7th International Summer Academy on Technology Studies -
Transforming the Energy System: The Role of Institutions, Interests & Ideas
Deutschlandsberg, 27 – 31 August, 2007

Empirical Study of the Formation Processes of Energy Scenarios

Christian Dieckhoff
Institute for Technology Assessment and
Systems Analysis (ITAS), Forschungszentrum Karlsruhe

28. August 2007

General Problem: Objectiveness of Futures

In the decision-making process about the future energy system, "images" of how this future will, can or should look like are discussed. → Futures

Scientific "Futures": e.g. Forecasts, Scenarios

Futures...

…are **uncertain**, controversial, influenced by interests
…express assumptions, hopes, fears, expectations
…are partly subjective or normative

→ Can Futures be objective at all?
→ Can the objectiveness of Futures be "measured" or compared?
→ Can Futures be objectified?

Research Group on Potentials of Objectifying Future Assumptions: The Example of Energy Futures

Epistemological approach:

- Classification of Futures
- Terminological and conceptual clarification of “objectiveness” in the context of future assumptions (also “intersubjectivity”, “neutrality” etc.)

Empirical approach: (→ Ph-D Project)

- Analyse concrete Energy Futures
- Analysis of the actors interactions in developing Energy Futures

→ **Identification of Potentials for Objectifying Future Assumptions**

→ Clarification of “objectiveness” still open!

→ An idea: **Objectiveness is**
Objective knowledge can be principally found by all subjects*
(→ intersubjectivity)

* Source: Enzyklopädie Philosophie und Wissenschaftstheorie

Ph-D Project: Empirical Study of the Formation Processes of Energy Scenarios

- Important type of Future in the discussion on the energy system: **Scenario-Study**
- For an analysis of Futures in terms of objectiveness the knowledge of their **formation processes** is crucial
- **Empirical** Approach: Analysis of existing studies, **interviews** with involved actors

Energy Scenarios

(Energy) Scenarios outline **possible futures** depending on characteristic **assumptions**

Typical study:

- 1 Base-Case-Scenario: Business as usual
- 2-4 “characterised” scenarios: e.g. “renewable”, “fossil”, “nuclear future”

→ Assessment of the consequences relatively to the base-case (e.g. costs, emissions)

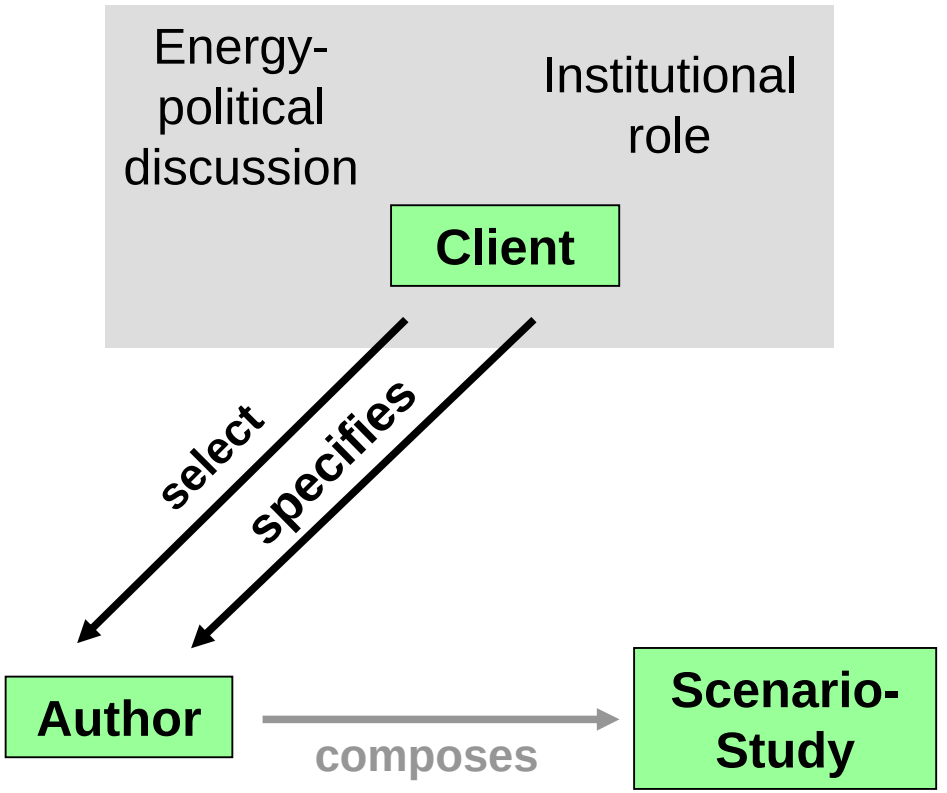
A scenario-study is a result of a consultation process
→ Main actors: **client** (political institution), **author** (scientific institute)

The Client as a Part of the Formation Process

The **client searches** for, **selects** and commissions the author and **specifies**
→ the "**content**" of the scenarios:
- Characteristic specifications: define individual scenarios
- Basic specifications: basis for all scenarios (e.g. population growth)

→ the **methods** (e.g. demands explicitly a scenario-study)

