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RESEARCH

Human Resources Program

“DOCTORAL SCHOOLS”

Background, Legitimation and Conditions

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Austria on the path to achieve a R&D quota of 3% ...

Research and development (R&D) is a key factor of technological change, and investing into technological know-how is one of the key determinants - next to the availability of qualified human resources - of long-term economic growth.

In the last years, Austria was undergoing a remarkable change:

- **R&D spending** has grown **dynamically** from 1.4 % of GDP in 1993 to 2.35 % in 2005 and 2.43 % in 2006. In terms of the level of R&D spending, Austria (together with Denmark and Finland) had **one of the highest growth rates** among industrialized countries in 1993–2002.
- A strong focus has been on **bottom-up schemes** characterized by their breadth of action, and on the very generous indirect schemes in the form of tax breaks for R&D so that the **R&D basis** (measured in terms of the number of enterprises doing R&D) has broadened considerably.
- Established technology and structural programs have put much attention to build up a “**culture of co-operation**”, especially between scientists and the business community.

The need for qualified human capital

BUT: Investments in R&D are only one side of the medal enforcing innovativeness and competitiveness of companies. R&D expenditures are mainly dependent on two factors:

- Highly qualified human resources and
- Performance of scientific research (excellence).

Consequently, highly qualified human resources are essential for the process of innovation and advancement of science in two ways:

- (1) To provide adequate personnel for doing R&D and
- (2) To make use of technical progress through adaption and diffusion of new technical developments in order to build up absorptive capacity.

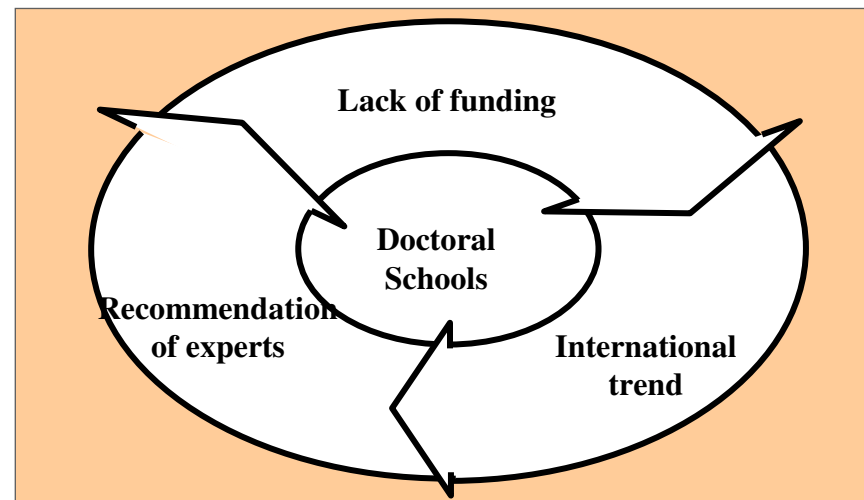
Additionally, the whole process gets enhanced by the commitment to the Barcelona and Lisbon process.

The situation in Austria

There is no funding program targeted towards R&D and innovation without a human resources component.

The study of Schibany and Jörg (2005) indicates that Austria already has a **wide range of funding initiatives** implying high complexity and low transparency.

Nevertheless, the study of Nones and Schibany (2006) on behalf of the Federal Ministry for Education, Science and Culture on funding initiatives targeted towards research careers at universities shows that there is a **significant lack of structured doctoral training** in Austria.



Good practice examples of doctoral training in Europe

Good practice examples

- **Research Training Groups and Graduate Schools of the DFG, and International Research Schools of the Max Planck-Gesellschaft in Germany;**
- **Program Pro*Docs in Switzerland;**
- **Doctoral Training Centres in the UK;**
- **Graduate Schools in Finland;**
- **Nordic Graduate Schools in Scandinavia;**
- **Research Schools in the Netherlands.**

Major characteristics

- **Established at universities for a specific time period;**
- **Offering a co-ordinated study and research program run by scientists;**
- **Having an interdisciplinary focus;**
- **International recruitment of students and fostering mobility;**
- **Fostering internationalisation by networking in the scientific community;**
- **Enhancing training in generic skills.**

Challenges of a new Human Resources Program

1. **Being based** on various, already existing supporting and funding programs in order to benefit from experience and adapt or even widen objectives.

Example: Doctoral Programs (DK) – Doctoral Schools

2. **Being open** towards other supporting and funding programs (especially, for those fostering the building up of excellence) and being flexible to adequately meet the demand of other programs and, thus, to avoid duplications.

