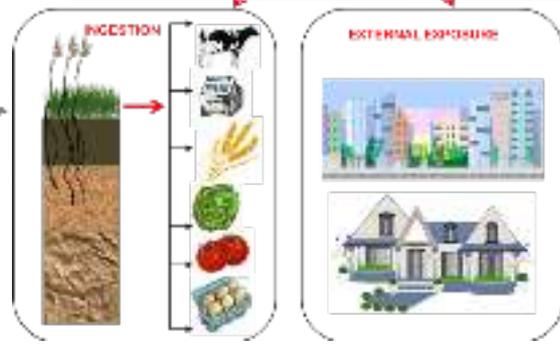
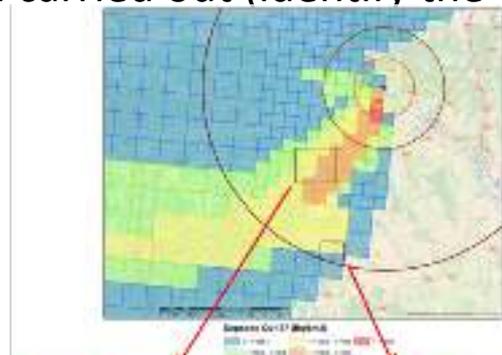
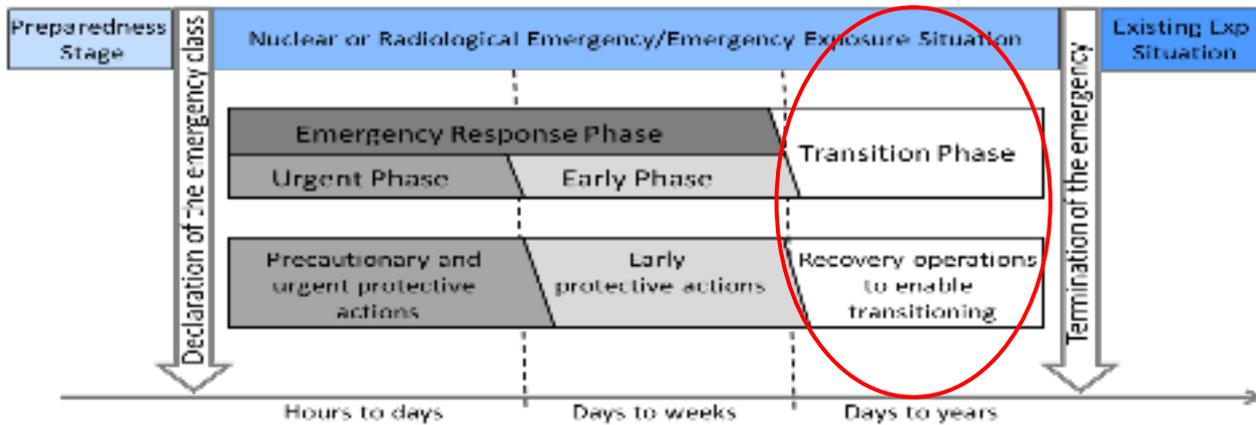
**4<sup>th</sup> NERIS Workshop**  
25-27 April 2018, Dublin, Ireland.

**Scenarios and issues to address with stakeholders in the transition phase. Towards the reduction of uncertainties in the management of long-term recovery.**

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The transition phase is the period of time after the emergency response phase when:

- The situation is under control
- Detailed characterisation of the radiological situation has been carried out (identify the exposure pathways, assess doses)

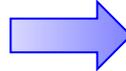


Source: IAEA GSG-11. Arrangements for the Termination of a Nuclear or Radiological Emergency (2018)

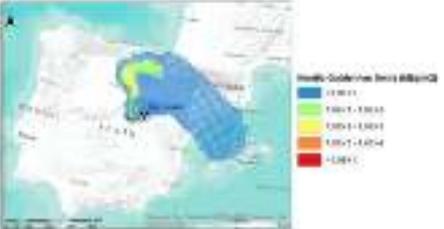
- Activities are planned and implemented to enable the emergency to be declared terminated and prepare the long-term recovery.

The transition phase is not driven by urgency and allows, as the emergency evolves,

- For lifting the emergency protective actions,
- For adapting, justifying and optimising specific protection strategies, to prepare and begin the late phase recovery and
- For the engagement of the interested parties



Main objective: is to facilitate the timely resumption of social and economic activities



Arrangements:

- The identification of the authority, role and responsibilities of the different organisations in EP&R, and coordination between them,
- Focus on the protection strategy of the public (planning, development and implementation of recovery actions), including the involvement of stakeholders.



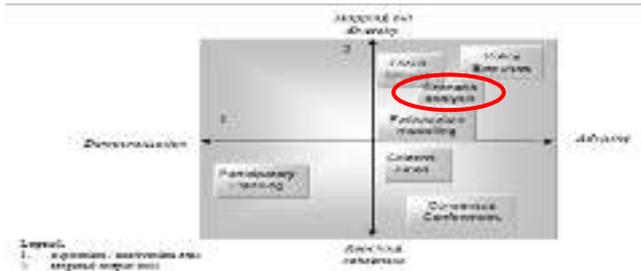
The success of the recovery plan will be measured by the ability of the recovery actions to meet the stakeholders' main concerns and to be implemented in a timely manner. It depends on:

- How is the problem addressed?
- Who is involved? (stakeholders)
- What concerns are considered: health, environmental, social, economic, ...?
- What are the objectives, the things that matter, in the context of the decision under consideration?
- What options are possible?