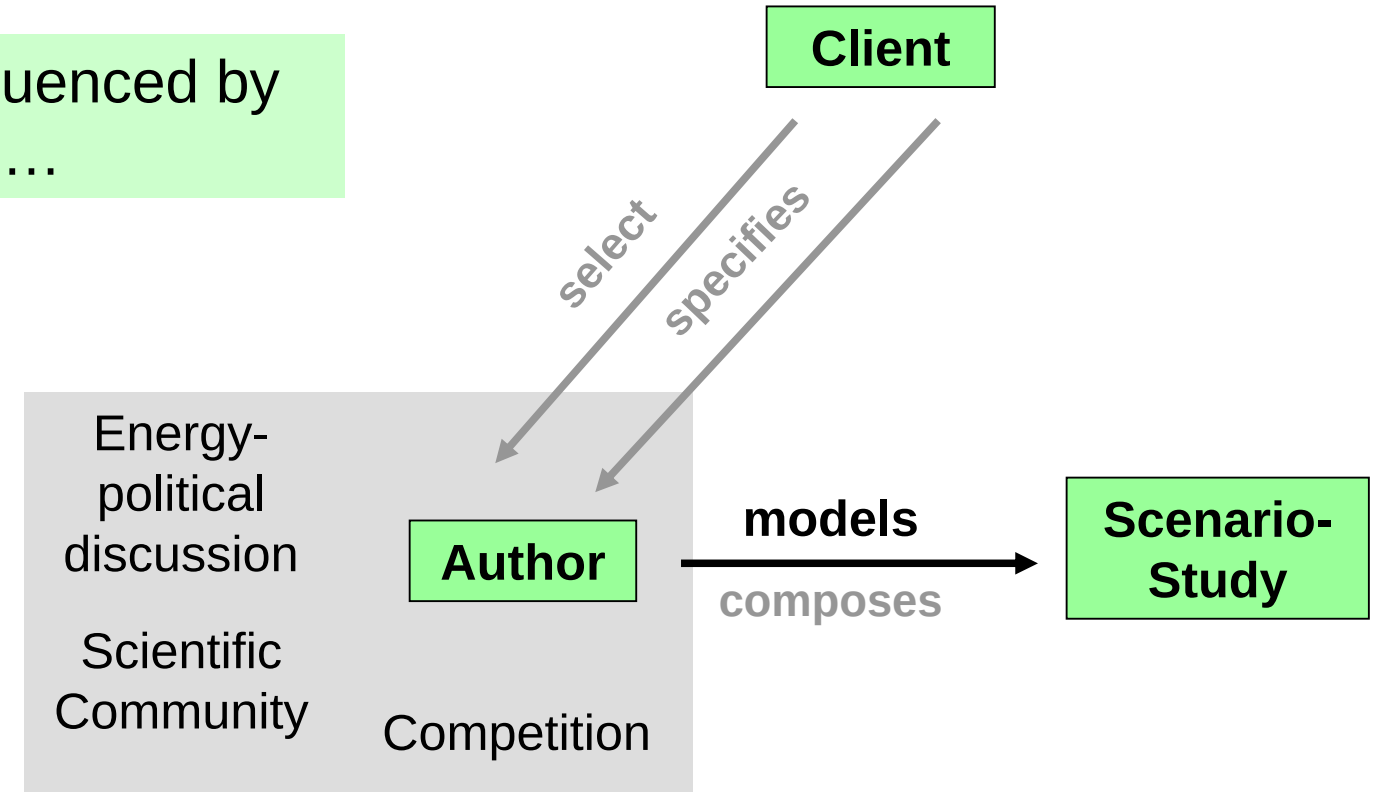
Specifications are **influenced** by interests, expectations, wishes…



The Author as a Part of the Formation Process

The **author** composes the study and conducts the **modelling**; he
→ **builds the model**
→ Interprets **results of third**
→ **Interprets** the **client's specifications** and makes **own assumptions**
→ **Interprets** and communicates the results

The **author** can be influenced by interests, expectations…



Aims and Approach

- **Understanding / Description of the formation process and its conditions**
- Identification of explicit and implicit designing impacts
- Identification of possibilities to objectify energy scenarios

- Terminological clarification
- **Analysis** of the documented **discourse** of energy systems modelling
  → consensus or standards
- Selection of (relevant) studies
- **Analysis** of existing **scenario-studies**
- **Interviews with clients and authors**

Thank you for your attention!

Literature

- Deutscher Bundestag, Referat Öffentlichkeitsarbeit (Ed.) 2002. Nachhaltige Energieversorgung unter den Bedingungen der Globalisierung und Liberalisierung. Berlin: Dt. Bundestag, Referat Öffentlichkeitsarbeit.
- Häfele, W. / Schrattenholzer, L. 1980. Modelle für Energiebedarf und -verbrauch im weltweiten Rahmen. pp. 23-34 in: Voß, A. / Schmit, K. (Ed.): Energiemodelle für die Bundesrepublik Deutschland. Köln: Verl. TÜV Rheinland.
- Institut für Energiewirtschaft und Rationelle Energieanwendung / Wuppertal Institut / Prognos AG. 2002: Szenarienerstellung. http://webarchiv.bundestag.de/cgi/show.php?fileToLoad=111&id=1040 (last access: 14.08.07).
- Labys, W. 1990. Normative Models: Survey and Prescribtions. Energy - The International Journal. Vol. 15, No 7/8, pp. 539- 543.
- Lipinski, A. 1990. Introduction. Energy - The International Journal. Vol. 15, No. 3/4, pp. 207-211.
- Mittelstraß, J. et al. 2004: Enzyklopädie Philosophie und Wissenschaftstheorie. Stuttgart [u.a.]: Metzler.