



# GLOBAL IMPACT PROGRAM FOR CLEAN COOKING FUELS AND TECHNOLOGIES

A PARTNERSHIP DELIVERY MODEL FOR MARKET,  
TECHNOLOGY, FINANCIAL AND SOCIAL INNOVATION

*4<sup>th</sup> IEF OFID Symposium*

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# WHAT IS THE PRESENT SCENARIO?



## ENERGY ACCESS AND CITY ISSUE

**More than 3 billion people worldwide** do not have access to clean fuels and technologies for daily cooking, affecting the growing urban metropolitan areas



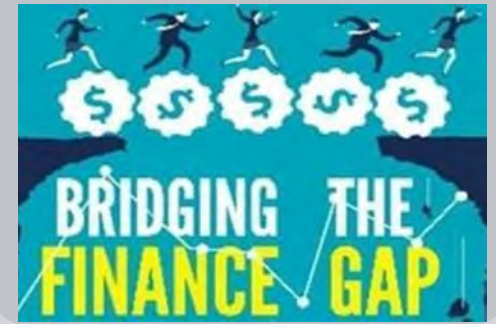
## AIR POLLUTION AND CLIMATE CHANGE ISSUE

Inefficient traditional cook stoves **contribute up to 25% of total** black carbon emissions, more than **2 billion** people depend on **wood-based fuel**. This over-dependence is the main cause for **rapid**



## WOMEN and CHILDREN HEALTH, LIVELIHOOD ISSUE

Exposure to HAP from traditional cooking practices is estimated to cause **over 4 million deaths annually**. Women spend up to **20 hours each week** collecting **wood** and spend up to **4 hours cooking each day**.



