

**FEWCOOP SA IE  
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**Industrial Symbiosis  
Contribution to Circular  
Economy [ISP and Waste]**

NDP 2030, Paris Agreement 2050, ADA 2063,



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# Presentation Outline

- 1) INTRODUCTION AND BACKGROUND
- 2) UNIQUENESS OF OUR WASTE
- 3) FEWCOOP SA Business Units
- 4) FEWCOOP SA LINEAR TO CIRCULAR ECONOMY
- 5) IE INDUSTRIAL ECOSYSTEMS
- 6) ISP AS IT CONTRIBUTES TO CE
- 7) CIRCULAR ECONOMY WITHIN INDUSTRIAL SYMBIOSIS
- 8) CONCLUSION

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# INTRODUCTION

## About FEWCOOP SA:

- ☞ The Food Energy Water South Africa Tertiary Co-Operative Limited [FEWCOOP SA] is a black owned tertiary co-operative comprised of Eight Secondary Co-ops in Nine Provinces [KZN, MP, EC, GP, NC, WC, LP & FS],
- ☞ It has about 270 Primary Co-operative and SMME's in all 9 provinces including SANWFA members in PTYs.
- ☞ At the tertiary level of our operation we facilitate funding / investments, partnerships, markets and opportunities for capacity/skills development for the secondary co-ops which are comprised of primary co-ops in the various provinces. Further assist with innovation, research and development of information hubs,
- ☞ FEWCOOP SA's strategic intents is to absorb rural & indigenous communities with focus on Youth & Women to: knowledge economy, i.e. 4IR, DATA Access, for a just transition by adopting Natural Based Solution to climate change (Adaptation, Mitigation and Resillience building).

## Primary Co-Ops

- ☞ Primary Co-Ops were formed from community members Youths, Women and Disabled person
- ☞ It takes a minimum of five individuals with IDs to form a Primary Co-Op
- ☞ Primary Co-Ops are formed at Local and Regional levels.

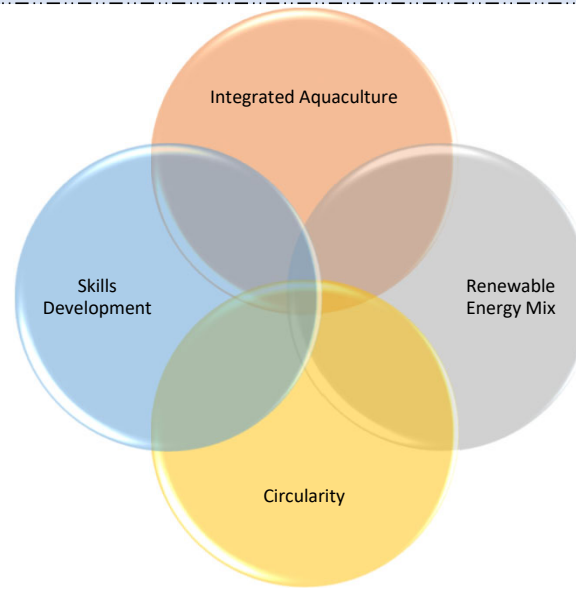
## Secondary Co-Ops

- ☞ Secondary Co-Ops are aggregated at provincial levels from the Primary Co-operatives,
- ☞ Local NGOs and PTY's are also welcome as members of the organization provided they subscribe to the constitution of the Provincial Secondary Co-ops they are affiliated to.

# FEWCOOP SA Business Units

Data Analytics

Resource Mobilisation



Investments

Information new Gold

Tertiary Co-Op

• Commercial Viable Sustainable Business to lead to a Co-Op Bank with Sustainable Assets,

Secondary Co-Ops

• Provincial Data Hubs for 4IR,  
• Pyrolysis, Carbon Sequestering Activities, Waste to Energy, Industrial Symbiotic Park,

Primary Co-Ops / Projects

• Van Der Kloof Dam Aquaculture Development Zone,  
• Renewable Energy Mix, i.e. Hydrogen, Floating Solar,  
• Green Construction Materials,  
• Mpumalanga Hemp Pilot Project Distributed Farms over 3000 hectares.



