The Role of Geoscience Evidence In Stakeholder Confidence

Dr. Michael Siemann

Head of Division
Radiation Protection and
Radioactive Waste Management

AtomEco 2013

Stakeholder – Confidence - Trust

Having **trust** signifies that an individual is willing to give up a certain measure of control to another person, an institution, or set of institutions.

Trust (1):

-making process and
eir representatives."

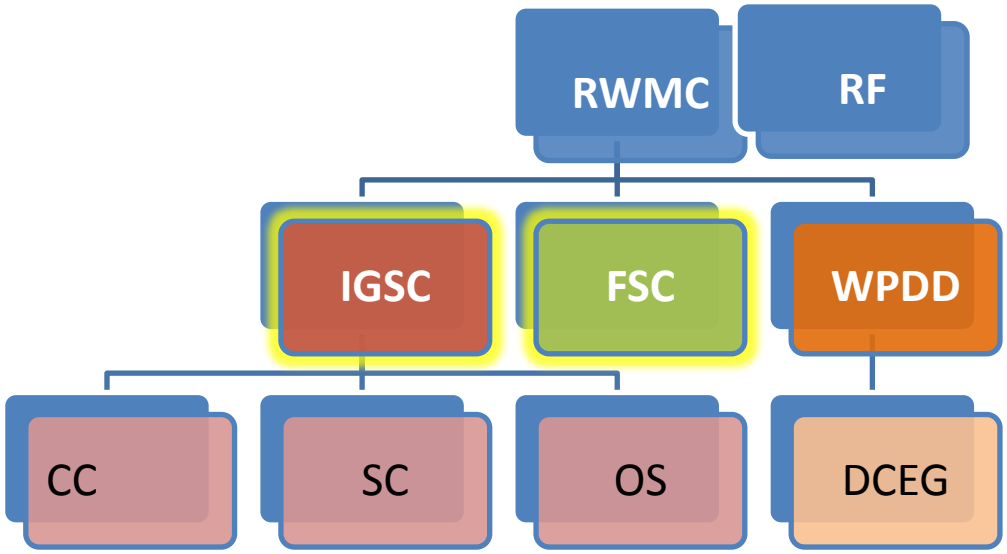
s dependability, based on
d through transparency.

Trust is related to the behaviour of individuals and organisations; it has to be earned, and it is related to feelings of comfort and liking.

Stakeholder Confidence in Radioactive Waste Management – An Annotated Glossary of Key Terms, OECD NEA 2013

Developing and Communicating Confidence

- 2 working groups under the OECD/NEA RWMC carry out work to develop and demonstrate safety in radioactive waste management:
  - Forum on Stakeholder Confidence (FSC);
  - Integration Group for the Safety Case (IGSC)



Forum on Stakeholder Confidence (FSC)

- The NEA RWMC created the FSC in 2000 to better understand stakeholder interactions and public participation in decision-making.
- Roles of the FSC:
  - Promotes open discussions among stakeholders, facilitates the sharing of experience in addressing the societal dimension of radioactive waste management;
  - explores means to ensure an effective dialogue with the public with an aim to strengthen confidence in the decision-making process.
- Participants:
  - Regulatory officials, R&D Specialists, implementers and industry representatives (both technical and social scientists) from 19 countries

FSC (cont'd)

- Modus operandi:
  - **Annual meeting** with topical sessions to discuss specific societal dimension of radioactive waste management issues;
  - Hold **national workshops**, often include a community visit, to further explore the influencing factors that affect public confidence in the area of radioactive waste management;
  - The FSC workshops and visits have proven to be constructive in **fostering national dialogue** and providing an opportunity for mutual learning;
  - Since 2000, the FSC has held 9 national workshops, developed terminologies and concepts to facilitate communications among involved stakeholders. Last WS in Czech Republic (2012) next in Republic of Korea (2014)

Work of the IGSC on achieving confidence in a safety case

- In 1999, the RMWC published a report on communicating confidence in technical aspects of a safety case: "*Confidence in the Long-term Safety of Deep Geological Repositories*"

- **This report formulated the modern safety case concept**. The IGSC was subsequently created in 2000;

- Since then, the IGSC has completed many successful projects. Specifically relevant to the topic of this TS is the **AMIGO** Project.

