

# ***Whole System Transformation:***

## **Building Communities Building Opportunities**



# ***Whole System Transformation***

**An innovative project to combat economic disadvantage and bring prosperity to families and their communities by:**

- ◆ Building partnerships for deploying simple and affordable symbiotic water, sanitation, power, and food production eco-technologies
- ◆ Meeting seven of the United Nations' Sustainable Development Goal
  - Goal 6: Clean Water and Sanitation
  - Goal 7: Affordable and Clean Energy
  - Goal 2: Zero Hunger
  - Goal 12: Responsible Consumption and Production
  - Goal 3: Good Health and Well-Being
  - Goal 4: Quality Education
  - Goal 17: Partnerships for the Goals
- ◆ Contributing to the United Nations' other Sustainable Development Goals

**The Core Modular System Enabling the Transformation:**

- ◆ Gasifier (waste-to-energy)
- ◆ Bio-digester (sanitation and waste-to-energy)
- ◆ TreeWell effluent-to-clean-water
- ◆ Solutek organic enhancement solution



**Clean water gives life**

# ***Short Food Chain Systems***

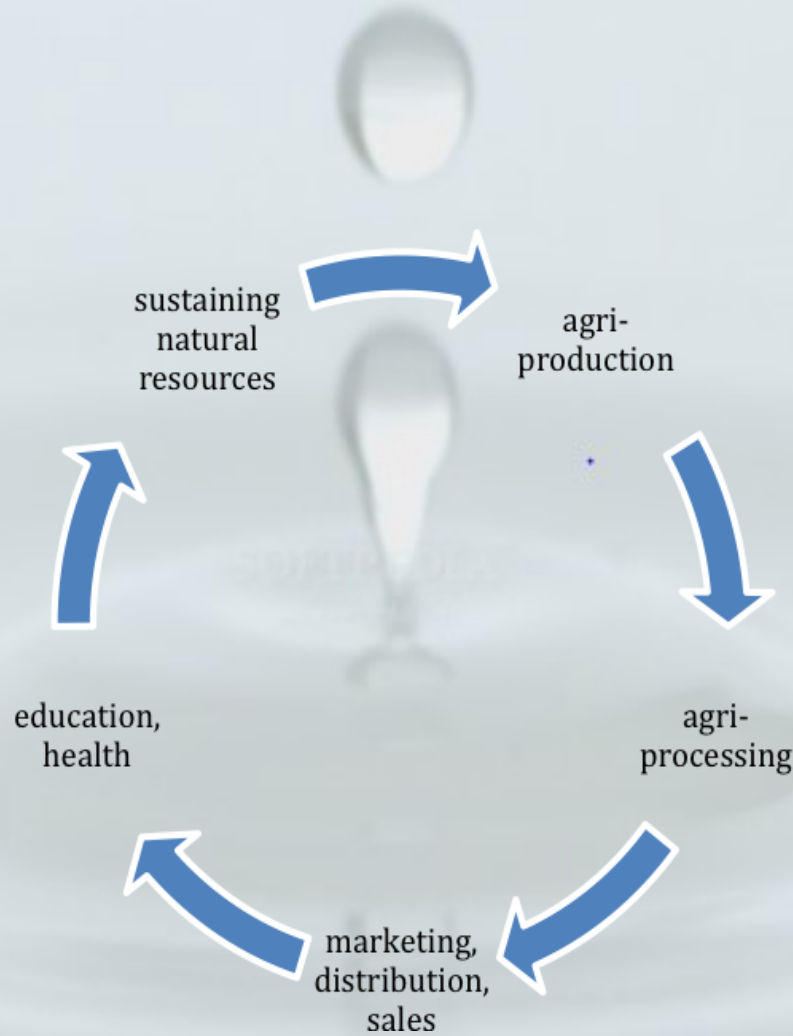
**Partnerships that bring new life to remote rural areas and new benefits to global value chains in three basic steps:**

