

Workpackage number: WP 2.1		Start date or starting event: month 2					
Workpackage title: <i>Public Science and Industry Link - Funding, Organisational Conditions and Outcomes</i>							
Participant id:	NIFU-STEP	SPRU	IWH				
Person-months per participant:	8	5	2				

Objectives:

The overall objective is to increase the understanding of the link between the public funded science systems and industry. The following research questions will be answered:

- 1 How has the funding of public science changed and how important are these changes for the characteristics of the research carried out?
- 2 What are the main organisational conditions and institutional arrangements that facilitate the link between public science and industry?
- 3 What are the main outcomes and characteristics of specific public science-industry arrangements?
- 4 What are the main policy implications from the analysis?

Description of work:

- 1 For the analysis of the changes in university funding and the importance of these changes for an improved competitiveness we will use the data for selected countries (including Germany, UK, Norway, Czech Republic, Hungary, Italy) provided by the 'Changes in University Incomes' project (22537-2004-12 F1ED SEV NO) which is coordinated by NIFU-STEP. The database provides information on selected European higher education institutions with respect to universities' income, allocation of funds to research, and characteristics of research activities (available from October 2005). In U-Know, particular emphasis is placed on the analysis of correlations between detailed sources of funding and the characteristics of the research carried out (e.g. public-private partnerships).
- 2 In order to research the role of the organisational conditions and facilities in universities and other public research institutions that promote or restrain interaction between science and industry, the focus is on the organisational condition such as the administration system, the curriculum, incentive systems and regulations for contract research and intellectual property rights, and facilities like technical transfer offices, science parks and centres of entrepreneurship will be analysed. U-KNOW will map technology transfer strategies, policy measures and organizations in selected countries and give an analysis of different approaches. The research team identify examples of good practice in the context the different national innovation systems. With regard to incentive structures the focus is on incentives rewarding publication, citations and patents. This study will compare national practices as regards how universities, colleges and research institutes reward industry oriented activities [and teaching] career wise and synthesise evaluations covering the effects of such alternatives. This is supplemented by interviews with researchers, policy makers and stakeholders. Based on the database produced in the European University income project we will compare relationships with innovative companies and structures of technology transfer, protection of IPR and dissemination practices of scientific results. Here we will also synthesise the results of existing studies on the topic for a state of the art delivery. Additionally we will select ten universities from the data set and perform interviews with all deans of these universities.
- 3 To analyse the third objective looking at the outcomes and research characteristics of specific science-industry links, the research team will look at the scope and intensity of different types of knowledge transfers to industry:
 - the scope of contract research paid by firms;
 - an overview over European practices in patenting and licensing of research results;
 - the extent of academic patenting and licensing in Europe;
 - co-operation with industry indicated by common publications or patents;

- sales of services, data or software to industry;
- the formation of joint ventures and spin-off companies.

For the patent study the team utilizes both domestic patent data and EPO data. Evidence from recent patent studies on Finland, Italy, Germany and Norway is synthesised from this new perspective. A bibliometric approach is applied for analysing co-authorship relations between science and industry for selected countries. With regard to spin-offs, the team distinguishes between different phases in the firm life circle of successful university spin-off companies in science based sectors. The determinants of growth and survival of university spin-offs are analysed contrasting spin-offs in the science based sectors with spin-offs in more traditional sectors. Again the University income database is a formidable source of information, but also information from the EU Innovation Scoreboard about knowledge creation and innovation outputs, and other existing studies about spin-off companies is used as a basis for new and original analysis.

Moreover, research in this workpackages delivers input for later research in the project on social-cultural attitudes. The opportunity will be seized to conduct interviews with the deans of selected universities exploring attitudes toward commercialisation activities at European universities input for (WP 3.3), attitudes towards academic patenting (input for WP 3.2) and entrepreneurial education (input for WP 2.2). We will also address connections between universities and local and regional intermediate organisations facilitating the mutual transfer of knowledge by including questions about such organisations in our interviews with the deans.

- 4 In order to achieve the forth objective, the main policy implications from the analysis of changing funding patterns, organisational conditions, institutional arrangements, respective characteristics of the research as well as experiences with local/regional intermediate organisations facilitating mutual transfer of knowledge are outlined. This policy oriented approach could strengthen the steering capacities of universities and intermediate organizations in terms of monitoring processes and outcomes of the science-industry links (also as input for WP 2.3, 3.2, and 3.5).

Deliverables:

D13 *Report on the Industry-Science-link- Funding, Organisational Conditions and Outcomes.* Responsible:

A. Klitkou (NIFU-STEP) (month 20)

- NIFU-STEP: Summary on State-of-the-Art in Researching the Industry-Science-link (month 20)
- NIFU-STEP, SPRU: Meta analysis co-authorship and co-inventorship between science and industry (month 14)
- NIFU-STEP: Summary of funding, organisational conditions, attitudes, and characteristics of research outcomes of the science industry link in selected EU countries (also as input for WP 3.1, WP 3.3, 3.5) (month 20)
- NIFU-STEP, IWH: Patenting and IPR regulation at European universities, and higher education in the field of IPR (also input for WP 3.2) (month 20)

D14 *Paper on policy implications from evidence on funding, organisational conditions, and characteristics of research outcomes of the science industry link in selected EU countries* (also as input for WP 3.5)

Responsible: NIFU-STEP, SPRU (month 24)

D15 *Policy-briefing/or open workshop: funding, organisational conditions, and the science-industry link.*

Responsible: NIFU-STEP (month 24)

Milestones and expected results:

- 7 The relationship between changes to funding of public science and the research characteristics in a knowledge based society