Evaluation of MSWM and potential for generating valuable products in the context of Circular Economy. Case of Study: Ecuador

Chicaiza C.[1], Vaca S.[2], Arellano D.[3]

[1] Tianjin University, School of Environmental Science and Engineering, Tianjin , China. E-mail: cristhianchicaiza@hotmail.com
[2] University of Natural Resources and Life Sciences Vienna (BOKU), Department of Forest and Soil Sciences, Vienna, Austria. E-mail: sara.andrea.vaca@students.boku.ac.at
[3] Sungkyunkwan University, Department of Water Resources, Graduate School of Water Resources, Suwon 16419, Republic of Korea. E-mail: dvictoria.arellano@gmail.com

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Introduction

Ecuador is hardly influenced by a rapid urbanization process and the municipal solid waste generation rate.

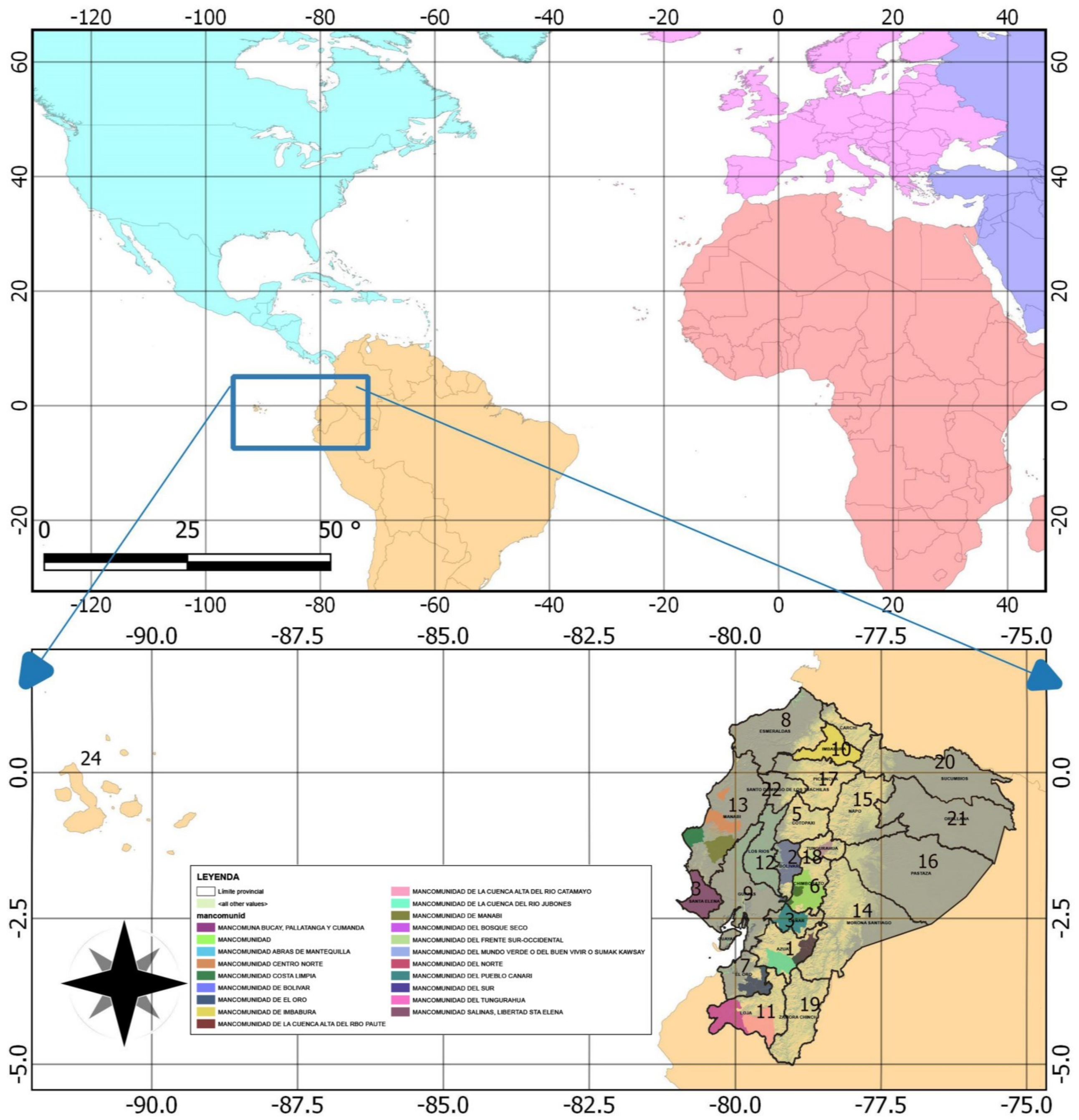

Fig. 1 Location and waste management map. Adaapted from (INABIO, 2019)

Methods

The methodology followed in this study is based on the Water-Soil-Waste Nexus approach and literature review, for the Metropolitan District of Quito, capital of Ecuador, it focused on the interaction between MSW, wastewater and agricultural soils for the identification and suggestions of technical solutions and transition strategies of policies.

