SUSTAINABLE DEVELOPMENT GOALS

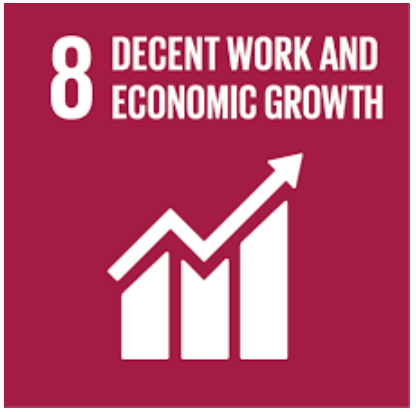
SEVENTEEN GOALS FOR LONG TERM SUSTAINABILITY

A sustainable clean cooking/heating fuel strategy needs to look at the triple bottom line, focusing on benefiting the people, their environment and their economic well being. This is far bigger than just focusing on the cookstove.

CLEAN ENERGY

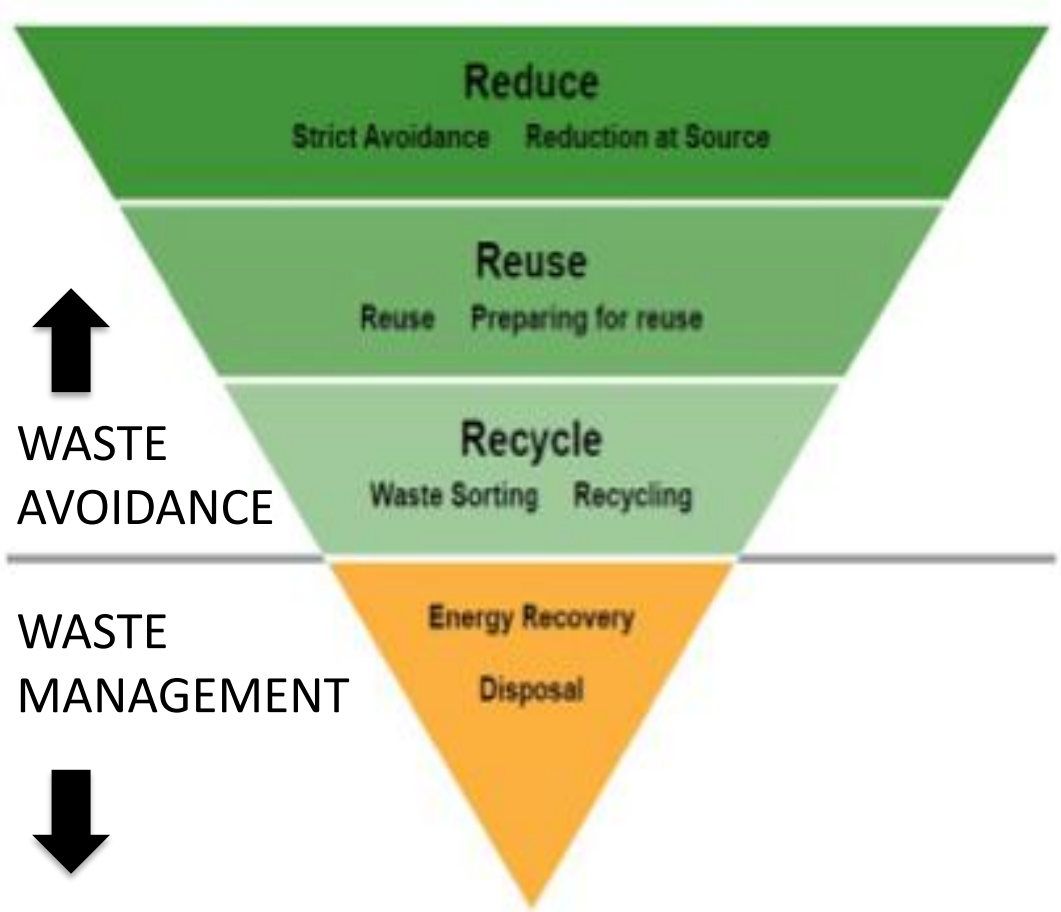
BIODIVERSITY

ZERO WASTE



ENERGY JOBS

WASTE HIERARCHY PYRAMID



COOKING FUEL STRATEGIES

REDUCE RAW MATERIAL USE

- Improve Stove Combustion
- Better “Harvesting” Practice
- Re-engineer Supply Chain

RECYCLE BIOWASTE INTO FUEL

- Biogas – Anerobic Digester
- Biomass Pellets – Pellet Mill
- Char Briquettes – Char Kiln