Work of the IGSC (cont'd)

The **AMIGO* Project** looked at how to effectively integrate geological information into safety cases . The objective of AMIGO was to clearly address the role of the geosphere and how to effectively communicate and understand the geosphere performance in a safety case;

1st AMIGO WS 2003:
"Building Confidence using multiple lines if evidence"

2nd AMIGO WS 2005:
"Linkage of geoscientific arguments and evidence in supporting the safety case"

3rd AMIGO WS 2008:
"Approaches and challenges for the use of geological information in a safety case"

*AMIGO = Approaches and Methods for Integrating Geological Information in the Safety Case

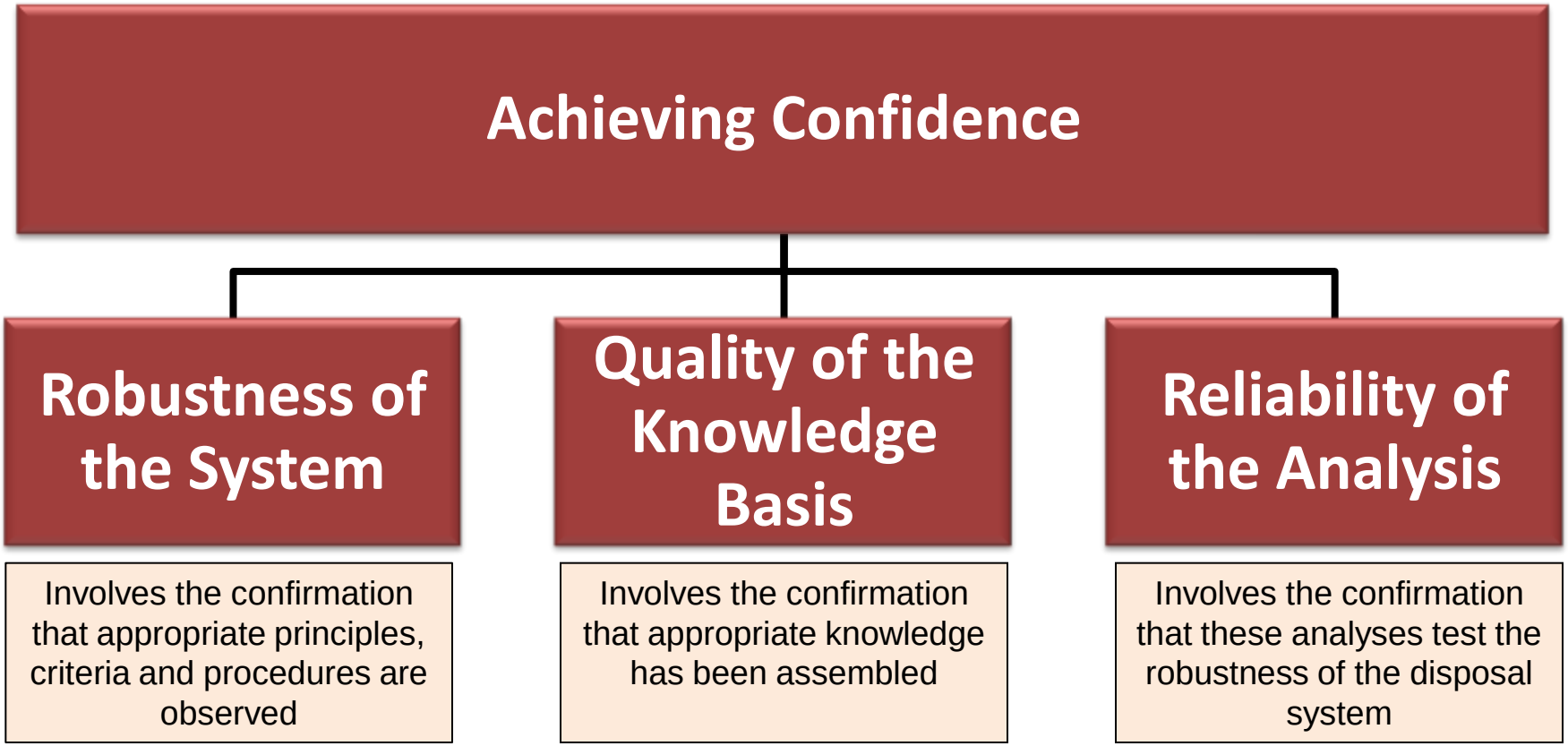
Work of the IGSC (cont'd)

