IUR Contribution to a Strategic Research Agenda in Radioecology

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- Context
- Questionnaire
- Results, arising priorities
- Conclusion

Context

- SRA has been built by the European Alliance in Radioecology ERA (8 research Institutions)
- SRA consultation promoted to identify research priorities. IUR contribution via providing its worlwide list of members for better dissemination
- IUR solicited by the Alliance to provide an international perspective with respect to radioecology in the future. **Ambition to provide a new and original contribution**
- IUR consultation based upon a different perspective to feed prioritization
- IUR consultation attempting to widen the scope of the consultation by exploiting institutional agreements with other networks (IAEA, SPERA, NREA, NCoRE, Asian Network …)

The IUR questionnaire

- SRA has proposed 15 « lines of research » for the future, consultation to derive priorities

- For research priorities to be of strategic value, it is proposed here to examine also the influence of the context within which radioecology evolution and goals are considered.

- Radioecology evolves along/through 3 main drivers:
  - **Radiation protection**
  - **Environmental sciences**
  - **Society (inputs to)**

- Questionnaire built around 3 major questions, with a wide array of possible answers to be rated on a scale from most important down to least important (or not to be considered).

The IUR questionnaire

Position of radioecology with respect to radioprotection science

What is the target of most importance in future radioecology?

- Transfer (and effects) to human being individuals
- Environmental media contamionation levels
- Transfer and effects to animal and plant individuals
- Transfer and effects of populations of animals and plants
- Transfer and effects to, and within, ecosystems

Protection of the environment against radiation shall evolve in first coherence with :

- The existing framework for radioprotection of human beings
- The other environment protection frameworks against non-radioactive stressors

The IUR questionnaire

Position of radioecology with respect to environmental sciences

What is important, strategic or pertinent for tomorrow's radioecology to consider?

- Feeding tracer studies to improve understanding of biogeochemical cycles, streams, etc.
- Acquiring knowledge on more different species to better account for worldwide biodiversity
- Prioritizing toxicological approaches (radiotoxicity in molecules up to individual organisms – biology)
- Prioritizing ecological approaches (ecosystem-centred approach featuring interpecies relationships – ecology)

The IUR questionnaire

Position of radioecology with respect to society (public and authorities)

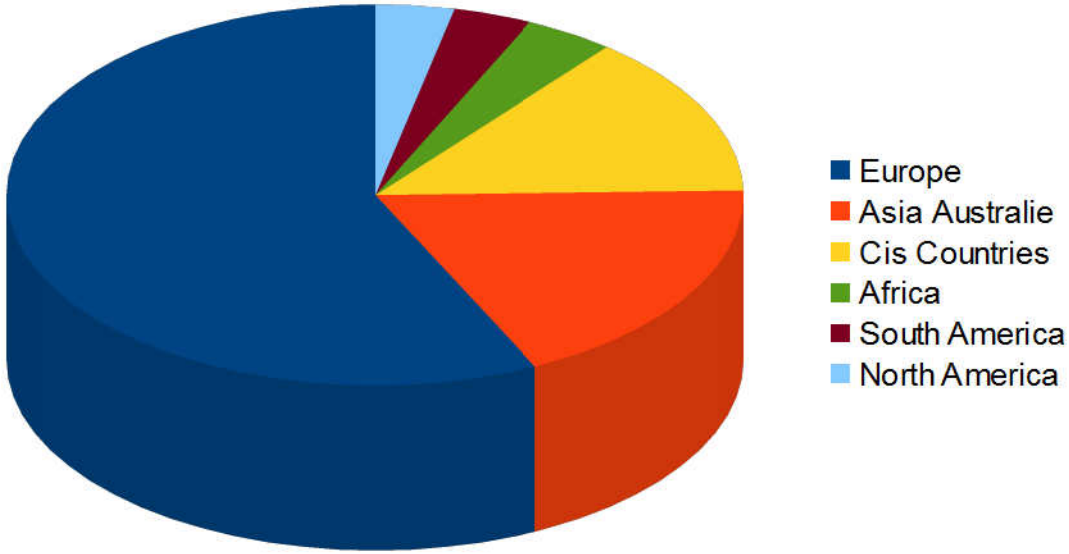
- In situ observations in the environment
- Understanding transfer/effects/interaction processes (basic science)
- Predictions for risk assessment (modeling)
- Translating scientific knowledge into regulations and assessment tools

Position of IUR with respect to radioecology

- IUR is an independent, non-profit, and non-governmental association of professional radioecologists which you have been supporting during the last years through your membership. In the context of promoting Radioecology research and developments, and given the efforts undertaken in Europe via the STAR project, do you consider that IUR should coordinate on a worldwide basis other continental initiatives such as to ensure an optimised and balanced development of efforts?