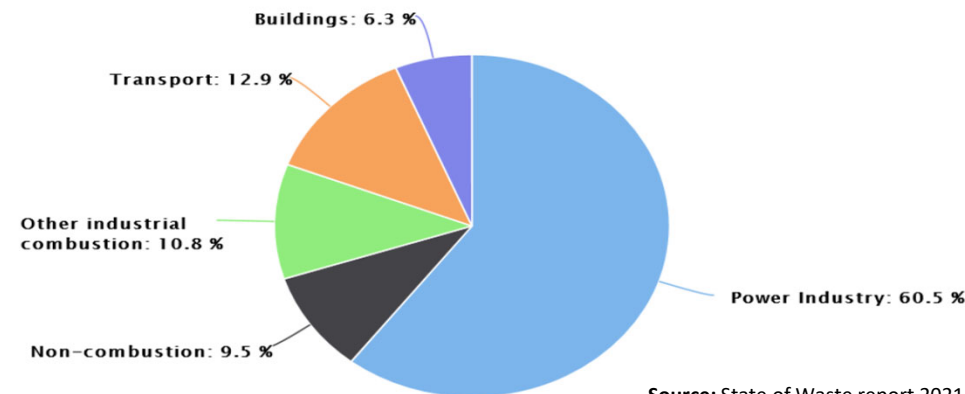
# UNIQUENESS OF SOUTH AFRICA'S WASTE

## Industrial's Waste ..... Our Input.

- ☞ **Landfills:** are a source of Methane and Carbon Dioxide emissions,
- ☞ **Mining:** Asbestos Waste, Steel Slag, Copper Slag, Fly-Ash, Gypsum Slag, Lime, chrome Slag, etc.
- ☞ **Agri-Aqua and Domestic Waste:** Refuse not Collected in Townships, Dumping of Agri Waste, i.e. Cow Dung,
- ☞ **Sewage and Industrial Wastewater:** Agri and Mining Wastewater, Poorly Constructed Sewage systems,
- ☞ **Industrial Waste:** Chemicals and Solid Waste,
- ☞ **Plastic and Paper Waste,**
- ☞ **Construction Waste,**
- ☞ **e-Waste** [rare earth materials in electronic gadgets].

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Fossil CO2 Emissions by Sector



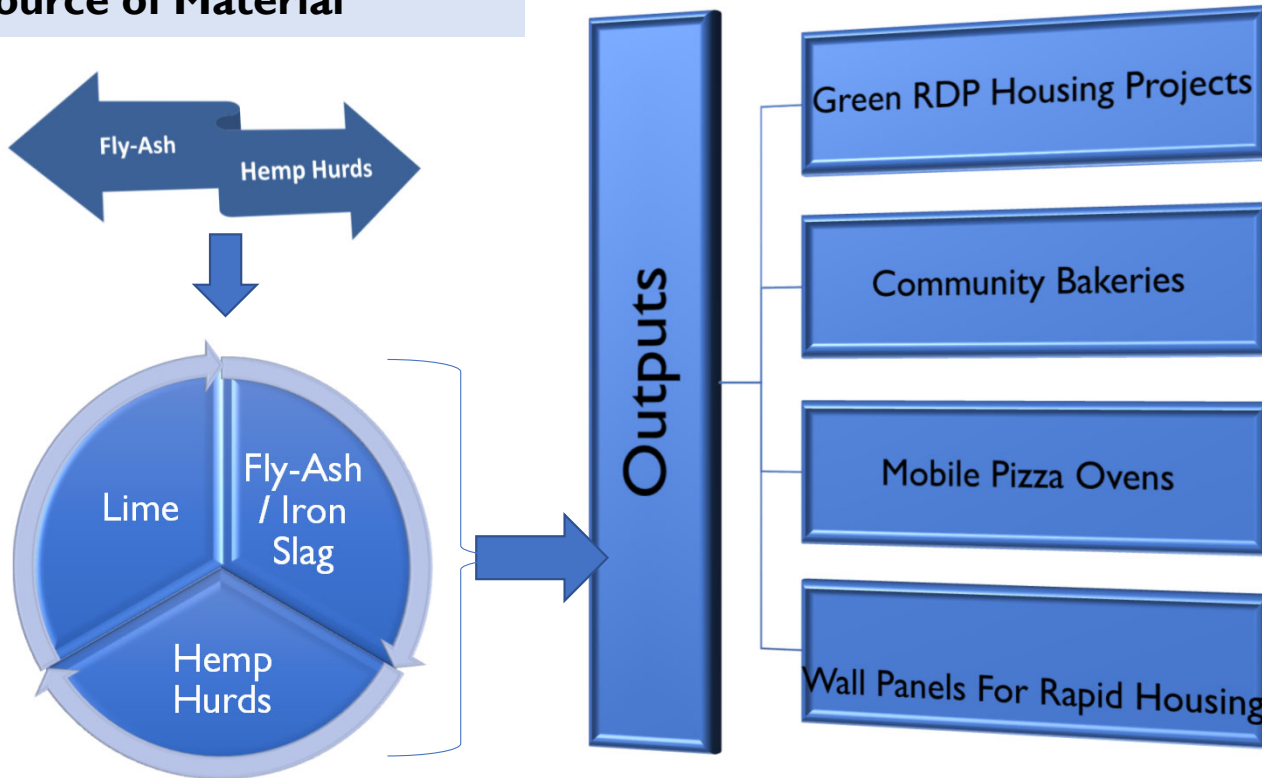
Source: State of Waste report 2021

## FEWCOOP SA's Waste of interest:

- ☞ Our Secunda ISP Model is informed by our industrial waste demands & its access, i.e. Fly-Ash, Carbon, Mining Slag, Agriculture Waste, Municipal Waste, REE – Rare Earth Elements, etc.
- ☞ Reskilling of our workforce is the core, i.e. Training on Concrete without Cement, Waste to Vermicompost, Upcycling of Waste Cement, Waste 2 Energy, etc.

