An ethical “capability-possibility” framework for education and training in radiological protection

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The challenge

for radiological protection research and policy

(aiming to deal responsibly with the radiological risk)

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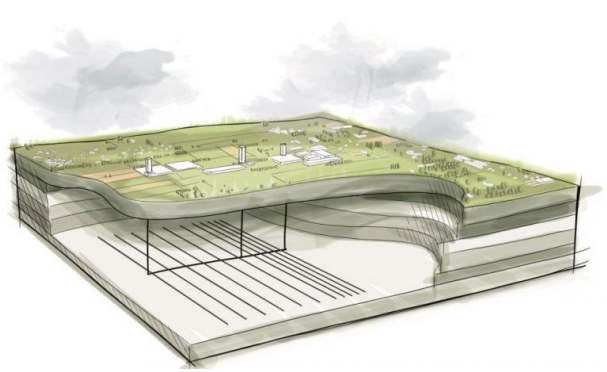
The evaluation of the development and possible use (justification) of applications of radioactivity and nuclear technology needs to take into account **factual uncertainties** and (often conflicting) **value-based opinions**.

→ Factual uncertainties about natural, technical and social phenomena

→ Different value-based opinions informed by our perceptions and worldviews





The challenge
for radiological protection research and policy

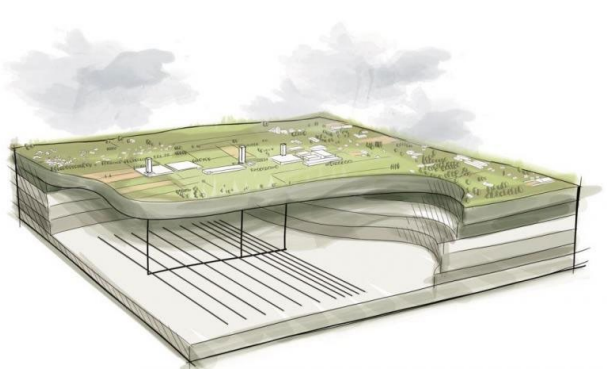
Scientific advancements can to a certain extent address this challenge, but in the end, this 'situation' is an inherent characteristic of our contemporary **risk society**.

radiological protection research and policy is not alone:

In our contemporary society, living with low doses of fine dust, pesticides, food preservatives, trans-fats, hormone additives, radioactivity, electromagnetic radiation, and so on… is living with the scientific uncertainty troubling the understanding and prediction of their true health effects.

ref "*The Politics of Hypothesis – An Inquiry into the Ethics of Scientific Assessment*" (Routledge, 2018)





Theoretical approaches

aiming to address this challenge

→ concepts, dynamics, paradigms and fashions of **'advanced knowledge generation'**

participatory technology assessment (PTA) / transdisciplinarity (TD) / postnormal science (PNS) / …

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↘ all have in common that they start from the recognition that

- 'traditional science' relying on techno-scientific methods, models and numbers alone cannot longer do the job
- **science as policy advice** should also be inspired by **ethical reflection** and that it should integrate (through social sciences and humanities approaches) recognition of **uncertainties**, **value-based arguments** and interests of various **stakeholders** and the **future generations**

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holistic – transdisciplinary – inclusive

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HOLISM – TRANSDISCIPLINARITY – INCLUSION

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what *is* advanced knowledge generation in practice?

→ Advanced knowledge generation put in practice is simply people with different interests, expertise and backgrounds engaging in **a dialogue that would never happen in traditional science and policy settings** and that generates new knowledge and insights **that would otherwise never have existed**

↘ The **preparedness** of each of them **to engage in that dialogue** is motivated by the insight that this dialogue will serve a common goal: **effectively dealing with a complex problem** that affects us all

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however The **possibility** and **effectiveness** of these advanced approaches of knowledge generation not only depend on the **preparedness** of the scientific community, stakeholders, citizens and policy makers to engage in that dialogue, but also **on their possibilities and capabilities to do so**

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The importance of perceiving practical approaches
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→ Re-interpretation & 'extension' of the capability approach (Sen – Nussbaum)

capability approach [1]:
- *the freedom to achieve well-being is of primary moral importance*
- *well-being should be understood in terms of people's capabilities and functionings*