Who answered ? Overview

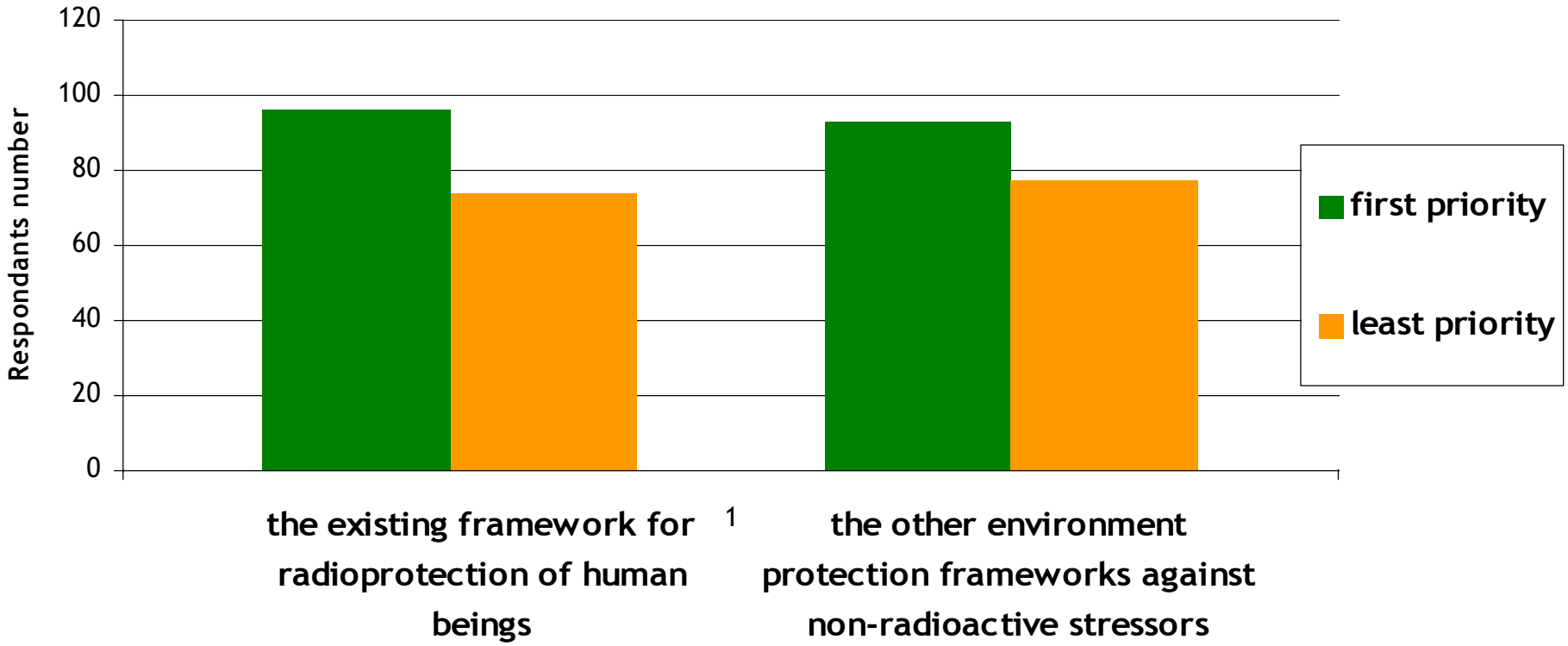
- 203 respondents throughout the world
- 48 countries represented
- 170 initial respondents
- 33 « STAR » respondents



