Zero.Waste Agricultural Technology ZWAT program, The Future of the Smart, Sustainable Agriculture in Egypt and the World

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Zero.Waste Agriculture Technology (ZWAT), the Joint EPECO.USA & ADACO Program

- Zero.Waste Agriculture Technology **ZWAT** program, is developed by EPECO.USA early 2016, since when it was implemented in several pilot projects world wide.
- Mid 2021, ADACO, the Agro-Development & Advanced Aquaculture Industries Co. (share Holding), was incorporated with ZWAT program as a leading framework in Egypt and Middle East.

- **ZWAT** program, minimizes or emissions from agricultural operations to the minimum, while maximizing the recycling protocols by creating a closed loop for water, energy, fertilizers, animal feed, crops and food stuff.



ZWAT Program,… the Concept

In **ZWAT** program practices, the output of one farming process is an input to another agricultural or industrial processes.

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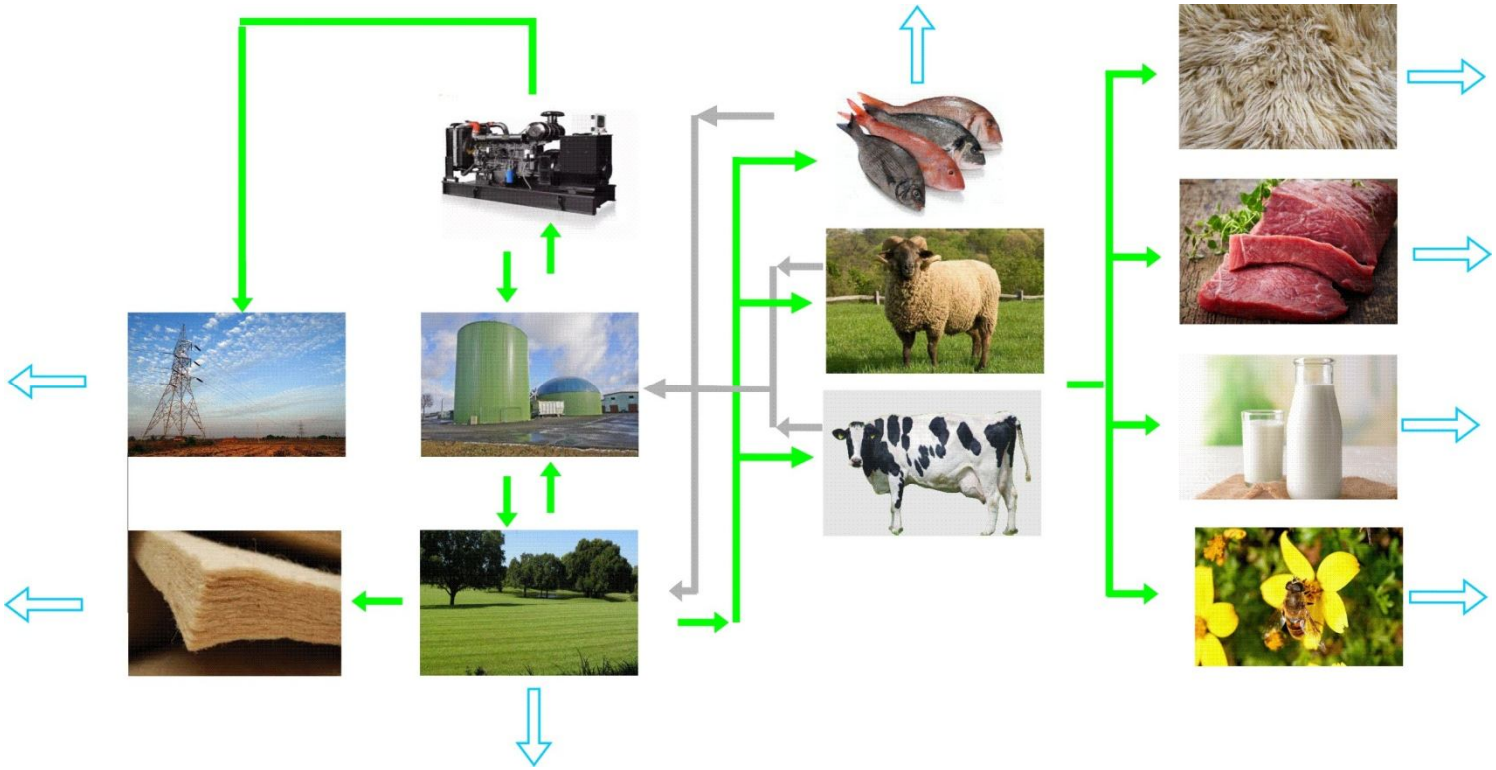
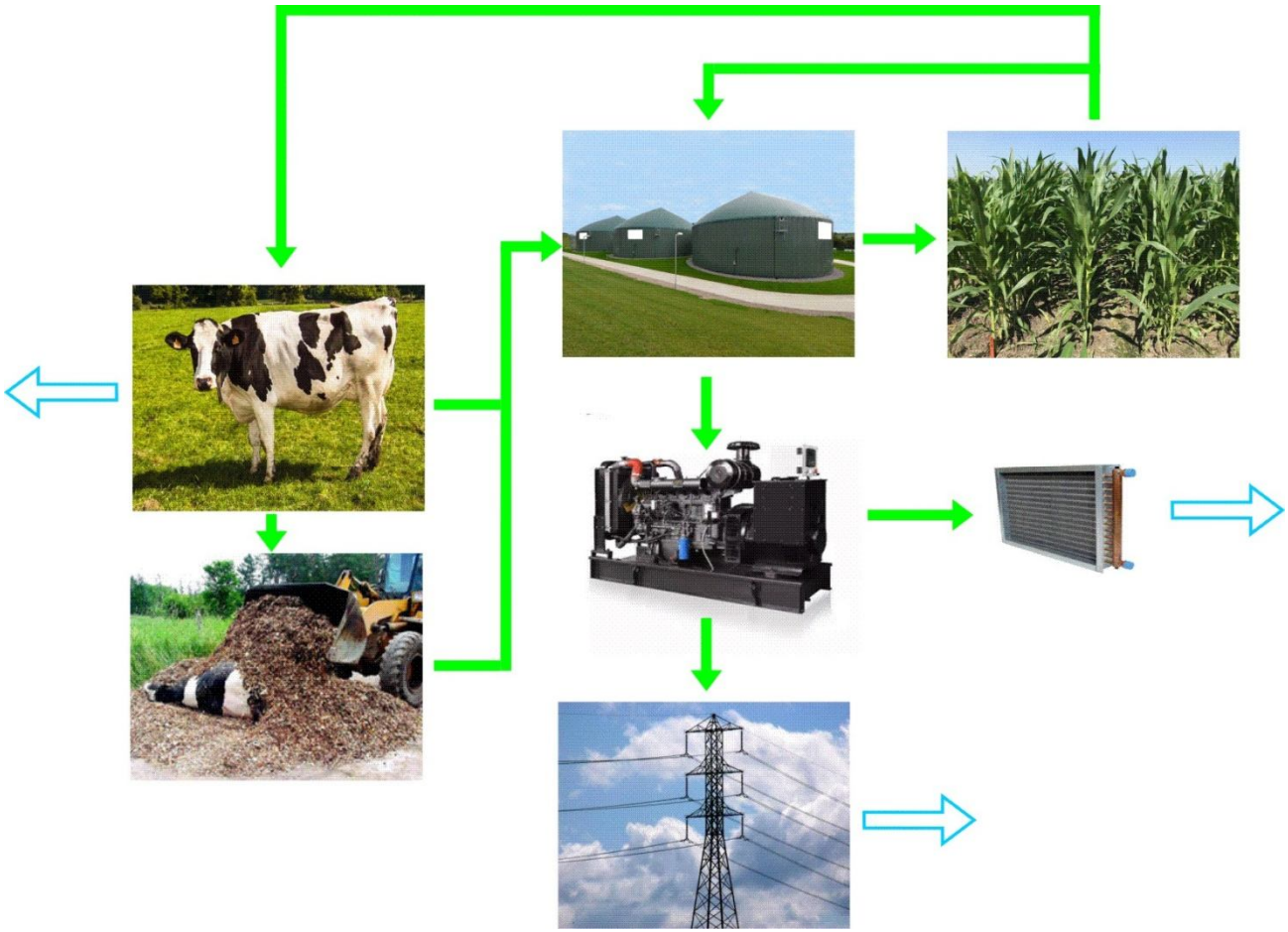
In **ZWAT** program, agricultural and animal wastes are recycled into organic fertilizer, animal feed and energy.