- In 2010, the NEA published the main messages gained in this project – "Geoscientific Information in the RWM Safety Case"

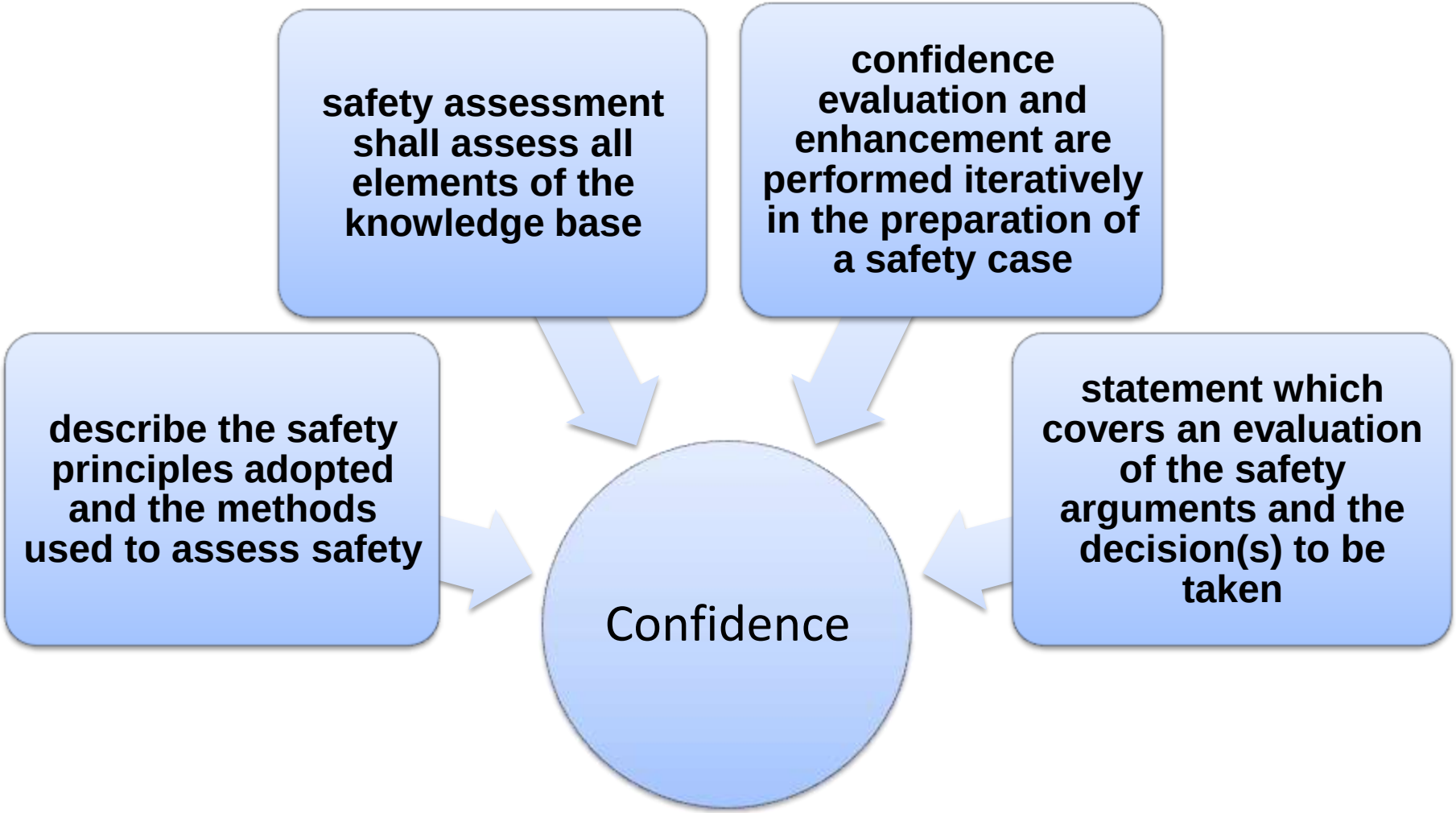
- In 2012 IGSC annual meeting TS: "uncertainty management / sensitivity analyses in developing a safety case"