Geographical area	Europe	Asia Australie	Cis Countries	Africa	South America	North America	Total
Number of repondent	116	37	28	8	7	7	203
%	57,14%	18,23%	13,79%	3,94%	3,45%	3,45%	100,00%
main country	13% France	44% Australia	52% Russia	20% Nigeria	71% Brazil	57% USA	

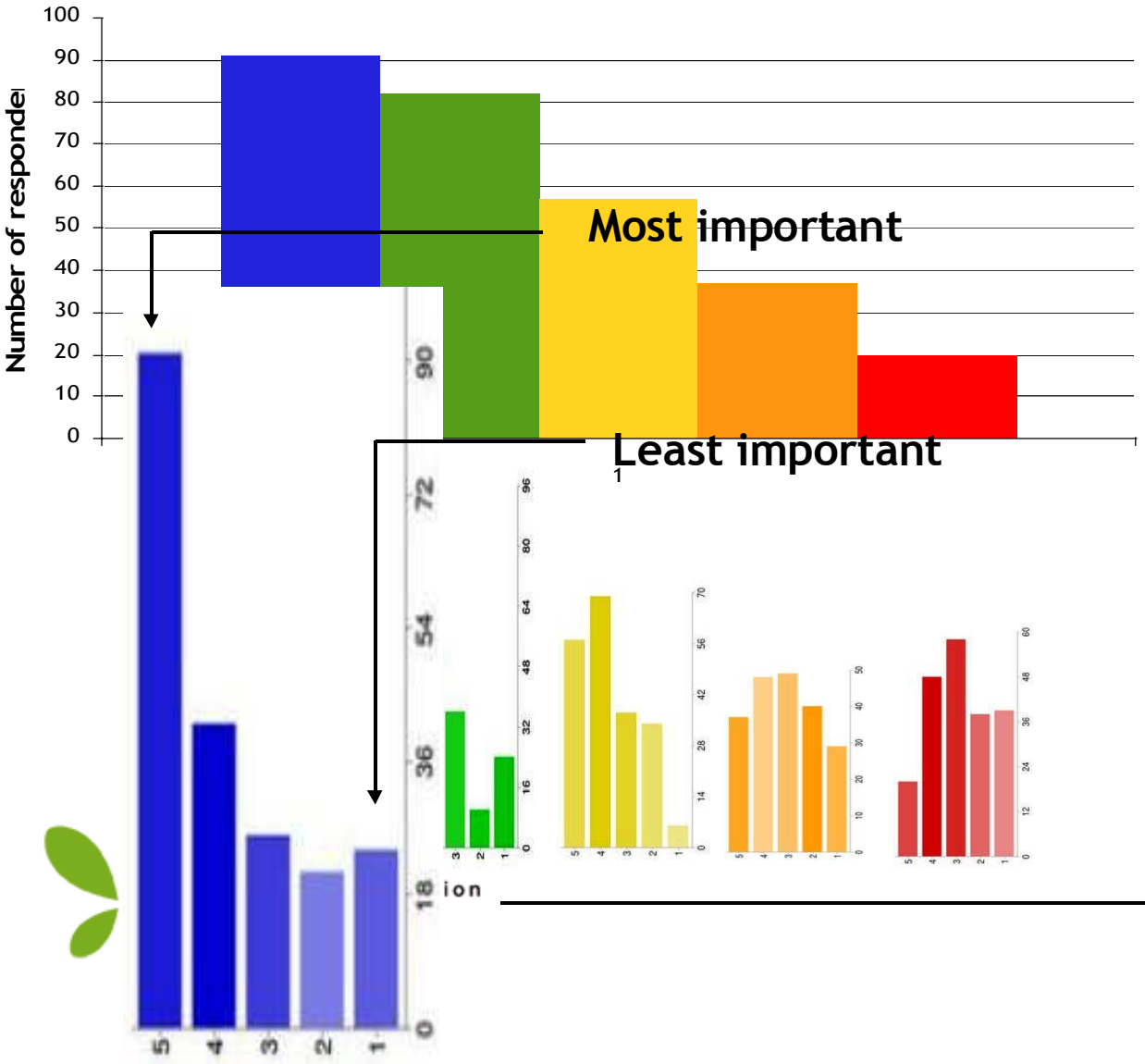
Radioecology and radioprotection

Protection of the environment against radiation shall evolve in first coherence with...