↘ Inspired the UN Human Development Index and UN SDG Goal 4 on Education

[1] https://plato.stanford.edu/entries/capability-approach/

The importance of perceiving practical approaches
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↗ The **possibility** to contribute to advanced knowledge generation (as a 'democratic right')

↘ The **capability** to contribute to advanced knowledge generation (as a right to learn)

capability to gain insight and think critical
to be vocal, raise concerns, formulate ideas
to care for precaution and other ethical values

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possibilities and capabilities are no unrelated concerns that should be addressed separately

↘ ideally, they are 'entangled' or 'interwoven' in every formal process of knowledge generation

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An ethical capability-possibility framework

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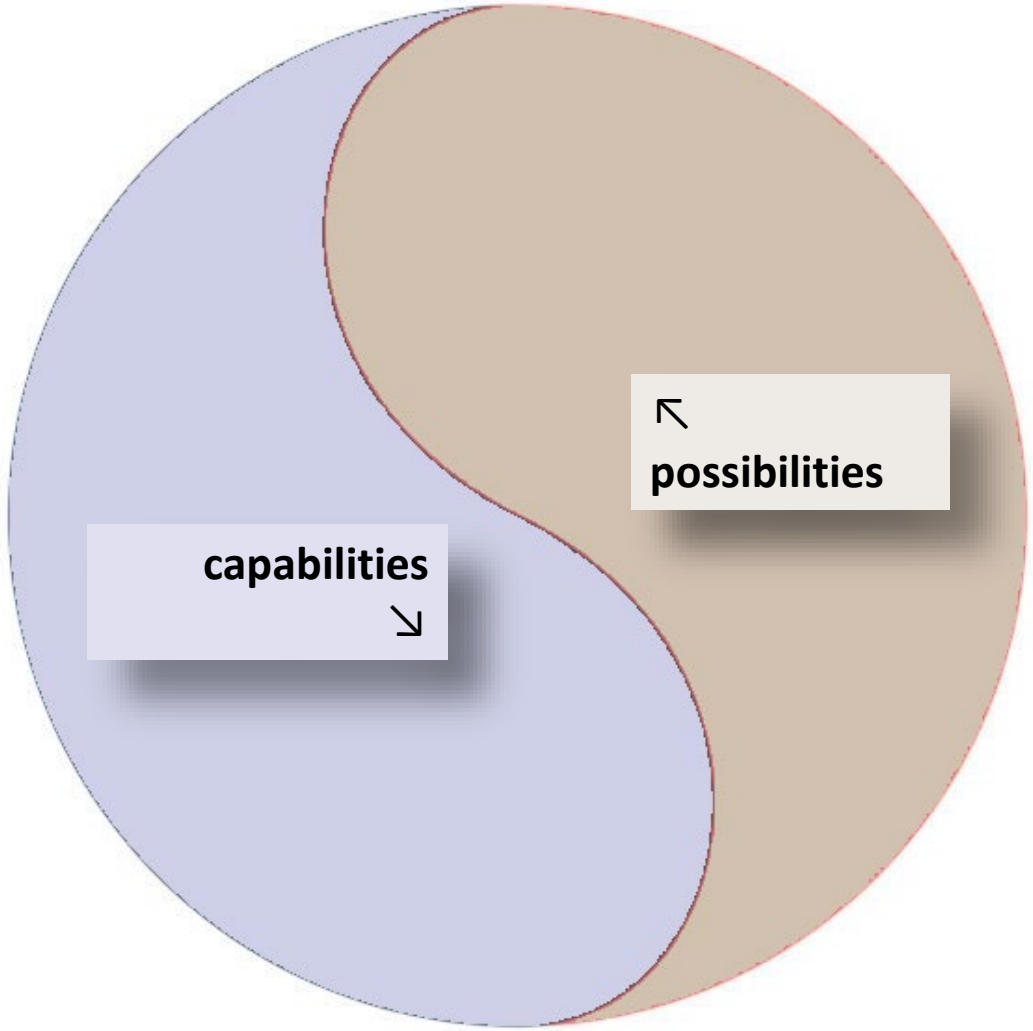
An ethical capability-possibility framework