- ◆ Eliminating wastes, conserving natural resources, and maintaining and improving water, air, biodiversity, and soil quality using closed-loop eco-technologies
- ◆ Involving community as a whole in a sharing economy
- ◆ Creating more spending power for individuals, families, and communities generated where they live

**Local rural communities are connected to global value chains.**

- ◆ Investment in Whole System Transformation revitalizes rural communities through income, skills, connections, and food security.
- ◆ Whole System Transformation provides the basis for local circular economy, which in turn provides the basis for keeping natural and cultural values alive.
- ◆ Whole System Transformation enables individuals and communities to introduce unique products from their areas into the global marketplace.
- ◆ Poor or disaster-stricken communities are transformed into opportunities, not problems.
- ◆ Business toolkits, coaching, and collaborative technologies bring solutions to reaching global value chains.

**Whole System Transformation initiates a virtuous cycle benefitting individuals, their families, and communities.**



**It begins with closed-loop water, sanitation, and energy to meet basic needs through local infrastructure with immediate results. The circular, sharing economy generates local leaders and puts the community in charge right from the start.**

# ***Our Eco-Technologies:***

## ***Waste-to-Energy***

### **WasteMaster—patented downdraft design gasifier with biochar production**

- ◆ Converts a wide variety of agricultural, industrial, or municipal cellulosic waste into heat or electricity
- ◆ Has EPA-approved, environmentally responsible, clean-burning emissions
- ◆ Produces BioChar as a by-product, a natural soil fertilizer and soil restoration supplement, locally
- ◆ Produces output of 160-600 kw per system
- ◆ Operates in a portable, modularized, solar-powered system

### **RAPAD—Rapid Anaerobic Digestion**

- ◆ Features capacity of .5 –3 tonnes/day and reduces holding time for solids
- ◆ Produces biogas with up to 90% methane concentrations for energy generation
- ◆ Produces valuable by-products such as fertilizer and irrigation or potable water
- ◆ Features low operating costs, easy maintenance, and configuration flexibility
- ◆ Operates in a portable, modularized, solar-powered system



# ***Our Eco-Technologies:***

## ***Water Remediation and Re-Use***

### **Solutek—concentrated organic extract for water remediation**

- ◆ Utilizes organic sea kelp to remediate water
- ◆ Activates and massively enhances beneficial bacteria to out-compete damaging bacteria
- ◆ Results in a substantial reduction or elimination of BOD (Biological Oxygen Demand) and COD (Chemical Oxygen Demand), TSS (Total Suspended Solids), FOG (fats/oil/grease), and hydrogen sulphide (malodour)
- ◆ Applications in all types of wastewater remediation, including sewage, slaughterhouse effluent, and dairy and meat processing
- ◆ Clarifies standing bodies of water
- ◆ When mixed with bio-char, creates agricultural tool which enhances soil, stimulates plant root growth, improves water retention and humic levels in soil, stimulates better plant health, growth, and crop yield, and reduces or eliminates the need for artificial fertilizers.

# ***Our Eco-Technologies:***

## ***Water Remediation and Re-Use***

**TreeWell System by Carex—a proven sludge-free and practically maintenance-free biotechnological invention for wastewater**

- Allows for market-tailored solutions for efficient treatment of wastewater, regeneration of usable water, and restoration of heavily polluted surface waters and despoiled land.
- Works in conjunction with Solutek

**Aquaculture Tanks/Protein Production—an integral part of a water recirculation system producing protein for the community**

- Cleaned by Solutek
- Coupled with TreeWell to generate suitable clean water
- May employ Solutek as a fish food for some species



# Sanitation and Clean Water

## 6 CLEAN WATER AND SANITATION



The TreeWell system by Carex, in conjunction with Solutek, provides clean, healthy water and allows for water reuse.