Radioecology and radioprotection

What is the target of largest importance in future radioecology ?
(Responses rated as « most important » within the 5 proposed responses)

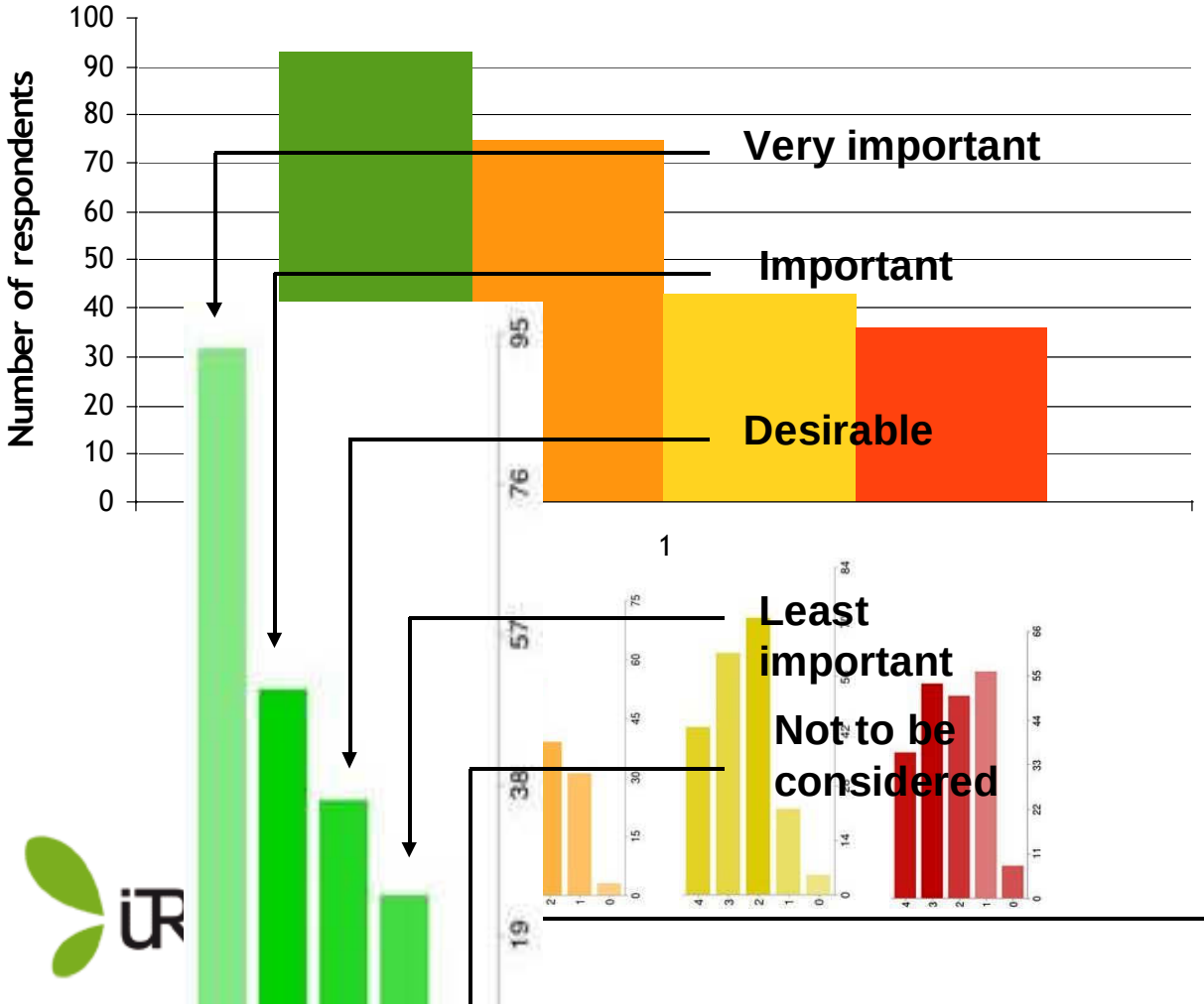


- Transfer (and effects) to human being individuals
- Transfer and effects to, and within, ecosystems
- Transfer and effects to populations of animals and plants
- Environmental media contamination levels
- Transfer and effects to animals and plant individuals

Union Internationale de Radioécologie
International Union of Radioecology

Radioecology and environmental sciences

What is important, pertinent or strategic to take into account for future radioecology ?