ZWAT Farming Program,… the Process

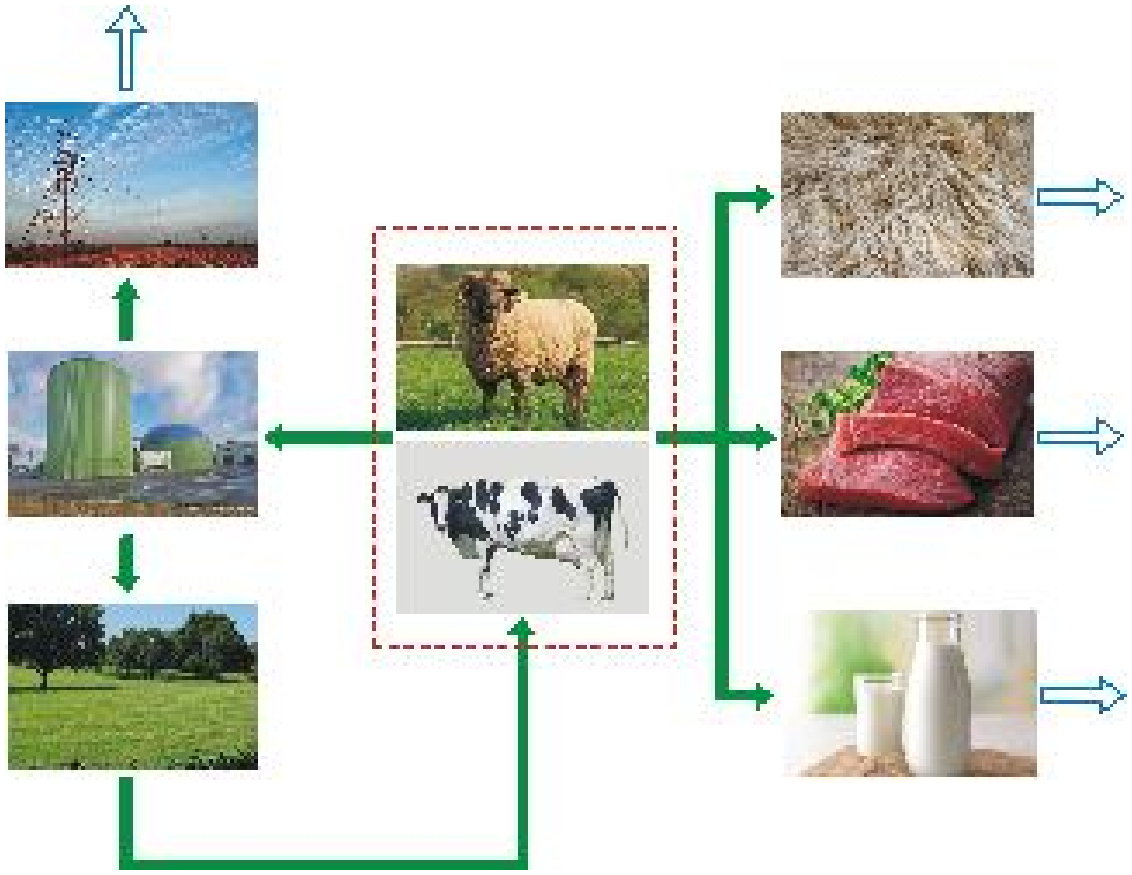


ZWAT Program ,… the Energy Cycle



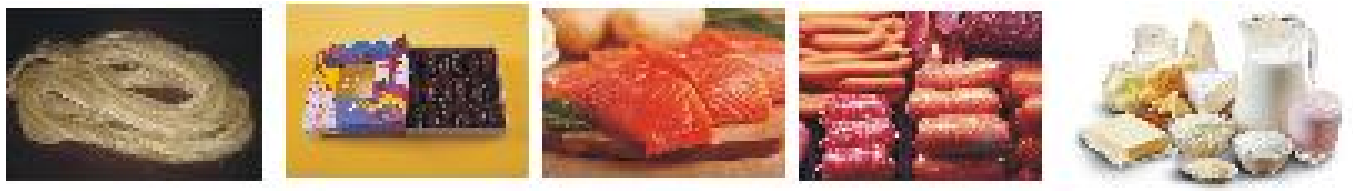
- In the anaerobic bioreactor , animal manure and agricultural-no-food-value, will be anaerobically digested to produce bio-fuels and organic fertilizers.
- Gas driven electric generators will utilize the biofuel to generate electric power or used directly for heating, while organic fertilizers are returned to the agricultural and farming operations.

ZWAT Program,….Animals, the Source of Organic Food, Fertilizers & Bio-fuel



- Animals are raised in specified quantities to allow for economic use of their waste for energy conversions.
- Bio-wastes are used as the main input to the anaerobic bioreactor, which produces bio-fuels and organic fertilizers.
- The energy is used partly in agriculture and agro-processing industries, while the surplus electric power is fed to the national power supply network or other users.
- Cows and sheep produce milk and meat alongwith Many other by-products, that is mainly processed as dairy products and processed meat.

ZWAT Program,… the Final Produce



- Bees & Dates Honey
- Algae (Spirulina,..etc.)
- Moringa products
- Jojoba oil
- Paulounia wood
- Fibers

- Processed Meat
- Dairy Products.
- Preserved Fish
- Olive Oil
- Dates
- Aromatic oils

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ZWAT Program,… Mathematical Modeling and Scale Prototypes

Mathematical modeling and scale prototypes are essential to design/build a zero.waste farming project due to diversity and variance of environmental, geographical and social criteria of individual location.