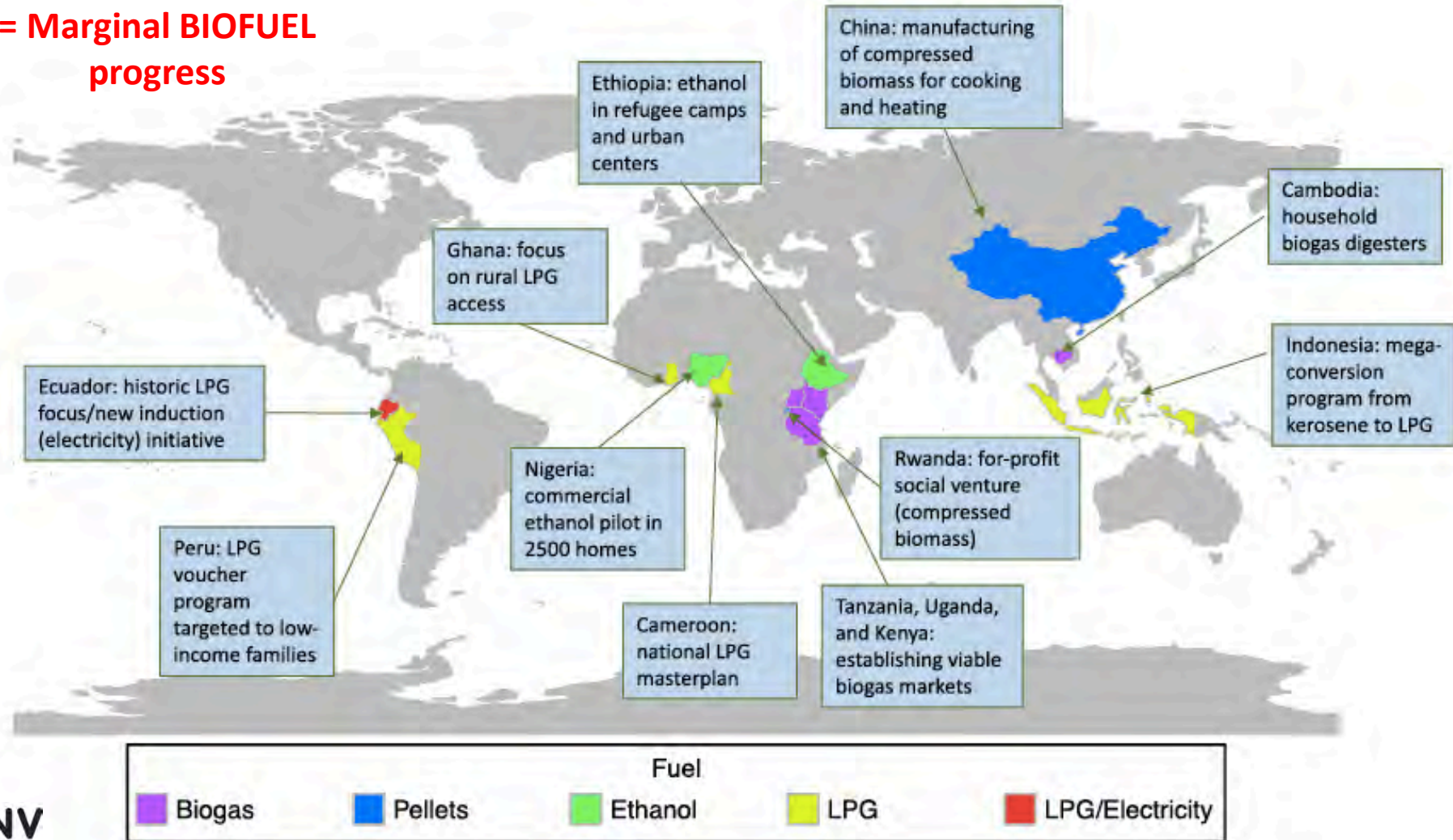
## FINANCING ISSUE

Opportunity cost associated with traditional cooking practices and behavior is estimated up to **USD 123 billion per year**.

# GLOBAL EFFORTS TOWARDS CLEAN COOKING:

Plethora of development partners are looking into various aspects of clean cooking, e.g. SEforALL, UNDP, EU, CCA, WHO, SNV, bilateral organizations and civil society organizations etc.: **yet only approx 28 M USD committed 2015/16** with estimated **4.7. billion \$ yearly finance gap**

**CONCLUSION**  
**= Marginal BIOFUEL progress**



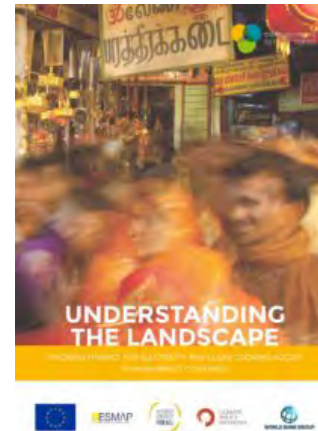
GREEN  
CLIMATE  
FUND



CLEAN COOKING ALTERNATIVES

# LESSONS LEARNED FROM LAST 3 DECADES

- **Small-scale**, dispersed and mostly rural initiatives
- **Limited investments** and private sector involvement
- Centered around “improved” cook stoves, still using traditional fuels, **i.e. not clean**
- **Lack of enabling environment** with regard to policies and regulations by Governments
- **Weak market creation** and lack of consumer awareness
- Dire need for real viable alternative fuels and technology solutions to delivered on a **mass scale**



# ZANZIBAR PILOT PROJECT (2015): A UNIDO STORY

**UNIDO undertook a pilot study in Zanzibar to pilot the viability of bioethanol as a clean fuel for cooking.**

Timeline	No. Households
<b>2015 –</b> Project Target	150
<b>2017 –</b> Independent Market Pick Up	350
<b>2018 -</b> Independent Market Development	1,000

	USD
Monthly Savings per Household	20 – 25 \$
Trigger Effect / Market Development	<b>X 6 the Project (150)</b>



# DAR ES SALAAM - TANZANIA (2017): SCALE UP UNIDO STORY



Targets	Country A
Household / Families	500,000
Population	2 Million
Housewives	500,000
Children	1 Million
Clean fuels production	100 Million Liters
PS Infrastructure Investments USD in clean fuel production over 5 years	100 Million USD
SMEs Ethanol Producers	40 companies
Jobs Created	800 jobs
Indirect Jobs Created	2,400 jobs



MARKET – TECHNOLOGY – SOCIAL IMPACT  
Transformation and Innovation

# ALTERNATE SOLUTION BASED APPROACH

## Market enabling framework to facilitate a mass commercial roll out



### 1. Vision and target driven

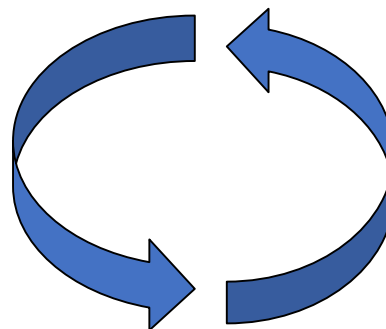
- Fit for purpose solution
- What is measured is managed
- Design to achieve a target & vision

### 2. Cooking needs already met

- Current fuels meet the needs
- A switch in fuel is needed
- Hence effective market catalyst & effective implementation methods
- It is also different to electrification!

