

# Markets, institutions, and innovation-related services

**A workshop on innovation theory and innovation processes with particular reference to climate change mitigation and adaptation**

**Hamburg, June 28-29, 2006**

This workshop aims at bringing together two broad research areas in order to explore and deepen fruitful interlinkages and initiate future collaborations:

1. We invite contributions on the achieved insights from disciplines and fields as diverse as economics, sociology, geography, political sciences, and science and technology studies.
2. We invite contributions that specifically address innovation processes in the field of climate change mitigation and adaptation.

A particular emphasis will be placed on the mediation of economic and institutional factors by innovation-related services such as, e.g., sales and marketing, public relations, legal and political consulting, and human resources management. These innovation-related services are particularly relevant when it comes to practical questions of application in specific fields such as climate change mitigation and adaptation. The workshop is designed as a starting point for several future activities ranging from academic publications in a special issue of a top journal to international research collaborations. We thus aim at attracting high quality contributions in particular from Europe and the US.

Among the confirmed speakers are Ian Miles (Manchester, UK), Thomas Ritter (Copenhagen, Den) and Frans Berkhout (Amsterdam, NL). If you wish to participate, please contact Iris Bleher ([iris.bleher@web.de](mailto:iris.bleher@web.de))

# Workshop Outline

## 1. The importance of competitive structures and innovation services

Innovation includes both technological invention and economic utilization. In economics, the diffusion of new technologies is considered to be based on the introduction to an existing market or by initiation of a new market. This process of marketization is influenced by regional and local context variables, but is also subject to transnational or global dynamics. The establishment of global standards by international organizations is one of these dynamics and worldwide strategic orientation of large corporations and their involvement in the so-called “global patent race” is another. On the other hand, a special innovative potential is attributed to some small regions and to regional networks of small and middle-sized enterprises. Moreover, local context variables are increasingly seen as crucial for the innovativeness of regions. In each of these cases, innovation processes depend on specific socio-economic factors and conditions. At the same time, there is a global search for successful models that can be copied to other local contexts.

The perspective of innovation economics provides a useful starting point for this kind of search. For a long time, innovation economics could claim to occupy an important niche, namely the explanation of innovation processes in and through economic analysis. Following Chris Freeman it has been argued that conventional economic theory considered technological change only as background variable but did not place it center stage in the analysis of economic development. However, authors have demonstrated that economic development is often intricately connected to important technological breakthroughs with key technologies such as steam power, railways, and information technology. One of the main hypotheses was that cycles of economic growth were a function of the rapid and sweeping exploitation of revolutionary technologies. This triggered a new body of comparative research on innovation systems or innovation regimes that focused on cross-national comparisons and the identification of institutional advantages. A whole range of institutional variables have been discussed, covering legal aspects (patent law and property rights), infrastructures of secondary and professional education, the organization of research and technology transfer, and finally cultural patterns and values which underlie consumer behavior as well as the willingness to invest in innovative enterprises.

These studies are based on the assumption that the enabling innovative capacities of institutional frameworks vary greatly between different national contexts. The attraction of this kind of research, therefore, also lies in an evaluation of national innovative capacities and in providing an orientation for political decision-makers by highlighting successful institutional contexts that can serve as role models. In retrospect, important changes of role models can be identified. The 1970s and 1980s carried a strong appreciation of the German production model, in particular with respect to the dual structure of professional education, and of the Japanese way of

coordinating research and development through the state apparatus, embodied in its then famous MITI (Ministry of International Trade and Industry). In the 1990s, the US model of the production and economic utilization of scientific knowledge gained recognition. It is now seen as a unique source of inspiration, and its potential for being copied in part or total has been tested in various regions throughout the world. A sociological perspective that builds on dynamics of globalization and looks at macro-phenomena with a potentially worldwide reach provides useful and complementing theoretical grounds for analyzing these processes. In this combination, the analytical potential of innovation economics can be exploited without being pre-assigned to a cross-national research design. The research perspective can be broadened to also include transnational dynamics on the one hand, and local or regional institutional frameworks on the other. By following this research perspective, both remarkable differences between countries and sweeping similarities among various innovation regimes across different national contexts can be observed and systematically analyzed. Research can then focus on the formation of geographical agglomerations which can be observed in each country; a phenomenon which is usually labelled as innovation cluster. Moreover, specificities of different economic sectors and of different material technologies can be reformulated as independent variables for innovation processes, and their importance in explaining variances within national or regional contexts can be tested. In this vein, national or regional contexts are not seen as more or less innovative per se, but it can be asked under which conditions they serve as inhibiting or promoting institutional context for innovation processes in specific sectors or for specific technologies.

