# Technology Assessment
# Examples from Germany and some thoughts about the need for multilateral TA

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**16.11.2022**

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# TA in Germany: The Institutional Setting

## Institute for Technology Assessment and Systems Analysis (ITAS)


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# Technology Assessment in Germany: Example

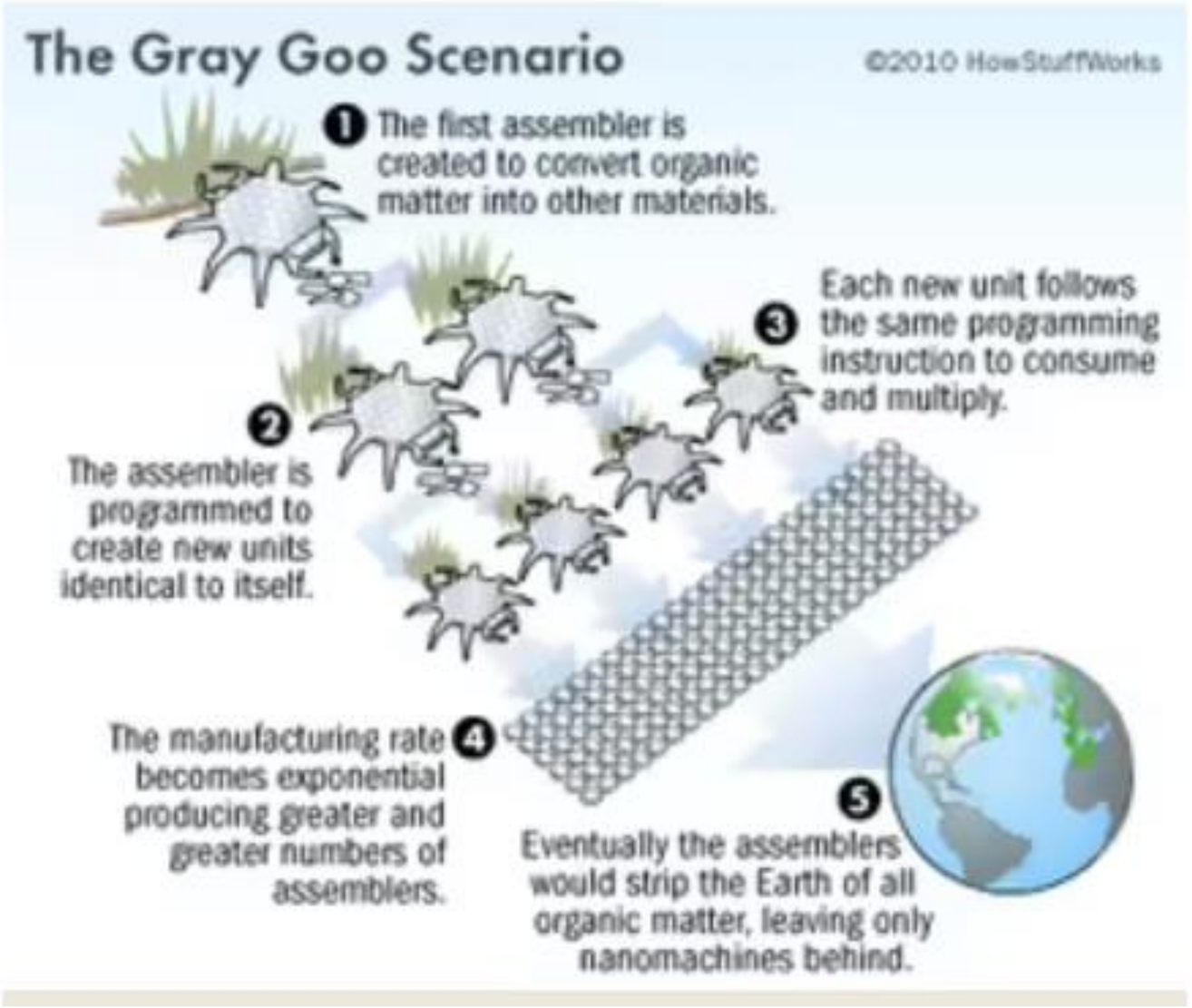
## Example 1: Nanotechnology in the early 2000s

Emerging Technology – only visions about prospective use, but no knowledge and data

Hype as regards options for nano-manufacturing, new therapies for cancer, etc… vs distopian expectations („grey“ goo)

Possible need for public funding and legal regulation – but lack of clarity clear how policy making should take it up

# The „Gray Goo“ Nightmare



# Nanotechnology TA study on behalf of the German Government

- Scanning the international discussion on Nanotechnology (Science and governmental programs) with regard to state of research, prospective applications and problematic issues

- Commissioning expert studies on specific aspects (Nano in medicine, Nano for cosmetic products …)

- Workshop of salient experts and stakeholders in Germany: Sorting out areas of consensus and dissensus as regards chances and risks (separating hype fom reliable expectations)

- Public opinion survey on Nanotechnology

# Composition of the Expert Group

- Industrial engineering (automobile, energy, construction, chemical, aerospace, textile)
- Information and communication technologies (optical electronics, CPU design, quantum computing)
- Life sciences (microbiology, biotechnology, bioengineering, bioinformatics, food and nutrition, cosmetics)
- Cross cutting expertise: public perceptions, ethics, law

# Impacts of the TA Study on Nanotechnology

- Outcome: Recommendations for a German Nanotechnology Research Progamme

- Defining focus areas of research (New Materials for industrial applications)

- Setting up an accompanying research programme on health effects of Nano Particles (invading of particles the brain-blood-barrier)
  > Early political up-take of risk issues,
  > Reducing the „grey goo“ debate to its rational core

- Nano-Particles and health issue proved to be the longstanding issue of the debate

- Regulation by European Paliament, applying the REACH framework: Registration, Evaluation, Authorisation and Restriction of chemicals

# Heuristics of fear or heuristics of hope? Gene Editing

In July 2018, the European Court of Justice classifies organisms created by genome editing techniques (such as CRISPR-Cas9) as genetically modified organisms (GMOs) within the meaning of the EU GMO Directive.

A technical-legal ruling with far-reaching consequences in the Global South:

- All future innovation cycles in the field of gene editing in the European Union have to follow the strict regulations for GMO crops. This process is lengthy (4-6 years) and costly (7-15 million euros).
- All crops which involve Gene Editing techniques have to be labelled as GMO crops. On the European markets this basically excludes commercialization
- Developing countries have to chose to either abstain from using gene editing or abstain from export agricultural products to the EU

# Heuristics of fear or heuristics of hope? Gene Editing

The ruling of the EU Court of Justice was not based on a serious TA exercise, but rather on an ad hoc understanding of possible risks of the new technology

It has its  normative roots in the precautionary principle, as laid down in Article 191 of the European Treaty. The precautionary principle calls for preventive actions in the face of uncertain information about risks.

The ad hoc assessment of possible risks of gene editing has been rejected by most of the scientific community.

***As decisions about technologies have a global reach, we need multilateral modes of TA, which take into considerations different assessments of opportunities and risks!***

Thanks for your attention!

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# Contact

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