Results & Discussion

The Decentralized Autonomous governments (GAD) have not done enough to incorporate strategies for the integral management of MSW, which has generated social, economic, and environmental concerns in many cities.

Among the results, it was found that: The National Program for Integrated Waste Management (PNGIDS Plan) proposed some pathways from two perspectives: ISWM and Value-Added Models since 20% have the potential to be recyclable or being used in Waste to Energy (WtE) facilities.

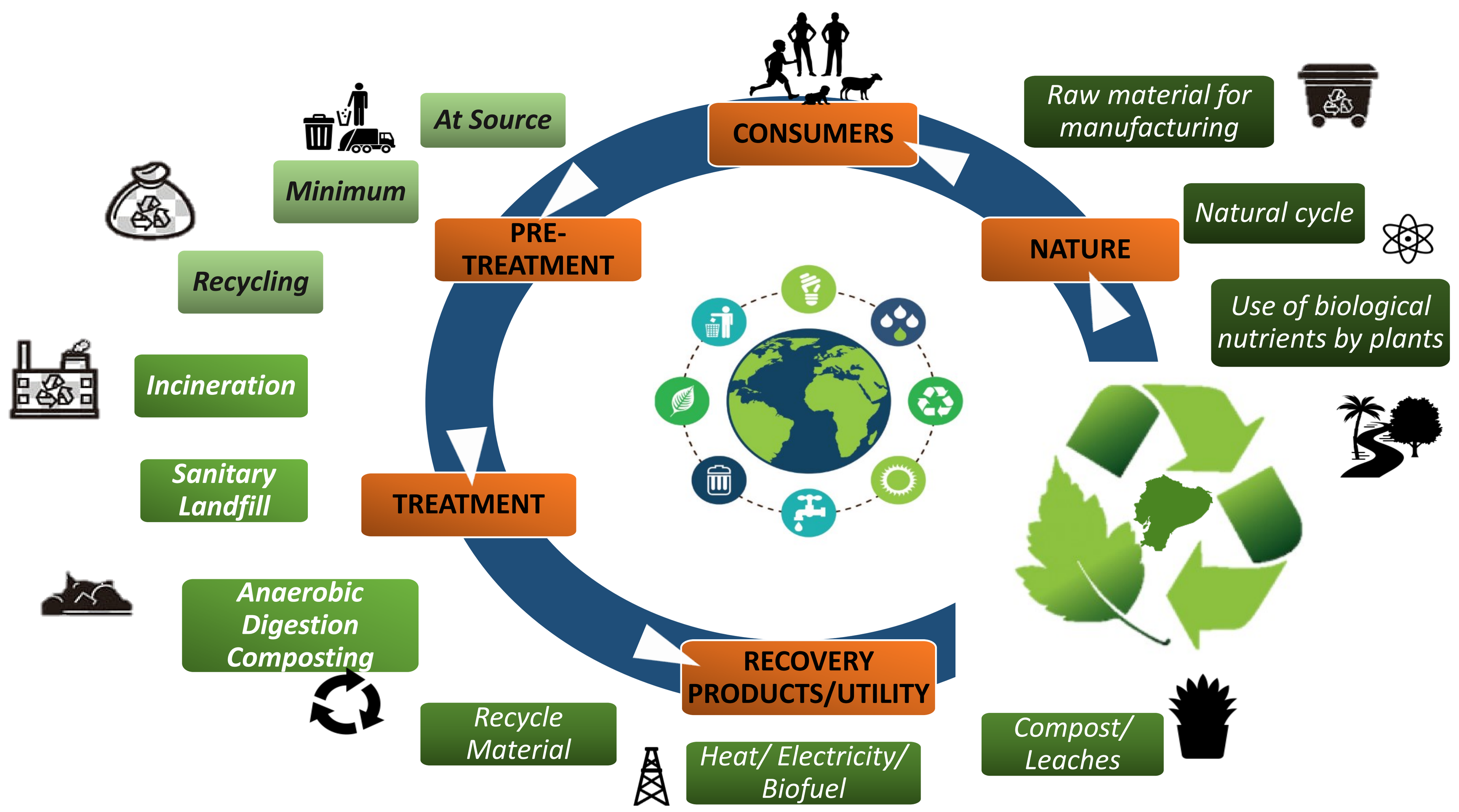

Fig. 2 Potential applications of the Circular Economy in Ecuador

There is a lack of legislation in the different instances of the law regarding the circular economy in the PNGIDS. Quito produces approximately 2037 tons/day of solid waste, almost 60% of these are organic waste, it is one of the two biogas plants in Ecuador, the treatment of leachates is based on the system of improved vibration shear processing (VSEP), and there is no significant risk of contaminating the soil, since the areas where waste is disposed of are covered with a geomembrane in the sanitary landfill

Conclusions & Outlook

Urban solid waste remains a significant challenge for human health and the environment in developing countries, in the case of Latin America and the Caribbean, the application approaches Integrated Solid Waste Management (ISWM), and principles of the circular economy are lagging.

Only 24% of the GADs have initiated separation processes at the source, and the MSW that do not have controlled disposal represent 33%.

Further studies are suggested from the economic perspective

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