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MASTERCLASS: BIOMASS OPPORTUNITIES IN SOUTH AFRICA

African
Utility Week



PART OF **DIGITAL ENERGY
FESTIVAL**

HOST PUBLICATION **ESI
AFRICA** AFRICA'S
POWER
JOURNAL

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HOST:
SEBASTIAAN MESSERSCHMIDT
CONSUL-GENERAL OF THE KINGDOM OF
THE NETHERLANDS IN CAPE TOWN,
SOUTH AFRICA



MODERATOR:
WERNER EULER
MANAGING DIRECTOR, ILIVE SUSTAINABLE
DEVELOPMENT, SOUTH AFRICA

African
Utility Week

POWERGEN
AFRICA

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SPEAKER PANEL

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EMIEL HANEKAMP

SENIOR PARTNER, PARTNERS
FOR INNOVATION, THE
NETHERLANDS



JORIS SPAAN

PROJECT MANAGER, YILKINS,
THE NETHERLANDS



RUBEN WALKER

CEO, AFRICAN CLEAN ENERGY,
LESOTHO



BART-WILLEM TEN CATE

LOW-CARBON STRATEGIST,
FINCO FUEL GROUP, THE
NETHERLANDS

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JORDI MEIJER

MANAGING DIRECTOR, CONTROL
UNION, SOUTH AFRICA



GARTH BARNES

DEPUTY DIRECTOR: RISK AND STRATEGIC
PARTNERSHIPS, DEPARTMENT OF
ENVIRONMENT, FORESTRY AND FISHERIES,
SOUTH AFRICA



KEES KWANT

SENIOR EXPERT BIOENERGY AND LIAISON
CIRCULAR BIOBASED ECONOMY, NETHERLANDS
ENTERPRISE AGENCY PART OF MINISTRY OF
ECONOMIC AFFAIRS, THE NETHERLANDS

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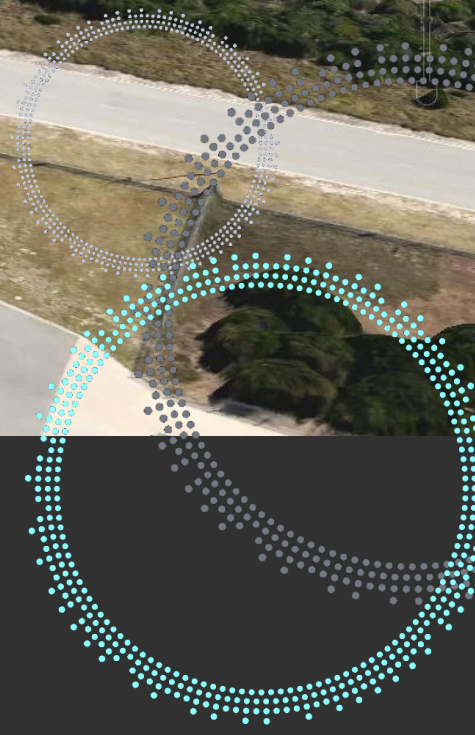


COEGA

BIOMASS

CENTRE

Joint Press Release – 23 November 2020



COEGA BIOMASS CENTRE

South Africa's largest biomass energy business has officially launched:

Hive Energy (United Kingdom), iLive Sustainable Development (South Africa) and Partners for Innovation (Netherlands) have joined forces to establish Coega Biomass Centre.





COEGA
BIOMASS
CENTRE

Production Facility

Coega Biomass Centre is an existing pellet plant situated in the Special Economic Zone, in Coega, Port Elizabeth, South Africa, and 7km from the deep-sea port facility in Coega. It is capable of processing 180.000 tons of wet biomass and outputting 120.000 ton pellets per annum. The plant has been in care and maintenance by the DTI since 2014, after a 4 years of operation.

Goals:

- ❖ Recommission the white wood pellet facility in 9 months
- ❖ Supply into export markets
- ❖ Diversify into local markets (i.e. electricity, steam & cooking stove market)
- ❖ Demonstrate a feasible biomass model in SA



Processing equipment at the Coega Biomass Centre Plant, in the Special Economic Zone, Port Elizabeth, South Africa



Coega Biomass Centre's feedstock includes the use of biomass residues from non-indigenous forest and destructive invasive vegetation, restoring indigenous vegetation, improving water supplies. The supply will be developed in the next few months, while future biomass supplies may include green garden residues, fire damaged plantations, wood processing waste, and forest undergrowth clearings.



Left: Sawmill residues from a local sawmill in the region.

Right: Potential sources of sustainable biomass from waste and residues



Alien Invasive Plants Clearings



Sawmill Residues



Green Garden Waste



Forest Undergrowth Clearings



Wood processing waste



Fire Damaged Plantations





An estimated 200,000 tons of equivalent coal CO₂ per annum could be offset with biomass pellets produced by Coega Biomass Centre.

Approximately 66 MW_(thermal) renewable energy feedstock will be produced at full capacity.

All biomass is to be sourced from suppliers certified by leading sustainability programs and certified by independent third parties. This includes programs such as FSC, GGL, RSB or SBP.



Examples of third-party sustainability certification schemes which all biomass will comply to as a minimum





Biomass pellets are internationally traded commodities mainly for electricity, as well as industrial and domestic heating purposes. Export to Europe and Asia will form a base market for Coega Biomass Centre. A potential of over one billion ZAR in foreign currency could flow to South Africa from export sales during the next 5 years, assisting the country's trade deficit.

Over the next few months Coega Biomass Centre will develop and secure its off-take agreements prior to its commissioning date.



In the future biomass pellets could be diverted to local off-takers. This includes markets for electricity, steam, liquid fuels, and domestic clean cooking stoves use.

*Above: Short-term market with base load export to Europe or Asia
Below: Future alternative markets and industry developments*





Coega Biomass Centre is conducting a feasibility study to introduce new drying and torrefaction technologies to produce black pellets. The range of feedstocks used to produce black pellets is broad and enables the beneficiation of biomass residues – such as forestry residues that would otherwise be left in the plantations to rot, producing methane which has a very high Green House Gas impact.

Future research and development will include the feasibility of biomass use for value-add products and pellet supplies into advance fuel technologies (biomass-to-liquids) via gasification and Fischer-Tropsch.



Some of the Coega Biomass Centre pilot unit –
Head of Technology, Andrew and Joseph Kock





COEGA
BIOMASS
CENTRE

Contact US

For more info on CBC or the shareholders please contact

Coega Biomass Centre:

info@coegabiomass.co.za

www.coegabiomass.co.za

Hive Energy:

emily.marshall@countercontext.com

www.hiveenergy.co.uk

iLive Sustainable Development:

info@iLiveWorld.com

www.iliveworld.com

Partners for Innovation:

e.hanekamp@partnersforinnovation.com

www.partnersforinnovation.com



*Werner Euler – Managing Director of CBC; at Coega Biomass Centre,
In the Special Economic Zone, Port Elizabeth, South Africa*

follow Coega Biomass Centre on [LinkedIn](#) or via de [website](#)





COEGA
BIOMASS
CENTRE

Special Thanks – Partners for International Biomass



Ministry of Foreign Affairs of the
Netherlands



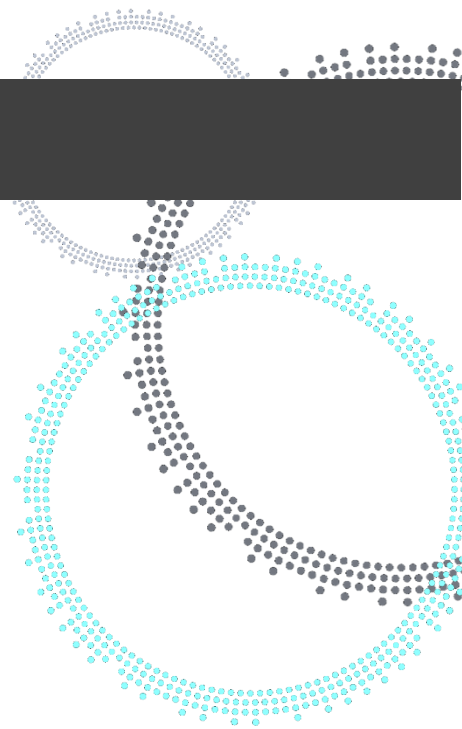
Netherlands Enterprise Agency



Signing event on 31 October 2019 of the Solid Biomass South Africa consortium as part of the Partners for International Business Program

Special thanks to the Dutch Enterprise Agency and the Royal Dutch Embassy in South Africa for sponsoring the media briefing, hosted during the Africa Utility Week.

Coega Biomass Centre is a product of iLive and Partners for Innovation's collaboration in the Solid Biomass South Africa consortium as part of the Partners for International Business Program subsidized by the Dutch Government.





COEGA

BIOMASS

sustainable biomass products

Master class: Biomass opportunities in South Africa



Netherlands Enterprise Agency



Kingdom of the Netherlands

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Partners **for**
Innovation

SOLID BIOMASS OPPORTUNITIES IN SOUTH AFRICA

Partners for Innovation BV
Netherlands

25 November 2020 | Emiel Hanekamp



PARTNERS FOR INNOVATION

- Dutch consultancy and project development company founded in 2006
- *Together with our clients we realise profitable solutions for a sustainable and circular future*
- 2 offices: Amsterdam and Niamey (Niger, West Africa)
- Respectively 17 and 8 people employed
- Focus areas:
 - Circular economy
 - Sustainable Energy
 - Agribusiness
- Geographic focus: Europe and Sub Saharan Africa
- More info: www.partnersforinnovation.com



Partners **for**
Innovation



WORKING TOGETHER ON SUSTAINABLE INNOVATION

Together with our clients we realize profitable solutions for a **sustainable and circular future**.