# FEWCOOP-SA Carbon Capturing and Up-Scaling [IS to CE]

## Source of Material



## Industrial Symbiotic Park [Secunda]:

- ☞ Site next to SASOL, Land Reform land to be used, ample Municipal Waste and favourable climate for Aquaculture trials etc.,
- ☞ Anchored on Skills Development and Training of Primary Co-Ops formed by rural community members, Youth, Women and Disabled person etc.
- ☞ Product quality assurance for scaling up, i.e. SABS approval etc.
- ☞ Carbon capture measurement and certification / verification, i.e. ARC, Alberta, etc.,
- ☞ Infrastructure demands and costing – business planning & funding.

# SUSTAINABLE AND UNSUSTAINABLE PRODUCTION

**FEWCOOP SA in its symbiotic park in Secunda will exhibit transition of industrial production system from Linear to Circular one.**

## Unsustainable Production:

- ☞ Municipal Waste,
- ☞ Fly-Ash and Mineral Waste,
- ☞ Carbon Emissions,
- ☞ Cow Dung and General Agri Waste.

## Sustainable Production:

- ☞ Waste2Energy,
- ☞ Green Building,
- ☞ Carbon Upcycling, i.e., Feed, Food, Fuel & Fibre,
- ☞ Vermicomposting, Soil Regeneration.

- ❑ Our ISP will rely on Materials Collaboration of Synergistics possibilities by Geo Proximity and Geo Spatial within the ISP. We will incorporate 4IR Applications in measuring Methane and Carbon Dioxide to enable authorities & our partners to verify captured carbon for symbiotic beneficiation, i.e. carbon credits, carbon industry development etc.,
- ❑ Synergistic relationships across the value chain are core to the success of closing the industrial production loop,
- ❑ Our Industrial Symbiosis model entails building a network to foster Eco-Innovation and long-term business culture change in creating mutually profitable transactions between FEWCOOP SA, ESKOM, GeoScience, SASOL etc.

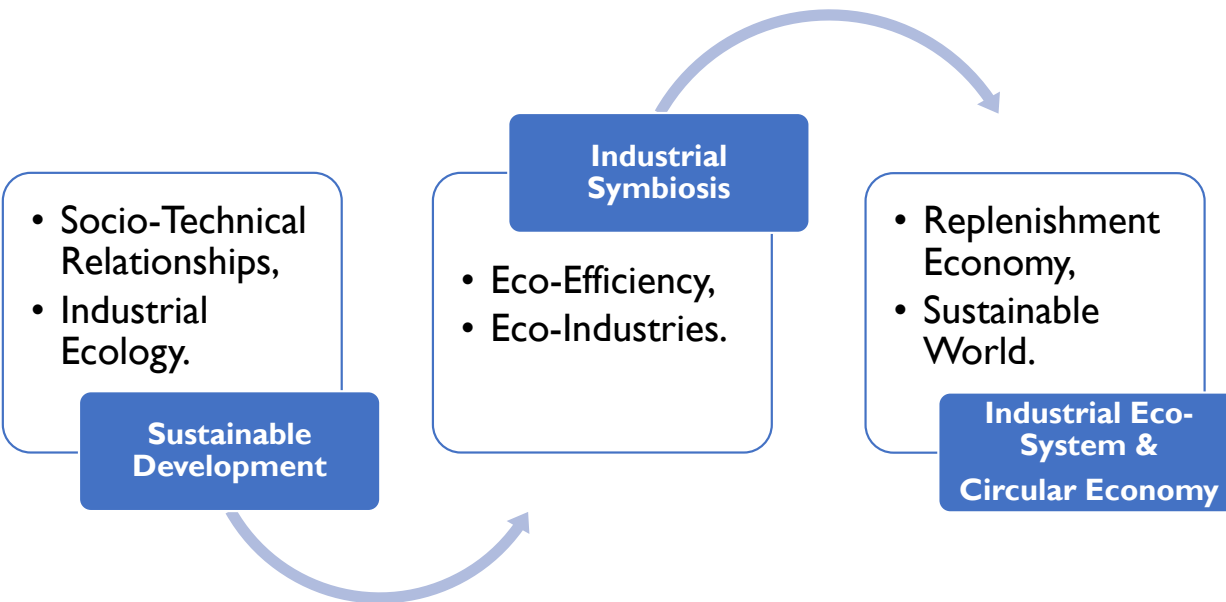


# ISP CONTRIBUTION TO CIRCULAR ECONOMY

Industrial Symbiosis is part of a much broader activity context where human and industry aligns towards a replenishment focus:

## Circular Economy:

- ☞ The value of products and materials are maintained for a longer period, waste and resource use are minimised,
- ☞ Planning, Resourcing, Procuring, Production, and Reprocessing are designed and managed as both process and output to maximise eco-systems functions and human wellbeing,
- ☞ An Economy based on 4IR integration and upskilling of rural and urban communities for the knowledge economy.

