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## TEACHING SUSTAINABLE REAL ESTATE MANAGEMENT: EXPERIENCES FROM THE HTW BERLIN

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Recent studies highlight the big impact of the building industry on CO<sub>2</sub> Emissions in Germany but also more specifically in Berlin. In Berlin, around 45 % of all CO<sub>2</sub>-emissions come from buildings (heating energy, warm water), because buildings are responsible for a huge part of the total energy consumption. In addition, new construction leads to the increase of sealed land. Furthermore, the social issues of real estate markets (such as the lack of affordable housing or gentrification processes as consequences of real estate investment activities) are central in recent debates on urban development in Berlin.

These brief examples demonstrate the societal need to consider aspects of sustainability in real estate management. However, this sustainability shift is currently hardly reflected in study programmes of real estate management. Existing study programmes focus often on business administration issues, the fundamentals of economics and lack an interdisciplinary perspective. In the following, I will describe some of the activities recently implemented at HTW Berlin regarding the teaching of sustainable real estate and I will highlight some of the problems, which we encountered while implementing those activities. As a conclusion, I will present some ideas, on how to proceed with teaching sustainable real estate management.

The real estate management programme of HTW Berlin is a 7-semester bachelor study programme. Each year, between 40 and 50 students start the programme. Most of the students already have practical experiences in the real estate sector, before starting the study programme. The graduates of the study programme work in different field of real estate management such as project development, broking

companies, banking and finance institutions and also for housing companies. The following activities have been implemented in order to include issues of sustainable real estate in the current curricula.

First Activity: Research-Practice Projects with sustainability foci

The real estate study programme of HTW Berlin has a strong practice orientation. Students in the 6<sup>th</sup> semester are working on a so-called practice project in which they develop ideas or concepts for real estate companies. One example of how to include issues of sustainable development was a research-practice project which was implemented in cooperation with the Berlin-based housing company GEWOBA. The students had to develop concepts and ideas for a “housing laboratory” at Bülowstraße 90. The task was to develop ideas on how to transform the existing building block in a state-of-the-art sustainable building, which fulfils highest ecological and social standards. The students started to develop ideas for sustainable waste management, for improved bike facilities and a more sustainable use of the existing guest apartments in the building. The concepts of the students are highly relevant for the housing company and some of ideas of the students are now being implemented. The students learned to include a sustainability perspective and to discuss with a housing company what kind of sustainability elements are implementable.

Second activity: Cooperation with DGNB

Another activity is the cooperation between the HTW and the DGNB – Deutsche Gesellschaft für Nachhaltiges Bauen. DGNB is the leading institution for certification of sustainable buildings in Germany. The real estate programme of the HTW Berlin became member of the DGNB-university cooperation. Part of this cooperation is the easier access for HTW students to the certification labels of DGNB and the adoption of DGNB-related content in existing HTW study courses. The students have the possibility to pass an additional exam, which opens them the possibility to become a DGNB registered professional.

Third activity: Sustainability debates

The third activity are dialogues on sustainable development and especially the Agenda 2030 of the United Nations and the Sustainable Development Goals (SDGs). In several of the existing study modules of the study programme, we included general content on sustainable development. This way, the students get a general idea about the sustainability discussions and learn why the real estate sector plays an important role in achieving the Agenda 2030. Furthermore, trade-offs between the different sustainability goals are discussed. This is especially of high interest for the real estate sector, where conflicts between energy-efficient renovation and the affordabilities of rents exist.

Those activities show that there are several way of including issues of sustainable real estate in the existing study programmes of real estate management. At HTW, this sustainability shift was realized without changing the general structure of the existing programme. Furthermore, we teach sustainable real estate not in one specific subject of study, but try mainstream sustainable development in various subject of studies. In our opinion, such an approach is necessary because sustainable

development plays an important role in different fields of real estate management such as real estate valuation, project development or building theory.

We see a huge interest from the students in sustainable development and most of the students consider sustainable development as an important issue in their future working area in real estate management. In the future, we need to think if more profound changes in the study programme are necessary such as the development of the subjects of study, further cooperation with companies already active in sustainable real estate (such as companies realising timber construction). One important future challenge for our study programme is the question of how to include the (besides sustainability) second major societal trend, digitalisation in our teaching. Contents such as Sustainable Smart Cities, Smart Homes and digitalization of buildings will therefore need to play a more important role in the study programme real estate management at HTW Berlin.

## **DEVELOPMENT OF DUAL EDUCATION SYSTEM OF MEDICAL PHYSICISTS IN REPUBLIC OF BELARUS**

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The medical physicist is a new profession in the twenty-first century. Its appearance is caused by the development of a high-tech branch of medicine - medical radiology. The profession "medical physicist" was included in the International Standard Classification of Occupations ISCO-08 in 2008. Currently, the world medical community numbers about 25,000 medical physicists. Medical physicists are highly skilled professionals in the application of the methods and concepts of physics to medicine. They work in clinical, research and academic institutions.

In the Republic of Belarus, the profession "medical physicist" received an official status in 2018. The training of medical physicists began in 2013 at the Department of General and Medical Physics of the International State Ecological Institute named after A.D. Sakharov Belarusian State University. The first graduation of specialists took place in 2018. During the period 2018-2021, 74 medical physics of the first and second stages of higher education were trained, while the needs of medical centers equipped with sophisticated modern equipment, the park of which is constantly growing, in the near future is about 400 specialists.