

# Annotated Agenda 13a

**SSC-III.AS: “Switch from fossil fuel to biomass in existing manufacturing facilities for non-energy applications”**

# III-AS. Background

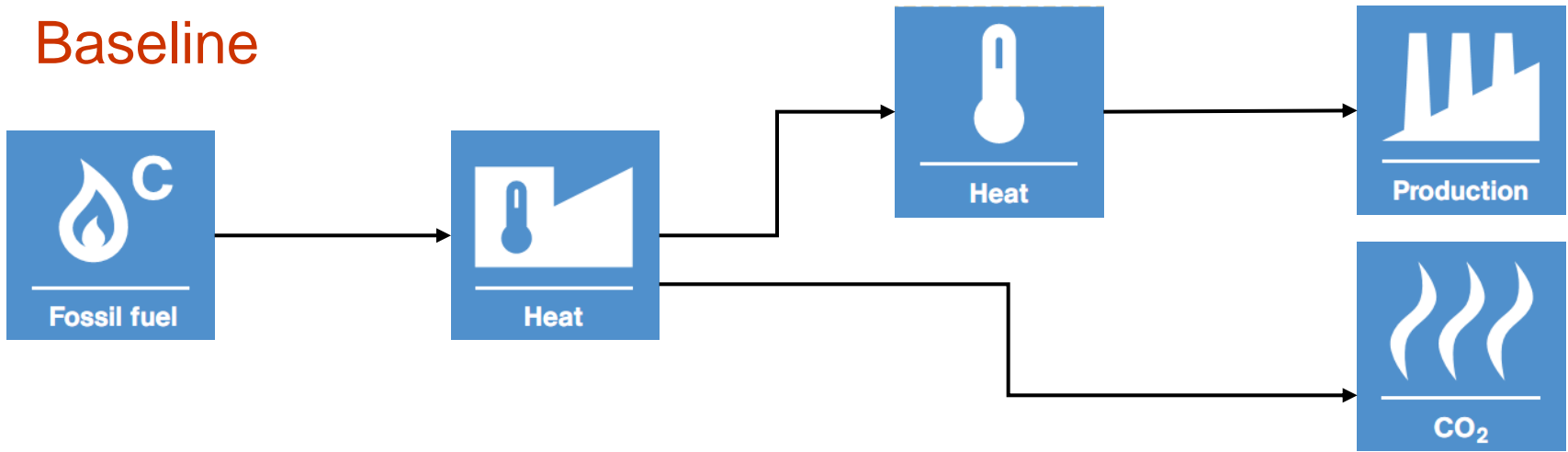
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- Approved SSC fuel switch methodologies:
  - **AMS-III.B/III.AG/III.AH/AMS-I.C**: **only for heat/electricity output**
  - **AMS-III.AM**: for **cogeneration/tri-generation units only**
  - **AMS-III.Z**: **covers only brick manufacturing**
  - **AMS-III.AN**: **limited to fossil fuel switch (biomass not included)**
- III.AS is developed with PP consultation
  - Triggered by **SSC-NM058 (lime kilns) and CLA SSC\_412**
  - **Broadens portfolio of technologies for fuel switch**