Capabilities and possibilities as 'opposing but interconnected forces'



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An ethical capability-possibility framework

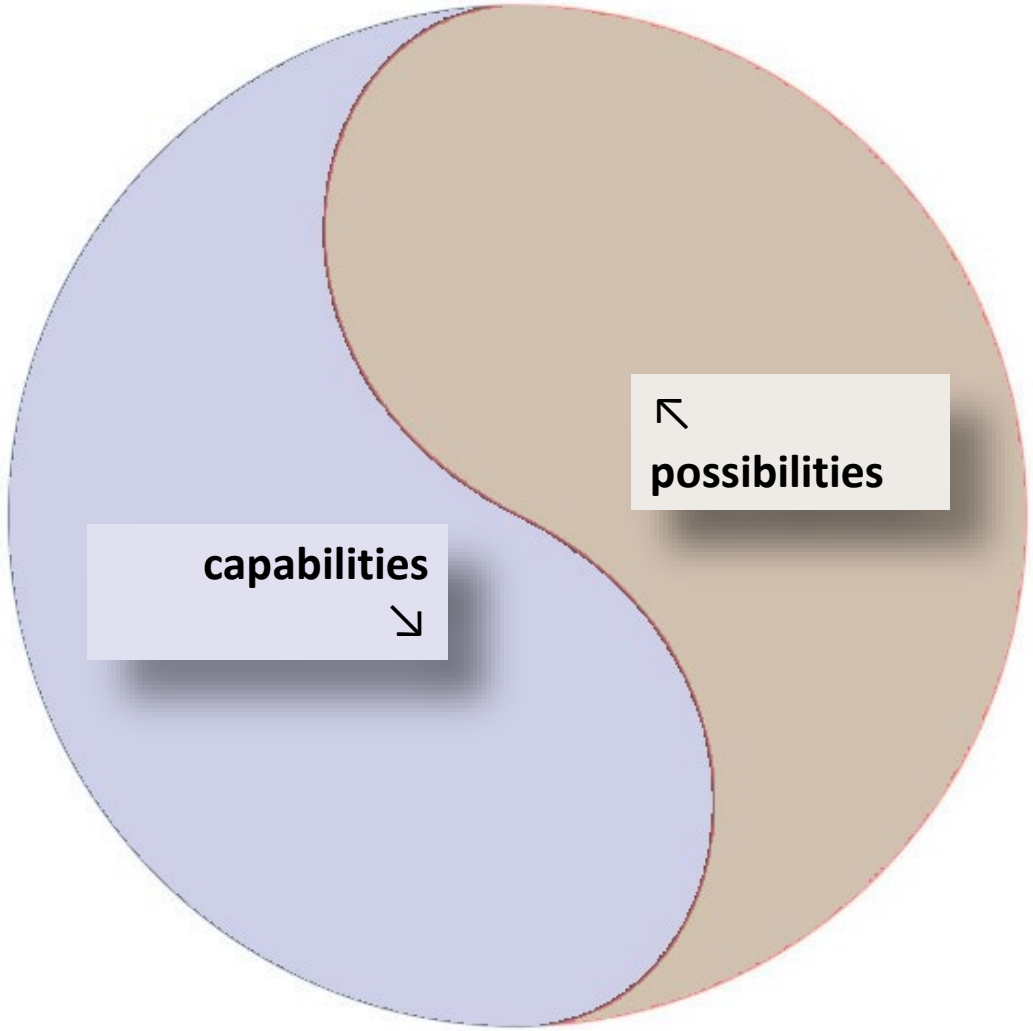
Capabilities and possibilities can 'co-create' each other

capabilities > < possibilities

↑

need …
enable …
stimulate …

('co-creation')



