



Design and development of technical-biological erosion protection systems

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A lack of available space as well as the gradually expansion of infrastructure networks led to an increase of steep-slope constructions in alpine areas. This fact comes along with the need for instant slope protection and erosion control to ensure long-term slope stabilization and reduce the erosive potential of surface runoff. Innovative civil engineering structures using technical facilities for structural safety such as mats, nets or grids are applied more and more. Further increase of steep slope stability is achieved by combining technical facilities with the benefits of an adequate vegetation layer. However steep slopes provide extreme environmental conditions particularly with regard to water availability, extreme temperatures, soil conditions or nutrient supply. Due to these conditions there is still a lack of knowledge to install an efficient and sustainable vegetation layer covering steep slopes. A research project has been started in the frame of the the alpS – Centre for Climate Change Adaptation Technologies to design and develop innovative, sustainable and technical-biological erosion protection systems for steep slopes.

The project started in October 2010 and is at present in an early project stage (overall duration: 3 years). It is conducted in close collaboration with venture partners whereas the focus is on the optimization of technical-biological erosion protection systems by identification and determination of the main selection criteria and its implementation into planning and execution processes. An holistic view including all the specific environmental factors as well as protection purposes should serve as the basis for an appropriate system selection which meets slope stability, ecological compatibility, sustainability and economical requirements. However local effects on the specific micro-habitat caused by Global Climate Change require integrated comprehensive strategies to keep up long-term functionality. Especially the biological system component (vegetation) is highly affected by changes in the micro climate. Key objectives are the development of a decision support matrix for the most relevant vegetational planning parameters and further design standards. At the conference, analysis of problems and the strategic planning of the research activities will be presented.