
GREAT OPPORTUNITIES FROM DEADLY CHALLENGES
Community-scale service center in water-scarce regions: application to the…
Cape Town
Water Crisis
Team DREAMERS of the *International Summer School on Renewable Energy of RLS-Energy* Network

Our VISION of today's city

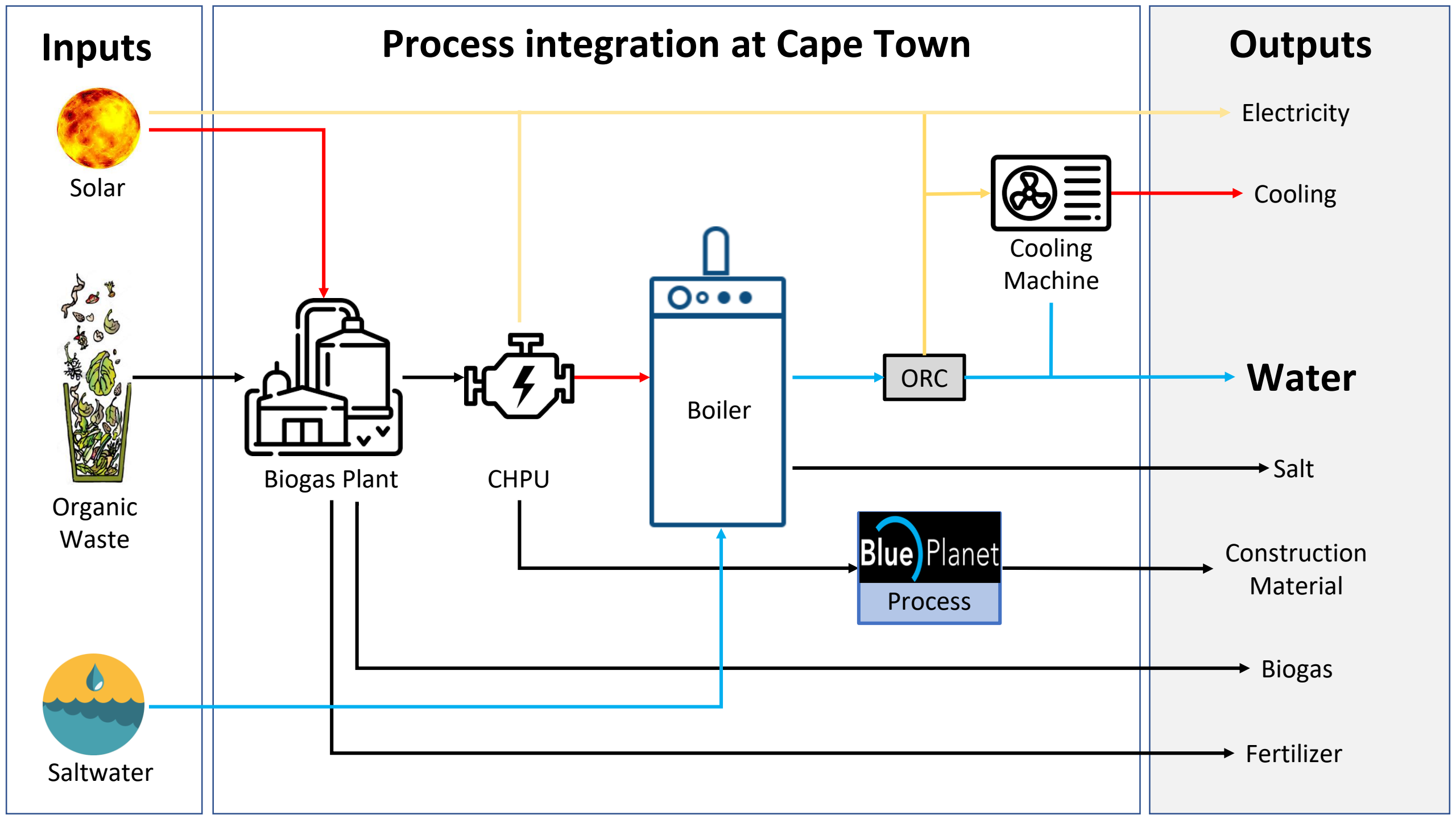
NEEDS

Water/Food
Energy
Jobs
Housing
Mobility

Community Scale Integrated Solutions

CHALLENGES

Water Scarcity
Climate Change
Energy Efficiency
Waste Management
Decarbonisation
Poverty


