The energy demand of Santa Cruz Island can be reduced 50% from 1'200,000 GJ/yr to 550,000 GJ/yr. The most important intervention is to get rid of fuel electricity generation and to convert transportation into electric.

- **HYBRID ENGINES AND REDUCED TRAVELING PATHS**
  - 300,000 GJ/yr

- **SHORE ELECTRICITY**
  - 20,000 GJ/yr

- **ELECTRIC BOATS**
  - 24,000 GJ/yr

- **ELECTRIC VEHICLES**
  - 90,000 GJ/yr

- **ELECTRICITY GENERATED FROM A RENEWABLE SOURCE**
  - 135,000 GJ/yr

- **WATER HEATING**
  - 14,000 GJ/yr

- **ARCHIPELAGO**
  - **BIOGAS**: 180,000 GJ/yr from organic waste from other islands
  - **CATTLE MANURE**: 108,000 GJ/yr from anaerobic biodigestors
  - **SEWAGE + URBAN BIOWASTE**: 12,000 GJ/yr from anaerobic biodigestors

- **AGRICULTURAL BIOMASS**: 105,000 GJ/yr woody waste

**REDUCED DEMAND 550,000 GJ/yr.**

- **URBAN ROOFS**
  - **SOLAR HEAT COLLECTORS**
  - 34,000 GJ/yr

- **BALTRA WIND FARM**
  - 1'000,000 GJ/yr
  - 6% needed to meet the demand, a total of 60,000 GJ/yr, that occupies 1.5 km

**URBAN ROOFS ROOF PV PANELS**

- In Puerto Ayora there are 2500 buildings with a total roof area of 190,000 m² from which 60% is assumed suitable for PV panels. That could produce 115,000 GJ/yr

**RURAL ROOFS ROOF PV PANELS**

- In the rural area there are 700 buildings with a total roof area of 50,000 m², if solar PV panels are installed it could produce 55,000 GJ/yr

**PRODUCTION MEETING DEMAND 550,000 GJ/yr.**

Using heat for heat, biofuel for fuel and electricity for electricity for a more efficient system could achieve balance.

The big solar energy potential of Santa Cruz could produce a lot more electricity and heat than is required, but the dependence to fuel into the maritime transportation sector imitates the island self-sufficiency; biogas production can just meet the reduced fuel demand, that is why reusing waste as energy is such an important input. Without biogas the cruisers’ fleet fuel demand could not be met. Furthermore waste reused as energy helps resolve waste management creating a sustainability.

**WASTE= ENERGY**

**PRODUCE SUSTAINABLY**
GALAPAGOS
Sustainable energy strategies for Santa Cruz island

DEMAND

Sustainable energy scenario

Energy network

Actual Demand

Top-down

 behavior and knowledge

bottom-up

improving building and homes

COMMUNICATION

direct heat and electricity

100% electric appliances
Transportation electric and hybrid engines

DEMAND 2.215.000 GJ

Airplanes are fuel in continent

DEMAND 1.195.000 GJ

Better living conditions

Better public transport
local services.
Shorter cruisers paths
Shore energy supply

DEMAND 700.000 GJ

DEMAND 545.000 GJ

SUSTAINABLE ENERGY GENERATION

555.000 GJ

renewable energy
Self sufficiency

biomass storage

POTENTIAL

REUSE

PRODUCE

step 1

step 2

step 3

renewable energy

Self sufficiency

biomass storage

POTENTIAL

REUSE

PRODUCE

step 1

step 2

step 3

energy

mass

area

urban

agricultural zone

baltra

Floreana

San Cristobal

Isabela

top down

bottom up

transportation

electric and hybrid engines

behavior and knowledge

improving building and homes

DIRECT HEAT AND ELECTRICITY

100% electric appliances
Transportation electric and hybrid engines