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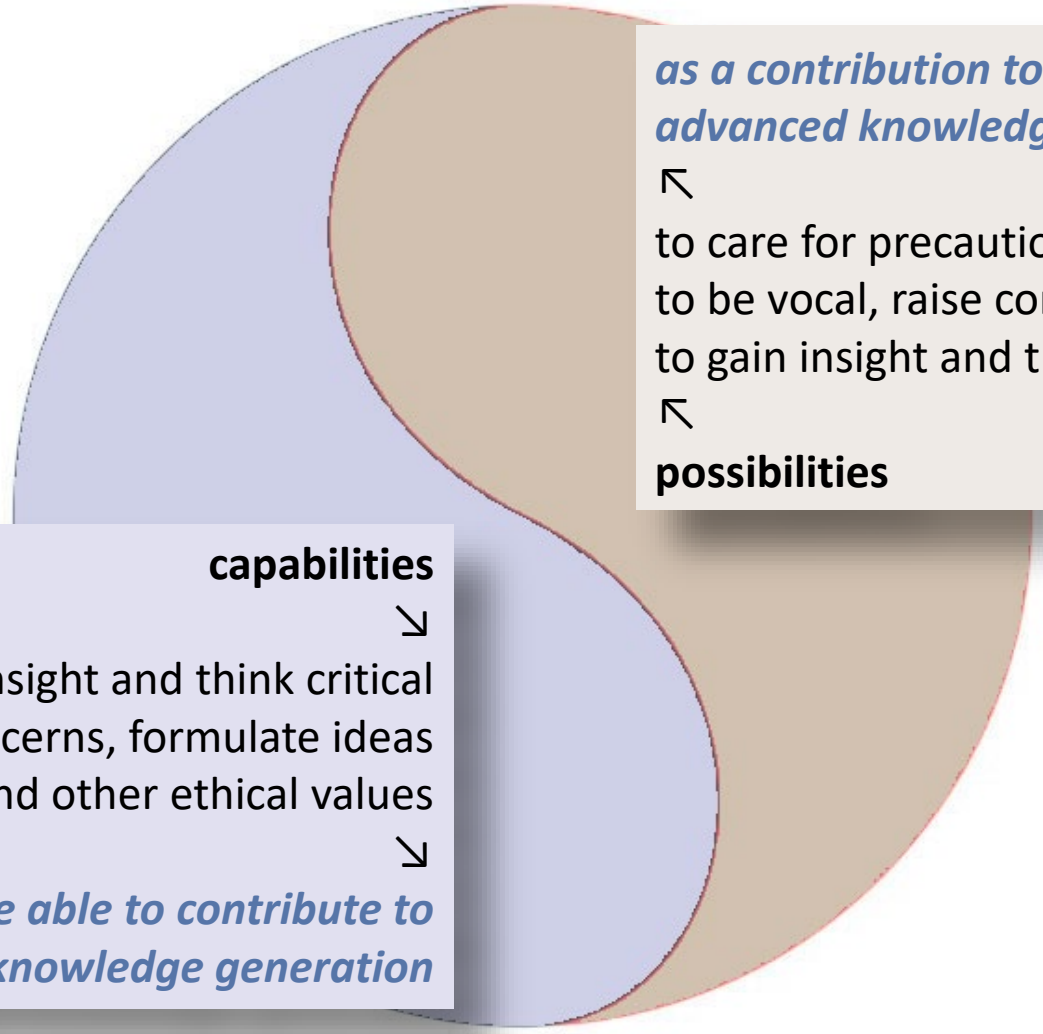

as a contribution to advanced knowledge generation

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to care for precaution and other ethical values
to be vocal, raise concerns, formulate ideas
to gain insight and think critical

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possibilities

capabilities

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to be able to contribute to advanced knowledge generation