Circular economy



Sustainable energy



Agribusiness

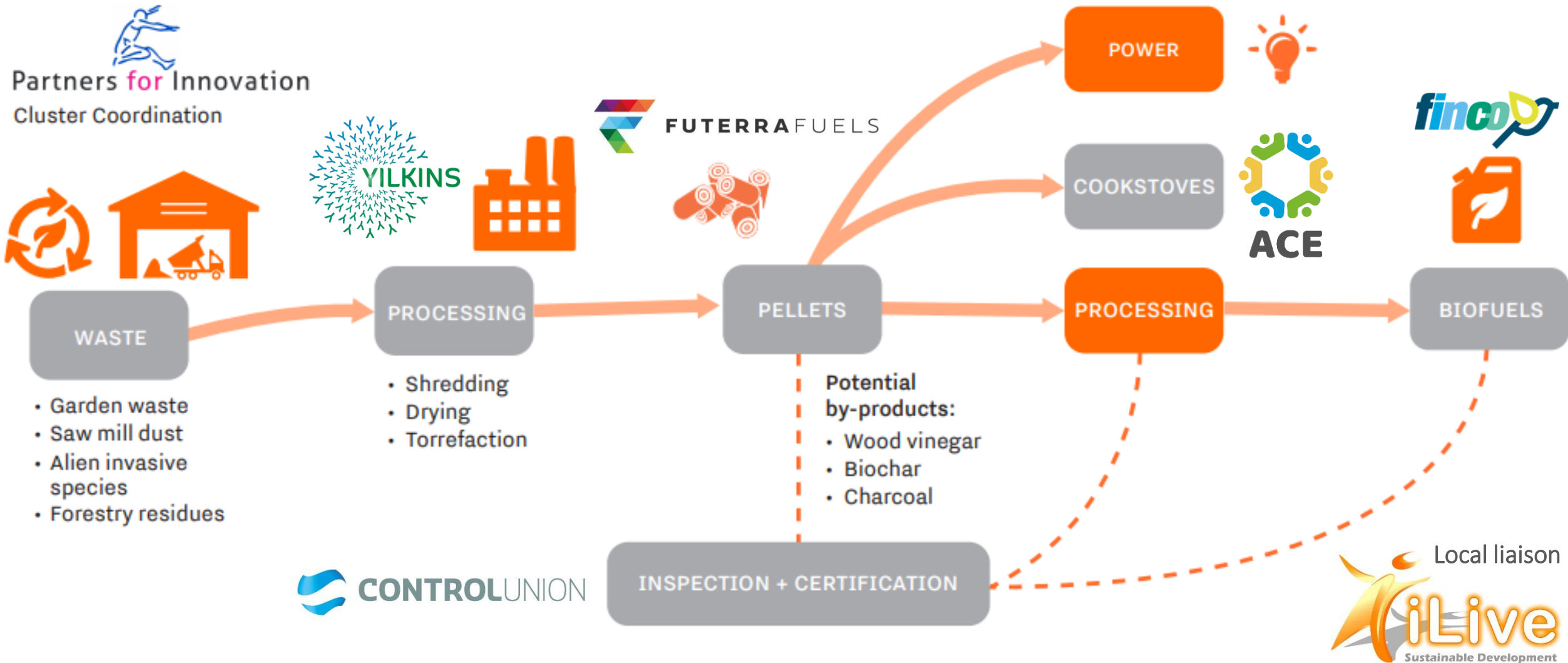


PIB - SOLID BIOMASS OPPORTUNITIES SOUTH AFRICA

AIM: developing new business opportunities aimed at valorising solid biomass waste in South Africa

- At least 10 Million tonnes of pellets can be produced with the available waste streams in SA
- Average price of pellets delivered in Western Europe is \$ 110-150 / tonnes
- Many local socio-economic and environmental benefits

DUTCH COMPANIES ACTIVE IN ENTIRE SOLID BIOMASS VALUE CHAIN



FIRST ACHIEVEMENT: ACQUISITION OF MOTHBALLED PELLET PLANT





QUESTIONS?

For more information please contact:

Emiel Hanekamp

e.hanekamp@partnersforinnovation.com

+31 (0)6 5154 2539





<http://www.coegabiomass.co.za>



Unlocking Biomass Potential

Yilkins presentation

Digital African Utility Week
25 november 2020

Yilkins – The enabling company

- Yilkins technology offers our clients complete solutions to produce
 - Dried biomass
 - Original “white” pellets
 - Superior “biocoal” or “black” pellets (through torrefaction)
- Focus on biomass residues and organic waste material (including herbaceous biomass)
- Yilkins offers production technology at the right scale and with both a large scale- or a “local to local” approach.



YDS Technology scope

YDS Technology with focus on:

Feedstock flexibility

High energy efficiency

Superior product quality

Safe and reliable operation

YDS Technologies:

Single stage drying

Two stage drying with high efficiency

Torrefaction plant (drop-in option)

Integrated combustion

Pretreatment knowledge



Construction-phase of 6 torrefaction lines (Futerra, Portugal)

Biomass is not a fuel – but biocoal pellets are

BIOCOAL fuel is produced by means of torrefaction

Torrefaction is a thermal treatment applied at 300 C and in absence of oxygen

BIOCOAL fuel properties are superior:

- High calorific value

- Volumetric energy density

- Efficient combustion with low emissions

BIOCOAL is precondition to establish commodity fuels from a wide variety of biomass feedstocks



SA opportunities

Utilization of (unlocking biomass potential):

Agricultural / Municipal waste streams

Invasive species

Sawdust of existing wood processing industry

Local to Local production and utilization:

Sustainable heating locally

Biocoal used for cooking

Large scale applications / business chain

Co-firing in power stations (coal replacement)

Export casus: sales of pellets to EU / Asia

Biocoal as starting point for biobased products (f.e. fuels)

In all applications a serious amount of job's will be created



More information:

Joris Spaan

Business Development

j.spaan@yilkins.com



Yilkins is a renewable technology company and strategic partner for its customers, enabling them in the upgrading of biomass residues into high value energy pellets for electricity, heat and chemical applications.

www.yilkins.com



AFRICAN CLEAN ENERGY



AFRICAN CLEAN ENERGY

Investment Teaser

November 2020



Our mission is to eliminate the worst forms of poverty on a platform of clean energy and smartphone technology

2-5 tonnes
annual CO₂
savings per
ACE One

40 lives
saved every
25k ACE Ones
distributed

Women save
25 hrs
every month
on cooking

Providing an essential, sustainable household energy solution to a fast growing market of over 900 million low-income households



