



HRK

Collaboration between Universities and Society, Business & Industry in Research & Innovation

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Key Role of Universities: Transfer and Cooperation with Society and Business/Industry

- Universities develop and define their key role in **constant dialogue** with society. They render services for the **society's scientific, economic, societal and cultural development**.
- The exchange is based on the universities' **core competences in research and teaching** which are strengthened by this exchange.
- Different **types of universities** complement each other (universities, universities of applied sciences, universities of arts and music).

From Basic Research to Development and Application

In 2015, the **total income** of **higher education institutions** was **€ 34 bn.** (Additionally, there was roughly € 16 bn administrative income of university hospitals.)

- As part of this € 34 bn budget, German universities spent **€ 15.3 billion** on **research and development**.
- **R & D third-party funding by business/industry** amounted to only **€ 1.4 bn.**
- Still, the **universities** are the preferred partner for business – science collaboration in Germany (3/4 of collaborative activities). In this respect, German universities hold a **top position worldwide** (Source: OECD 2016).

Close collaboration creates Win-Win Situations: Input from Theory to Practice and Vice Versa

Close link between academia and industry in **academic career paths** ⇒ Long-lasting networks are established

- **At the Technical Universities, particularly in the Engineering Sciences** (Generally, 50 - 60% of engineering researchers have been in industry before.)
- **At Universities of Applied Sciences:** Appointment of professors from industry/practice as a rule

Close collaboration creates Win-Win Situations: Input from Theory to Practice and Vice Versa

- **Researchers benefit:** Access to actual industrial research problems, access to industrial research infrastructure
- **Universities benefit:** Research funding, shared professorships
- **Students benefit:** Internships and BA or MA theses with companies, diversified career options in academia, industry or administration
- **Companies benefit:** Enhancement of innovative strength and access to the university's research capacity, human resources

Strategic partnerships between universities and larger (multinational) companies

Example: BMBF Project Carbon2Chem

- Making **steel production carbon neutral** by recycling the produced CO₂, turning it into manure, synthetics or fuels (thyssenkrupp: 10-13 m tons p. a.)
- **Pilot site** starting production in spring 2018, proof of technical and economic feasibility within ten years
- **Investment** of approx. € 100 m until 2025; Federal Ministry of Education and Research contributes € 62 m
- **Consortium of universities and industry:** thyssenkrupp (lead), BASF, Evonik, Linde, Siemens, VW, KIT, U Bochum, RWTH Aachen, TU Kaiserslautern, FhG-ISE, MPI-CEC, MPI-Kohlenforschung and others

Small- and medium-sized companies as the strongest R&D partners of German universities

Example 1: StreetScooter

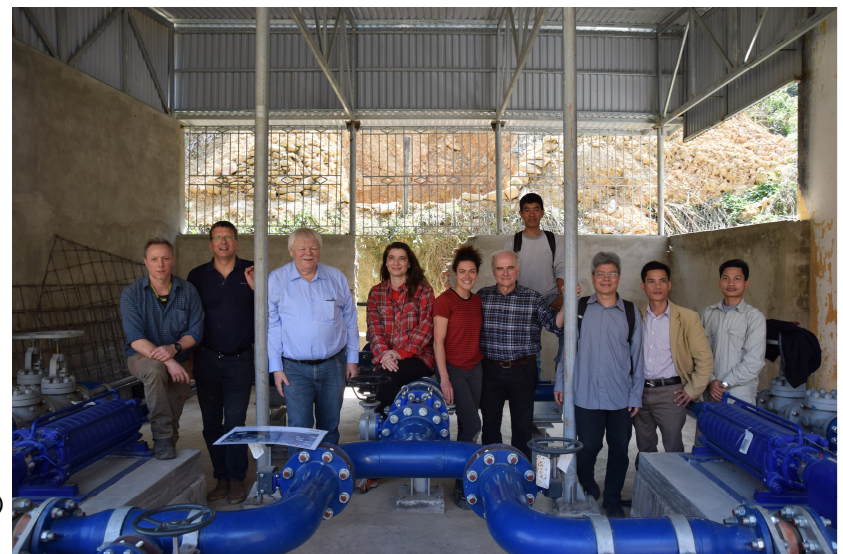
- Development and production of **utility vehicles** with **100% electric drive**
- **Leading producer** of electric utility vehicles in Europe; focus on solutions for the delivery of the so-called „last mile“
- Founded in 2010 by **RWTH Aachen University** together with **80 SME**



Small- and medium-sized companies as the strongest R&D partners of German universities

Example 2: BMBF Joint Projects KaWaTech (2013- 2016) and KaWaTech Solutions (2016 – 2019)

- Project region of **Dong Van Karst Plateau** in the north of Vietnam
- Developing and testing **innovative solutions** for karst water supply: Implementation of a pilot water pumping plant to guarantee **sustainable water supply** for approx. 10,000 people
- **German and Vietnamese partners** from universities, research institutes, government agencies and industry: KIT, U Bochum, companies Klotz, KSB, Disy, GSL, Hydro-Eletrik and others



Points to Consider

- **Academic standards** must be met; **quality assurances** lies with the universities, (incl. appointment of professors)
- **Clear rules** and **regulations** are needed, also with regard to **publications** and **IPR**.
- **Assessment of the research** must be possible (data must open to research); **publicly-funded research** must be **published**
- **Good scientific practice** needs to be followed
- **Reliable communication** towards the public is key

Thank you!
ご静聴ありがとうございました

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