Safety Case and Confidence (1)

Technical evidences are documented in a safety case to support certain decisions-making (implementer/regulator) and confidence must be demonstrated to make a positive decision (public)



Recommendations to gain Confidence in Safety Case



Confidence cycles in a safety case

1. Establish an assessment basis

2. Carry out a performance assessment

3. Evaluate confidence in the safety assessment and if necessary, modify design and/or assessment basis

Steps 1, 2 and 3 define the safety assessment

4. Compile a safety case

5. Interact with decision makers and stakeholders, if necessary, modify assessment basis

T…ntific evidence in a …case

Evidence

The facts, signs or objects that make you believe that something is true

(*Oxford Advanced Learner's Dictionary*)

- Pr… …g key parameters in pe…
- Imp… …ill evolve at … cha… rep…
- Pr… arg… …dence (e.… …t pro…

Evidence, …, is anything presented in support of an assertion. This support may be strong or weak.

- The strongest type of evidence is that which provides direct proof of the truth of an assertion.
- At the other extreme is evidence that is merely consistent with an assertion but does not rule out other, contradictory assertions …

(Wikipedia)

Means to reduce uncertainties in a safety case

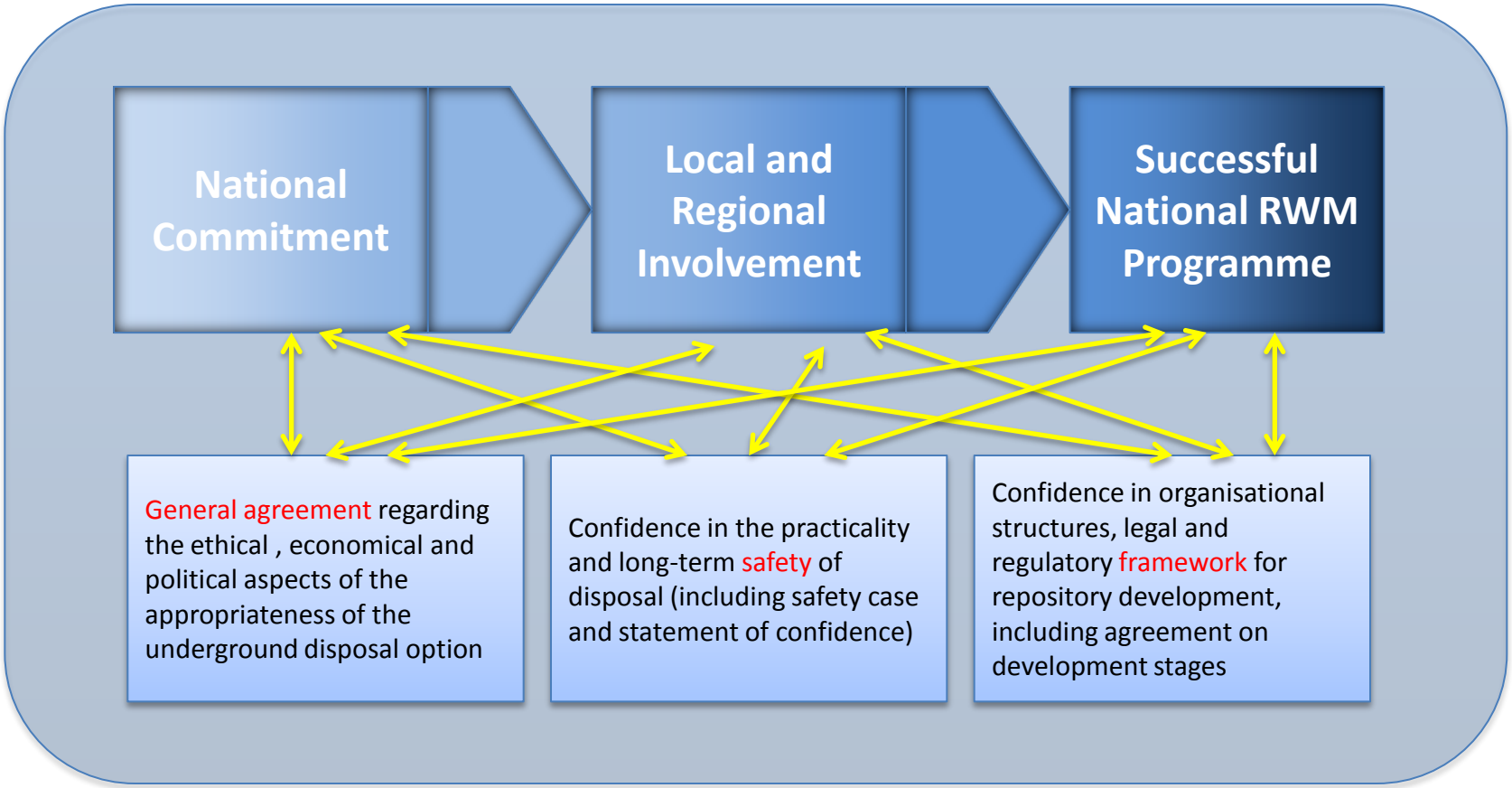
- Acquire more comprehensive geological and hydrogeological data through R&D
- Elicit feed-back from expert(s) and peer review, evaluate available scientific and technical experience
- To reduce model uncertainty, evaluate a range of conceptual models and compare results of different models to assess the consequences of uncertainty;
- Examine (natural) analogues, past behaviors of similar rock formations, etc.