### 3. Competitive market offer

- Different offers for different markets; economics, Geographic
- Household income & affordability
- Households make value based decisions – price x performance
- Ultimately on a commercial basis & economically sustainable



### 6. Market enabling interventions

- Current market failure must be addressed
- “Chicken or the egg” – first ?
- Correct integrated implementation methods the CSF’s needed

### 5. Use of commercial enterprise

- Volume dictates industry needed
- Industry currently supplies charcoal, LPG so why not bioethanol.

### 4. Scale, scale, scale

- Fledgling industry curse
- Rather high volume / low margin needed. BUT needs a catalyst
- Large scale roll out >100,000’s

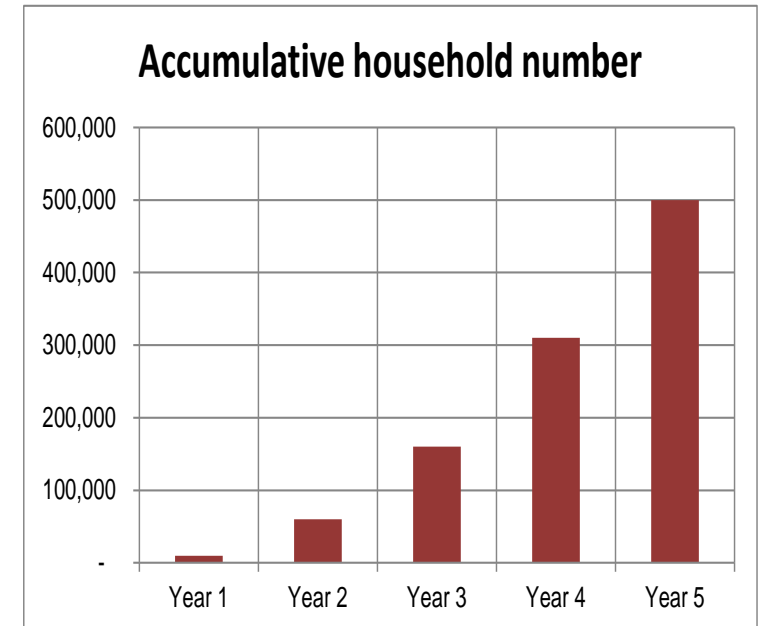
# MEF VISION AND TARGET DRIVEN - TANZANIA

## An overriding **national vision**

- At a macro visionary level Tanzanian Government is embracing the switching of cooking from current wood based practices to clean burning environmentally friendly fuels on a massive scale to halt deforestation, land degradation and improve health of population (HAP)

## GEF Bioethanol fuel **programme targets**

- Switching 500,000 urban charcoal cooking households to bioethanol stoves within 5 years, which is 10% of a national clean fuel, improved health and sustainable environmental vision
- Switch rate = 400 stoves / workday for five years
- 10,000/50,000/100,000/150,000/190,000 per year
- Phase One – 110,000 households one distributor proving the design
- Phase Two – 390,000 mid 2020 accelerated role out 2/3 distributors