FUELS MOSTLY USED FOR COOKING/HEATING

FIRE WOOD

CHARCOAL

PARAFFIN

LPG

ALL UNSUSTAINABLE IN THE LONG TERM

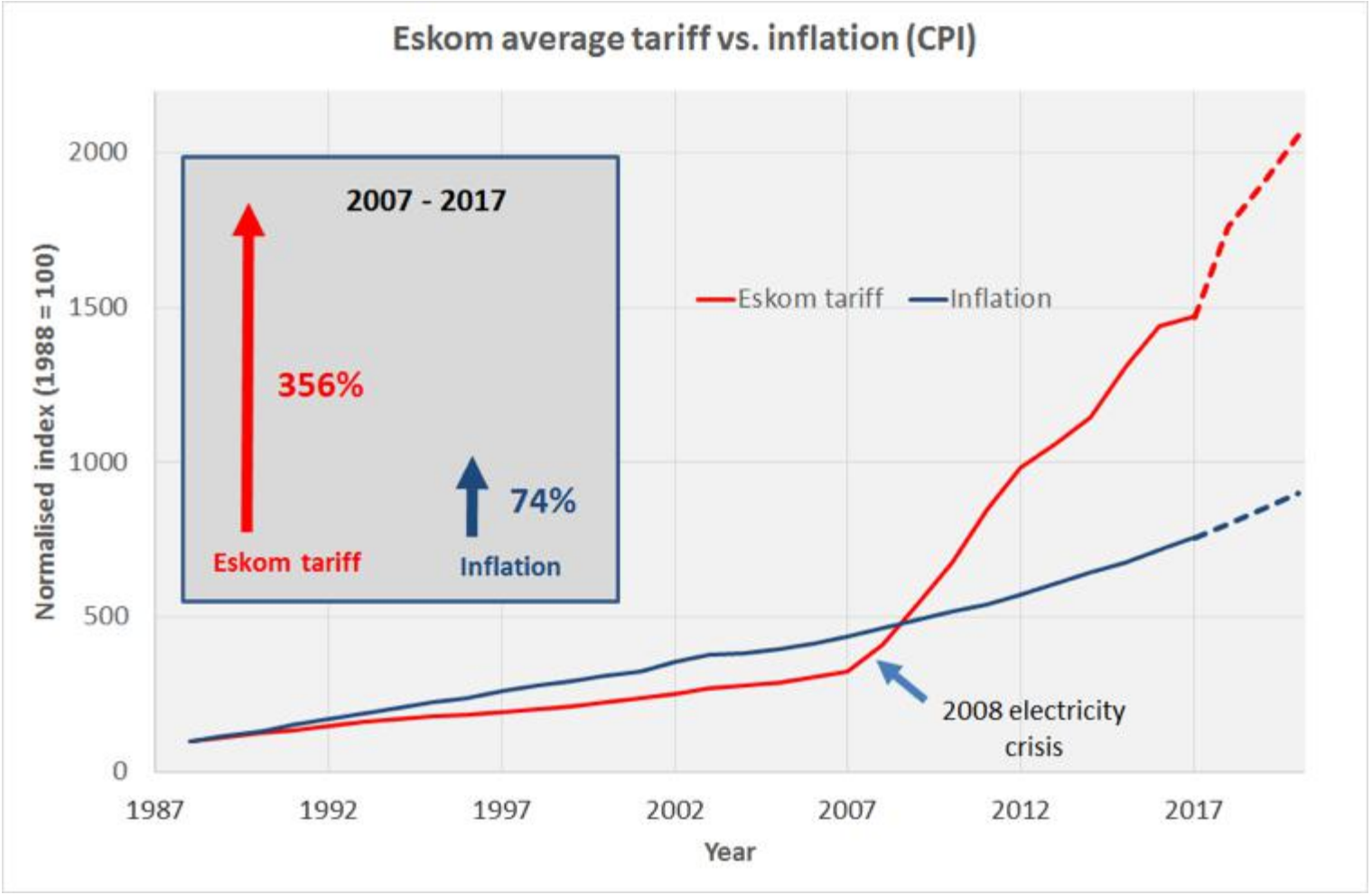
CLEAN BIO FUELS MADE FROM WASTE

WOOD PELLETS

