

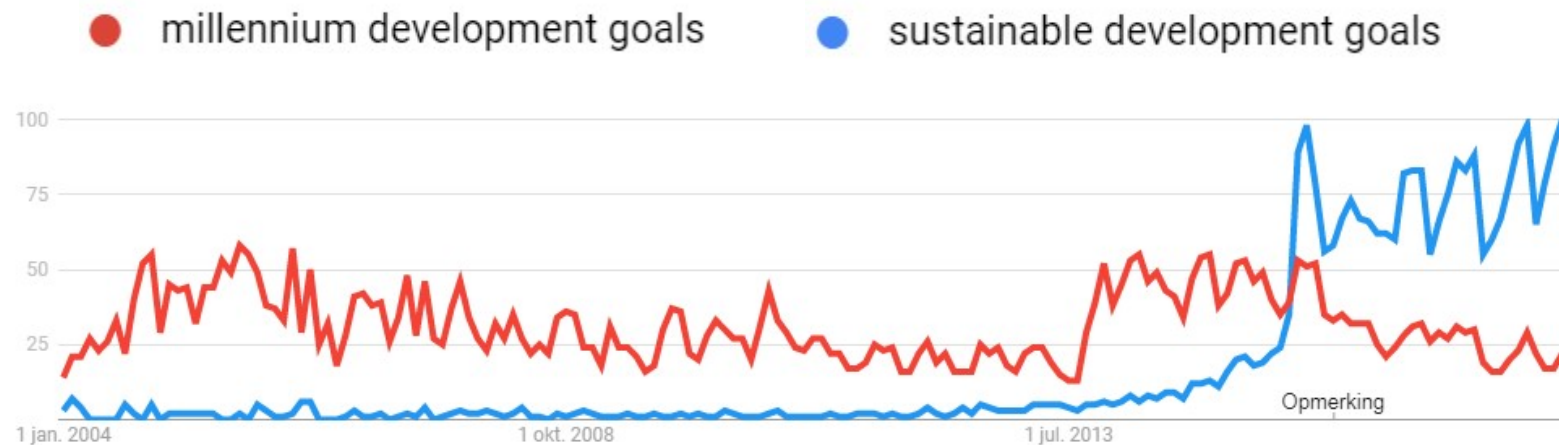
A background image showing a modern cityscape with several high-rise apartment buildings under a bright blue sky with a sun flare. In the foreground, there is a green lawn with a small pond and trees.

AN INNOVATION EXPERIENCE FOR A SUSTAINABLE WORLD

VITO is an independent Flemish research organisation in the area of cleantech and sustainable development. Our goal? To accelerate the transition to a sustainable world.