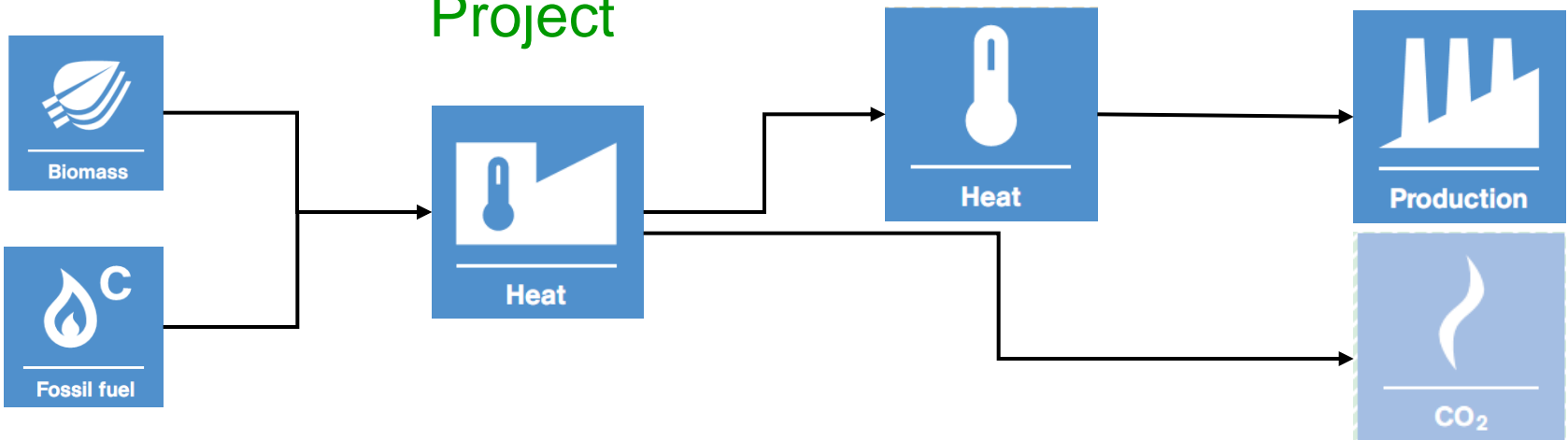


# III-AS. Emissions Reduction

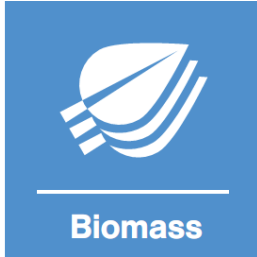
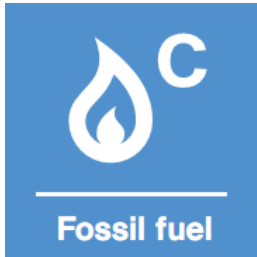
## Baseline



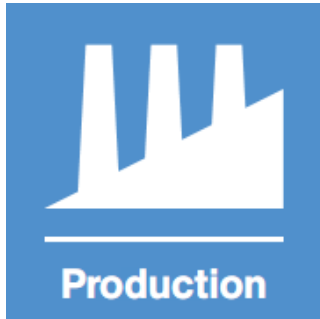
## Project



# Key Features



- Distinct energy input ( i.e. specific fuels) and distinct product output (intermediate/finished)
  - a) Fuel/Energy input proxy where product output can not be monitored e.g. hot metal.
- Products are equivalent in the baseline and project
  - a) Same use/function, physical properties;
  - b) Same or better level of service;
    - As determined by a national standard or industrial norm;
- Input materials and output capacity do not vary significantly (+/- 10%).



# Baseline Calculations

## Approach 1 (< 20 kt CO<sub>2</sub>)

- Simplified approach as in AMS-III.Z;
- Historic data (3 yr annual average) used for :
  - Baseline fossil fuel consumption;
  - Product output.

## Approach 2 (> 20 kt CO<sub>2</sub>)

- Relevant to large manufacturing facility (e.g. clinker production);
  - Heat transfer efficiency/fuel energy input likely to change;
- Consistent with ACM0003:
  - Specific energy consumptions in baseline and project compared;
  - Higher fuel/energy input from lower efficiency discounted and vice versa.



# Annotated Agenda 13.b

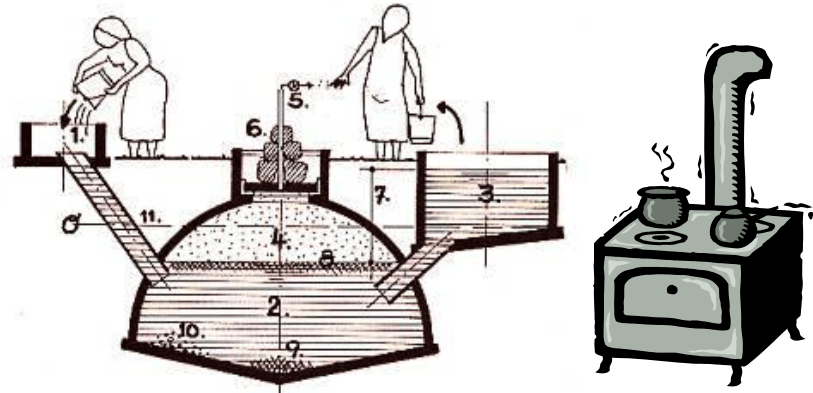
**SSC- I.I: “Biogas/biomass use for thermal applications for households/small users”**