IMPACT



Preserving Africa's forests



Improving people's health

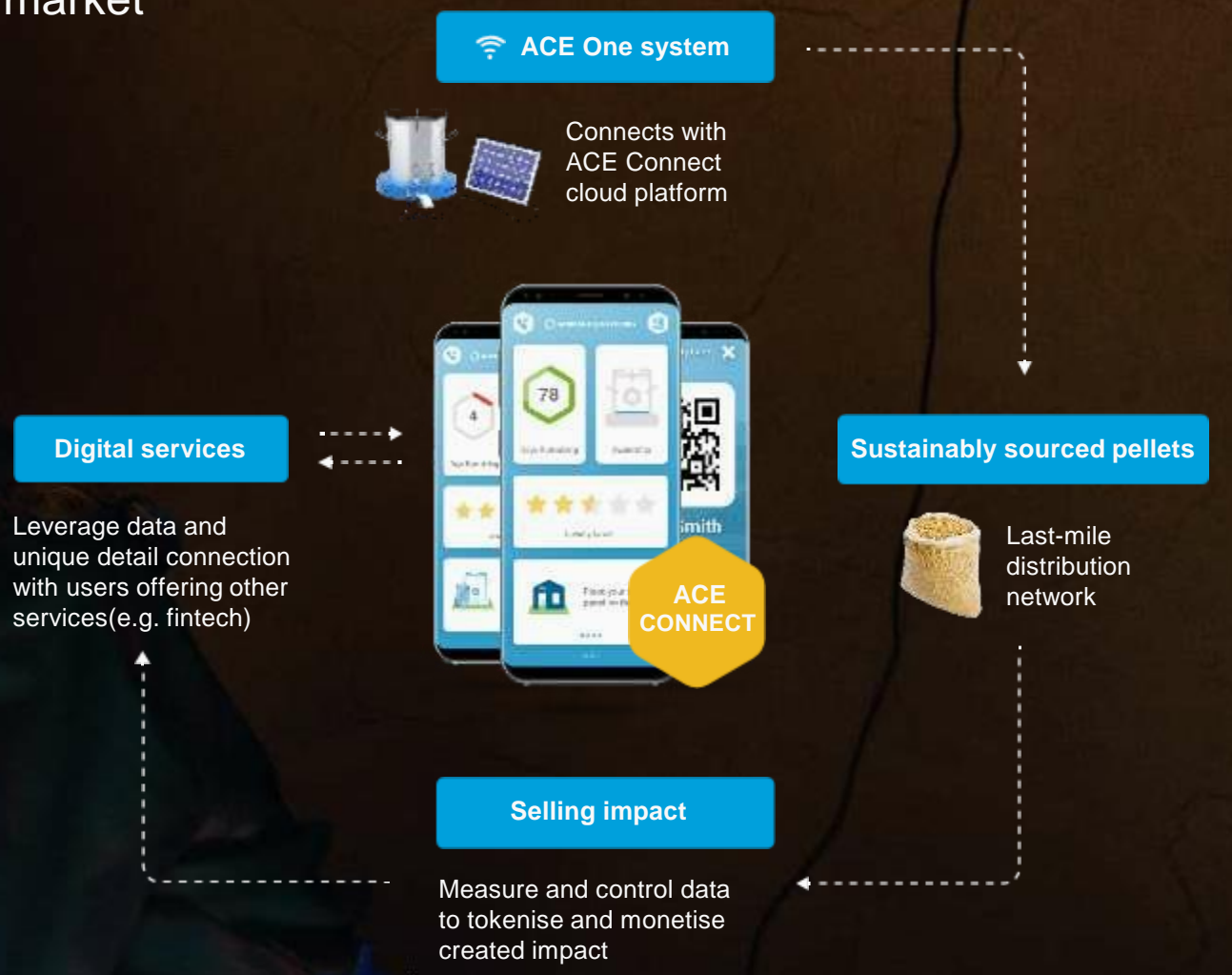


Lowering carbon emissions

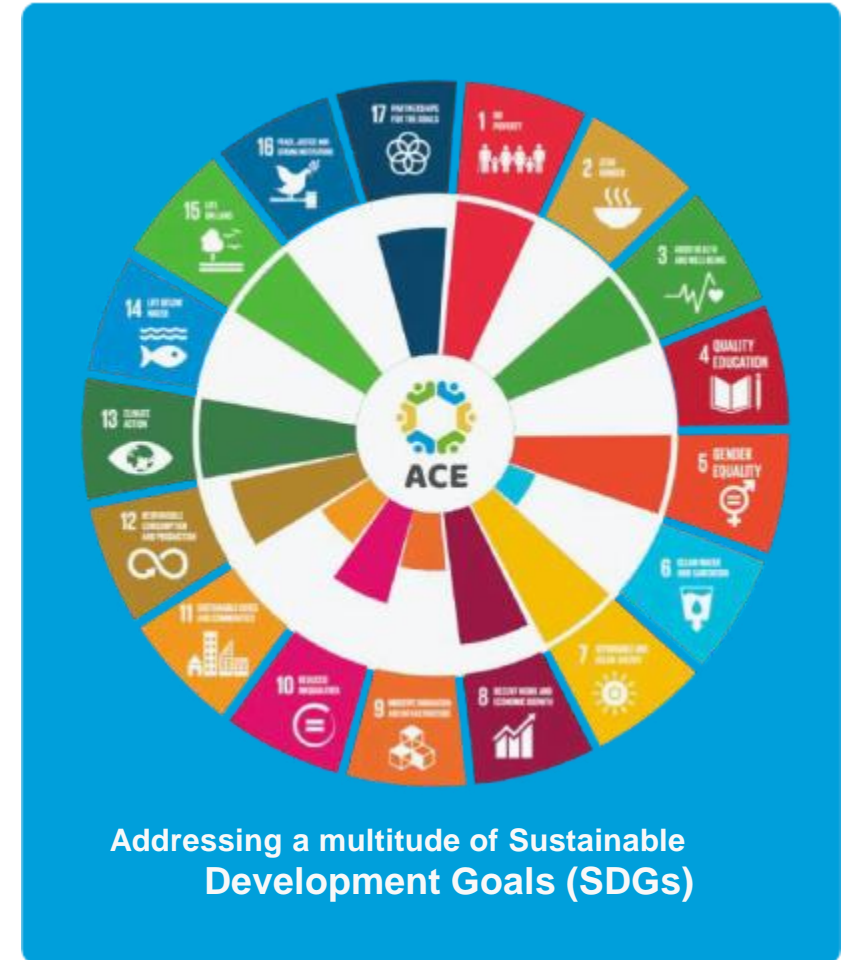
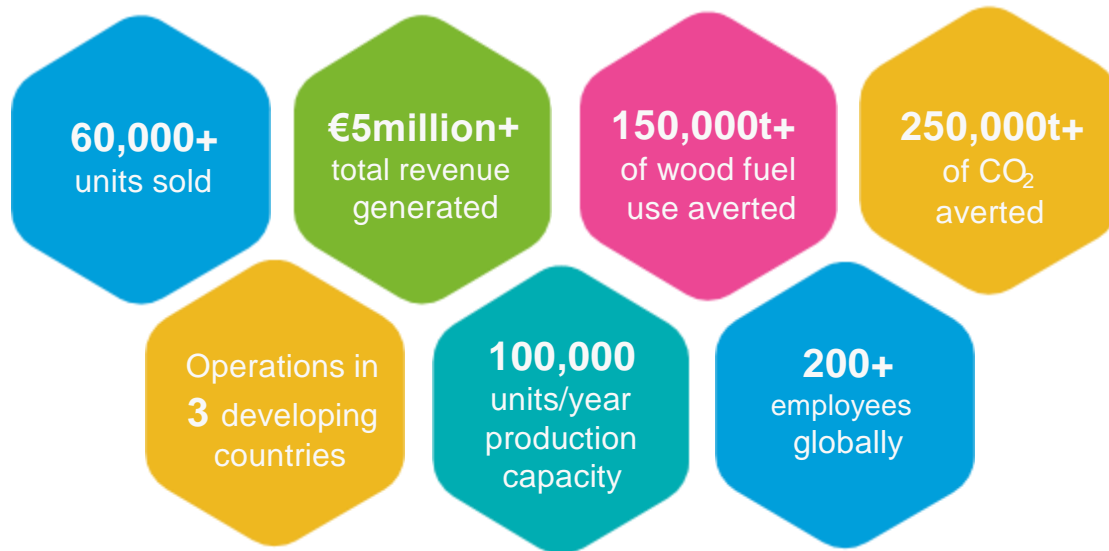


Increasing people's wealth

The ACE One is the first thermal energy product that integrates with smartphones providing unique ingredients to develop a sustainable business model in this market



ACE has gained significant traction in developing economies and is well positioned to become the global leader in its market



ACE has developed relationships with institutions, private sector enterprises and technology partners that will enable sustainable growth

Key partners, funders and recognition



Sustainable growth projection



Gross margin of 35% as per 2020 expected to substantially increase with scale from 2021 onwards



ACE is developing a last-mile distribution network to supply sustainably sourced biomass pellets on the back of its ACE Connect platform




With this scale-up, ACE is projected to become EBT positive by end of 2023 with revenues of over €140m by 2026


ACE has more than 200 employees in its 3 operating countries and is primed for further roll-out




Netherlands
Global support team


Vietnam
1 consolidation centre
To efficiently manage procurement (mainly in Asia)


Uganda
2 sales offices


Lesotho
6 sales offices
1 manufacturing facility


Cambodia
2 sales offices
1 manufacturing facility

Entered in 2017
19,500+ units sold
in **East Africa**



ACE's first market,
where proof of concept
was developed in 2014
30,000+ units sold
in **Southern Africa**



Entered in 2016
6,000+ units sold
in **South East Asia**



Ca. 4,500+ units
sold across the
rest of the world



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+31 6 3383 1208



Fedde van Dijk
Stecc Corporate Finance | Funding Advisor to ACE
f.vandijk@stecc.com
+31 6 1338 1464



AFRICAN CLEAN ENERGY





We are FinCo Fuel

African Utility week, 25 November 2020

Bart-Willem ten Cate

FinCo Fuel system geared toward climate neutral solutions

FinCo is a downstream fuel supplier with an integrated distribution network and logistics system



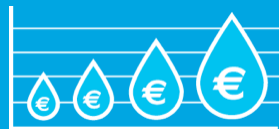
- We invest in low-carbon fuels in order to create energy with a smaller CO₂-footprint
- Together with our partners, customers and our solid operating system we drive the energy transition of transport in North Western Europe
- 25% of the Dutch fuel market is supplied via the FinCo system



Volume
4.1 Million m³



Turnover
€2 Billion



EBITDA
€21.5 Million



Employees
151 FTE



Product
locations
28 terminals



400 Daily truck
loadings



Key figures 2019

Solid biomass South Africa - opportunity for biofuels production

Europe

- Wants to become the 1st climate neutral continent in 2050
- Needs sustainable biofuels to bring down emissions in mobility
- Legislation geared towards sustainable waste and residue (lignocellulosic) feedstocks for these biofuels