### This benefits communities by:

- ◆ Eliminating water-borne disease
- ◆ Restoring heavily polluted surface waters
- ◆ Assisting areas affected by drought and water deficits
- ◆ Recycling water for use at a minimum as irrigation/agricultural or toilet water
- ◆ Improving the community's ability to grow their own food
- ◆ Increasing the self-esteem of individuals and community through cleanliness





# Power

## 7 AFFORDABLE AND CLEAN ENERGY



WasteMaster's clean-burning conversion of waste to energy can provide 160-600 kw output per system and produces valuable Bio-Char for reuse in agriculture or sale. Methane generated from the RAPAD biodigester may be used for cooking and heating.

### This benefits communities by:

- ◆ Providing base load power, which solar and wind cannot supply
- ◆ Improving basic living conditions and the overall economy
- ◆ Refrigerating food which reduces time spent on food collection
- ◆ Reducing time spent on food processing
- ◆ Allowing for small medical clinics
- ◆ Creating jobs and increasing incomes
- ◆ Improving security through lighting
- ◆ Combatting migration to cities and preserving local cultures
- ◆ Protecting the environment
- ◆ Producing Bio-Char, a valuable fertilizer for growing food



**2** ZERO HUNGER



**12** RESPONSIBLE CONSUMPTION AND PRODUCTION



## *Food Production*

The power, fertilizer, time-savings, and water reuse provided by Whole System Transformation technologies lead to the ability to produce more food. Water treatment with Solutek also allows for aquaculture.

**This benefits communities by:**

- Providing higher quality food and nutrition
- Improving health, which leads to more man-hours toward jobs and work in the community
- Generating community income
- Eradicating hunger
- Reducing migration to cities





# Health and Education

**Whole System Transformation technologies thus lead to better health and education.**

**This benefits communities by:**

- Reducing common causes of child and maternal mortality
- Reducing in lung conditions caused by use of wood, dung, and other matter in cooking
- Increasing life expectancy
- Significantly reducing the spread of mosquito-born disease
- Educating communities on hygiene stemming from clean water
- Increasing time availability for the education of youth





# *Building Community-Based Partnerships by Developing Community Communications*

**17** PARTNERSHIPS  
FOR THE GOALS



**Elimating barriers to prosperity through Whole System Transformation technologies revitalizes local economies by mobilizing people.**

**This benefits communities by:**

- Demonstrating tangible benefits to the community that mobilize individuals, families, and the community as a whole
- Increasing involvement which works on an exponential basis
- Combining local resources, knowledge, skills, enthusiasm, networks, and traditions with the external resources of money, and technology in ways that enable a sharing of risks, costs, and benefits



# *Summary of Benefits for Rural Communities*

- ◆ Cost reduction and security in food and energy supply
- ◆ Time-savings through refrigeration, allowing for food production through processing, bottling, preservation, and sale
- ◆ Electric lighting allowing for night classes and increased education
- ◆ Electric lighting allowing for increased safety at night
- ◆ Sewage solutions allowing for energy, personal hygiene, and better overall health
- ◆ Medical problems drastically reduced through clean water, hot water, and use of gas to cook food indoors
- ◆ Refrigeration allowing for the storing of medications
- ◆ Reduction in lung conditions caused by use of wood, dung, and other matter in cooking
- ◆ Increased food production through soil rejuvenation substances
- ◆ Cost-savings allowing for better housing or building of small factories
- ◆ Connection to Internet and worldwide marketplace
- ◆ Increased communication to mobilize individuals, families, and communities



# *The Proposal*

1. Offering a modular configuration of sanitation and clean water technologies adapted to the needs, resources, circumstances, and opportunities of rural communities varying from 200-2,200 inhabitants and even higher where up to 5,000 inhabitants is possible with additional clean water handling procedures. Building community-focused partnerships and enterprises exploit the transformational potential of technologies for revitalising a local economy to increase incomes, wealth, and health of the individuals, families, and the community as a whole.
2. Attract a combination of grant-aid and investment to instigate Whole System Transformation “on the ground” with local communities as partners in Europe, Africa, and Asia and opportunities for first world companies to become involved in the benefits of whole system transformation while demonstrating an amortization mechanism on a sliding scale depending on the degree of poverty of the overall economy.

## *For More Information*

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