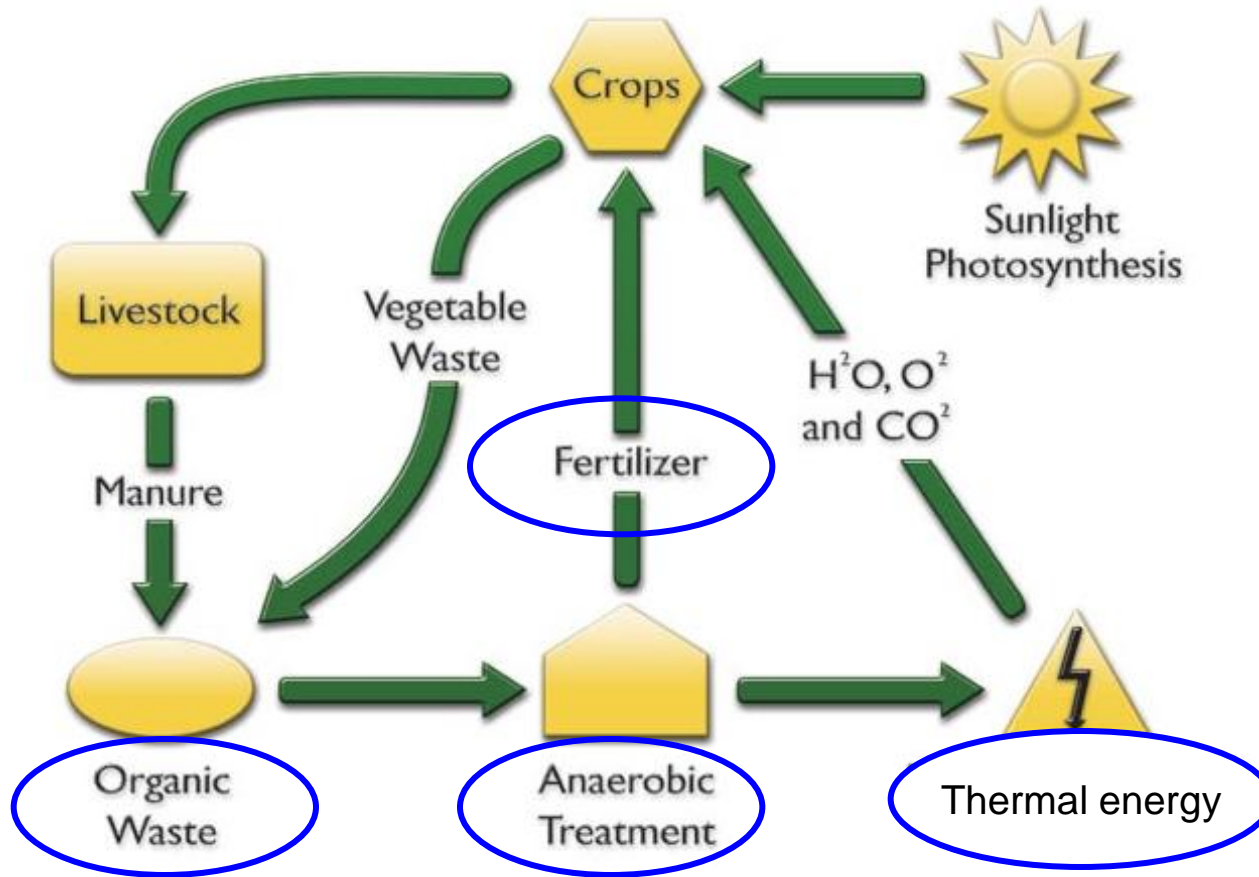
# I.I “Biogas/biomass for small applications”

- Energy from renewable biomass or biogas for residential, commercial, institutional applications e.g. use in households, small farms or in institutions such as schools;
- Technologies include biogas cook stoves, biomass briquette cook stoves, small scale baking and drying systems, water heating, or space heating systems.

