The GEF Small Grants Programme

COMMUNITY ACTION GLOBAL IMPACT


SUSTAINABLE ENERGY &

CARIBBEAN AGRICULTURE

SGP The GEF Small Grants Programme

When Sugar Was King

- When Sugar ascended to throne in the Caribbean 17th Century, sustainable wind energy was there to make it happen.

- The utilization of wind driven Sail boats/ships were used to transport both agricultural inputs and outputs on the “Trade Winds”.

- Windmills were introduced before 1663 in Barbados and were adopted quickly. By 1674 there were more than 260 windmills on the island.

- With the introduction of steam engines and cheap oil the wind mills were abandoned for the factories.

Tenets of the Kingdom

The Plantation Economy was built around agriculture and was based on:

- The availability of cheap/free labour.
- The availability of cheap inputs delinked from oil.
- Economies of Scale
- Producing what we do not consume and consuming what we do not produce.

Tenets Lost but A Remnant Remains

- Since the decline of the plantation economy the agricultural sector has lost its place of prominence within several Caribbean economies.
- The components of the plantation economy has been totally reversed.
- Labour is no longer cheap.
- Inputs used are linked strongly to oil and are expensive.
- In many countries economies of scale have been lost.

Sustainable Energy (SE) as A Catalyst for Transformation

- Appropriately integrated SE can reduce the need for external inputs such as oil and inputs linked to oil.

- Changing the model of producing what you don't consume and consuming what you do not produce.

- Accessing and unlocking the potential of the blue economy.

Sustainable Energy as A Catalyst for Transformation

- Redefining of economies of scale.
- Facilitation the transition to climate smart agriculture.
- Facilitation of a closed system of production.

What is Driving the SE Changes Within the Sector

- High energy prices in the recent past has driven the incorporation of renewable energy within food production and fishing systems.

- Climate Smart Agriculture and the greening of the agriculture through the use of renewable agriculture has been identified as part of the NDCs for many Caribbean Countries and a part of CARICOM's Energy Policy.

- Production systems such as Permaculture & Organic Agriculture have been used to demonstrate the feasibility of a transition to a closed production systems.

Current Applications within the Caribbean

- Dominican Republic: Micro Hydro Power Generation & Cogeneration

- St. Lucia: Community Solar Desalination

Current Applications within the Caribbean

- Barbados: Solar power generation to power fishing vessels, livestock farms and protected crop production systems.

- Jamaica: Wind Farm

Current Applications within the Caribbean

- Barbados: Biogas generation to power livestock farms.
- Barbados: Sail Cargo Ship initiative.

Current Applications within the Caribbean

- Cuba: Biofuels with a focus on Jatropha & Cogeneration
- Belize: Cogeneration from Bagasse

Scaling Up Our Experience

- Energy Cogeneration using Biomas.
- Centralized Biogas production for the livestock sector.
- Utility Scale Wind and Solar Production integrated within production Landscapes.
- Bio-fuel production on the larger islands within the region.
- Solar Desalination for coastal production zones.

Barbados Case Study: Greening Fisheries

Type of Boat	Number of Boats	Initial Cost Outlay - 1	Initial Cost Outlay - All	(NPV) 10 yr - 1	(NPV) 10 yr All
Longline	45	$14, 750	$663,750	$417,413	$18,783,585
Iceboat	164	$2,655	$435,420	$287,643	$47,173,452
Dayboat	236	$1,680	$396,480	$330,129	$77,910,444
Moses	660	$900	$594,000	$2,365	$1,560,900
Total		$19,985	**$2,089,650**	$1,037,550	**$145,428,381**