Dirk Van Speybroeck
Strategic Adviser
<https://vito.be>

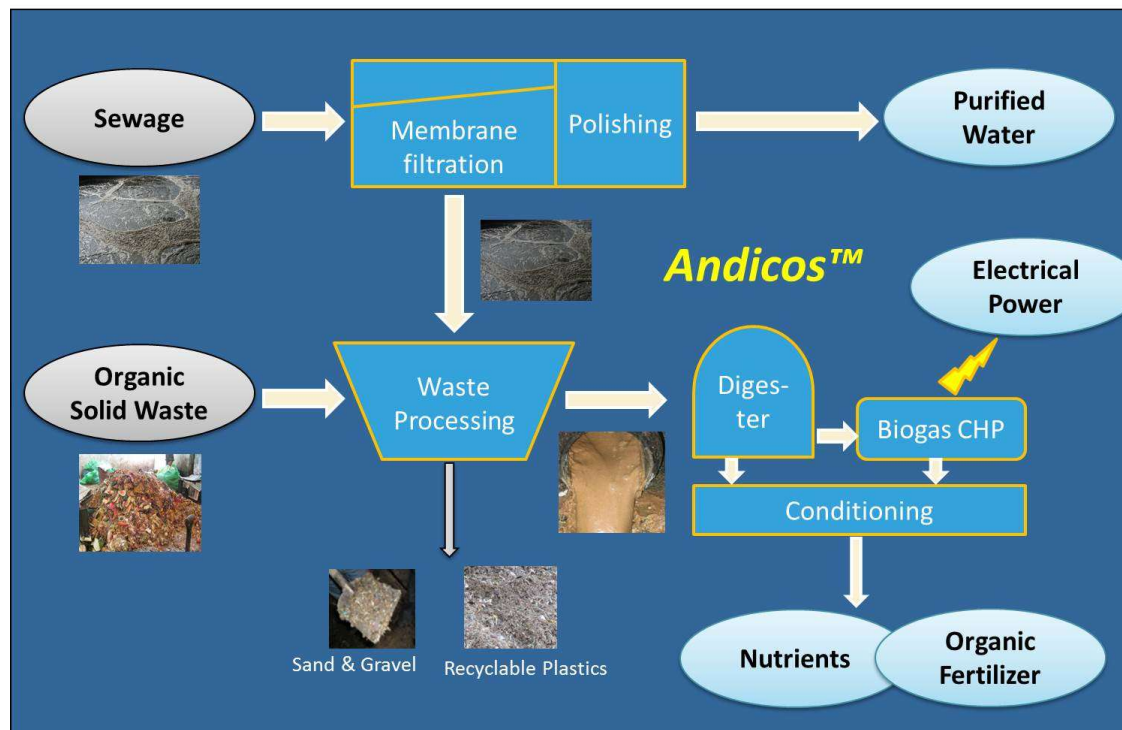
THE CONTEXT



- » **2000 the Millennium Declaration** on Environment and Development with its 8 MDGs
- » **2015 Paris Agreement** on the reduction of Climate Change
- » **2015 the 2030 Agenda** for Sustainable Development
 - » 17 SDG
 - » 169 targets
 - » 232 indicators

EXAMPLE 1: INTEGRATED WATER/WASTE SOLUTIONS

- » ANDICOS® system (ANaerobic Digestion by Combining Organic waste and Sewage)
- » Domestic wastewater is combined with organic domestic waste
- » From energy consumption to energy production



EXAMPLE 1: INTEGRATED WATER/WASTE SOLUTIONS

- » ANDICOS® system (ANaerobic Digestion by Combining Organic waste and Sewage)
- » Domestic wastewater is combined with organic domestic waste
- » From energy consumption to energy production

First Project in India

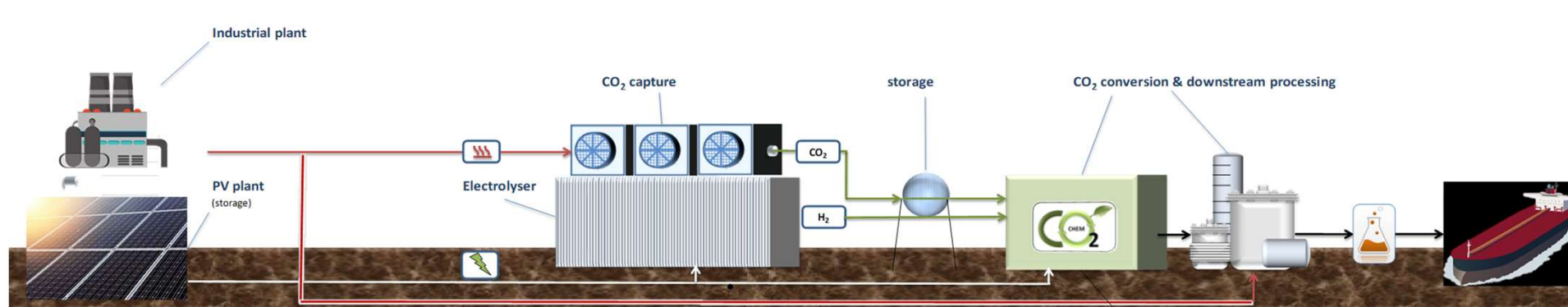
InfoSys CSR, Hyderabad

3000 PE demonstration plant to generate >50 kWh of electricity



EXAMPLE 2: ENERGY & CLIMATE PLANNING

- » Paris Climate Agreement (2015):
 - » All signatories need to prepare energy & climate plans
 - » Innovative technology: Carbon capture, storage and/or use to reduce carbon emissions
- » Technology enabler, clean tech promotor, e.g. World Bank consultancies:
 - » *Carbon Capture and Storage Strategy and Capacity Building for Fossil Fuel Fired Power Plants in the Maghreb Countries*
 - » *Techno-economic assessment of Carbon Capture and Storage (CCS) deployment in power stations in the Southern Africa and Balkan regions*



EXAMPLE 3: FOOD SECURITY & EARLY WARNING

- » Global agricultural monitoring via remote sensing & GEOspatial technology
- » Case study Malawi (with FICA support): area, production estimates, stress, ...