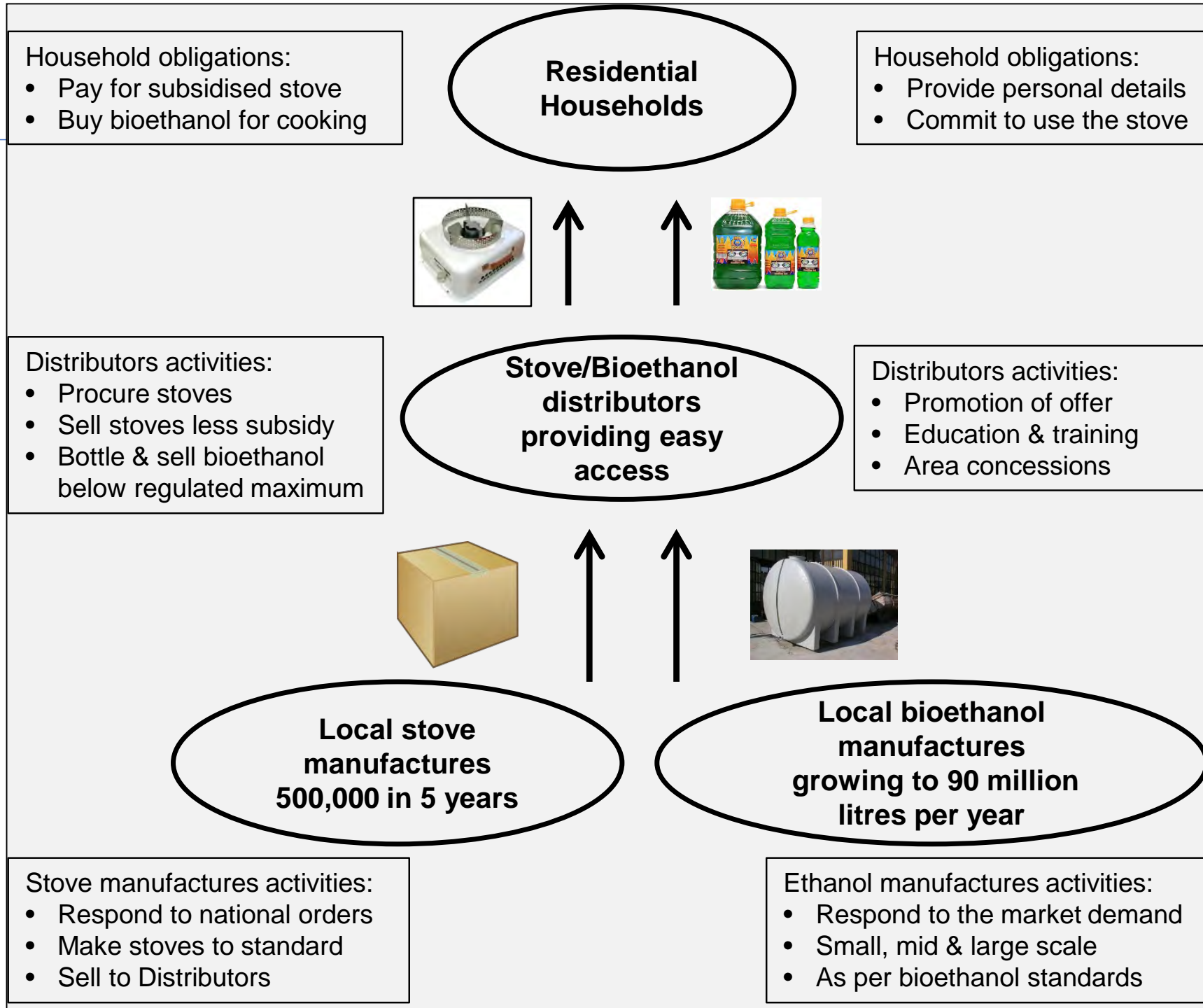


# THE APPROACH

## Dar es Salaam

*Phase One* – 110,000 household proof of concept with GEF funding underway

*Phase Two* - mid 2020 roll out remaining 390,000 across 2/3 areas with EU funding



# PROJECT KEY AREAS OF PROGRESS

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- **2018 achievements**

- Project initiation & launch with the government of Tanzania
- Detailed design of MEF components
- Regular engagement with potential stove, fuel and distribution suppliers to build understanding and interest
- Procurement for the worlds first large scale 110,000 ethanol cook stove and fuel distributor
  - EOI published 13 August, closed 30 August and two companies short listed
  - RFP published closed 25 October

- **2019 progress**

- Consumers Choice of Tanzania appointed as first distributor
  - Engagement of TIB as the in country contracting & verification entity
  - Inception meeting held setting all the frameworks in place
  - Consumers choice currently making all the investments and preparations to launch the first stoves in the market by June, including a world first tender for 110,000 ethanol stoves – has lowered price by 30%
- Initiation work on a Private Sector Guarantee Scheme for capital investment
  - PSGF Round Table with Government and Financial Institutions

# PROGRESS ON SCALING UP LOCAL PRODUCTION OF FUEL

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Of 14 sugar factories in Tanzania, only one has distillery

- Sugar factories have molasses, a waste, to sell
- To remain competitive in region, sugar factories need 3 revenue streams: sugar, power and ethanol
- Tanzania has a deficit in sugar, power and clean fuel for cooking

As part of the MEF, all of the sugar factories have been engaged.