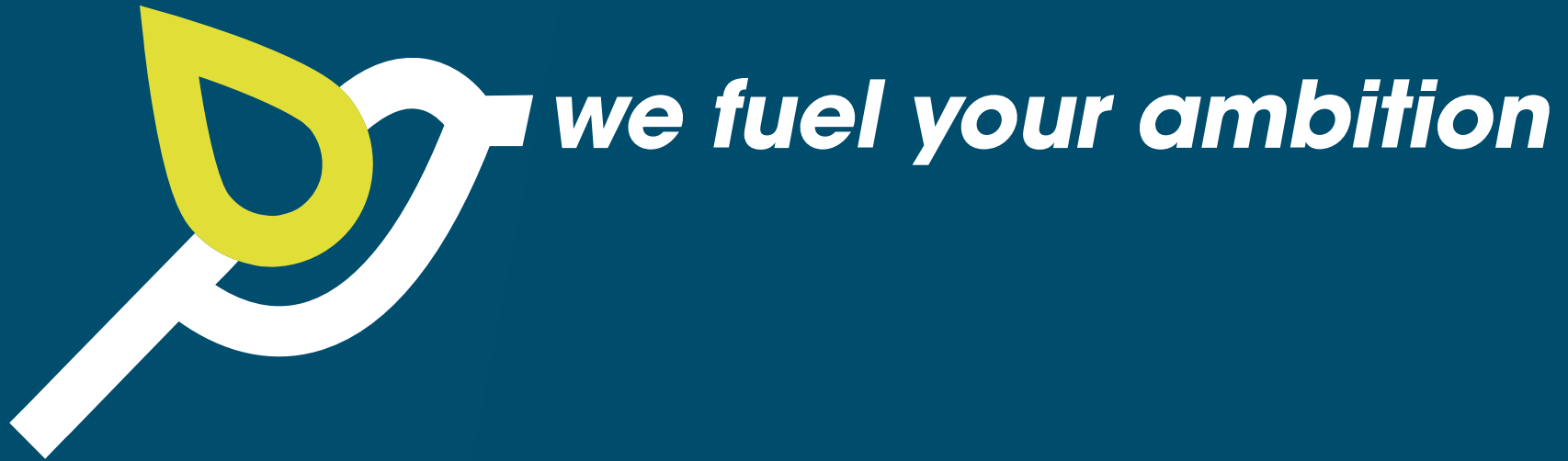
South Africa

- Offers huge potential for these sustainable feedstocks (e.g. invasive alien species)

FinCo

- Is committed to setup supply chain partnership to bring sustainable bioenergy into the European transport markets
- Sells advanced biofuels at a premium over conventional bio-energy, which acts a flywheel to initiate, build and maintain the necessary supply chains in South Africa





Established in Rotterdam

1920



70+ Countries



Family owned
non listed company.
Long term vision -
Thinking in generations.



4000+ People



Certifications



Collateral
Services



Commodity
inspections



Commodity
logistics



Overview certification standards Biomass



- Green Gold Label (<http://www.greengoldcertified.org/>)
- International Sustainability and Carbon Certification (<https://www.iscc-system.org/>)



- Sustainable Biomass Program (<https://sbp-cert.org/>)
- Roundtable on Sustainable Biomaterials (<https://rsb.org/>)



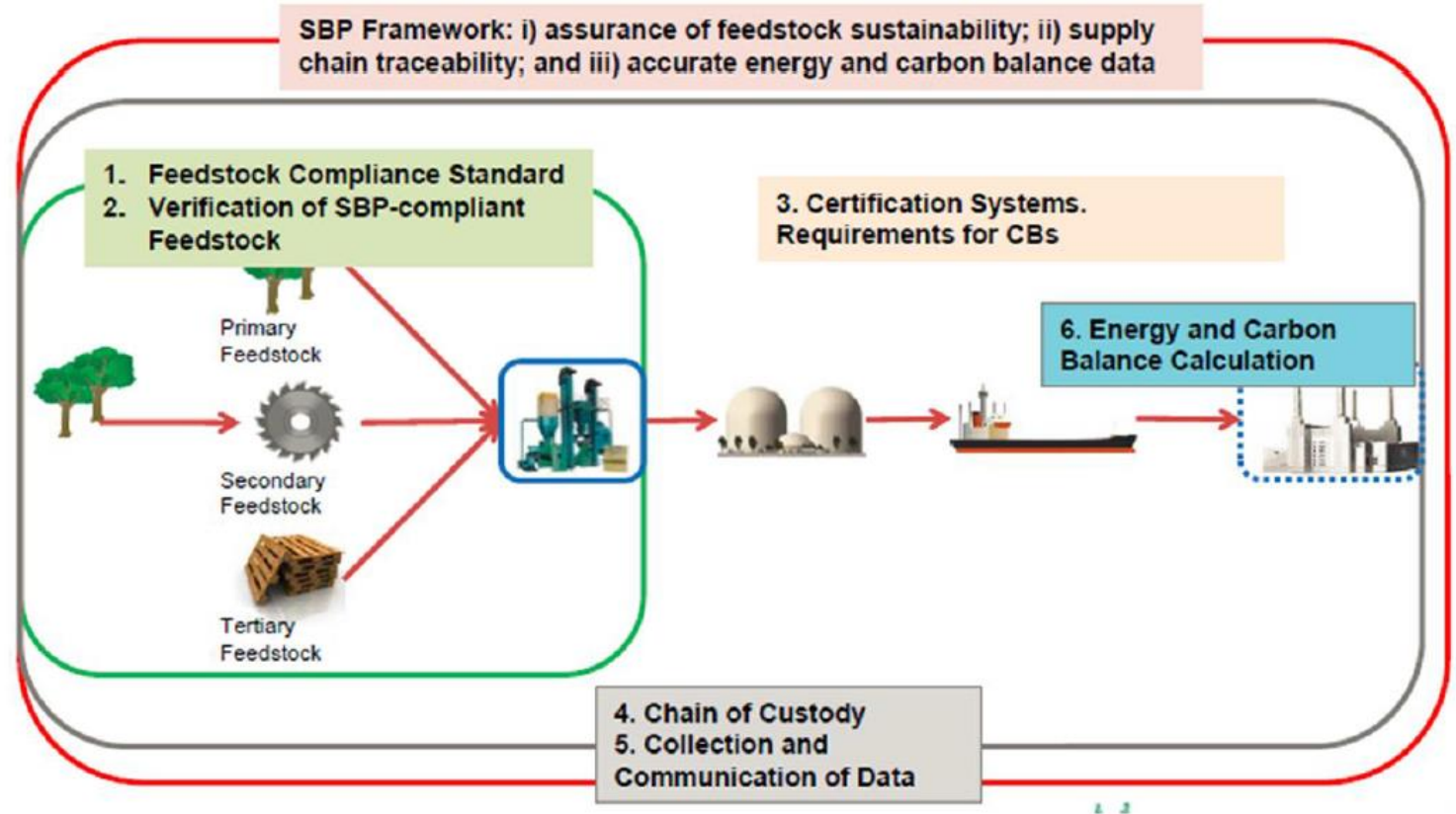
Differences between GGL and SBP

SBP

Locally adapted standards
 No GMO allowed
 Stakeholder consultation
 Dispute System required
 No TCs
 Mixing allowed

GGL

Standard set of requirements
 for supplier assessment
 GMO allowed
 No stakeholder consultation
 No dispute system
 No mixing allowed





Benefits of certification

- ✓ Sustainability assurance through independent, third party verification and certification
- ✓ Reduce your environmental footprint
- ✓ Comply with the applicable legislation and align with national regulations for sourcing sustainable biomass
- ✓ Traceability



One stop shop

- Independent, accredited certification
- Quality and quantity inspections
- Stockpile calculations
- Analysis
- Logistics





Netherlands Enterprise Agency
Ministry of Economic Affairs and Climate

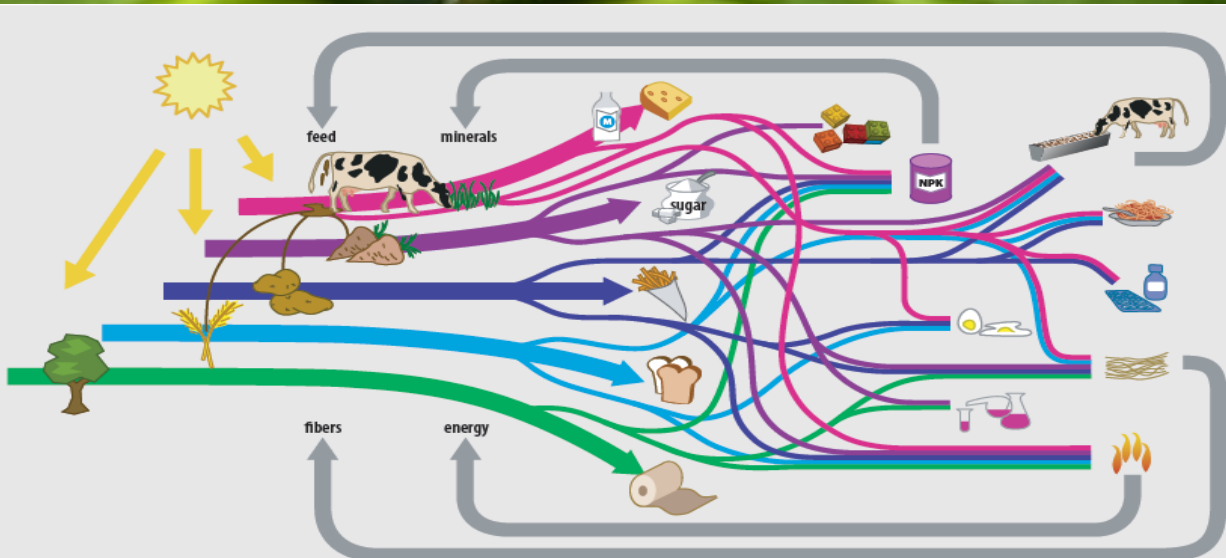


Biobased Energy

- Policies Netherlands
- PIB collaboration with South Africa

Ir. Kees W. Kwant

Exco IEA Bioenergy





Sustainable Development Goals(SDG)