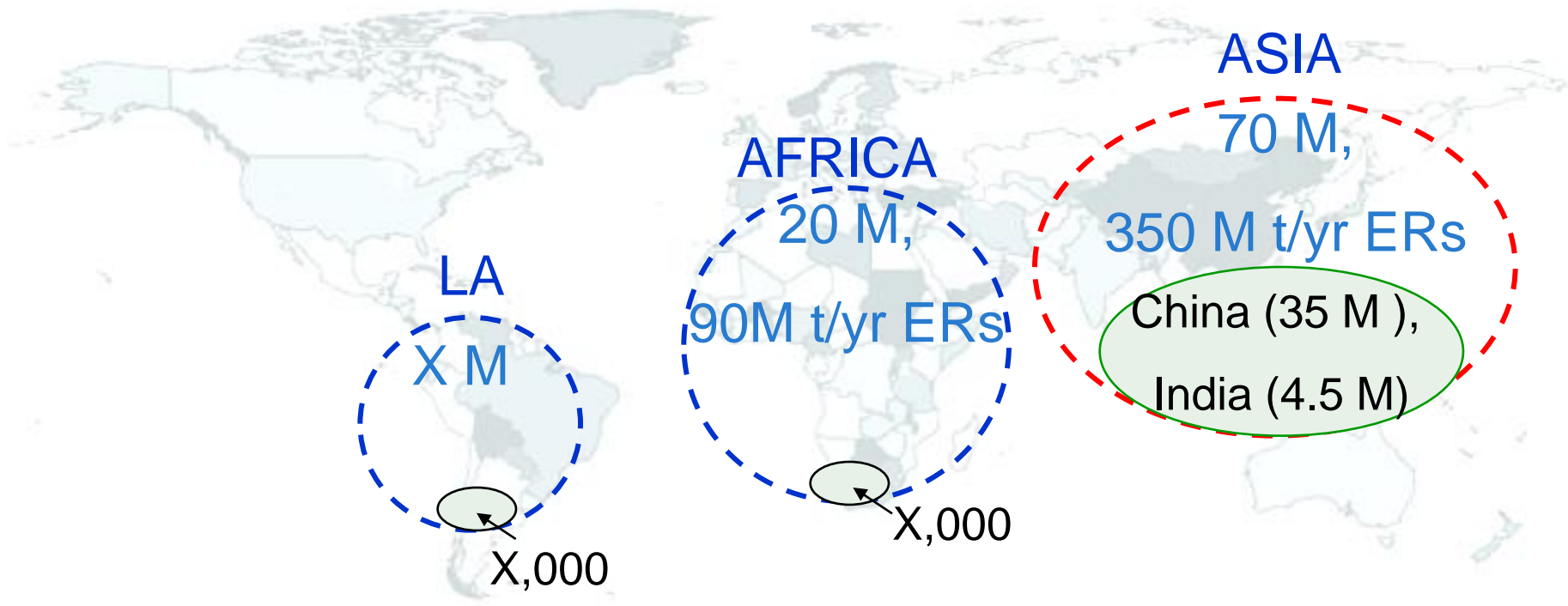
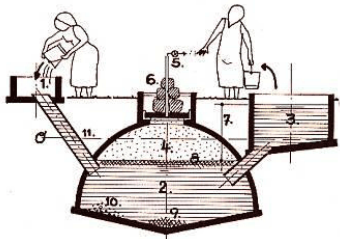
Biogas Digester & Briquette Stove



