

## Research group “Socio-Technical Futures and Policies” – Our main topics of research

Socio-technical transformation processes, such as those driven by digitalization and artificial intelligence or by the transition to renewable energies and carbon-neutral transport systems, take place simultaneously at local and global levels and at the interfaces between science, politics, economy, and society. Socio-technical transformations are the processes and phenomena of societal change that result from the interaction between technical, cultural, and social factors. From the perspective of technology assessment (TA), technological innovations are the subject and result of societal negotiation processes that influence their design and application. In turn, socio-cultural structures, ways of interpretation, and courses of action are changed by technologies.

Considering the high degree of complexity of socio-technical transformations and the resulting multiple uncertainties in the knowledge about societal developments, the future becomes the cause of (sometimes conflictual) debates in the present. We therefore speak of different “futures” (in the plural), in which different expectations, forecasts, or fears are expressed and which are reflected in different political demands and measures. Against this background, TA as a provider of scientific advice to society and policy makers faces the challenge of further strengthening its relevance in Germany, Europe, and worldwide as communicator of the complexity of socio-technical transformations. In the light of these transformation processes, its fields and objects of research as well as its addressees and areas of advice are constantly changing.

TA must critically accompany society’s way of dealing with the future by analyzing interest-led negotiations of possible futures in the present (visions, scenarios, narratives, value orientations, policies, prototypes). It has to be taken into account here that problems, expectations, and concepts for action are articulated in different cultural and political frameworks at the local and global level by a variety of actors with different interests and possibilities of influence. Thus, our analyses of ongoing transformations try to capture different but interacting process dimensions. This requires the cognitive integration of several scientific disciplines. In addition, advice on possible futures must address transnational issues and problems and direct its advisory services to international actors, publics, and institutions.

In the research group, we work interdisciplinarily and with different methods and approaches of empirical research and science-based advice. To this end, we combine our expertise in sociology, science & technology studies, cultural anthropology, political science, economics, philosophy, psychology, and cultural semiotics, to name but a few. In doing so, we work along three main topics “Vision Assessment and Spatio-Temporal Conjunctures”, “Socio-Technical Problems and Sustainable Transformation”, and “TA in Global Science-Policy Constellations (globalTA)”, each of them dealing in their specific way with the challenges described:

- “Vision Assessment and Spatio-Temporal Conjunctures” deals with the further development of concepts and methods to examine, firstly, the role and impact of visions of the future and their presentation formats (e.g., discourses, narratives, prototypes) in socio-technical transformation processes and, secondly, the influence of spatial (e.g., local/global) and temporal (e.g., medium-/long-term) structures and dynamics of change in a more systematic and context-specific manner. This will result, among others, in an analysis grid that can be used as a recommendation for different interdisciplinary TA projects. The monitoring and evaluation of the role and impact of futures and changing spatio-temporal constellations in transformation processes will be developed toward context-specific advisory services. Conceptual and analytical-observational research practices are increasingly accompanied by interactive research practices to reflexively assess and interactively shape futures in dialogue with different actors and groups, e.g., in interaction with citizens or with scientists in research and development.
- “Socio-Technical Problems and Sustainable Transformation” first of all gears theories and methods for identifying and dealing with socio-technical problems to new problem situations in transformation pro-

- cesses such as converging infrastructures, the coupling of sectors (e.g., energy = electricity, heat, transport), civil security issues, and social rebound effects as a result of problem solutions. Suitable management tools for interdisciplinary projects and the transfer of knowledge to political actors are being developed. Secondly, interdisciplinary and participatory formats for the implementation of sustainable transformation processes are analyzed, developed, and sustainability programs of varying scope (from small initiatives, start-ups, or regional networks to national innovation programs) are accompanied and advised.
- “TA in Global Science-Policy Constellations (globalTA)” explores different concepts and framework conditions for TA at the international level in order to be able to establish and implement global TA projects and TA advice. To this end, we also promote the networking of and cooperation with global TA actors. This topic includes the commitment to establish shared orientation values for a TA-based knowledge policy (e.g., the sustainability goals of the United Nations). At the organizational level, we are strongly involved in the establishment of the “globalTA” network.