Safety and stakeholder confidence

- In decision-making, safety is not just assessed based on technical and numerical analyses;
- There is a vast difference between the concept of safety (or perceptions of risks) by experts and by the general public
- ICGR 2012 focused on "geological disposal of radioactive wastes: national commitment, local and regional involvement".

One step after the other!

No standard recipe available!



Possible measures to enhance confidence in non-technical areas (no recipe for success)

- A stepwise, flexible approach to decision making, with the possibility to reverse decisions;
- Obtain consensus (including public, regulators and others) on basic principles, e.g. principles of radiological protection or DGR;
- Involve scientific communities (e.g. via (inter)national peer review) to evaluate and demonstrate the technical competence of both implementer and regulator(s);
- Perform audits to ensure the adequacy of the organizational structures and management, legal framework and regulatory review process and make the results become public;
- Maintain openness in decision making, continue “social” dialogue in all stages, etc.

Confidence in Decision-Making

- To reach a decision, sufficient confidence must be demonstrated to both technical and non-technical stakeholders;
- Sufficient confidence does not imply that all issues have been resolved, but rather that the issues are judged as not critical for the decision at hand and they will be resolved in future development stage. i.e. to assure the decision is an appropriate course of action;
- In coming years, more work to further enhance stakeholder confidence will continue within the IGSC and FSC communities.

THANK YOU

FOR YOUR ATTENTION!