- Prioritizing ecological approaches (ecosystem-centered approach featuring interspecies relationships-ecology)]
- Feeding tracer studies to improve understanding of biogeochemical cycles, streams, etc
- Prioritizing toxicological approaches (radiotoxicity in molecules up to individual organisms - biology)
- Acquiring knowledge on more different species to better account for worldwide biodiversity

Union Internationale de Radioécologie
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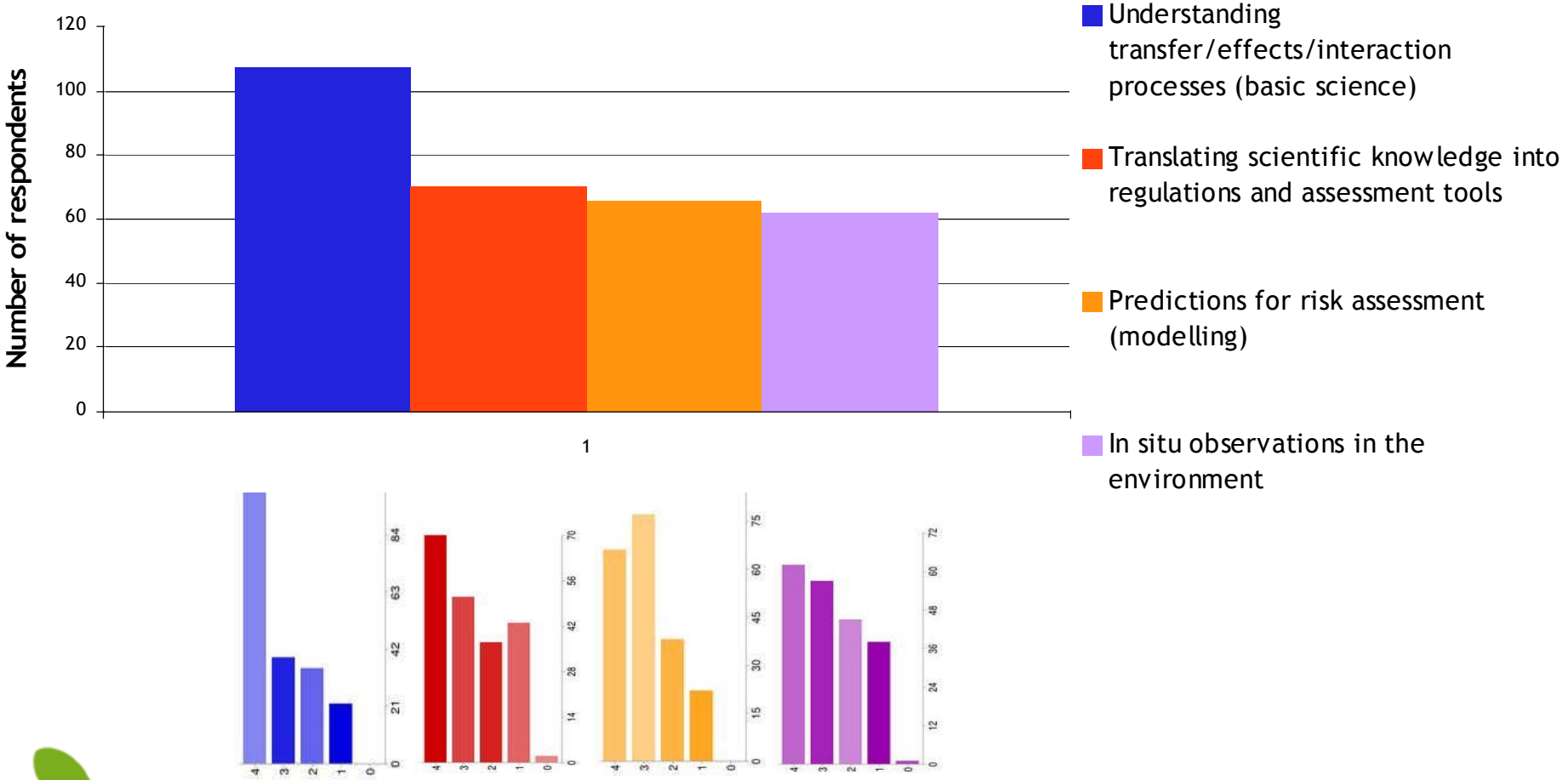
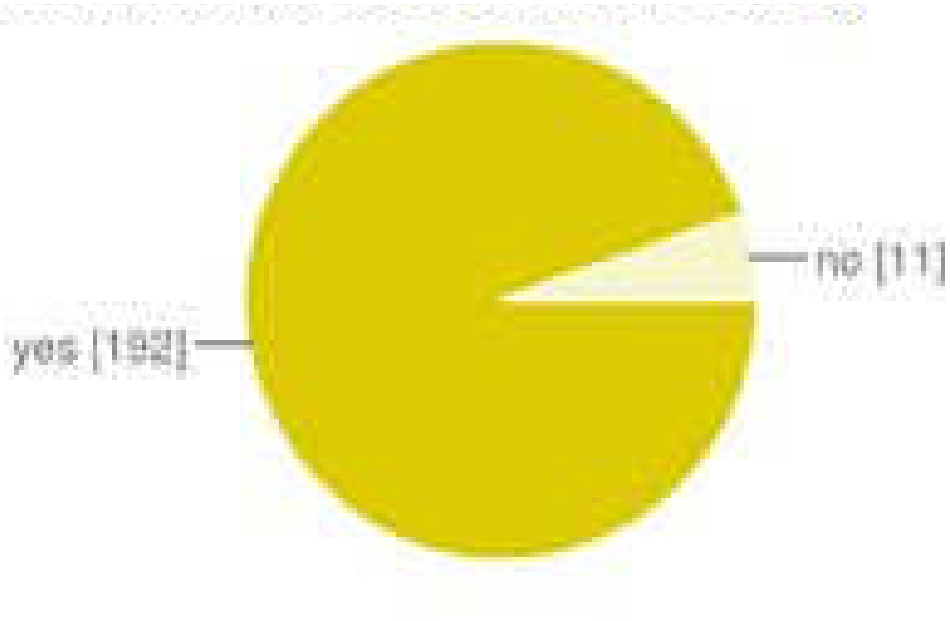
Radioecology and society