CHAR BRIQUETTES

BIOGAS

ELECTRICITY PRICES IN SOUTH AFRICA OVER 10 YEARS



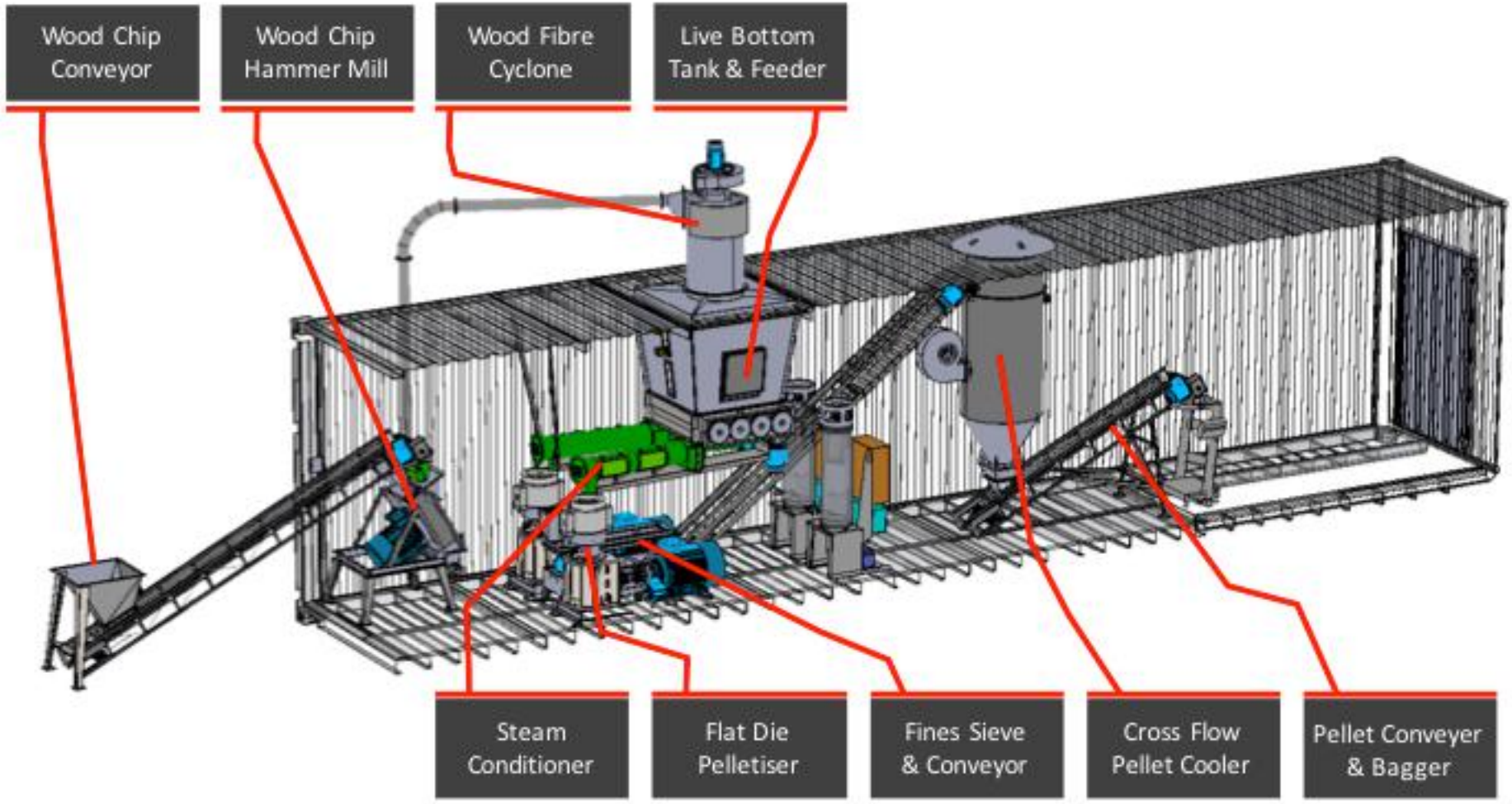
TOTAL POPULATION: 95% Access but only 70% Affordability

WHY BIOMASS PELLETS?