Inputs
Process integration at Cape Town
Outputs
Solar
Organic Waste
Saltwater
Biogas Plant
CHPU
Boiler
ORC
Cooling Machine
Blue Planet Process
Electricity
Cooling
Water
Salt
Construction Material
Biogas
Fertilizer

Local economic integration !

CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD

Outputs

Electricity

Cooling

Water

Salt

Green building material

Biogas

Fertilizer

PIONEER FOODS

Checkers

DE HAAN'S BUS & COACH

AGRI-ORGANICS
mother natures farming friend

How’s feasible ?

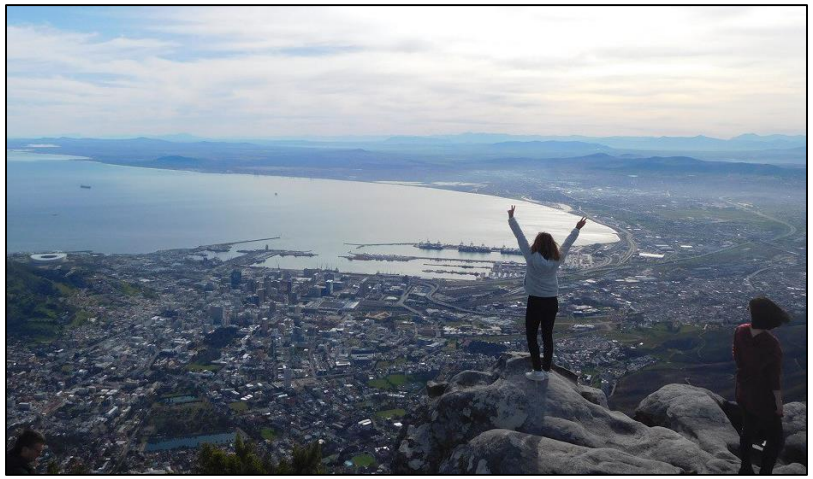
DATA ASSUMPTIONS FROM LITERATURE		
Population in Cape Town	3.5 milllion	people
Target Population for organic waste management	18169	people
% of Cape Town population	2	%
Weight of organic waste (food waste and excrements)	390	kg/y/p
INPUTS		
Organic waste (food waste and excrements)	7086	T/year
PV panel	16	m2
OUTPUTS		
DRINKABLE WATER	12532	L/d
ELECTRICITY	3066	MWh/year
SALT	453	kg/d
BIOGAS TO SELL	1488	T/year
FERTILIZER	2834	T/year
COLD DRY AIR	376	m3/hr

How’s feasible ?

Assumptions			Notes
C$/US$ conversion	1.3	C$/US$	/
CAPEX	730	C$/T	[1,2]
OPEX	62	C$/T	[1]
Revenues from digestate	10	C$/T	/
Revenues from electricity	193	C$/MWh	[3]
Economic calculations			**Notes**
CAPEX	6428900	C$	/
OPEX	545842	C$/year	/
Revenues from digestate	28863	C$/year	/
Revenues from electricity	591738	C$/year	/

Socio-economic and environmental sustainability (SEES)

- ✓ **WATER SECURITY AND QUALITY THROUGH CLEAN ENERGY PRODUCTION**
- ✓ JOB CREATION
- ✓ EMPOWERMENT/HIGH SKILLED JOB
- ✓ WASTE MANAGEMENT LEADING TO CIRCULAR ECONOMY
- ✓ PROBLEMS Of CAPE TOWN CAN THEN BOOST THE LOCAL ECONOMICS !



LET'S MAKE IT HAPPEN WITH THE RLS NETWORK !