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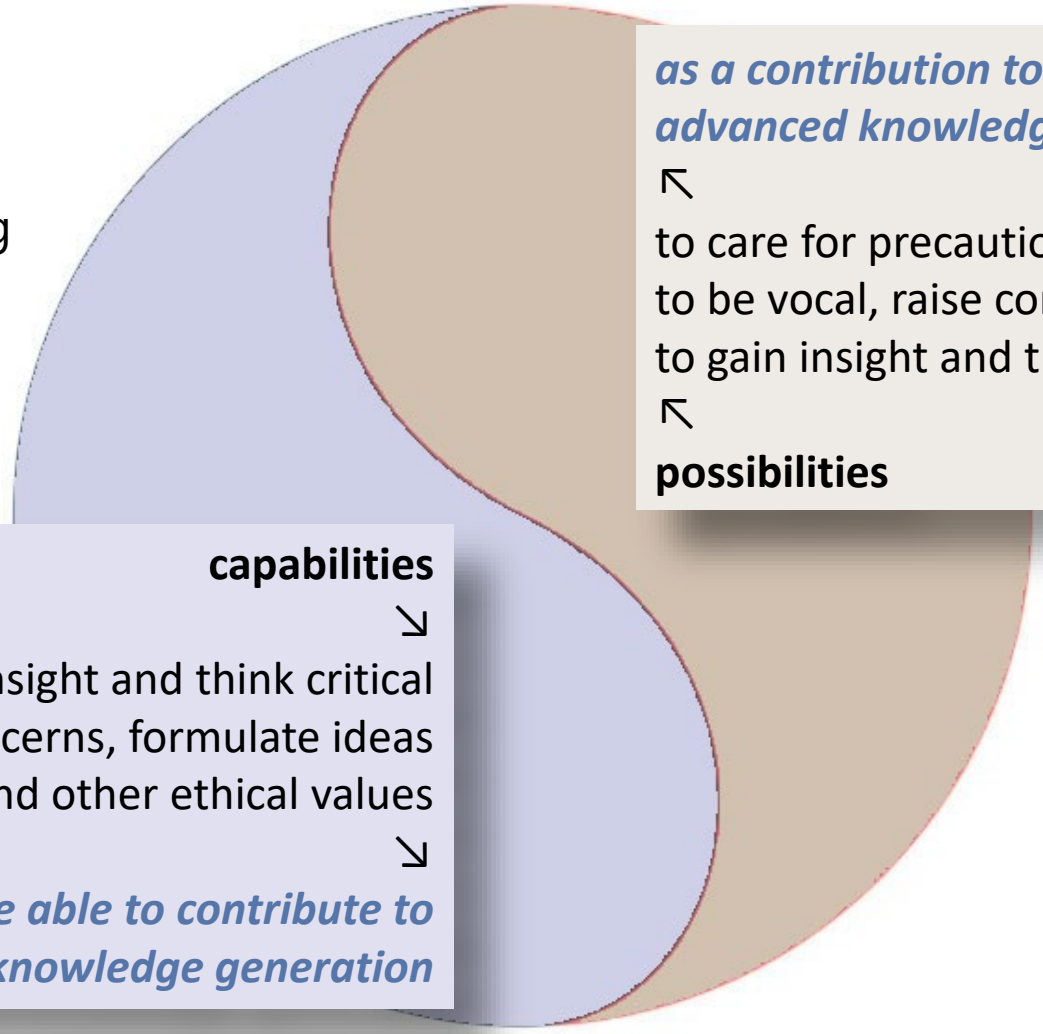
Capabilities and possibilities can 'co-create' each other

→ applicable to

political decision making
science for policy advice
education



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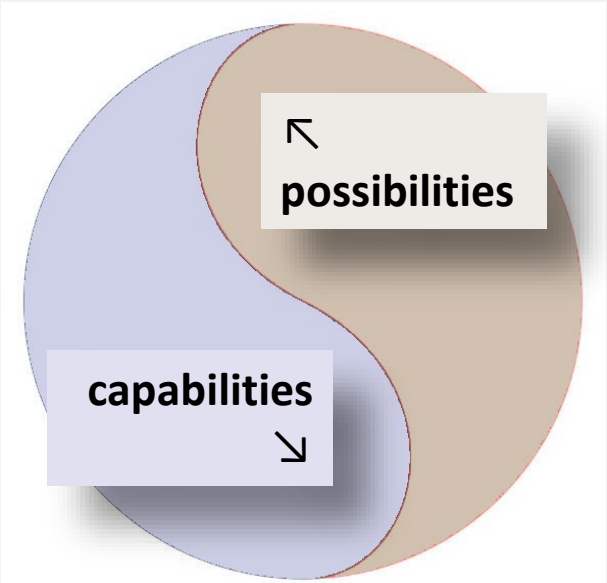
Reflexive (self)learning processes that can feed into and inspire each other