FUEL FACTOR	BIOMASS PELLETS	CHAR BRIQUETTES	BIOGAS
Stove Used	**Gasifier**	**KCJ**	**Gas Burner**
Reduces Local Waste	Yes	Yes	Yes
Improves Access and Affordability	Yes	Yes	Yes
Creates Jobs / Avoids Imports	Yes	Yes	Yes
Energy Recovery Rate / Ton	High	Low	Medium
GHG Friendly Conversion Process	Yes	Somewhat	Yes
Production/Distribution Cost	Medium	Low	High
Scalable Production Volume	High	Medium	Low
Manufacturing Complexity	Medium	Low	High
Production Cost / kWh	Medium	Medium	Low
Storing / Moving Fuel to Market	Simple	Simple	Complex
Useful By-Products	Yes	No	Yes

SOLID BIOMASS WASTE TO ENERGY

RECYCLABLE BIOMASS WASTE	BIOMASS WASTE TO FUEL PRODUCTION MOBILE CONTAINER PLANT	RECYCLED BIOMASS HEATING
TIMBER MILL HARVEST WASTE RECYCLED MATERIAL	FABTAINER WASTE 2 ENERGY PELLET PLANT  PRODUCTION RATE: 400 KG / HOUR	DOMESTIC  COMMUNITY  COMMERCIAL 



400KG / HOUR WOOD CHIP TO FUEL PELLET PLANT

BUILT IN A 12M HIGH TOP SHIPPING CONTAINER

EKASI ENERGY PELLET CONTAINER PLANT IN OPERATION

CREATING SUSTAINABLE JOBS & VALUE OPPORTUNITIES

BIOMASS WASTE COLLECTION

TREE HARVESTING

LOG DRYING

CHIPPING

BIOMASS CONVERSION

OUTPUT CAPACITY

- UP TO 200 TONS / MONTH
- EQUIVALENT TO 600 MWh
- SAVING 400 TONS OF FOREST

CONVERSION COSTS

- ELECTRICITY / POWER
- LABOUR & SUPERVISION
- MAINTENANCE

PELLET FUEL DISTRIBUTION

STOVE ASSEMBLY

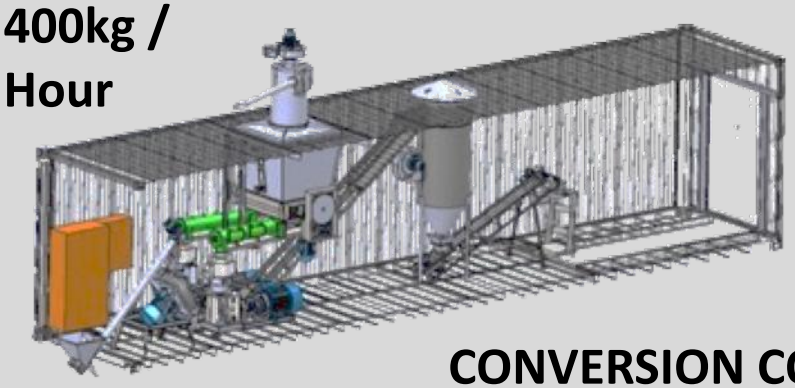
WHOLESALE DISTRIBUTION

RETAIL AGENTS

THE ECONOMICS OF LOCAL PELLET PRODUCTION

PELLET PRODUCTION

400kg / Hour



CONVERSION COST
Aprox $0,10 per Kg

3 Operators / Shift

SINGLE SHIFT - $15,000 TO/MTH
250 Hours = 100 tons

DOUBLE SHIFT - $30,000 T0/MTH
500 Hours = 200 tons

PELLET CONSUMPTION

DAILY HOUSEHOLD COOKING

2,5 Hrs / 5 kWh
= <2kg Fuel

@ $,20 / kg
= <$0,40 / Day

Traders make 25% GP ($0.05 /kg)

100 TONS = 2,000 STOVES

200 TONS = 4,000 STOVES

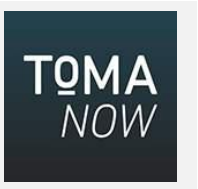
WORKING FOR WATER IAP PROGRAM IN SOUTH AFRICA

Invasive Alien Plants cause billions of rands of damage to South Africa's economy each year, and is the biggest threat to the country's biodiversity.

South Africa's **Working for Water** programme, the largest public-funded project to eradicate IAPs and improve water resources in the world, has created over 180 000 full-time jobs over the past two decades.