Position of radioecology with respect to society (public, authorities)



IUR role with respect to worldwide radioecology

… do you think that IUR should be committed to coordination on a worldwide scale of other regional initiatives in order to ensure an optimal and balanced development of effort ?



9 with no explanation

1 recommending to boost international legislation (not the role of IUR)

1 recommending to privilege a role of advisory body for IUR

Conclusions with respect to priorities

- **Environment protection against radiation must be set up in equal coherence with radiation protection for humans and other systems of environment protection**
- **Priority targets for radiation protection are: human individuals and ecosystems**
- **Least priority targets for radiation protection are: environmental media activity levels and individual organisms of animals and plants**
- **Priority scientific approaches are : ecological inferences (ecosystem-centred) and tracer studies/biogeochemical cycles**
- **Least priority scientific approaches are: pure toxicological inferences (from molecules up to individual organisms) and widening to larger biodiversity**
- **Most important input to society is to improve understanding of processes (transfers, effects, interactions)**
- **Other inputs to society are judged less important: regulation and assessment tools, predictions for environmental impact assessment, in situ observations**

General conclusions

- **A large majority of radioecologists foresees an evolution of radioecology towards more ecocentrism and ecology than before**

- **In the mean time, radioecologists do not forget about their historical roel of contributing to provide all environmental elements necessary to feed human radiation protection**

- **Identified priorities arise from a simple priorization method based upon a limited set of questions voluntarily provocative (but pertinent). To be seen as one possible contribution.**

- **To be noted: questions with respect to radioecology inputs to society provide here the responses form the radioecology communiity, not from society itself…**