Trends in TA:
Contested futures and prospective knowledge assessment

Armin Grunwald

LCA and Governance workshop, Brussels, 27.9.2007

Overview

1. General Trends in Technology Assessment
2. TA, Sustainable Development and uncertainty
3. Contested futures and needs for assessment
4. Some conclusions

1. General trends in Technology Assessment

Technology Assessment: „invented“ in the 1960s

Characteristics of TA:

- prospective knowledge for action and decision-making (strategic intelligence)
- policy advice concerning societal questions of science and technology (for example by parliamentary TA)
- multi-perspective approach: stakeholders, experts, laypersons, citizens etc.
- focus on non-intended side-effects (early warning)
- operating (transparently) at the borderline between facts and values

General trends

- shift from a “prognostic” focus to contributing to “shaping technology”
- increasing involvement of ethical reflection instead of restricting TA to a positivistic understanding (main fields: biomedicine as well as sustainability)
- considering entire innovation processes instead of concentrations on technologies
- more emphasis on the roles of knowledge as well as of uncertainty (emerging knowledge society)
- new forms of governance as cross-cutting issue
- reflections on the role of (contested) "futures" and the “validity” of prospective knowledge

2. TA, sustainable development and uncertainty

- often there is an ambivalent relationship between technology and SD: positive as well as negative impacts
- need for ex ante assessments of sustainability implications of new technologies
- TA as *prospective sustainability assessment* shall give orientation to SD governance and policies
- the entire life cycle of products or systems influences the sustainability bilance
- highly diverse criteria of sustainable development
- problems of measurement and availability of data
- necessity to deal with high uncertainties

The substantial ("What"-)Rules of Sustainability (Kopfmüller et al. 2001)

Goals / Rules	1. Securing Mankind's Existence	2. Upholding Society's Productive Potential	3. Keeping Options for Development and Action open
	(1) Protection of Human Health (2) Securing the Satisfaction of Basic Needs (3) Autonomous Self-Support (4) Just Distribution of Chances for Using Natural Resources (5) Compensation of Extreme Differences in Income and Wealth	(1) Sustainable Use of Renewable Resources (2) Sustainable Use of Non-Renewable Resources (3) Sustainable Use of the Environment as a Sink (4) Avoidance of Unacceptable Technical Risks (5) Sustainable Development of Real, Human, and Knowledge Capital	(1) Equal Access to Education, Information, and Occupation (2) Participation in Societal Decision-Making Processes (3) Conservation of the Cultural Heritage and of Cultural Diversity (4) Conservation of Nature's Cultural Functions (5) Conservation of "Social Resources"

Sustainability assessments - origins of uncertainty

- *inseparability* issue: co-evolution of technology and society; inadequacy of closed models → increased complexity and systemic feedback loops
- *incompleteness* issue: unlimited manifold of sustainability aspects through the complete life-cycle → decisions on relevance and priorities required showing own risks
- *incommensurability* issue: no common scale available for measuring sustainability effects → *necessity but limited utility* of quantitative approaches
- *prediction* issue: future developments influence the life cycle data → uncertainties due to the prospective nature of SD assessments

→ necessity of dealing with different and frequently „contested“ futures in analytical and empirical respect

3. Contested futures and the need for prospective assessment

- increasing contingency in modern societies – search for orientation by looking at „futures“ (e.g. Luhmann)
- this is exact the way by which TA (and every decision-support activity) operates
- prospective LCA also operates with „futures“
- these „futures“ frequently are contested and controversial
- example: the energy debate (which regained societal attention recently) is highly determined by futures involved

→ **if decisions have to be legitimised by looking at the future (for example by prospective LCA) – which „future“ shall be selected as a basis for decisions?**

Methodical challenges

- prospective knowledge always is more than prospective knowledge
- prospective knowledge is embedded in broader pictures of the future: assumptions about social developments like production or consumption patterns or lifestyles, about the possibility of simple extrapolation of current trends, about political stability etc.
- futures are *constructions* – including pieces of knowledge, assumptions, values, premises etc.
- futures form a medium of controversial societal debates, according to values, preferences and interests
- TA (and LCA): necessity of transparently investigating and assessing the “futures” involved

Debate in TA on prospective knowledge assessment

- epistemological analysis: cognitive aspects, identifying limits of knowledge and areas of uncertainties, characterising uncertainties, isolating and analysing quantitative and qualitative ingredients of the futures etc.
- normative analysis (ethics): desires and hopes, values involved, images of human nature and of society etc.
- empirical analysis (social sciences): genesis of “futures”, deliberation processes, power issues, interests etc.
- strategic analysis: who are the actors in constructing futures, why do they select specific futures, and in which way do they use futures?
- organisation of processes: participatory assessments including results of the various types of analysis (learning from foresight exercises should be possible)

4. Some conclusions

- similar challenges with respect to governance issues in TA and LCA
- dealing with uncertainties is a key challenge for SD governance
- three-fold reflexivity required in SD governance:
  - provide and take seriously „meta-knowledge“ on the premises, limitations, normative grounds etc. of prospective sustainability assessments (including LCA)
  - design SD governance processes in a way that learning during the process is possible to the largest possible extent
  - quantitative approaches are simultaneously indispensable and problematique: main issues are the problem of „futures“ and the incommensurability issue
- a lot of possibilities for co-operation between the LCA and the TA community

Thank you for your attention!