- Pilot study tested the concept with the Zanzibar Sugar Factory
- The mainland sugar factories are excited over the prospect of a supply-driven market for ethanol (the demand is huge)
- The MEF is working with TIB and exploring financial guarantees to help the sugar factories put together finance for their distillery projects
- The stove/fuel distributor will sign offtake agreements with the ethanol producers, which they can show to their bank
- Unlike other markets for ethanol, this is a low-risk market for producers

# MEF IMPACT IN THE AGRICULTURAL SECTOR

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Addition of distilleries to sugar factories will finance growth.

- Benefit to outgrowers who supply sugarcane
- Economic stimulus in farming areas.

New crops, residues and feedstocks take on value

- Cashew waste (cashew apple) offers a potential to produce millions of liters of ethanol from sugary waste now discarded.
- Sisal bole, while still unproven, offers potential for ethanol and biogas production.
- Red sorghum, tropical sugar beets and other appropriate, climate resilient feedstocks could lay the foundation for a biofuels industry.
- These feedstocks recycle and return carbon to the soil.
- When farmers and rural economies thrive, they become more productive and take better care of the soil and environment.
- More jobs stay in rural areas. More wealth is produced in local economy.

# A vibrant bio economy delivers many rewards



Kilimanjaro Biochem Ltd (KBL) in Mwanga district, Kilimanjaro Region, is an example of the successful bio economy.

This plant produces (1) high quality ethanol, (2) food-grade CO<sub>2</sub> and (3) energy.

It plans to expand with **red sorghum** to produce ethanol and distillers grains for animal feed and protein.

KBL produces all of the energy for its operation from briquettes from waste and biogas from its plant effluents.

# BIOMASS: SOURCE OF WEALTH IN MARKET-DRIVEN ECONOMY

Ethanol is a biomass-derived fuel. It is low carbon and burns cleanly. It is energy-dense and transports easily. Liquid fuels are more scalable than solid or gaseous fuels.

In 2017-18, there were 2.8 million tons of wasted cashew apple in Tanzania, a high sugar biomass.

This could have produced over 130 million liters of ethanol fuel for cookstoves. This amount of ethanol would fuel half-a-million cookstoves in Dar es Salaam.



# TANZANIA (COUNTRY A): TARGETS/IMPACT & TRIGGER EFFECT

Targets	Country A	Trigger Effect x3
Households Families	0,5 M	1,5 M
Population	2 M	6 M
Housewives	0.5 M	1,05 M
Children	1 M	3 M
Clean fuel (i.e. ethanol) per year	100 M l	300 M l
Ethanol cook stoves	0,5 M	1,5 M
PS Value Chain Investments USD	100 M USD	300 M USD
SMEs Ethanol Producers	40	120
Jobs created	800	2,400
Indirect Jobs	2,400	7,200

**Trigger effect = natural industry sales growth following MEF based roll out**



# UNIDO GLOBAL IMPACT PROGRAMME FOR CLEAN COOKING

High Impact Countries (Asia)	High Impact Countries (Africa):
<ol style="list-style-type: none"><li>1. India</li><li>2. China</li><li>3. Bangladesh</li><li>4. Indonesia</li><li>5. Pakistan</li><li>6. Philippines</li><li>7. Myanmar</li><li>8. Vietnam</li><li>9. Afghanistan</li><li>10. People's Republic of Korea</li></ol>	<ol style="list-style-type: none"><li>1. Nigeria</li><li>2. Ethiopia</li><li>3. DRC</li><li>4. Tanzania</li><li>5. Kenya</li><li>6. Uganda</li><li>7. Sudan</li><li>8. Mozambique</li><li>9. Madagascar</li><li>10. Ghana</li></ol>