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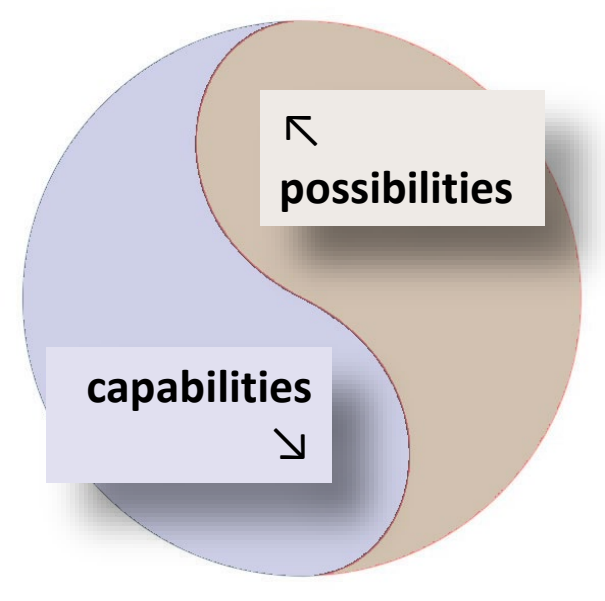
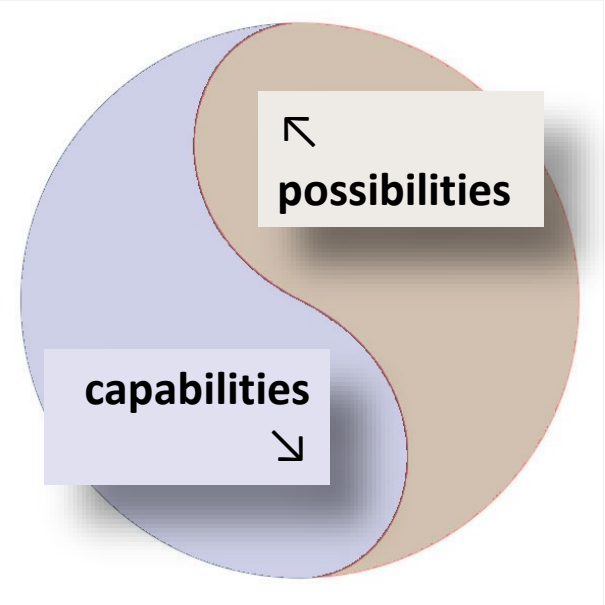


science



politics

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The essential role of education and training: the idea of developing ethical competence

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The essential role of education and training: the idea of developing ethical competence

competence "The ability to put skills, knowledge and attitudes into practice in order to perform activities or a job in an effective and efficient manner within an occupation or job position to identified standards" (source IAEA)

	Ethical competence (fostering and 'using' an ethical sense)
skills	
knowledge	
attitudes	

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The essential role of education and training: the idea of developing ethical competence

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	Ethical competence (fostering and 'using' an ethical sense)
skills	analytic skills context thinking reflexivity (being able to see the bigger picture and yourself in it)
knowledge	the situation, including uncertainties, values at stake other views and perceptions of the situation methods of dialogue, deliberation, teaching
attitudes	sense of responsibility, caring for fairness tolerance, openness, curiosity Reflexivity (being prepared to see the bigger picture and yourself in it)

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The essential role of education and training: the idea of developing ethical competence

The concept of **ethical competence** is today a research topic at SCK CEN (a cooperation of the Science, Technology and Society (STS) research group and the Academy for Nuclear Science and Technology, taken up in internal reflection processes on **research ethics** and **scientific culture**.

Questions

How does this idea of 'ethical competence' resonate with the visions on education, training and competence requirements for QE and RPO?

The idea of co-creation: meaningful? Inspirational?

Practical opportunities / hindrances for ethical competence building?

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