

ABSTRACT

Flooding is a natural process that arises because of the occurrence of extraordinary rainfall events; in addition, flooding plays an important role in the shaping of the natural environment. The human decisions taken in the past with regard to the location of settlements and land uses are the main reason of the damage caused by floods to the property and people; hence, the susceptibility of land to flooding becomes material of planning consideration. This master thesis is focused on how the governments of the European Union and Mexico deal with flood risk and the mitigation measures after the occurrence of flooding. The environmental issues that are related with the river basin management and how they can be addressed to a sustainable development are discussed as well. The purpose is to find the main similarities and differences between the topics mentioned above. On the basis of this comparison, the advantages and disadvantages, that the river basin management and flood risk analysis in Europe has over the river basin management and flood risk analysis in Mexico, are highlighted. Two case studies are developed to reach this objective: The International Odra River District in Europe and the Tuxpan River Basin in Mexico.

Even though the river basin management covers many different issues, this paper goes more into detail on the description of the implementation of flood forecasting systems (carried out by DHI and based on the FLOOD WATCH flood forecasting system) for the Upper and Middle Odra Basins and the flood forecasting of the Tuxpan River Basin (based on GIS and HEC-RAS analyses). In addition, some environmental issues that are directly and indirectly related with the flood risk and river basin management are described. The theory and engineering techniques that are taught in the Master course of Infrastructure Planning (MIP at the University of Stuttgart) were applied for the development of this master thesis.