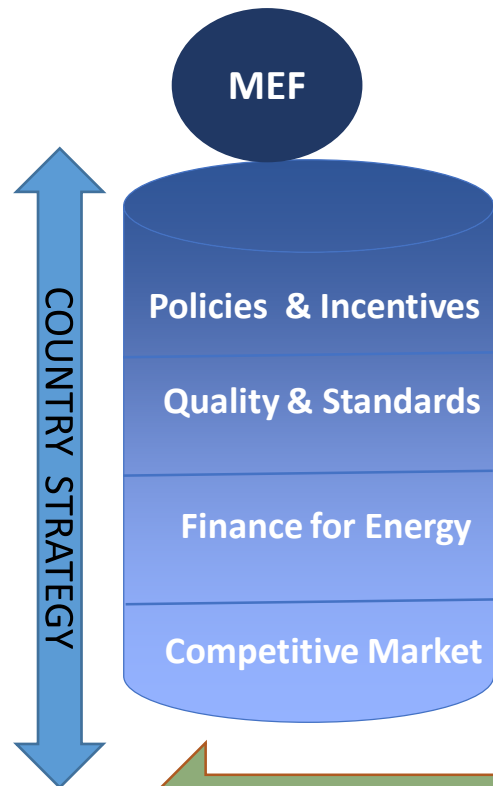
# UNIDO'S 3 PILLAR APPROACH

*A Partnership Delivery Model for Market, Technology, Financial, and Social Innovation in Clean Cooking*

## MARKET ENABLING FRAMEWORK PRIVATE SECTOR DEVELOPMENT

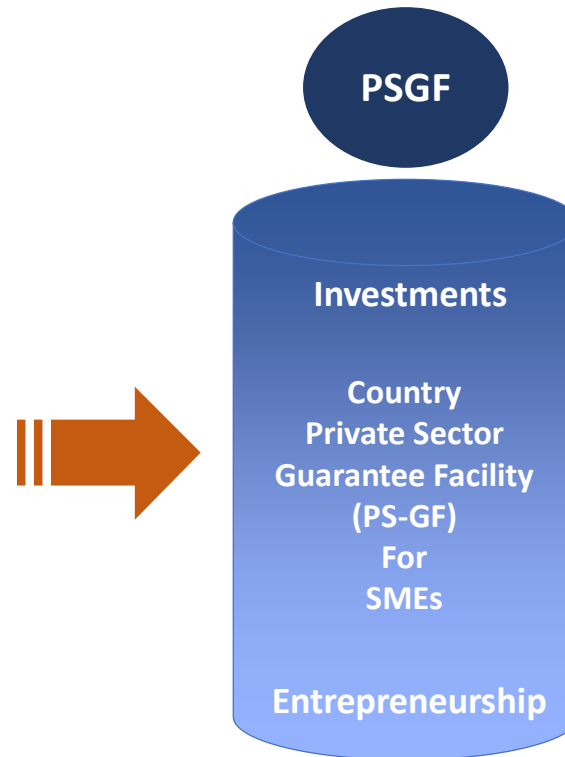
### Pillar 1

Creating a market of economies of scale



### Pillar 2

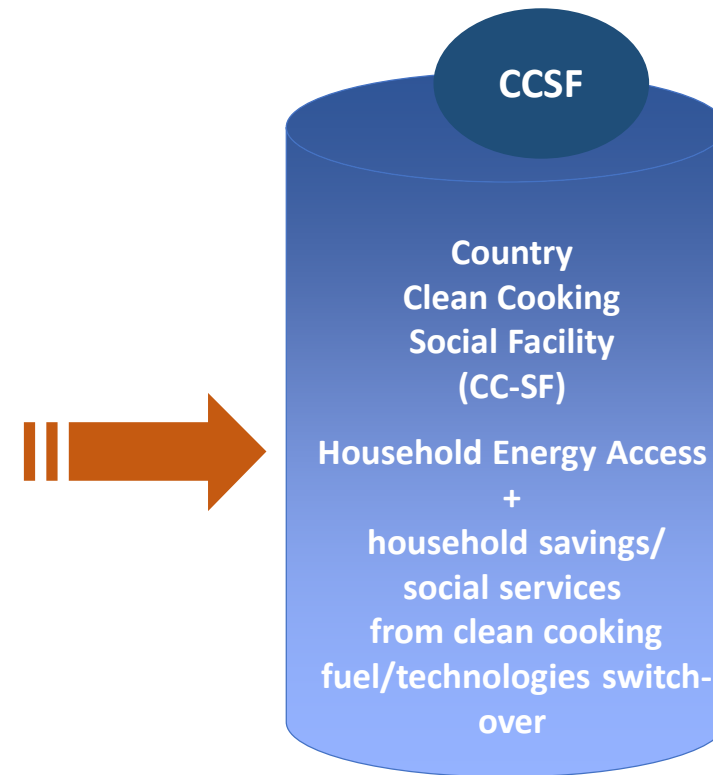
Promoting private sector investments and participation