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ZWAT Program,… the Farming

- Olive Trees
- Dates Palm
- Germinated Barley Grass

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ZWAT Program,… the Animals

Animal wastes (manure and feed residues) may represent just 10% of its economic value, a contribution that cannot be overlooked or neglected and with the possibility of doubling the value by recycling into organic fertilizers and bio-fuels.

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ZWAT Program,… the Algae

Our advanced technology for the production of organic spirulina algae is characterized by its high quantity and quality, for the same consumption of feed and water. This technology will reinforce the basic approach to zero-waste farming with the optimum use of water and energy.

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ZWAT Program,… the Aquaculture

- High-value fish will be cultured using waste-free farming technology, including bream, bass and mullet. Shrimps known as Souissi and Kazaz will possibly be cultured, to meet the needs of the local and international markets.
- Our intensive farming technologies of fish and shrimps with full control of culture's climate and environment

will be implemented. Fish and shrimps feed will be in-house produced inside the farm.

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ZWAT Program,… the Forests and Pastures

- Knafe Herbs
- Panicum Herbs
- Spineless Cactus
- Paulownia Bushes
- Moringa Bushes
- Jojoba Bushes
- Lucina Bushes
- Aromatic Plants

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ZWAT Program,… the Honey

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ZWAT Program,… the Flowers

The greenhouses , forests and pastures will be used to grow seasonal flowers while green houses will used for growing all-year-round flowers for daily sales in local and international markets.

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ZWAT Program,… the Food Stuff Manufacturing

- Spirulina Algae
- Flowers and Roses
- Knafe Fiber
- Honey and Jam
- Olive Oil
- Dates
- Meat Products
- Dairy Products

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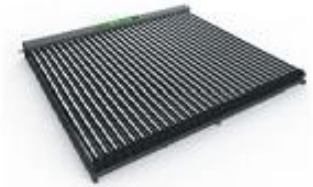
ZWAT Program,… the Energy

- o Photovoltaic
- o Wind Energy
- o Bio-fuel
- o Solar Heat Exchangers



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ZWAT Program,… the Water & Wastewater Treatment

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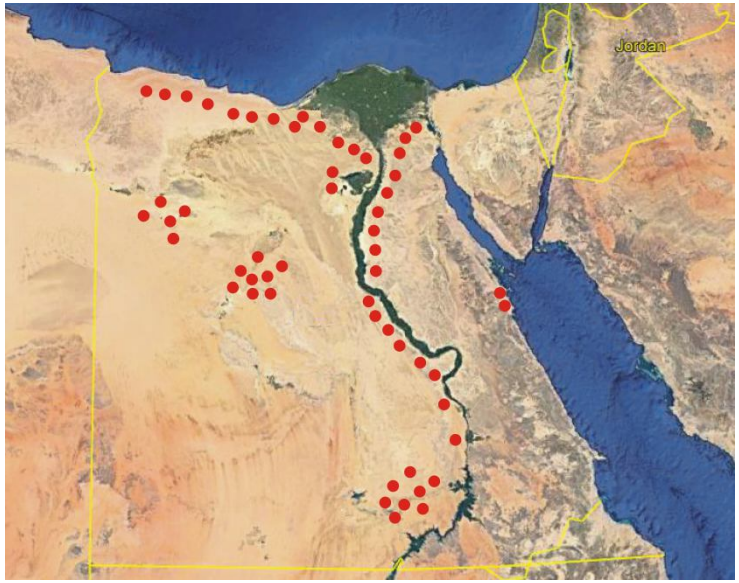
ZWAT Program,… the Egyptian Solutio to Global Food Crises



With **ZWAT** program, 1.5 million feddans can be added to the current agricultural area in Egypt. Separate farms ranging in size from 5000-50000 feddans in 55 desert locations will be the right locations for **ZWAT** Program farming operations targeting the production of organic food under sever water and energy problems.

- Upon completion of **ZWAT** program in Egypt, the anticipated production criteria of the program will exceed 450 billion Egyptian Pounds (30 b US Dollars)/ year. **ZWAT** program Egypt will cover for food shortage in Egypt within 10 years from start.
- Technologies, equipment and material of **ZWAT** program in Egypt, will be 80% Egyptian originated.
- **ZWAT** program in Egypt is targeting to export 20-30% of products and serviced staring 5 years from start.

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Middle East & North Africa Division
10. Tayaran Str., Raba'a al Adawia, Nasr City, Cairo, EGYPT
ph:+20 2 2401 6626 cell:+20 12 2210 4150
e.mail: info@epecousa.com www.epecousa.com