The workshop uses the outlined framework to address the following questions:

- **How can the interrelations between the successful marketization of technological innovations and structural context be explained?**

The structural context includes institutional factors (such as the arrangements of labor markets, dominant organizational patterns of individual firms), and market structures (e.g. the size and volume of markets, the number of competitors, the relationship between established firms and newcomers, rates of market entrants and –exits). The marketization of innovations can entail both the emergence of new markets for hitherto unavailable goods and the evolution of existing markets through innovative stimuli that stem from new components or new procedures. An important aspect here is product diversification that leads to a growing number of markets for increasingly specific products. However, the tendencies of product (and market) diversification are counteracted and partly compensated by the spatial expansion of markets. In the automobile industry, for example, the observed patterns have become more or less global in reach, and, in a similar vein, other industry have experienced an upgrading from local to regional or national markets, which also supports the general point that once geographically

separate markets have become integrated by processes of expansion. In each of these cases, important questions arise concerning the interactions of market structures and the institutional capacities to make economic use of technological innovations.

- **Which innovation services are crucial for the development and marketization of innovations, and how do they function in specific innovation regimes?**

The generation of new knowledge and the provision with a sufficient capital flow to invest in the development of the new product are crucial services which often have been described as preconditions for the development and marketization of new products. By contrast, other requisites have been considered less frequently as services that are necessary for successful innovation processes. One example of such services is support to obtain consumer acceptance or more generally the social acceptability of a product. Yet another example is assistance in coping with the relevant legal and political framework, e.g. to comply with regulatory requirements or to exhaust all avenues for tax breaks and government aid. The growing complexities of innovation processes and the successful marketization of inventions lead to an increasing demand for such innovation services. Small and medium sized enterprises in particular are less likely to be capable of performing these services on their own account, however crucial their potential role for the innovativeness of whole regions might be. The supply of innovation services and their factual usage are therefore critical factors for innovation processes. At the same time, the development of markets for innovation services is itself a highly complex process. It often depends on the institutional intermediation of demand and supply. As a response, the development of several types of intermediaries can be observed. In some cases the public sector harbors these developments; in other cases, private businesses perform services such as the provision with venture capital. The evolution of intermediary institutions varies across sectors and geographical contexts. The workshop will try to demonstrate how the above-mentioned socio-cultural or legal and regulatory frameworks influence the volume of demand and supply for services such as the provision of scientific knowledge, coping with impacts of technological standardization, dealing with legal norms and property rights issues, consideration of marketing requirements, financial consulting and so forth. These services may be considered to determine the market responsiveness for innovations. The provision with innovation services is therefore a crucial function of innovation systems or innovation regimes.

## **2. Applications in the field of climate change mitigation and adaptation**

The impacts of broad institutional and economic structures and the availability of innovation services can be illustrated best by applying the perspective to specific problem areas. For this workshop we have chosen climate change as a problem area in which negative externalities of technologies become apparent, and in which regulation creates a demand for technological and procedural innovations in several fields. Though the need for a better understanding of innovation processes is most pertinent in this case, there is a huge gap between theoretical debates and practical applications. The goal of this workshop is thus to generate knowledge and discuss insights which may contribute to closing this gap by asking what research perspectives and what practical applications may be derived from a theoretical perspective which highlight on institutional factors and on coping with these factors by the use of innovation services.

Climate change refers to two different sorts of innovation: innovations which contribute to a mitigation of climate change, and innovations which aim at an adaptation to new climate conditions. Innovations in these fields may cover a variety of technologies ranging from new transport systems and energy production to biotechnological innovations in agriculture and medicine. Though there is no clear-cut path, the emergence of an international regime on anthropogenic climate change will lead to a “carbon constrained world” in the mid- to long-term future.

- By mitigation we mean all measures that contribute to a reduction in the emission levels of greenhouse gases, and thereby reduce the risk of global warming and its expected adverse impacts. Innovation seems to be the key to a successful strategy of mitigating climate change in the long run. Some technologies are available in principle but meet various barriers on their way of being developed into mature products and being broadly used in the economy. Other, more radical solutions for climate change mitigation are yet to be developed. This is pertinent in sectors like energy, transport, and housing.
- Adaptation refers to increasing the technical as well as institutional capacities to adapt to adverse effects of climate change, e.g., to rising sea-levels and related problems of inundation or land loss, or to economic changes due to climatic shifts in mountain regions used for winter sports and recreational tourism.

The workshop is neither built on the idea that speakers should necessarily be experts both in the field of innovation theories and specific innovation processes relevant to the problem area of climate change. Nor do we expect presentations which deal with both issues simultaneously. Rather, we seek to organize a process in which speakers from one field will systematically comment on, and ask questions to, speakers from the other field, and vice versa. For developing a better understanding of innovation processes, climate change mitigation and adaptation may be a promising focus because the preconditions and requirements for innovations are far reaching. For an appropriate understanding of innovation processes in this field, on the other hand,

the institutional perspective on innovation processes may offer important analytical insights. The ultimate goal of these mutual exchanges is thus to develop common perspectives that motivate joint publication or research ideas and projects.