# Biogas: a benign renewable energy source

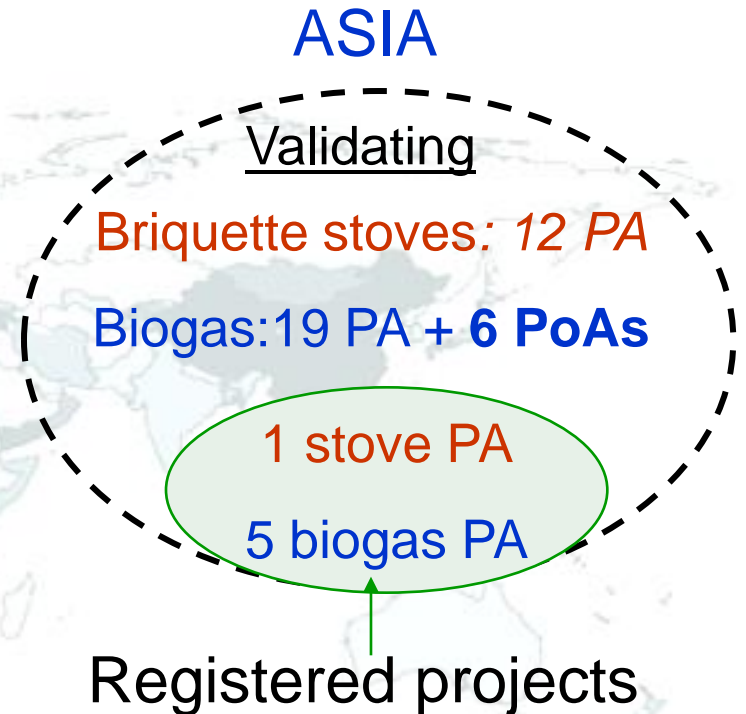


# Domestic biogas digester: potential

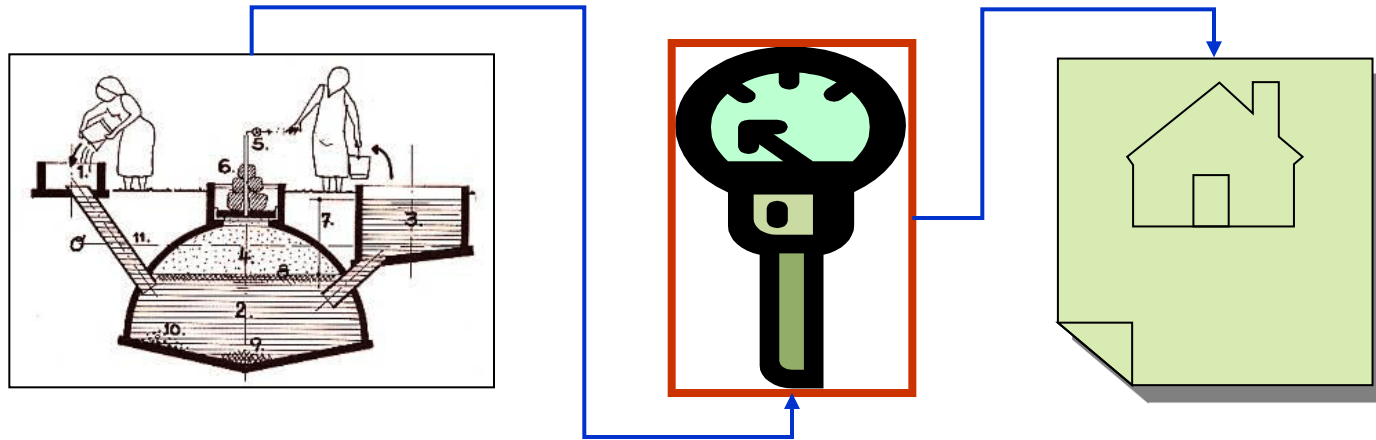


# I.C for household energy

- **Briquette stoves projects**
  - 12 validating & 1 registered
- **Biogas projects**
  - 19 validating
    - AMS-I.C alone (6)
    - Rest AMS-III.R + AMS-I.C
  - 5 registered
    - NRB baseline (currently under AMS-I.E)
  - 7 PoAs in Asia validating



# I.C for household energy-lessons



- Even on sample basis close to **100** households are to be **metered** for annual gas production:
  - a) **Transaction cost, data collection challenges;**
  - b) Measuring **equipment reliability** for low flows.

