

POLITECNICO DI TORINO
FIRST SCHOOL OF ARCHITECTURE
Master of Science in Eco-Design

Honors theses

Systemic Design Applied to Sugar Cane Derivatives: Panela in Colombia

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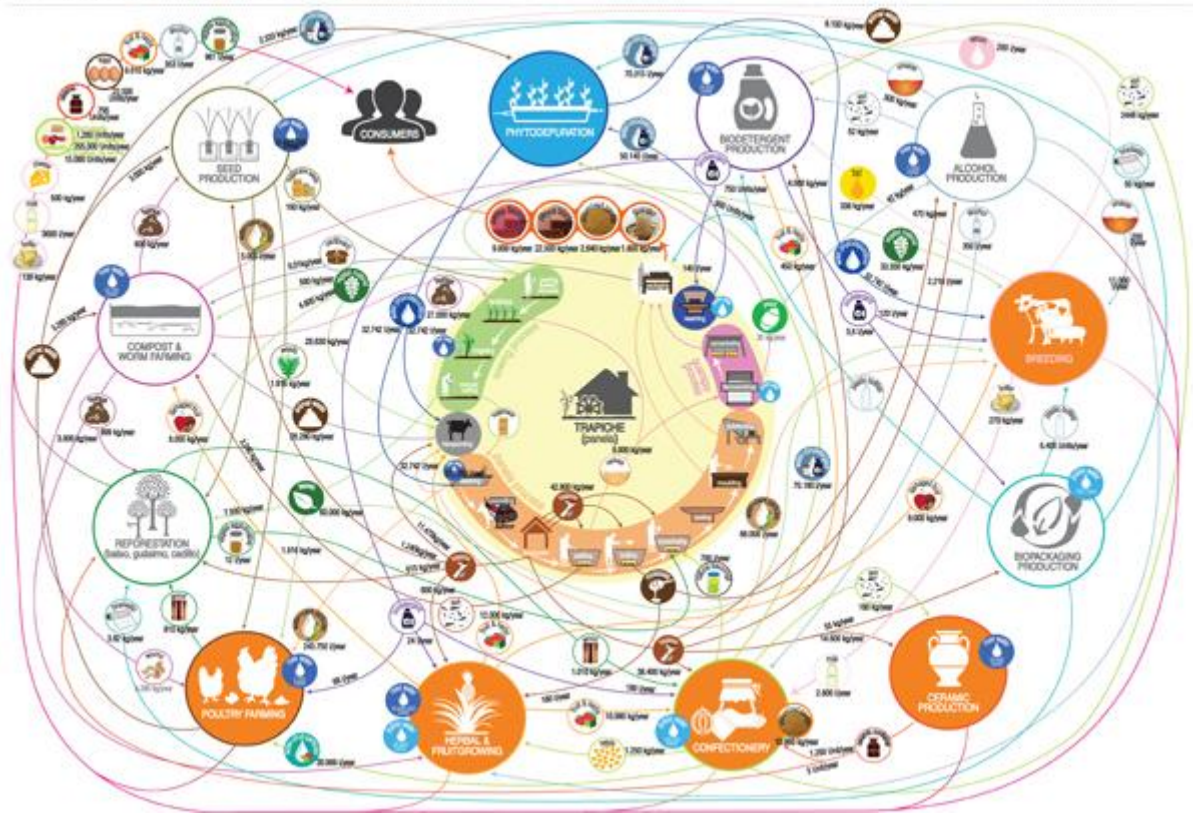
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The study was set out to explore the enforcement of the systemic design concept in sugarcane and its derivatives production chain in the Colombian territory as a way of taking the first steps towards sustainability in Latin America. The subjects of analysis were sugarcane, refined sugar and panela, a natural product obtained from sugar cane juices which by continuous cooking, concentrates, creating a soft mass that solidifies. The study has also frames the history behind the worldwide spread of this products and how they became part of the Colombian tradition. Furthermore, this thesis is motivated by the increasing problem of globalization, an issue that is hitting hard Colombian culture and threatens to eliminate the national artisanal know-how and its native heritage. Another important objective is convincing farmers to desist from the use of GMO seeds and technological packages for agriculture, for this reason it aims to demonstrate that sustainable agriculture is more beneficial for society and environment.

The main goal of the research was to define the advantages and disadvantages of craftsman and industrial production of panela in Colombia in order to recover the artisanal know-how for its production and consumption. Pursuing this further, it came to notice that Colombia is the number one panela consumer in the world and the second producer, nonetheless its consumption is decreasing due to the appearance of cheaper substitute products, free trade agreements and biofuels. After developing a rigorous study on the state of the art of artisanal panela, industrial panela and industrial sugar production, it was decided that working with the artisanal process was the best way to protect the Colombian craftsmen.