Trends and Characteristics of Agriculture in Malawi

Figure 15: Relative surface area cultivated per crop per district at a five year interval

Over time, other maize varieties are introduced and partly replace local maize. In 1985 hybrid maize is planted in the northern and central part of the country. For the southern departments this process of replacing the local maize is

In August (Figure 21), some additional plots are cleared from weeds. No red shade from emerging crops can be observed yet. The farmers may not have sown yet or the seedlings are still very small. The soils are much darker than the sandy soils North of the river, whereas this was not the case in June. Therefore they are probably irrigated. On the borders of some plots, weeds are appearing ('). Something else quite remarkable is natural vegetation that has irregular shapes (see e.g.).

crop production and farmer's income

Malawi is used for rainfed agriculture. Below average or at moments in the growing season - as experienced in the crop production. Villages entirely depending on rain have insufficient crop reserves to bridge the period

Figure 2: Farmers on their rice fields

much lower on irrigated fields where additional water is in rainfall is scarce or irregular. In addition, irrigation cycle per year, which gives the farmers more opportunities to sell their crops at the markets and increase their income.

For these two major reasons, increasing the area of irrigated land is a top priority on the development agenda in Malawi. Not only the development of new irrigation schemes is supported, but the rehabilitation of old irrigation infrastructure has equally become a focal point.

One of the largest efforts of the government to boost irrigation in Malawi is the Presidential Green Belt Initiative. This programme aims to increase agricultural and horticultural production along the coast of Lake Malawi by increasing irrigation. The "Green Belt" runs from Karonga in the north to Nsanje in the south and covers an area up to 20 km from the lake shore. Several national institutions and donors are involved in the project, with irrigation initiatives taking place at various scales, from micro-projects with local communities up to large-sized commercial schemes.

Parcel management

Figure 25: Area covered by different parcel wet season

supply water to the whole area between the pipeline. During this dry season (Figure 24) there was a third of parcels located closest to the pipeline that were covered with rice.

VI time-series derived from the satellite imagery over space and time of the area.

Figure 24: Map of parcel management during dry season 2010

The chart of Figure 25 shows that more than 6 ha were covered with rice during the wet season, while 5 ha remained unused. During the dry season 4 ha were covered with rice although the irrigation scheme is designed to supply water to 6 ha of rice.



G·STIC 2018

BRUSSELS 28 - 30 NOVEMBER

Connecting technological innovation to decision making for sustainability

Register for G-STIC 2018 at www.gstic.org

G-STIC: GLOBAL SUSTAINABLE TECHNOLOGY AND INNOVATION CONFERENCE SERIES

<https://2018.gstic.org/>

- Conference series on integrated technological solutions for the SDGs
- Organised by 6 independent and not-for-profit technological research institutes
- Technologies that are socially acceptable, economically feasible and affordable, and environmentally sound
- Making the link between market-ready, innovative technological solutions and the international policy community
- More than a conference: a movement for new tech for the SDGs; building on global expert networks, expert institutions, wide consultations and knowledge bases
- Agroecology, Circular economy, Energy positive communities, Geospatial data, Waste water as a resource, Health, Education



Four key findings

- 1. Many technologies needed to achieve many SDG-related targets are readily available.** Following demonstration to show effectiveness under real-life conditions, we need to develop strategies for deployment at scale to a level necessary to achieve the SDGs. For this, suitable policy and institutional environments, models, targeted incentives and partnerships are needed, which themselves are underpinned and strengthened by deep and sustained business, political and citizen engagement.
- 2. Widely distributed and bottom-up technological solutions that are appropriate for communities' needs and circumstances are to drive the realisation of **the energy and food SDGs, two key SDGs for achieving the 2030 Agenda.****
- 3. Circular economy is an essential element** of the new narrative, with Industry 4.0 a key enabler to achieve it and resource recovery and use from waste streams, such as waste water and CO₂, the new normal.
- 4. ICTs are an indispensable tool** to enable the achievement of the SDGs.

STAGE-SETTING THE 3 QUESTIONS

From the VITO experience as a technology enabler

» **Pre-conditions**

- » Circular economy is the new normal
- » ICTs are an indispensable tool (Industry 4.0)
- » Focus on energy and food SDGs

» **Barriers**

- » Single problem > solution approach
- » Weak policy and institutional environments
- » No private sector involved

» **Scaling-up**

- » Target integrated solutions, solving more than 1 problem at a time
- » Socially acceptable and economically feasible
- » Pilot projects as technology demonstrators
- » Setting up networks between industry, academia and governments
- » Active people involvement is crucial to reach high impact



G·STIC 2018

BRUSSELS 28 - 30 NOVEMBER

Connecting technological innovation to decision making for sustainability

Register for G-STIC 2018 at www.gstic.org