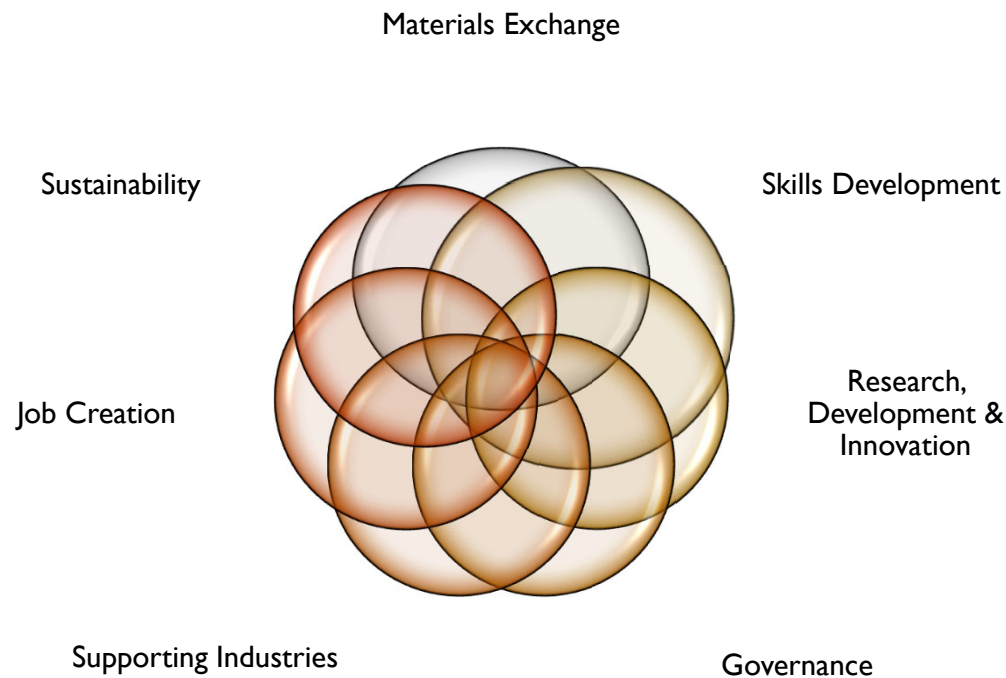


Supporting industries carbon industry: Agriculture, Mining, Aquaculture, ICT, Municipality Waste etc....





# Circular Economy Inter-connectedness



## CE dependency on IS:

- ☞ Governance: Regulatory Framework Local, Regional and National Governments
- ☞ Skills with Value: Absorption of Unemployed Youths, Women and Disabled people through focused Certified Training.
- ☞ Supporting Industries: Availing of required skills by supporting industries by establishing in close proximity to heavy industries
- ☞ Materials Exchange: Product, By-Product and Utility Exchanges

The Interconnectedness of the facets / dimensions of an IS conforms to the framework of system of systems:



# CONCLUSION

## Affirmed Partnerships:

- ☞ University of Kwa-Zulu Natal (UKZN School of Agriculture Transformation & Sustainable Food System),
- ☞ National Clean Production Centre South Africa (NCPC SA)
- ☞ Agricultural Research Council with respect to Hemp and Cannabis Industrialisation [*Pilot in Mpumalanga and Limpopo with two Cultivars Hemp-SA1 and Hemp-SA2 these are indigenous strains, Communal Seed Banks*],
- ☞ InnoTech Alberta Canada [global leaders in Carbon Capturing, Utilization and Decarbonization],
- ☞ Umfolozi Technical and Vocational Education and Training (TVET).

## Enablers:

In relation to ISP/Circularity, it would be in the best interest of FEWCOOP SA to partner with the following institution, namely:

- ☞ United Nations Industrial Development Organization (UNIDO),
- ☞ United National Environmental Programme (UNEP),
- ☞ To partner with the Department of Trade Industry and Competition (DTIC), Department of Water and Sanitation and Stats SA (**DATA - Decision Making**).
- ☞ To partnership with Centre for Scientific and Industrial Research (CSIR).



# I THANK YOU !!!

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