

# Vegetable waste to value add products including biogas



**WISP worked with Global Energy to identify Rennie Farms as a suitable location to invest R 1 200 000 into the development of an anaerobic digestion plant. The plant successfully produced biogas from a daily supply of 1.5 tonnes of organic vegetable waste from Rennie Farms.**

## The Organisations

Global Energy is a 100% South African-owned engineering, consulting and turnkey project company, providing innovative organic waste management and renewable energy solutions through biogas from anaerobic digestion technology.

Rennie Farms is situated between the towns of Malmesbury and Wellington in the Western Cape Province that produces ~5000 tonnes of tomatoes, cucumbers and herbs annually.

## The Challenge

In 2027 the 100% organic waste-to-landfill ban will come into effect. This is driving demand for decentralised treatment solutions that can add value on the site of the organic waste generator. Global Energy had secured a capital investment of R1.2 million to demonstrate the viability of anaerobic digestion as a decentralised organic waste treatment solution. Global Energy approached WISP to see if any WISP members had indicated that they were seeking an organic waste value add solution. Global Energy were looking to demonstrate a bespoke biogas technology project.

## The Solution

WISP facilitated a synergy between Global Energy and Rennie Farms. This new synergy has allowed for Global Energy to develop a biogas technology project that meets the specific needs of Rennie Farms. It was determined that the value add products from the organic waste would include using the biogas produced, to generate combined heat and power, with the digestate product being used on the farm. The future use of carbon dioxide is being investigated

for a greenhouse pilot. This anaerobic digestion solution produces gases which includes bio-methane and carbon dioxide and digestate sludge, of which the liquid and solid components are separated on site. The solid fraction has been proven as an effective soil enhancer. Approximately 900 litres of nutrient-rich water is recovered from each ton of tomato processed, which is returned to the farmer's irrigation dam, adding further value to Rennie Farms.

The project commenced in May 2018 and has two stages. The first stage focused on the conversion of the organic vegetable waste into biogas. This biogas would then be used to produce combined heat and power until it reached its final stages of commissioning, towards the end of September 2018. The second stage will focus on using the carbon dioxide within the pilot greenhouse.

## The Benefits

### Economic Benefits



- R 1.2 million capital investment for the design, construction and commissioning of an anaerobic digestion biogas plant.
- R 319 740 per annum worth of landfilling fees saved

### Environmental Benefits



- 1.5 tonnes per day of organic vegetable waste diverted from landfill.
- 876 tonnes per annum of fossil greenhouse gas emissions averted (CO<sub>2</sub>e)



# WISP

Western Cape Industrial Symbiosis Programme

Delivered by GreenCape

## Connecting Industry Creating Opportunity

### About WISP

The Western Cape Industrial Symbiosis Programme (WISP) develops mutually profitable links between companies from all industrial sectors, so that under-utilised resources such as energy and water, and/or materials from one company can be recovered, reprocessed and re-used by others.

#### Driven by Business

The programme uses actual business opportunities as the mechanism for encouraging resource efficiency. Its holistic approach sees it actively dealing with ALL resources including water, energy, materials, logistics, assets and expertise. The programme is based on the highly successful national programme in the UK (NISP), which demonstrated that industrial symbiosis has the potential to significantly reduce industrial and commercial waste and comprehensively lessen the adverse environmental impacts of business.

#### Free Membership

WISP is a free facilitation service funded by the City of Cape Town and delivered by the sector development agency GreenCape. WISP enables synergies to happen by filling the gaps that its members, especially SMEs, could experience due to the lack of time or dedicated expertise needed to identify and implement resource, waste and energy efficient practices. The diversity of the industries in which WISP operates, and the variety and size of its business members, means that WISP has the potential to generate significant economic, environmental and social benefits from the synergies and projects that it brings about.

#### Partnership with Purpose

WISP works hand in hand with leading trade associations, manufacturers and other organisations to add real value to business. We are working in collaboration with the City of Cape Town, International Synergies and the National Cleaner Production Centre (NCPC) and the Western Cape Government.

**Contact us to become a member and get involved!**

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**www.greencape.co.za/wisp**



WISP is delivered by

## GreenCape

GreenCape was established to promote the development of the green economy in the the Western Cape Province. We assist viable green businesses and potential investors in the green economy to remove barriers to their establishment and growth. Our aim is to help unlock the investment and employment

potential of green business, technologies and manufacturing and put the province on course to become the green economy hub for Sub-Saharan Africa. This work, in turn, contributes to improving the resource efficiency, carbon intensity and resilience of the regional economy.

WISP is funded by:



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