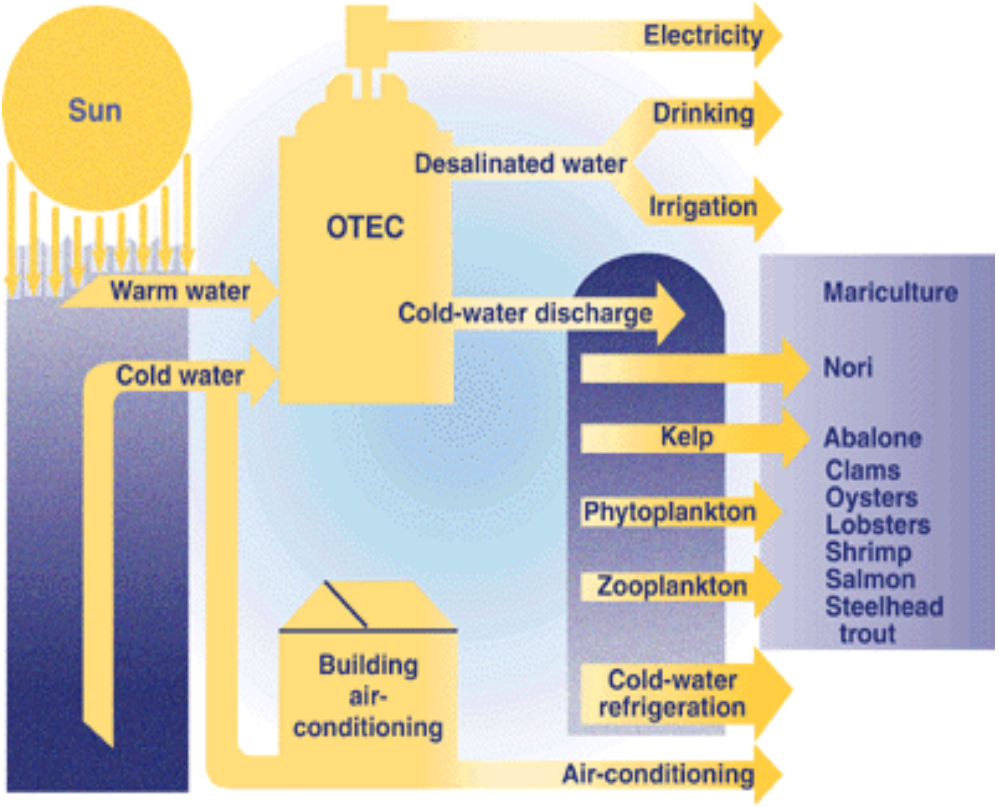
Barbados Case Study: Greening the Livestock Sector

Farm Type	Dairy Farm	Pork Production Farm	Egg & Poultry Farm	Egg & Poultry Farm [Slaughter House]	Total
Total Inverter Size	525.0 kW	3,000.0 kW	10,065.0 kW	1,800.0 kW	15,390.0 kW
Total Panel Size	603.75 kW	3,750.0 kW	11,574.75 kW	2,070.0 kW	17,998.5 kW
Total Price	$2,625,000.00	$14,500,000.00	$46,299,000.00	$7,200,000.00	$70,624,000.00
Estimated Total Bill	$31,501.26	$155,176.00	$553,646.37	$102,370.66	$842,694.29
Estimated Total Solar Savings	$30,621.07	$190,192.99	$587,049.67	$104,986.53	$912,850.26
Estimated Total Net Bill	$880.19	-$35,016.99	-$33,403.30	-$2,615.87	-$70,155.97
Total First Year Savings	$367,452.85	$2,282,315.84	$7,044,596.06	$1,259,838.34	$10,954,203.09
Total Savings over 25 years	$8,281,821.92	$51,439,887.68	$158,774,357.33	$28,394,818.00	$246,890,884.93
Simple Payback (Years)	7 years 4 months	6 years 6 months	6 years 9 months	5 years 10 months	7 years 4 months

Embracing the Blue Economy

- We live on a blue planet not a green one.
- More than 2/3 of the earth surface is covered in water.
- Looking at the agricultural sector through the lens of sustainable energy is a gateway to unlocking the potential of the blue economy.
- Move beyond OTEC for energy and look at the co-benefits.

Embracing the Blue Economy



- Currently, the OTEC deep water-based industries at Kumejima generate an annual turnover of 20 million USD, which is 25% of the islands Gross National Product.

Embracing the Blue Economy

- Algae that converts salt water to fresh water during the process of producing energy.

- In addition these algae can be used for the production of food, cosmetics and carbon sequestration.

- In the future algae will possibly have a greater impact on sustainability, carbon dioxide reduction and clean energy generation than wind, solar and hydroelectric combined.

Conclusion

- The Cornerstone of most developed economies is Agriculture.
- SE can help the Caribbean to firmly replace this cornerstone.
- It can facilitate in changing the paradigm of the broken plantation economy.
- It can assist in improving our food security and sovereignty.
- It is essential in attaining our NDCs and transitioning to a low carbon climate resilient economy.

Empowered lives.
Resilient nations.

THE CLIMATE IS CHANGING
ENERGY & AGRICULTURE MUST CHANGE TOO
THANK YOU!