SDG relevant for Biomass:

- 1: no poverty
- 7 : Clean Energy for all
- 9 : Industry, Circular Economy
- 11: Sustainable and Clean Cities
- 13: Climate Action
- 15: Life on land
- 17: Partnerships



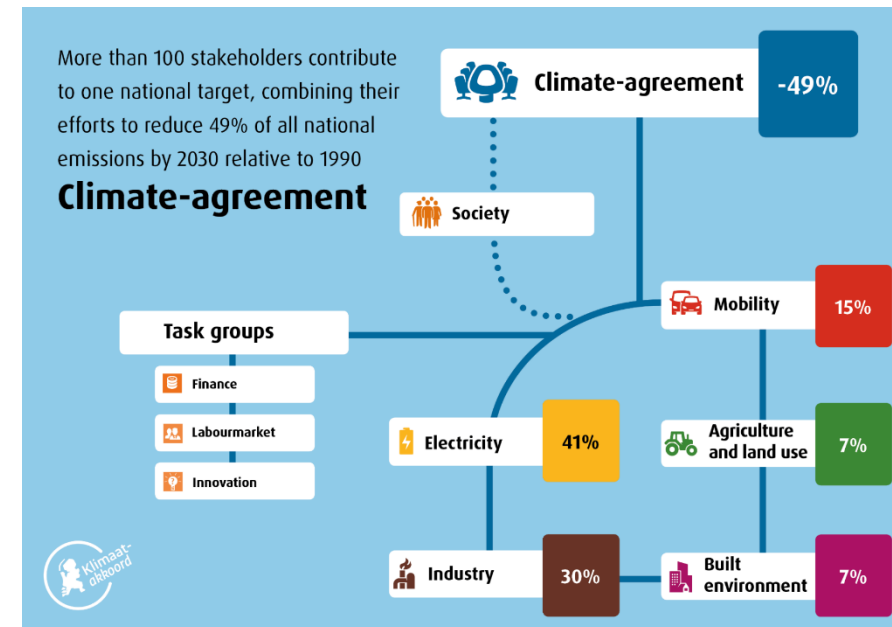
Netherlands:
-49% CO2 in 2030



Netherlands:

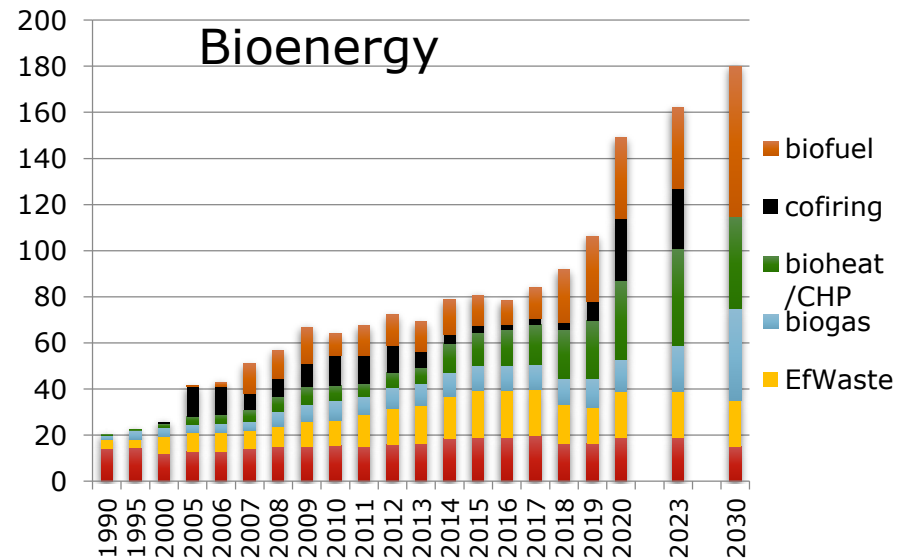
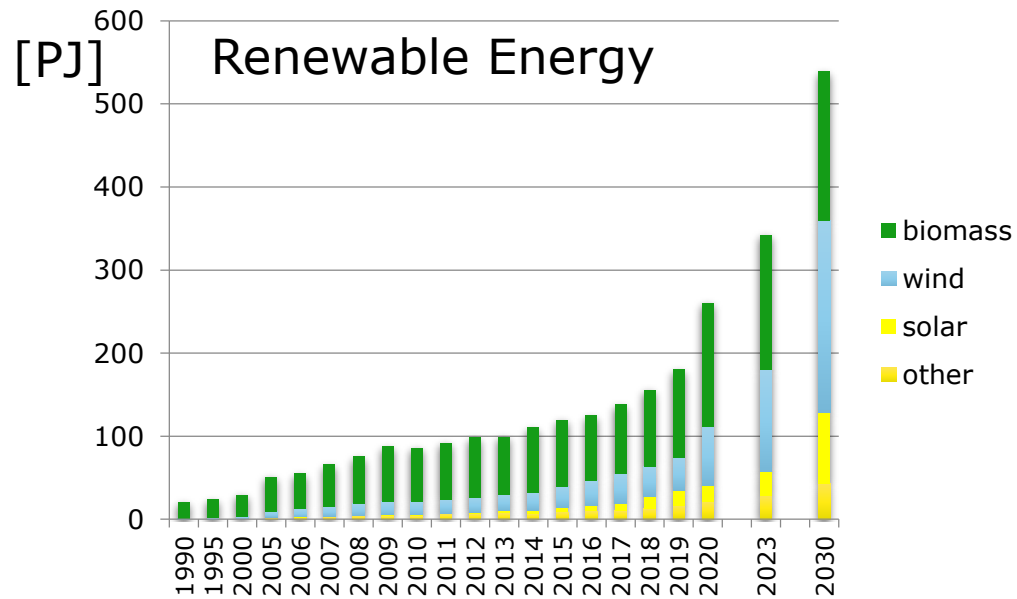
Climate Agreement

- Industry, Built environment, Energy, Transport, Agriculture
- Stop of Coal fired power plants in 2030
- Growth of wind and solar: Wind on see: 1 GW -> 12 GW in 2030
- Electrification of heat supply and Hydrogen for storage
- Biomass for transport fuels and chemicals and materials





- Renewable Energy [2019: 8,5% of final end use]
- After 2020 more wind/solar, smaller growth of bioenergy
 - Future: For biomass focus on biofuels and chemicals





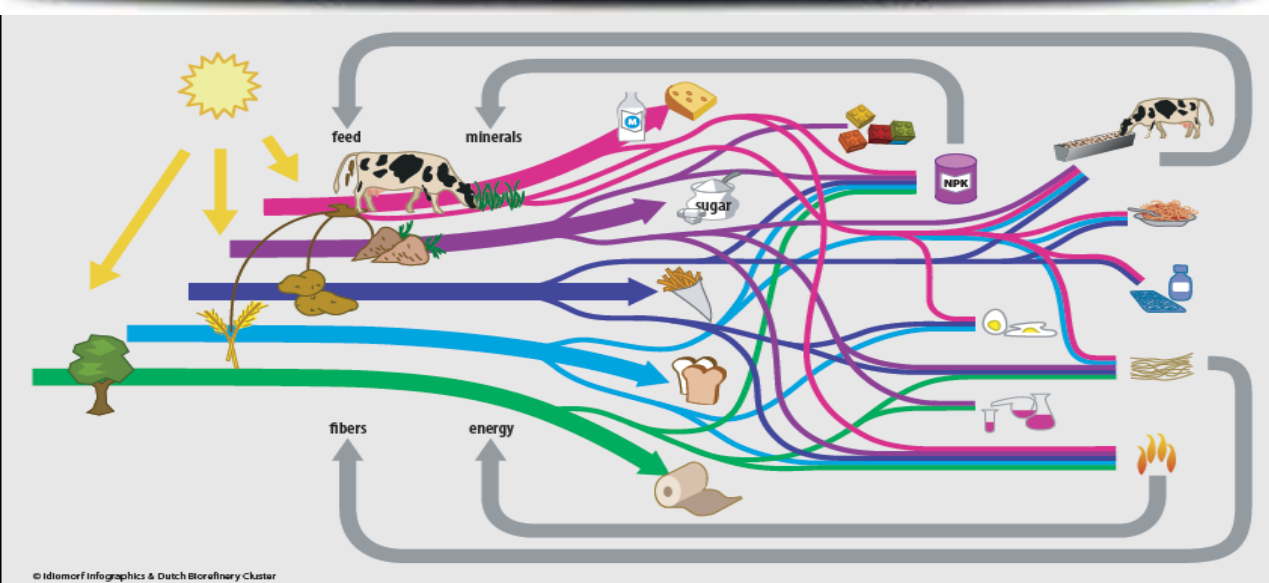
Only proven Sustainable Biomass

- Criteria:
 - 70% Green house gas emission reduction
 - No indirect land use change (ILUC)
 - Carbon Stock preservation
 - Prevention of forest conversion
 - High level of Sustainable Forestry
 - Reliable chain of custody
- Certification Schemes available





International Collaboration





PIB: Partner for International business

- Collaboration in Government 2 Government
 - Biomass Knowledge Platform
 - > Availability of biomass
 - > Certification of sustainability
 - > Markets and policies
- Knowledge 2 Knowledge project
 - > University of Utrecht and Stellenbosch
 - > Sustainability and availability
- support Embassy and Liaison



Expanding sustainable biobased energy in a Circular Economy

- Working with Municipalities
 - Inventory of wastes and residues
 - Roadmap towards valorisation
 - Enabling political/financial environment
- Create business
 - Exchange of know/how, collaboration
 - Identify opportunities
- Interested? Visit booth Netherlands





Technology suppliers for collaboration



biogas



combustion



Pyrolysis, Empyro



methanisation





IEA Bioenergy
Technology Collaboration Programme



International Collaboration

IEA Bioenergy

Technology Collaboration Programme

platform for international collaboration and information exchange in bioenergy research, technology development, demonstration, and policy analysis.

