

Master's Thesis  
**River Science in Tomebamba river in Cuenca, Ecuador: State of the art & outlook**  
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**Abstract**

The objective of this study is to analyze the current state of water quality in the Tome-bamba river based on the existing literature and own field work, from a sociological and environmental points of view. This study was carried out in Cuenca city, located in the Andean south region of Ecuador, province of Azuay. Among the four rivers that the city has, the Tomebamba river was the chosen one, due to its social value for the city, in three different locations along it. For the sociological point of view, a semi-structured survey was conducted to know the perception of the citizens of Cuenca regarding the river management policies. Additionally, the survey explored the population's perception about the ecosystem conservation and the ecosystem services that the river provides. A second survey was conducted to assess the fishing activities along it. From the environmental point of view, the quality of the water was analyzed by using the Ephemeroptera, Plecoptera, Tricoptera (EPT) taxa index. It is based on the richness of the macroinvertebrates that are sensible to pollution. Moreover, with the survey it was investigated the applicability of the *sumak kawsay* concept in the management of the river, and if it helps achieving the Sustainable Development Goals defined by the United Nations in 2015. The results showed that the majority of the citizens have environmental awareness concerning the environment conservation and the ecosystem services that the Tomebamba river provides. Furthermore, people are open to learn more about environment conservation and indigenous knowledge with the objective to preserve nature. Likewise, the perception is that the current state of the river is good, but the communication from the public department in charge of the river management with the society could be improved. In addition, the results revealed that the concept of *sumak kawsay* provides an opportunity for having sustainable river management due to its different manner of governance, which sets nature and humans at the same level, living together in harmony. Additionally, it can be linked with the concept of ecosystem services and with the Sustainable Development Goals. Finally, it was found that the quality of water degrades while passing through the urban area of the city, since in the upper part of the river the EPT index was 65% and in the lower part the EPT index was 16%. Simultaneously, it was found that the macroinvertebrates that are not sensitive to pollution raised from 15% to 83%. Thus, it can be concluded that it happened due to the growth of anthropogenic activities.