



# Accounting INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

“INTEGRATING CLEANER PRODUCTION INTO SUSTAINABILITY STRATEGIES”

## Emergy and Hydroelectricity

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### Abstract

The construction of hydroelectric plants is a controversial issue when negative effects are focused on, since social disruption, material or financial loss, crops, forest and soil loss, etc. On the other hand, benefits that would otherwise take years to occur, such as employment increase, arise in shorter run due to this region's development. In Brazil, the construction of "Run-of-the-river" plants, hydroelectric plants capable of operating with small or even without reservoirs, have been intensified..

In 2005, 93 % of the electric energy available for consuming was generated by hydroelectricity plants and according to the national planning elaborated by the Ministry of Mines and Energy, hydroelectricity will remain the predominant source up to 2030.

Global environmental benefits and costs for two Brazilian plants (Porto Primavera and Jupia) were accounted for in terms of emergy terms. The traditional emergy indicators were calculated as well as new indicators were proposed in order to evidence other aspects, such as matching between hydroelectric enterprise and region, more adequate use of water, influence of reservoir dimension and loss of ecosystem services.

*Keywords: Emergy, Hydroelectricity, Environmental accounting, Ecosystem services*