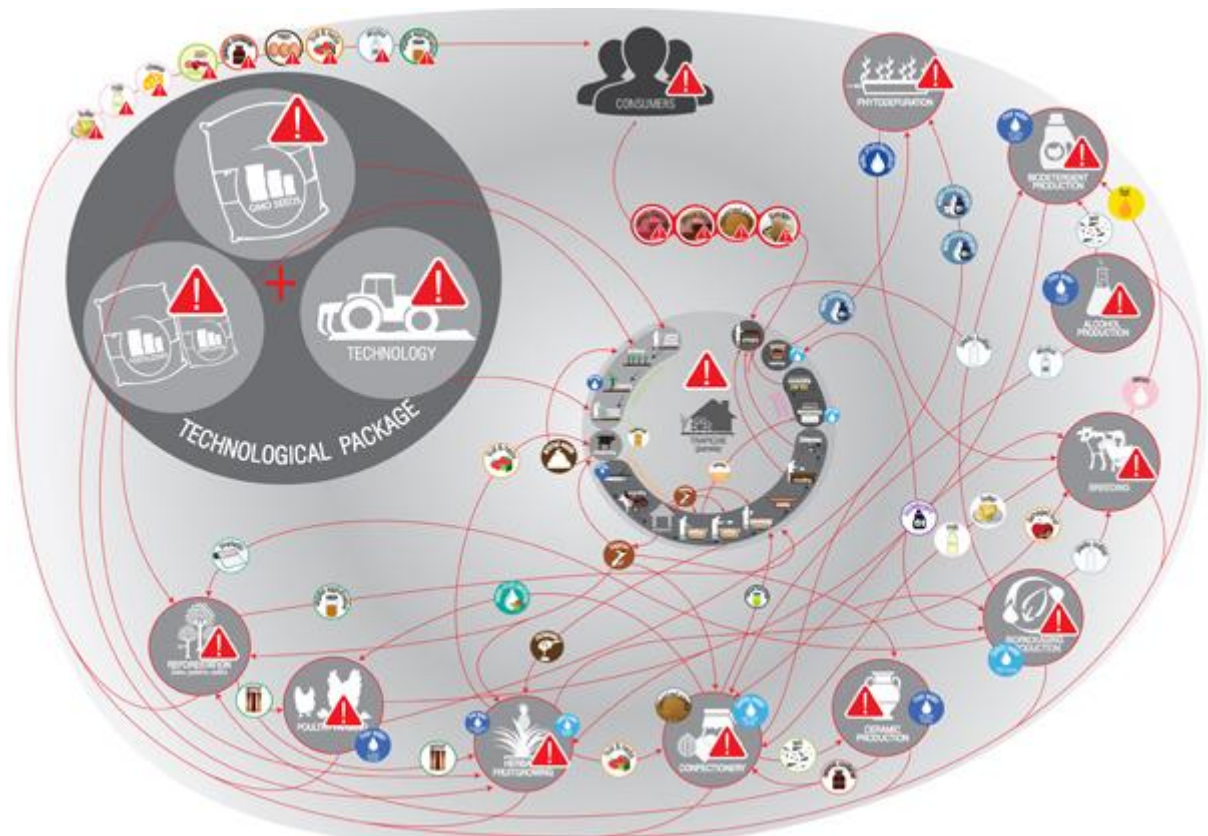
In economic terms, the EBT (Earnings Before Tax) increases of 196% and the use of local raw matters passes from 13% to 93%. The returning to Colombian traditions will also bring health benefits for the population as the growing use of panela can directly decrease the use of other harmful substitute products. Lastly, at an environmental level farmers can retrieve their tradition of using natural seeds instead of using toxic GMO seeds.

SYSTEMIC APPROACH-PANELA CRAFT



Systemic approach

However, in order to do a fair evaluation, a comparison of the systemic approach using GMO seeds has been made and the results show that the use of technological packages would contaminate the system, breaking its connections and generating fluxes of polluted matter.



GMO situation

In spite of what is commonly reported as beneficial in a linear approach nowadays (standardization, automation, industrialization and GMO seeds), this research has proven otherwise. The potential benefits of a systemic approach that aims to sustainability have been shown and their relevance for the artisanal production and consumption of panela in Colombia is a fact. Undoubtedly, by acting at a local level it is possible to create a systemic consciousness that defies the current patterns of this industrialized world.

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