Mission:

To increase knowledge and understanding of bioenergy systems in order to facilitate the commercialisation and market deployment of environmentally sound, socially acceptable, and cost competitive bioenergy systems

With SANEDI in South Africa

www.ieabioenergy.com



The IEA Bioenergy Technology Collaboration Programme (TCP) is organised under the auspices of the International Energy Agency (IEA) but is functionally and legally autonomous. Views, findings and publications of the IEA Bioenergy TCP do not necessarily represent the views or policies of the IEA Secretariat or its individual member countries.

Technology Collaboration Programme

by **iea**



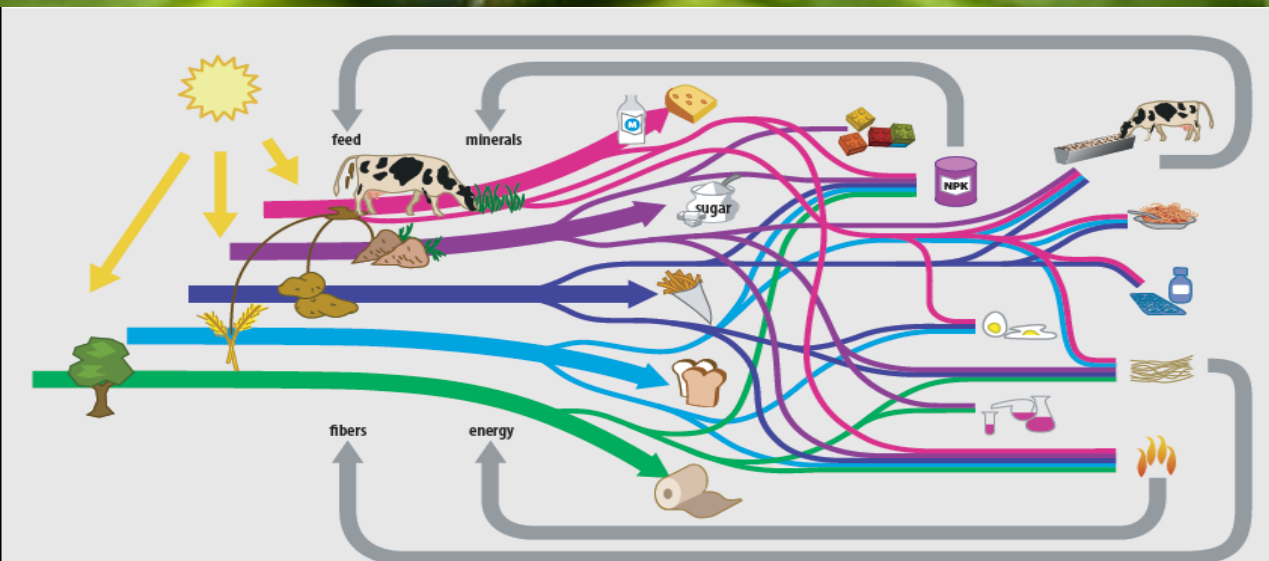
Netherlands Enterprise Agency
Ministry of Economic Affairs and Climate



*Thank you for
your attention*

Questions?

Kees.Kwant@rvo.nl





Welcome

Masterclass at Digital African
Utility Week
25 November 2020



environment, forestry
& fisheries
Department:
Environment, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA





virtuous
circle.



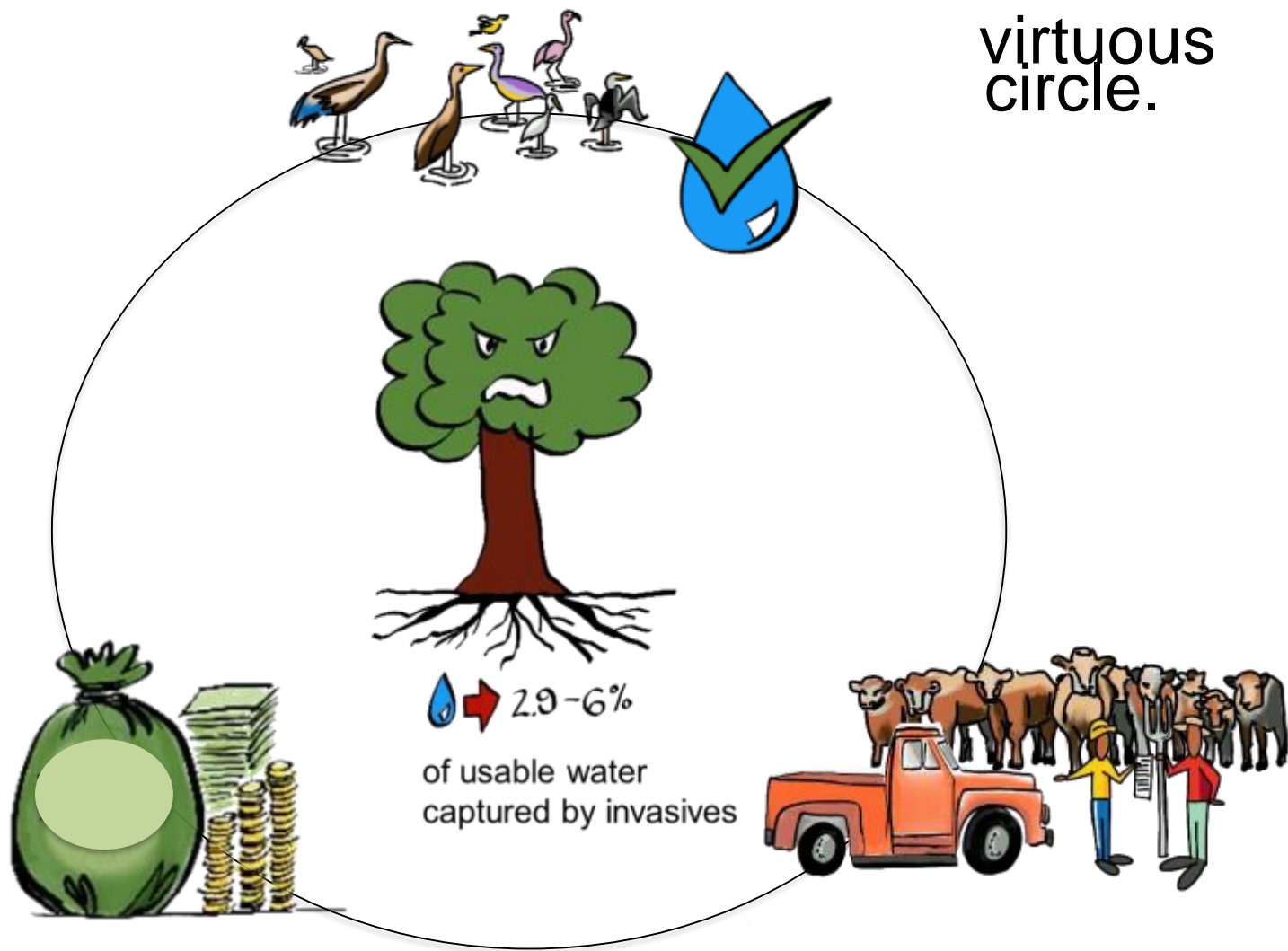
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virtuous
circle.





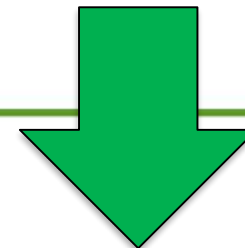
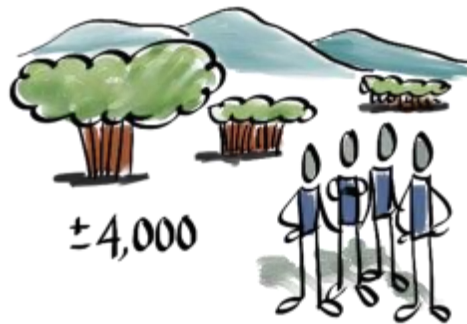


Since 1995, 3 million hectares have been cleared

Working for Water: biggest Green programme in the World!

Over 230 000 jobs created

  2.9-6%
of usable water captured by invasives





Green Business Value Chain programme will:

Catalyse a strong Biomass Economy...