# I.I Biogas/biomass simplifications

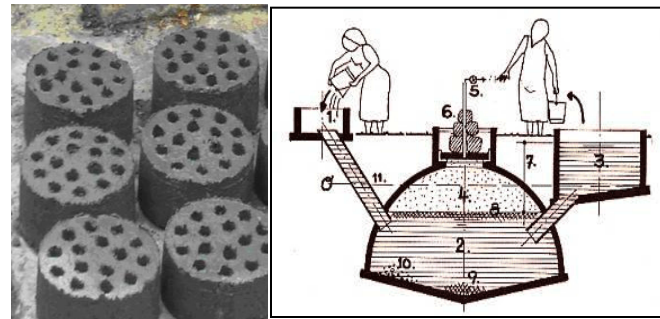
- Two options for monitoring Biogas generation
- Option 1: Avoided fossil fuel consumption (A-B) as per AMS-I.E principles
- Option 2: Measurement campaigns (defined as 30 days continuous measurements)
  - 5 campaigns per digester type (size, fixed/floating, ambient temperature of the location)

Baseline: Coal for cooking



A

Project: biogas+ reduced Coal

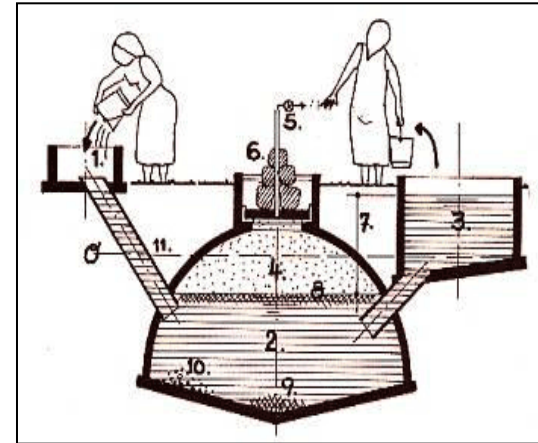


B



# I.I Biogas/biomass – simplification/rigour

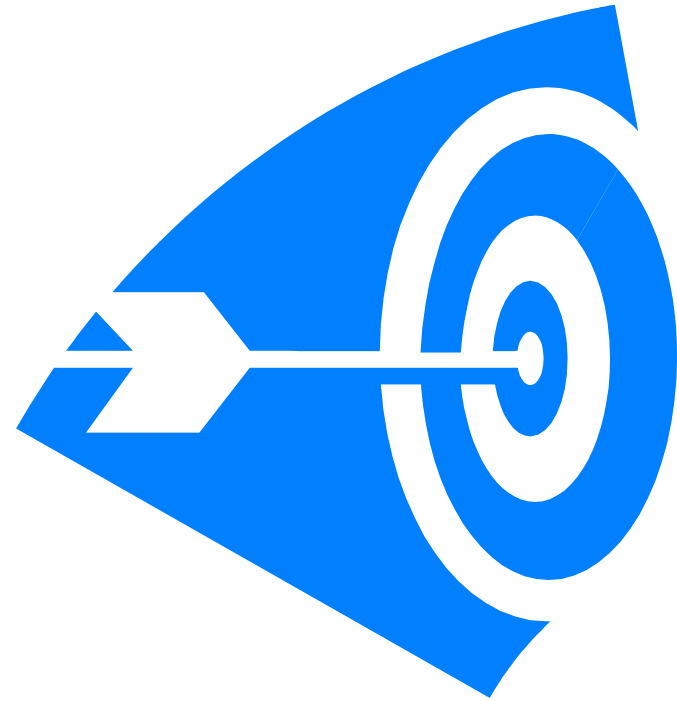
- Operational check every two years;
- Upstream emissions
- Default values;
- Limited to 150 kWth per unit;
- Constructed, operated per national or international standard;
- Operational check through sampling survey (95/5 precision).



# I.I Biogas/biomass

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- Small scale methodologies
  - =simplified
  - =broadly applicable
  - =conservative defaults
- Top down development
  - Extensive PP,expert consultation
- Regional distribution



# I.I: Biogas/biomass for small users

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	Confidence level and error margin					
	90/10	90/5	95/10	95/5	99/10	99/5
Sample Size	68	265	95	370	163	622

