# Science/Technology/Engineering of a new Development paradigm: ZERO-WASTE ZERO-CARBON BUSINESS-MODEL (ZW-ZC-BM)

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## Abstract

**Situation**: Human living needs Development, balancing environmental impacts. Hitherto, most of our developments have been no different from the original “slash-and-burn” culture, although we euphemistically use phrases such as; Clean-Technology; Eco-Friendly; Bio-degradable; Circular-Economy; Zero-Carbon; Organic Agriculture/Farming and Sustainable Development. There is, thus, a great need for a new paradigm that converts into a Quadruple-Impact Development (QID) orientation, that benignly modifies every system of human operational phenomena: a Socio-Techno-Economic-Environmental system.

**The Problem**: Human development cannot be indiscriminate and wasteful. Today’s Globalized Economy must balance contradicting situations, reducing conflicts. Materials, Human Population, Energy systems, Environment/Eco-systems, and any development anywhere would have to be planned/organized and executed in such a way that wastage are minimum in terms of energy/materials/human-power. Additionally , any wastes should be reused/recycled, reducing extraction of virgin materials afresh.

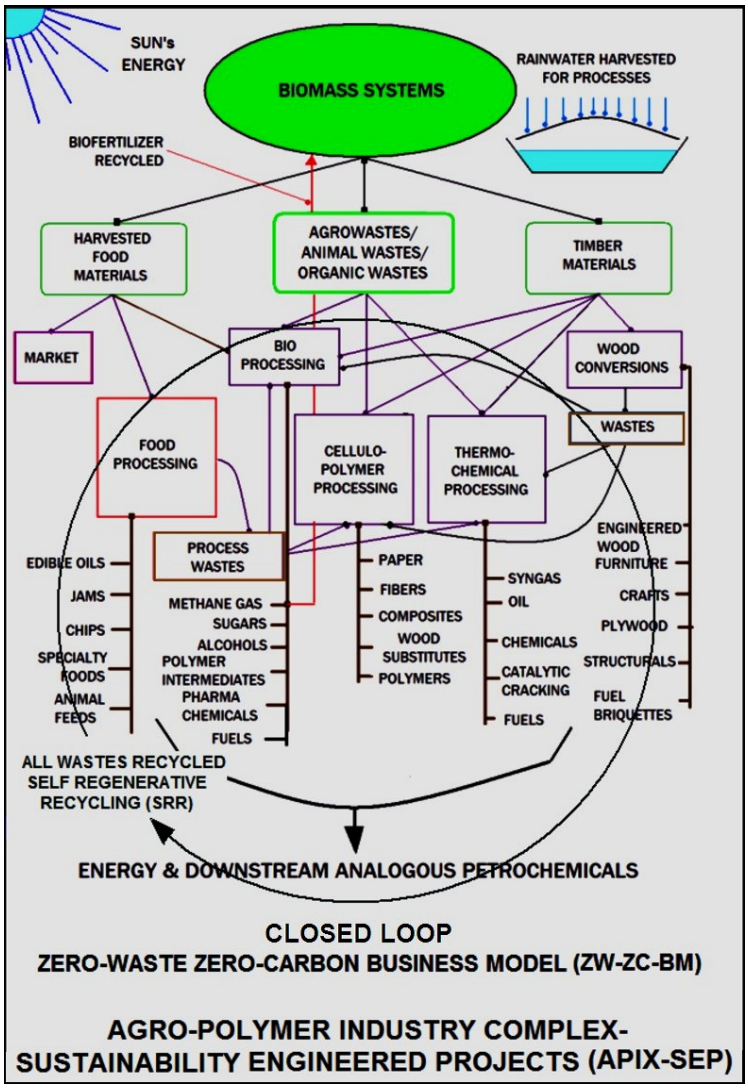
**The purpose of this work**: ZW-ZC-BM would showcase how the new QID paradigm would simultaneously answer the twin problems of Global Warming and Poverty (GWP), which afflict over 135 nations (almost all of them in the Tropics, including India).

**Experimental verification (Agriculture)**: Small operations were conducted in South Indian village regions where multi-crop agriculture are being practised – cultivating Banana, Coconut, Arecanut and some vegetables. The illustration here depicts the overall structure and processes/products involved.

**Findings**: It is possible to arrive at sustainable agriculture through ZW-ZC-BM, whereby all available renewable biomass, rainwater, sunlight, air/wind and soil could be converted in a Closed-Loop interconnected processes into Energy, Engineered Products, Processed Foods, Bio-Fertilizer, Bio-Petrochemicals, Bio-Water and an entire Village adults could have full time jobs.

**Conclusion & Recommendations**: (1) Development of ZW-ZC-BM is necessary for the development of sustainable world economy; (2) Almost the entire non-Metal systems of Engineering/ Engineered products could be developed reducing wastage, and impacts of Global warming; (3) More practical works need to be carried out.

## Image




ZW-ZC-BM is a unique concept, under development

## Biography



Hariharan PV, a Mechanical Engineer by education/training, has 47 years experiences, from 1971 in: Industry; Management; Project Setting up; Technology/Products/Process development; Concept Development in the following arena: Adhesives/Coatings/Sealants; Agro-Renewable Resources; Alternate Energy; Alternate Engineering Materials/Products; Bio-gas; Biomass; Carbon-Fiber; Chemistry/Technology/Engineering of Composites; Designing and Developing Engineered products/Machines; Heat/Thermodynamics; Hydraulics and Pnuematics; Plastics and Polymer Technology/Engineering; Renewable Resources Technology/Engineering; Village Development Schemes; Zero-Waste Zero-Carbon Business-Model.

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**Notes/Comments:**