...by stimulating demand for invasive biomass as an input into value-adding processes, that will..



...accelerate the eradication of invasive biomass...



...enhancing utilisation of and growth potential for SMME's engaged in the Green Value Chain...



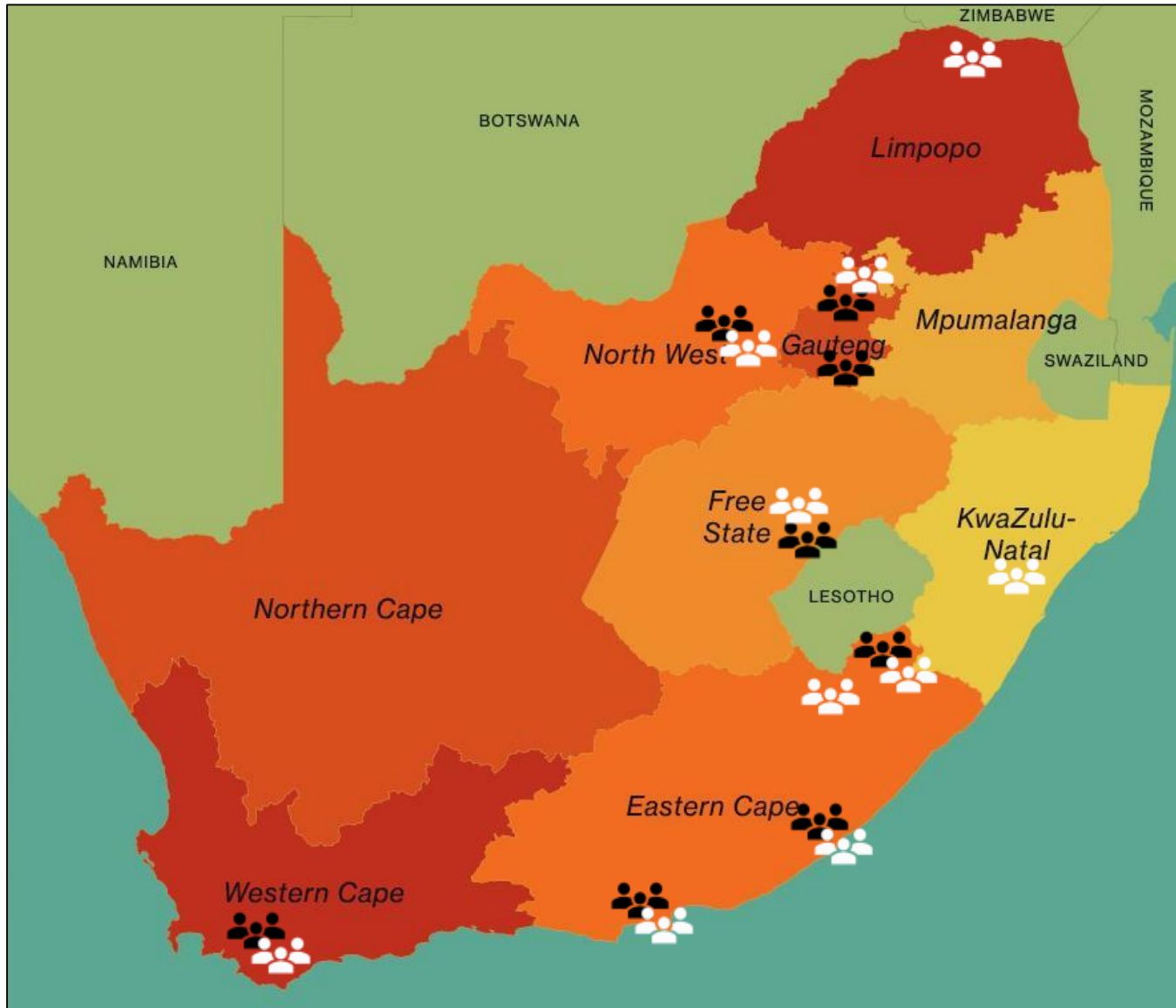
Year	Value	Value	Value
✓			✓
✓	✓		
✓		✓	
			✓
	✓		✓

...and driving clear understanding and contributions of public and private sector



And therefore strengthen South Africa's water security, reduce fire risk and help livelihoods

Locations.



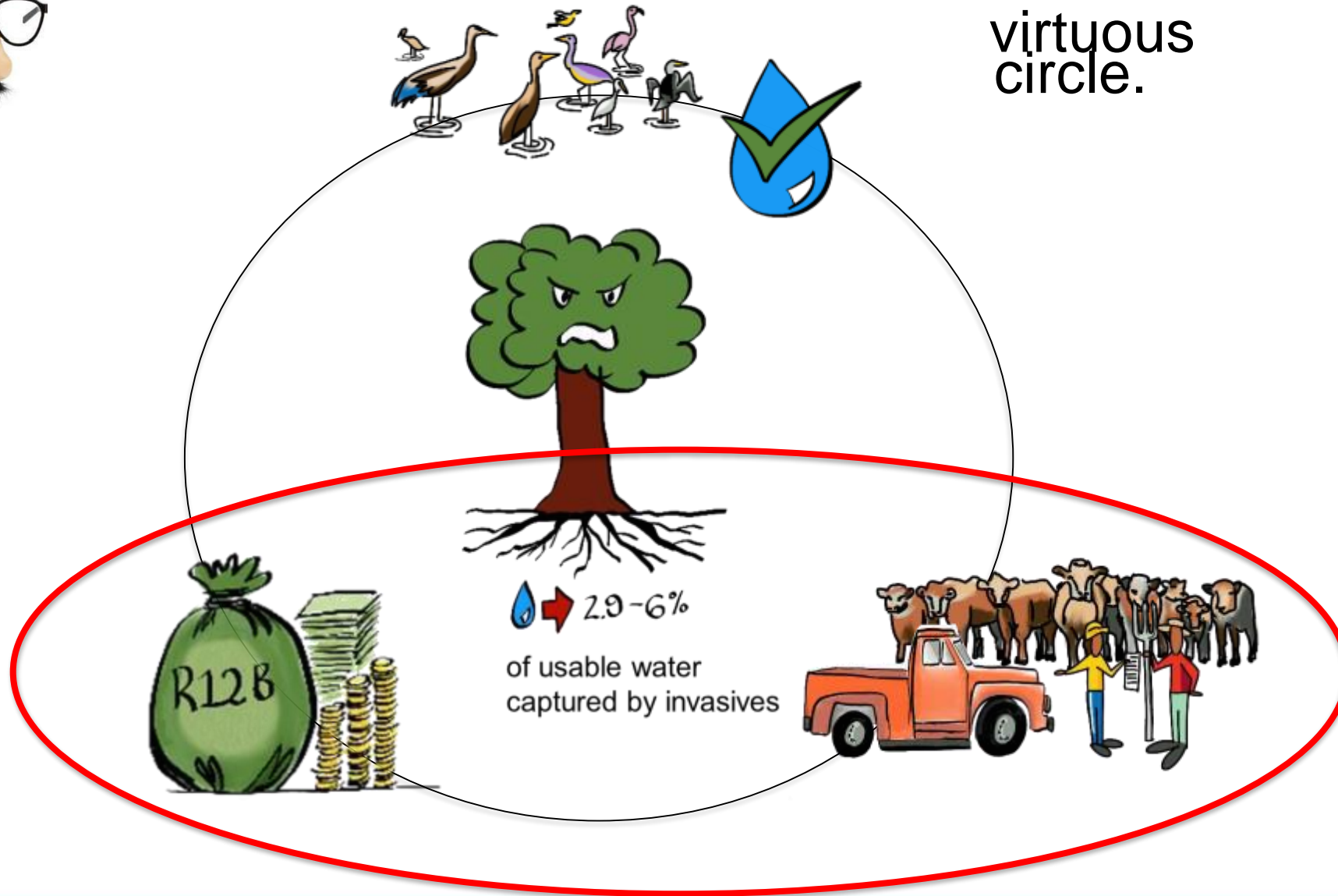
Existing Incubators (120 SMMES)



Planned Incubators to support Charcoal Operators



virtuous
circle.



environment, forestry
& fisheries

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**SMME incubator
(18 months
training and
mentorship)**

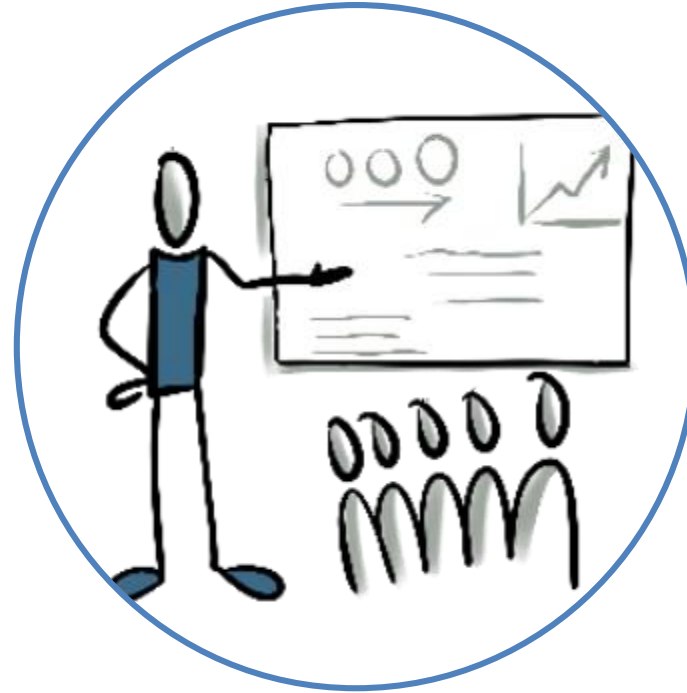
Diversified skills
development

Business in a box

SMME access to finance capacity building

Replicable in and for rural economies

Low cost job creation



social
benefit.





financial benefit.

