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Abstract of Master-Thesis

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Hydropower and Socio-environmental Conflicts – The case of the *São Luiz do Tapajós* project in Brazil

Hydropower is the most significant renewable source for electricity production worldwide. According to the *International Energy Agency* (IEA) it accounted for 16.2% of world's electricity generation in 2012. Unlike other renewable sources, which sum up to a total of only 5%, hydropower is a well-developed technology which produces electricity to comparable or even lower prices than fossil fuels and nuclear power and promises high economic profitability. Its highly flexible operation is a strong asset for electric systems and pump-storage plants are by now the only available way to store large amounts of electricity from intermittent sources such as wind and sun. Additionally, hydropower reservoirs can contribute to regulate water flows for fresh water supply, flood control, irrigation and navigation.

On this background, the IEA foresees a doubling of worldwide hydropower capacity until 2050 and states:

> *"Most of the growth in hydroelectricity generation will come from large projects in emerging economies and developing countries."*
>
> (IEA, 2012: "Technology Roadmap Hydropower", OECD/IEA, Paris, p.5)

Nevertheless, hydropower has also been one of the major economic activities leading to heavy socio-environmental conflicts, and it were in many cases specifically *„large projects in emerging economies and developing countries"* which caused most widespread unrest and opposition. The *World Commission of Dams*, which published its report "Dams and Development" in 2000, estimated the number of displaced people by dams worldwide at somewhere between 40 and 80 million and stated that many large dams didn´t hold to the promises of performance related to them.

In Brazil, hydropower is traditionally the dominant source of electricity generation. As the country still holds large unexplored potential, several large hydropower projects are currently being planned and implemented, in order to meet the growing electricity demand. Most of them are situated in the northern Amazon region, implying large distances to the consumption centers and difficult socio-environmental conditions. Hence, those projects are subject to controversial discussions and political and social struggles.

In the present work, the relation between the technological solutions adapted to hydropower and the potentially related conflicts will be discussed and analyzed. Therefor two theories will be presented and applied: the Critical Theory of Technology and a theory about dominant tendencies of environmentalism. Special attendance will be given to the concepts of "Environmental Justice" and "Ecology of the Poor", which are often evoked in resistance movements to infrastructure projects. These theories help to understand and analyze the conflicts on hydropower.

Subsequently, the *São Luiz do Tapajós* hydropower project, with a foreseen capacity of 8,040 MW one of the biggest dams planned in Brazil, will be presented and discussed in the light of the cited theories.

Central goal of the study is to answer the following questions:

- Is the project *São Luiz do Tapajós* in line with international recommendations of dam building?
- Is the project *São Luiz do Tapajós* in line with principles of Environmental Justice?
- Can technological innovation in hydropower overcome the socio-environmental conflicts around it?
- Which perspectives for *São Luiz do Tapajós*?

The study began in June and is foreseen to be finished until the end of October 2015.

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