- Problem addressed by means of decision-oriented scenario-analysis allowing to identify and evaluate alternatives involving stakeholders, experts and decision makers and dealing proactively with complexity and judgment in decision-making.

- The degree of involvement of stakeholders, varies:

- Objectives: Reasons for the involvement and expected outcomes
- Topic: The nature and scope of the issue
- Participants: Who is affected, interested or can contribute to solutions
- Time: Amount of time available
- Budget: Availability of resources

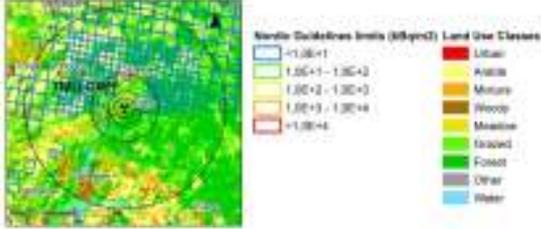
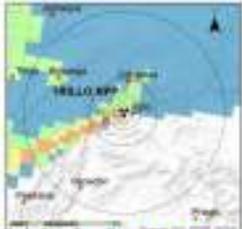


Source: International Centr<sup>®</sup> for Integrative Studies (ICIS)  
 Building Blocks for Participation in Integrated Assessment *A review of participatory methods (2001)*



Source: International Association for Public Participation (IAP2)  
 Adapted from Arnstein's ladder (1969)

Scenarios used in this process should be narrative descriptions of potential futures that focus the attention on relationships between events and decisions that have to be taken.



### Scenario construction process:

- Radiological characterisation: zoning of the contaminated area, (based on dose criteria, level of deposition or EURATOM FILs, radiological impact assessment in the long-term),
- Environmental characterisation: scenario structured in basic units in terms of parameters and attributes that affect the behaviour of RN and their response to recovery actions,
- Evaluation models: to assess the space-time evolution of the scenario; they are necessary to define the objectives and quantify criteria for decision,
- Development of a protection strategy designed to address the objectives defined previously,
- Decision-making process.

- Different types of recovery actions that can be carried out in both inhabited and agricultural areas to reduce the impact of radioactive contamination.
- They are designed to be used at the source of contamination, particular media or at points in the exposure pathways.
- Their implementation requires to take into account a series of factors to develop a specific protection strategy. Among them:
  - Target (source, RN, media, exposure)
  - Effectiveness: technical and societal factors
  - Feasibility
  - Incremental doses
  - Waste disposal issues: generation of waste and its disposal
  - Societal and ethical factors
  - Side-effects including direct and indirect environmental impacts
  - Costs
  - Legislation
  - Information and communication issues



The overall process generates uncertainties related to different issues:

- Associated with the radiological situation of the scenario contributing to the overall uncertainty associated with the estimated impact:
  - Space-time evolution of the contamination and the prediction of the radiological situation in the long term
  - Results of the monitoring
  - Possible changes in the future use of the scenario
- Associated with the goals and criteria used in the design of the protection strategy:
  - Objectives pursued
  - Radiological criteria: reference levels
  - Indicator Units (time to carry out the implementation of the strategy, area affected, n° of persons affected.....)

■ Associated with the protection strategy regarding:

- Effectiveness
  - Side-effects
  - Generated wastes and their disposal
  - Costs
- } Recovery actions
- The design of the recovery strategy, is sufficiently flexible and adaptable to take into account the evolution of the radiological situation?

■ Associated with the social pressure regarding:

- Trust and confidence: Will the protection strategy really allow the resumption of social and economic activities; stigmatization of the affected area
- Acceptability of the recovery actions
- Conflicting interests among the affected population and/or affected economic activities of the affected area

- Taking them into account in the decision-oriented scenario-analysis allowing to identify and evaluate different alternatives.
- This will arise different potential endpoints with different values according to the criteria considered.
- By means of the participation of the stakeholders in discussion panels, the different decision criteria, concerns and viewpoints, can reduce or at least consider the uncertainties in order to foresee the possible changes in the response of the long-term recovery.
- By means of surveys as complementary methods, allowing to identify the items of interest for discussion purposes and prioritise the preferences of the stakeholders .

- Scenarios help direct attention to motivate the actions to be taken , the possible evolution of the situation and the different possibilities that may be confronted.
- The approach based in decision-oriented scenario-analysis allows to identify and evaluate alternatives that focuses on engaging stakeholders, experts and decision makers and deals proactively with complexity and judgment in decision-making.
- It is very useful when many factors need to be considered and the degree of uncertainty is high, as is the case of the preparedness of the recovery during the transition phase.

**THANK YOU FOR YOUR ATTENTION!**