Viable market facilitation and offtake creation

Deep value chain analysis and understanding for local markets



Securing of local and international markets



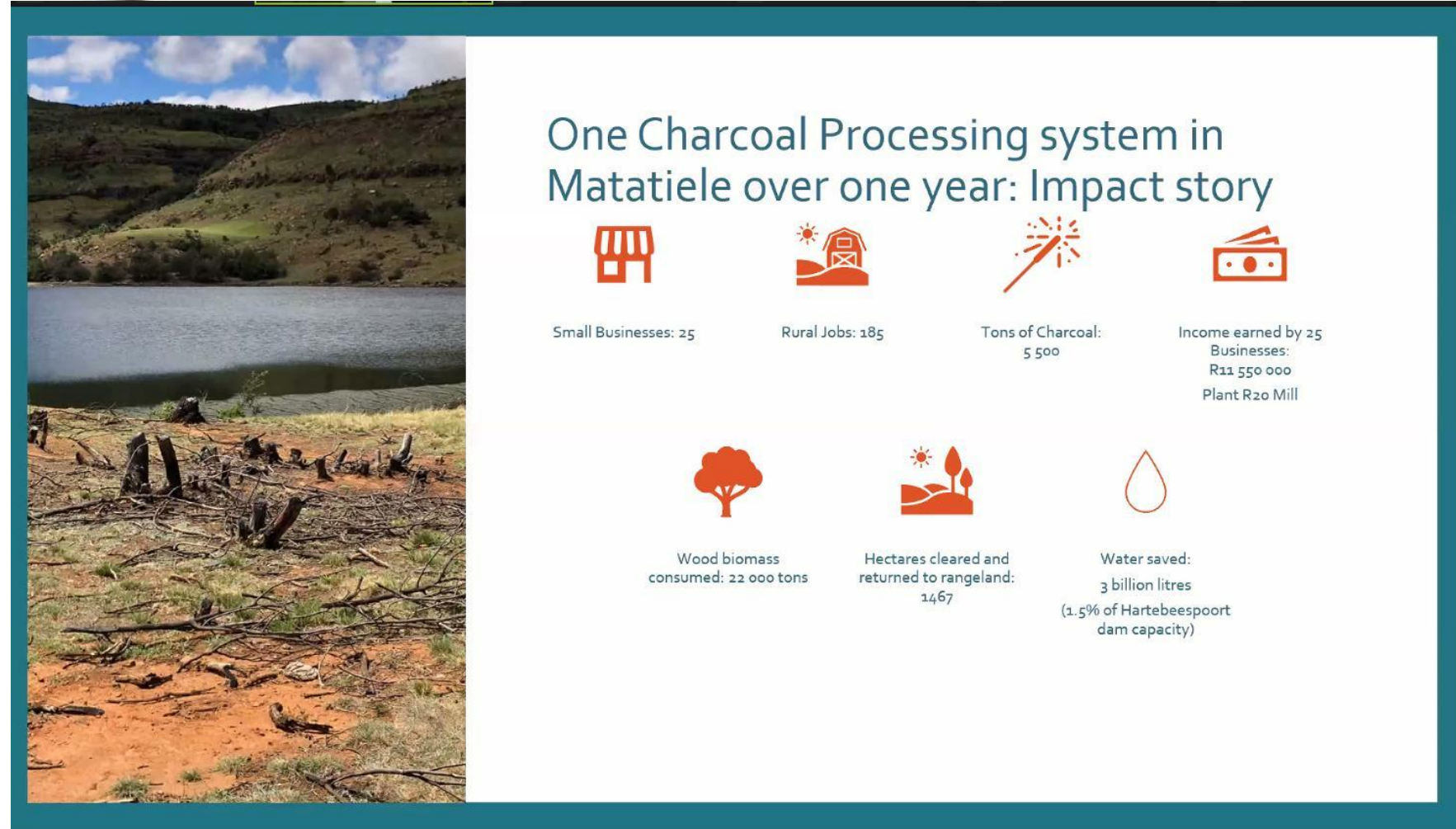
SMME incubator (18 months training and mentorship)

Link to finance institutions

Scalability



Green Business Value Chain programme will:





“Additional” water released*

Rehabilitation/Restoration value chains following clearing*

Biodiversity gain*

Carbon gain*

** Payment for Ecosystem Services – through the Forest Stewardship Council mechanism*

ecological benefit.





Manage the water security risk – operational, reputational – into the future

BEE points for
Enterprise
and Supplier
Development and
Skills Development



Local economic development for communities

Access invasive biomass for commercial supply chain opportunities





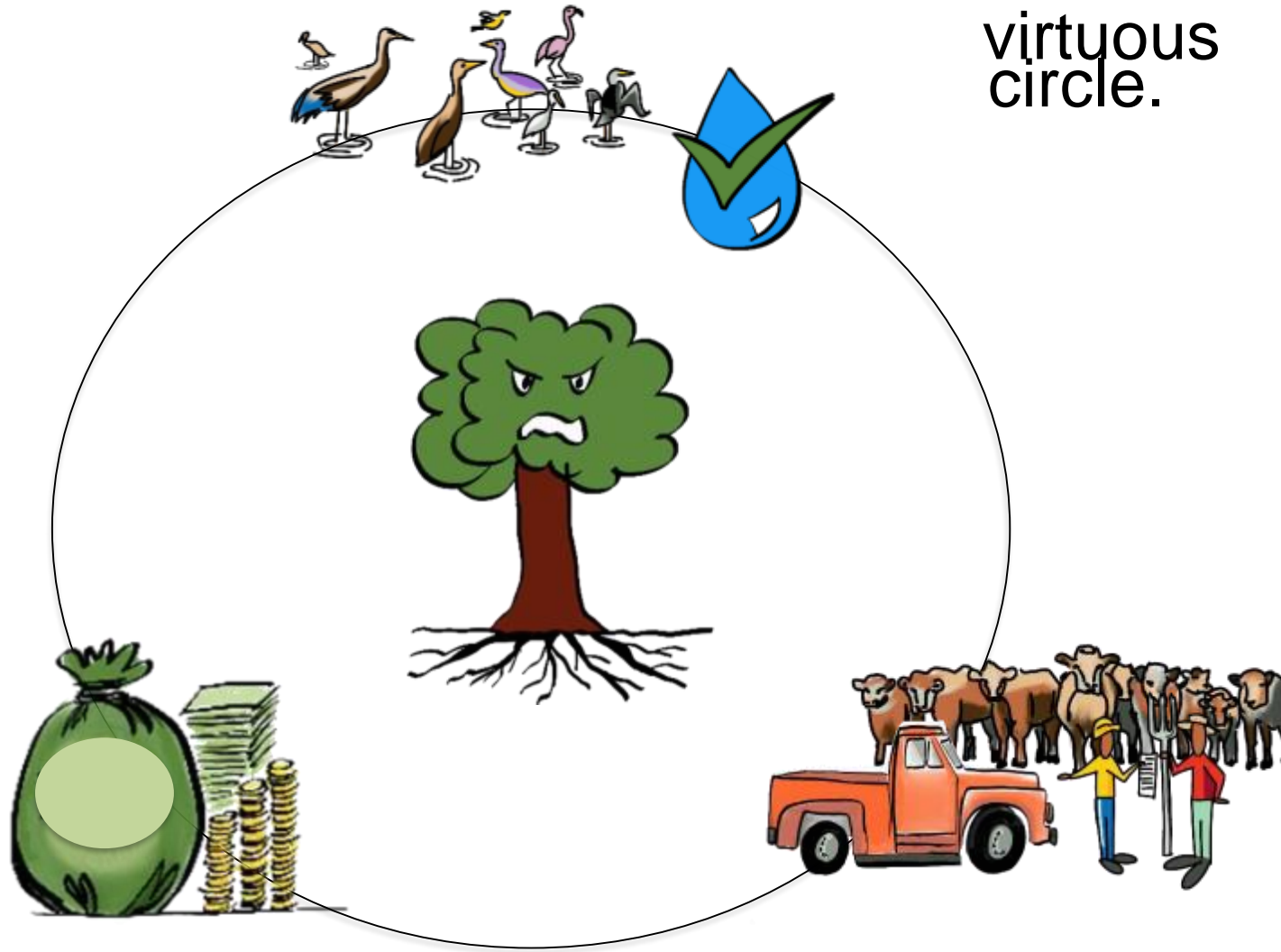
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circle.



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THANK YOU!

Garth Barnes

Natural Resource Management
Department of Environment, Forestry and Fisheries
Mobile: 082 296 1393
Website: <http://www.environment.gov.za>

Address: 14 Loop Street, Cape Town

Thank You



environment, forestry
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