THE BENEFITS OF IAP BENEFICIATION

Source



Environmental

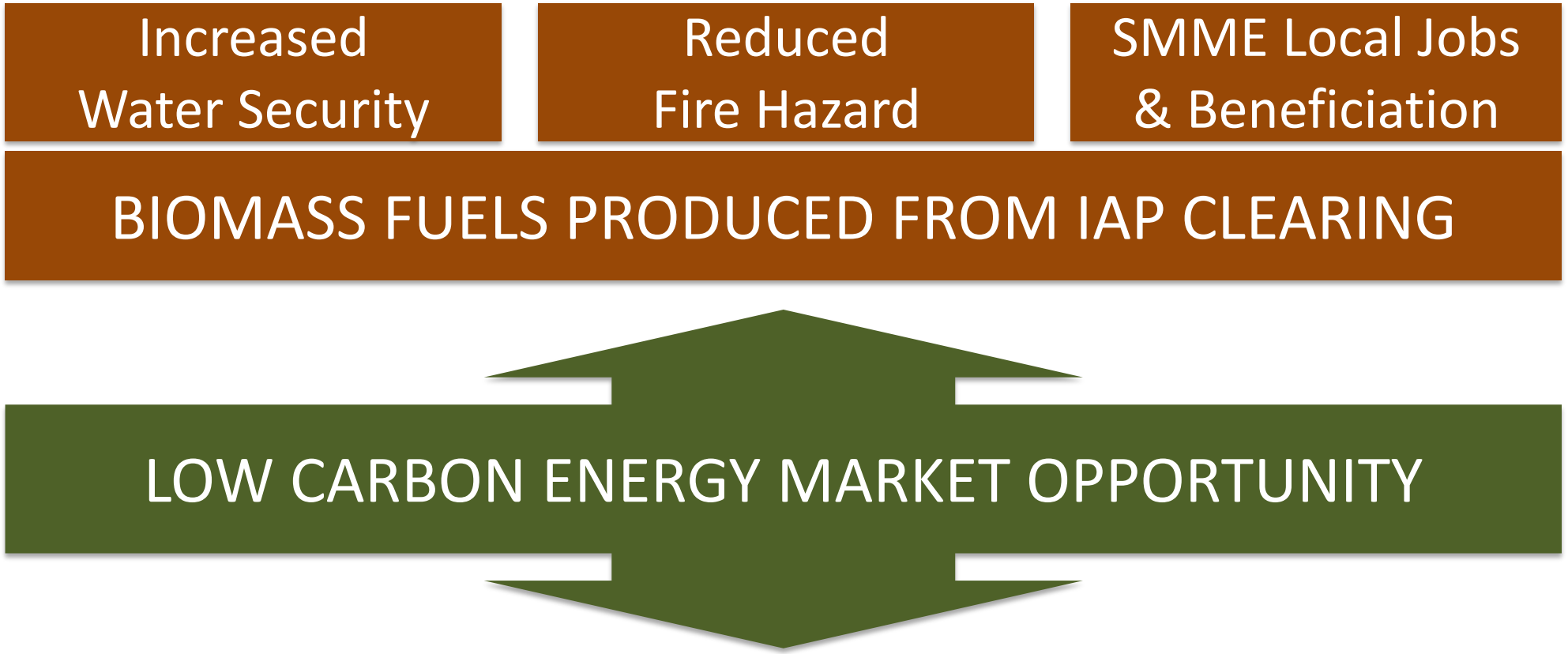
- Assist water management through removal of alien vegetation
- Replace traditional applications with clean, renewable sources
- Carbon sequestration solutions to offset effects of global warming
- Prevent loss of biodiversity
- Reduce risk of fire hazard. Stabilise catchment areas and prevent erosion.

Social Impact

- Investments into education, SMME's, community health and infra-structure
- Job creation and concerted skills development
- Poverty alleviation through community upliftment

Economic

- Develop industry value chains for green products like biochar, industrial heating, biomass 2 energy, timber / building materials & composting
- Develop low carbon economies, boosting local industries and communities
- Offset clearing costs, and create new jobs in typical farming and rural areas


Increased Water Security
Reduced Fire Hazard
SMME Local Jobs & Beneficiation
BIOMASS FUELS PRODUCED FROM IAP CLEARING
LOW CARBON ENERGY MARKET OPPORTUNITY
BIOMASS HEATING / COOKING ENERGY MARKET
Reduced Fuel Costs
Lower Carbon Footprint
Fuel imports Eliminated

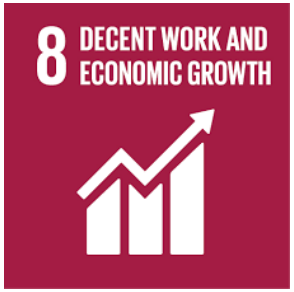
SOLAR PV

WIND

BIOMASS

LOW CARBON ENERGY FUTURE

CLEAN ENERGY



SMME JOBS

SUSTAINABLE DEVELOPMENT GOALS

ZERO WASTE

BIODIVERSITY

ekasi.energy

INNOVATIVE BIOMASS ENERGY SOLUTIONS

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