Example: K1 and K2 Centres

3. Establishing an **internationally visible** Human Resources Program, designated as Doctoral Schools, should succeed in a qualitative added value, and therefore show up two characteristics:

- **Critical mass and**
- **Financial, long-term stability.**

The Doctoral Programs (DK) of the Austrian Science Funds (FWF) as a starting point for Doctoral Schools (1)

- **Target group**
Scientists of any discipline who are working in **Austrian universities and non profit-making, extra-university research institutions.**
- **Goals**
 - creating **centers of education** for young, highly qualified academics from the national and international scientific communities;
 - promoting the formation of centers of scientific excellence at Austrian research institutions and
 - increasing the continuity and the impact of such centers.
 - **A DK must be attached to a university.**
- **Length**
12 years, interim reviews every 3 years decide on continuation.
- **Level**
5 to 20 contracts for PhD students, 1 to 2 postdoc positions, a 100 % position for administrative support, as well as money for consumables, travel and other costs.

The Doctoral Programs (DK) of the Austrian Science Funds as a starting point for Doctoral Schools (2)

➤ Requirements

- A Doctoral Program is a unit in which **several scientists** (5 to 12 at maximum) whose productivity is of internationally high quality join forces in an organized way to train and educate PhD students.
- The program is based on a **clearly defined research context** of midterm duration that if possible transcends normal disciplinary borders.
- Doctoral Programs should primarily be established in **close association with existing centers of excellence** (SFB or NFN).
- There have to be available **framework conditions** (space, laboratories, equipment) for scientific work of high quality.
- The participating research institution(s) have to guarantee that training within the DK will be **accepted for the awarding of PhD degrees**.



Homepage of the FWF:

<http://www.fwf.ac.at/en/projects/dk.html>

The concept of Doctoral Schools – some more background

- **Extending the Doctoral Programs of the FWF**
- **Structured doctoral education with two major features**
 - supervision that is state-of-the-art (i.e. a minimum of 2 supervisors) and
 - co-operative research activities on a high scientific level.
- **Targets enforced by the Bologna process**

based on the aim to improve the culture of graduation in Europe:

 - improving framework conditions for graduates;
 - reducing time for graduation;
 - lowering age of graduation;
 - enforcing mobility of European students and
 - gaining students from abroad



The program *Doctoral Schools* has to be implemented as a special **training program** for graduates, not as a funding program for research activities done at universities! Two major success factors are a prominent faculty and the building up of critical mass.

The concept of Doctoral Schools – conditions (1)

- **Promoting the profile of Austrian universities**
Representing and building up scientific capacity in special scientific fields at university.
- **Enforcing inter- and multidisciplinary research activities**
- **Providing a structured training program for PhDs**
To improve the qualification profile of PhDs the program includes:
 1. research program led by a scientific committee and
 2. study program that supports the personal development of the doctoral candidates by training in generic skills and having teaching experience.
- **Supporting national and internal co-operation** with universities, public research institutions and companies
- **Enforcing internationalization** through international recruitment
- **Gender balance**
This should be achieved on the basis of an equal opportunity policy.

The concept of Doctoral Schools – conditions (2)

- **Commitment of the applying university**
As Doctoral Schools make a significant contribution to the university's profile, the applying university must make a clear commitment to support Doctoral Schools being established. Furthermore, there is the challenge to sign up the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.
- **Setting up a organizational structure for the Doctoral School**
- **Providing career perspective for early-stage researchers**
Young people having decided for a research career need perspectives; therefore, it is essential to integrate the Doctoral Schools in the national strategy of excellence. In this view the FWF is going to take up the program Doctoral Schools in its Initiative of Excellence.
- **External monitoring and evaluation**
The FWF will manage the program Doctoral Schools; therefore, the FWF is responsible for the external monitoring and evaluation.

The concept of Doctoral Schools – funding & outlook

Type and Extent of Funding

Support in the Doctoral Schools should compass funding for:

- doctoral students (postdocs and research students)
- consumables
- visiting professors
- smaller conferences, workshops and travel by doctoral students
- sabbaticals by participating university teachers
- co-ordination work
- publication costs
- professional recruitment
- child care etc.

Outlook

The FWF is just finalizing the concept of Doctoral Schools as one part of its Initiative of Excellence but also the universities themselves are quite ambitious to enforce education in a more structured way. So, looking forward the structured doctoral training will be strengthened to a remarkable extend in Austria.

Thank you for your attention!

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