## SOCIAL IMPACT DEVELOPMENT

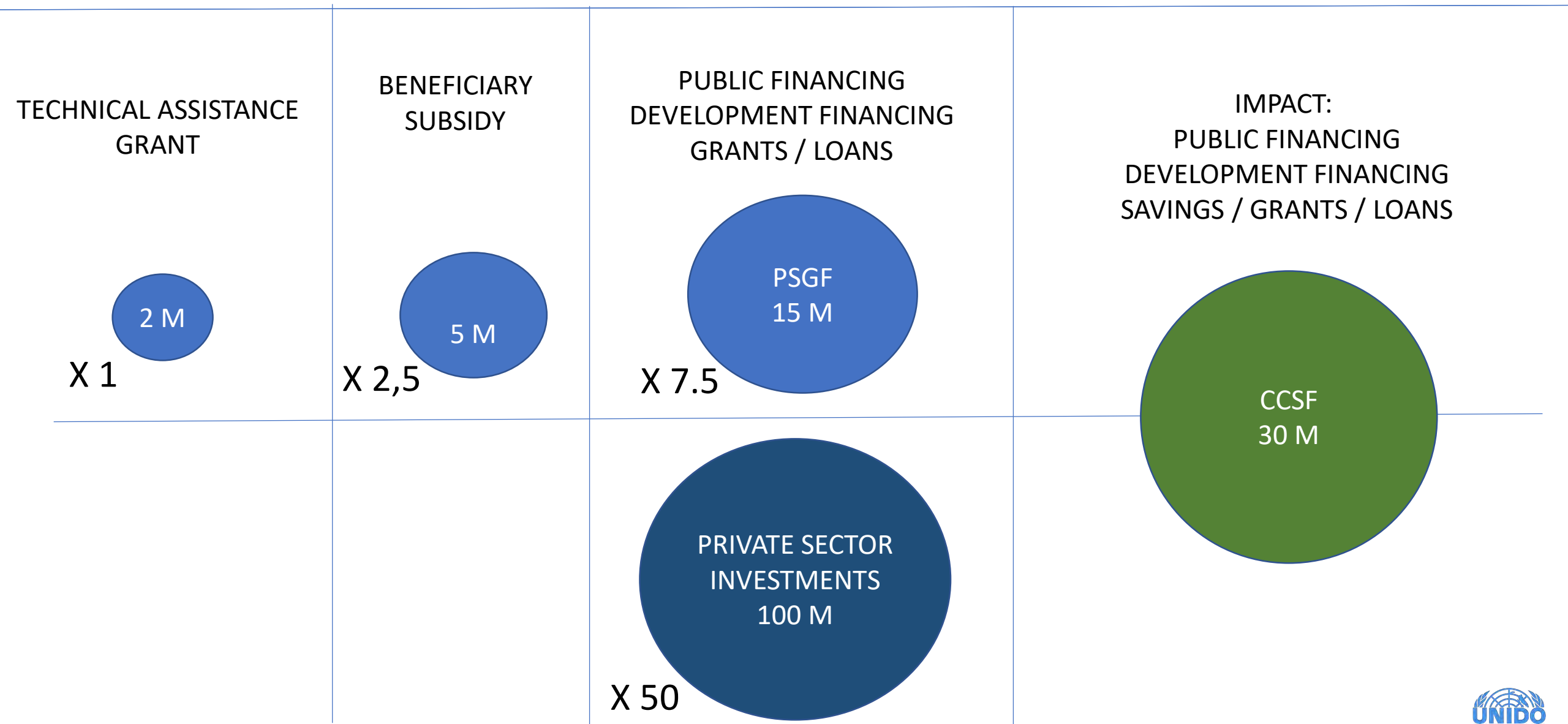
### Pillar 3

Cost saving clean cooking behavior leveraged for improved social benefits



INCLUSIVE, SUSTAINABLE AND MARKET-LED CLEAN COOKING FUELS & TECHNOLOGIES PRODUCTION & CONSUMPTION

# LEVERAGE SCENARIOS: TANZANIA



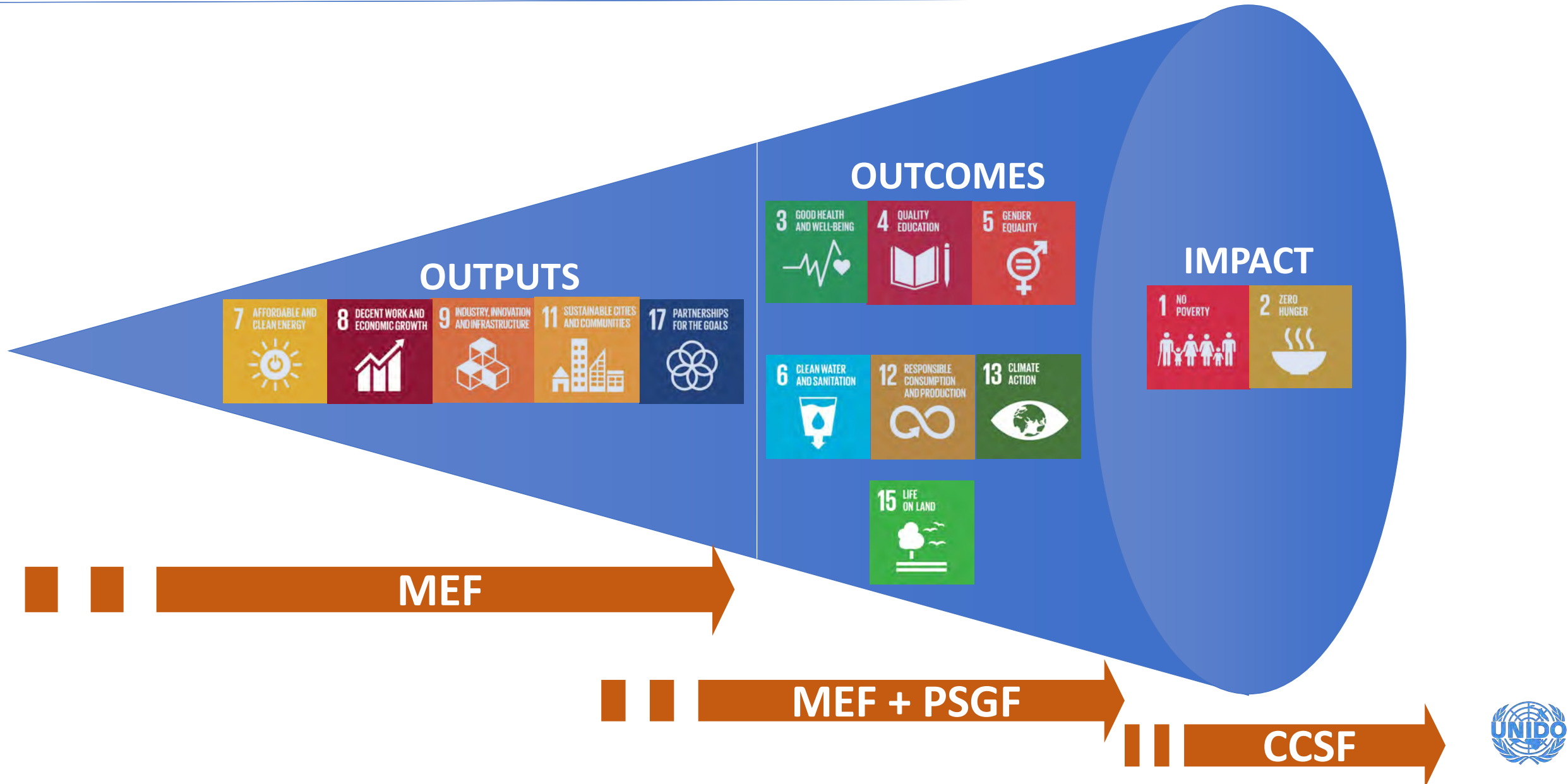
# FUNDING OVERVIEW GIP - CC

## GLOBAL IMPACT PROGRAM FOR CLEAN COOKING (GIP – CC)

COUNTRY A	<div>2 M</div>	<div>5 M</div>	<div>15 M</div> → <div>100 M</div>	<div>30 M</div>
20 HI	<div>40 M</div>	<div>100 M</div>	<div>300 M</div> → <div>2 B</div>	<div>600 M</div>
	TA UNIDO	GRANTS/ SUBSIDIES NDB	PSGF	CCSF
	UNIDO		GOVERNMENTS, DONORS AND PARTNERS	



# THE GIP-CC PATHWAY: SDG IMPACTS



# Next Steps

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1. Identify Collaboration Areas (in Tanzania) and Pipeline / Priority Countries
2. Update on Tanzania and GIP-CC 2019
3. Invitation to Expert Group Meeting 2019
4. Invitation to Confirmation of a GIP Advisory Board 2020
5. Participation & Contributing in programs by partners

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**THANK YOU**