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SESSION 8
Restoring Hydro-Morphological Processes

The application of soil bioengineering techniques as a part of a modern river engineering approach

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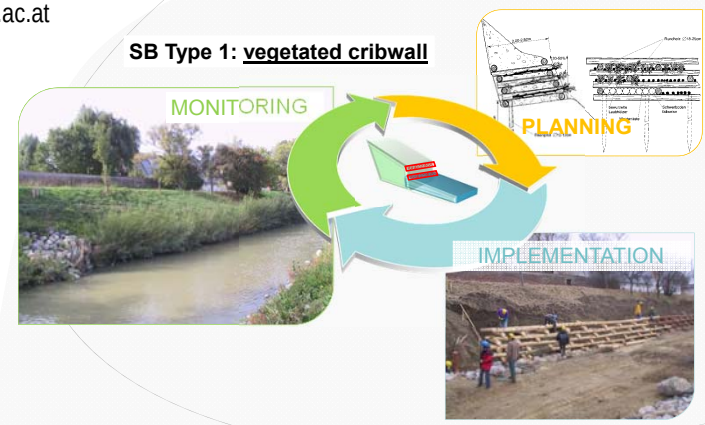
- **Background:**

Today a modern overall river engineering approach is becoming state of the art, in doing so additionally to technical functions, ecological and socio-economic effects such as water quality, terrestrial and aquatic habitats for plants and animals will be provided. The presence of appropriate riparian vegetation on the banks of the main channel and on the floodplain is part of such an approach and highly relevant due to their contribution to bank protection and soil and habit conservation. The riparian vegetation is furthermore important as an intersection corridor between aquatic and terrestrial habitats. Soil bioengineering is a helpful technique and often used for initiation and design of riparian vegetation structures.

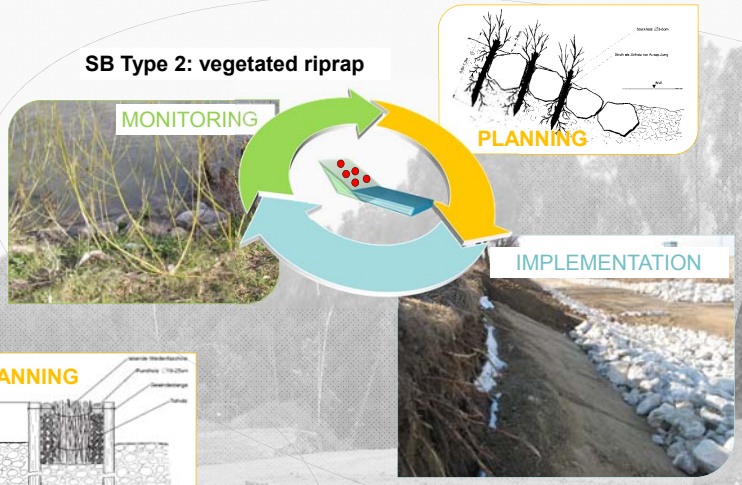
- **Methods and Results:**

The results are living "soil bioengineering systems" providing **technical** as well as **ecological** and **socioeconomic** functions. The implementation of soil bioengineering requires interdisciplinary methods to optimise the restoring hydro-morphological processes. For the planning and implementation of soil bioengineering a basic knowledge of hydraulics and morphology is necessary and helpful to facilitate the interdisciplinary planning process of different working fields, which are involved in river engineering projects. Four different types of soil bioengineering will be introduced taken into account their specific spatial performances.

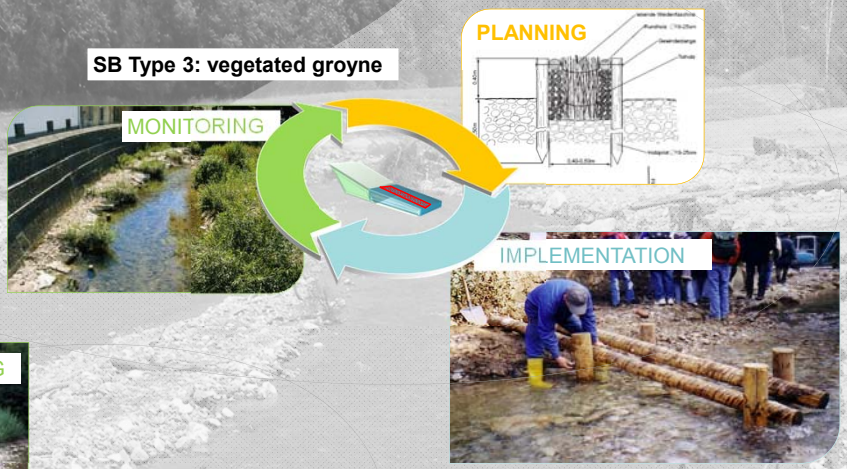
SB Type 1: vegetated cribwall



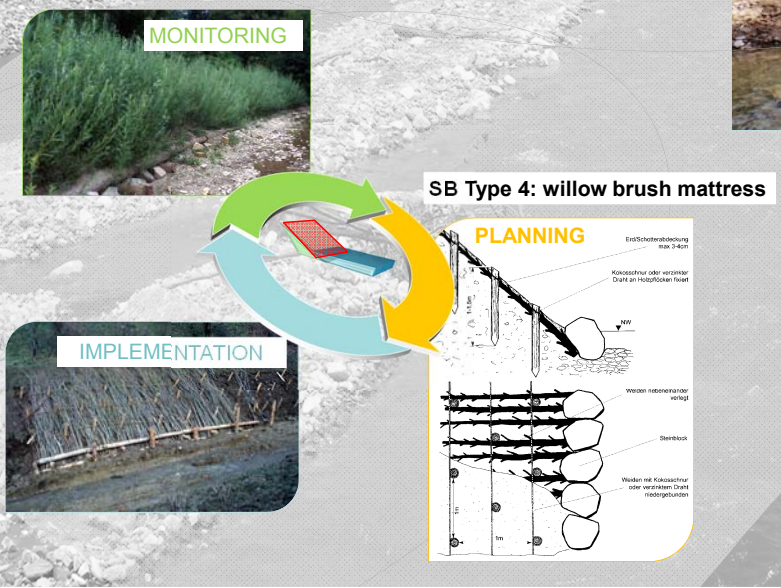
SB Type 2: vegetated riprap



SB Type 3: vegetated groyne



SB Type 4: willow brush mattress



- **Conclusion:**

All engineers working on planning and implementation of soil bioengineering systems as near nature river structures have to consider the bioengineering properties of plants. Local availability, easy propagation and the accordance with the location are general preconditions for soil bioengineering work independently of the location of the construction site. Additional to these general preconditions the specific conditions of adaptive qualities of plants against flooding periods, mechanical and hydrological and hydraulic effects of riparian vegetation have to be taken into account by soil bioengineers.