HEP PROGRAMME:

WEBINAR ON FOOD SECURITY: STRENGTHENING FOOD SECURITY THROUGH HIGHER EDUCATION PARTNERSHIPS

FINNISH NATIONAL AGENCY FOR EDUCATION

Ulkoministeriö
Utrikesministeriet

Ministry for Foreign Affairs of Finland

PROGRAMME OUTLINE – EVENT SITE IN THE CHAT

09:30–09:35 – Welcome

09:35–09:45 - Project Foodleader Strengthening Food Security through Higher Education Infrastructure in Kenya and Mozambique, Noora Kanerva, University of Helsinki

09:45–09:55 - Project NERC Strengthening Nutrition Education and Research Capacity in Universities in Nepal, Tarja Kinnunen Tampere University and Rojina Basnet Tribhuvan University

09:55–10:05 - Project SF-BioVac Sustainable Futures – Biogas Value Chain for Circular Economy Competence Growth in Zambia, Cynthia Söderbacka, Novia University of Applied Sciences

10:05–10:15 – Commentary and Research Perspective: Measuring Impact and Long-Term Sustainability in Food Security Interventions, Roseanna Avento, University of Eastern Finland

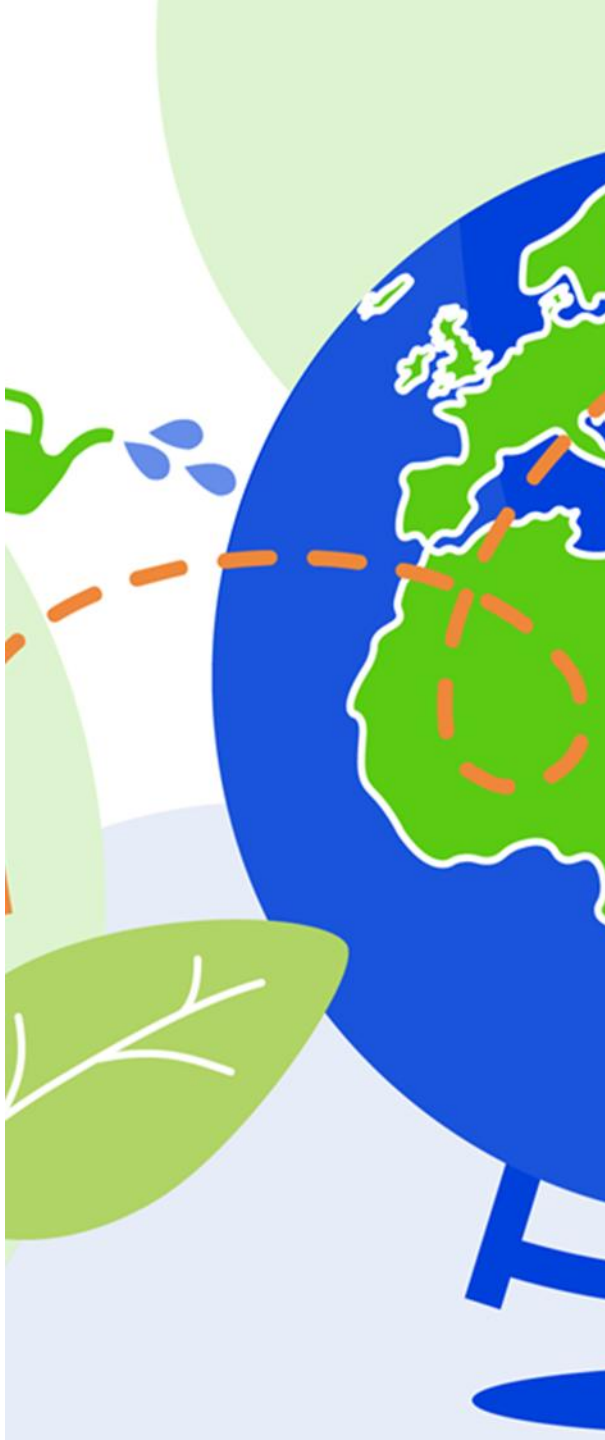
10:15–10:50 – Panel Discussion, Panelists: Previous speakers

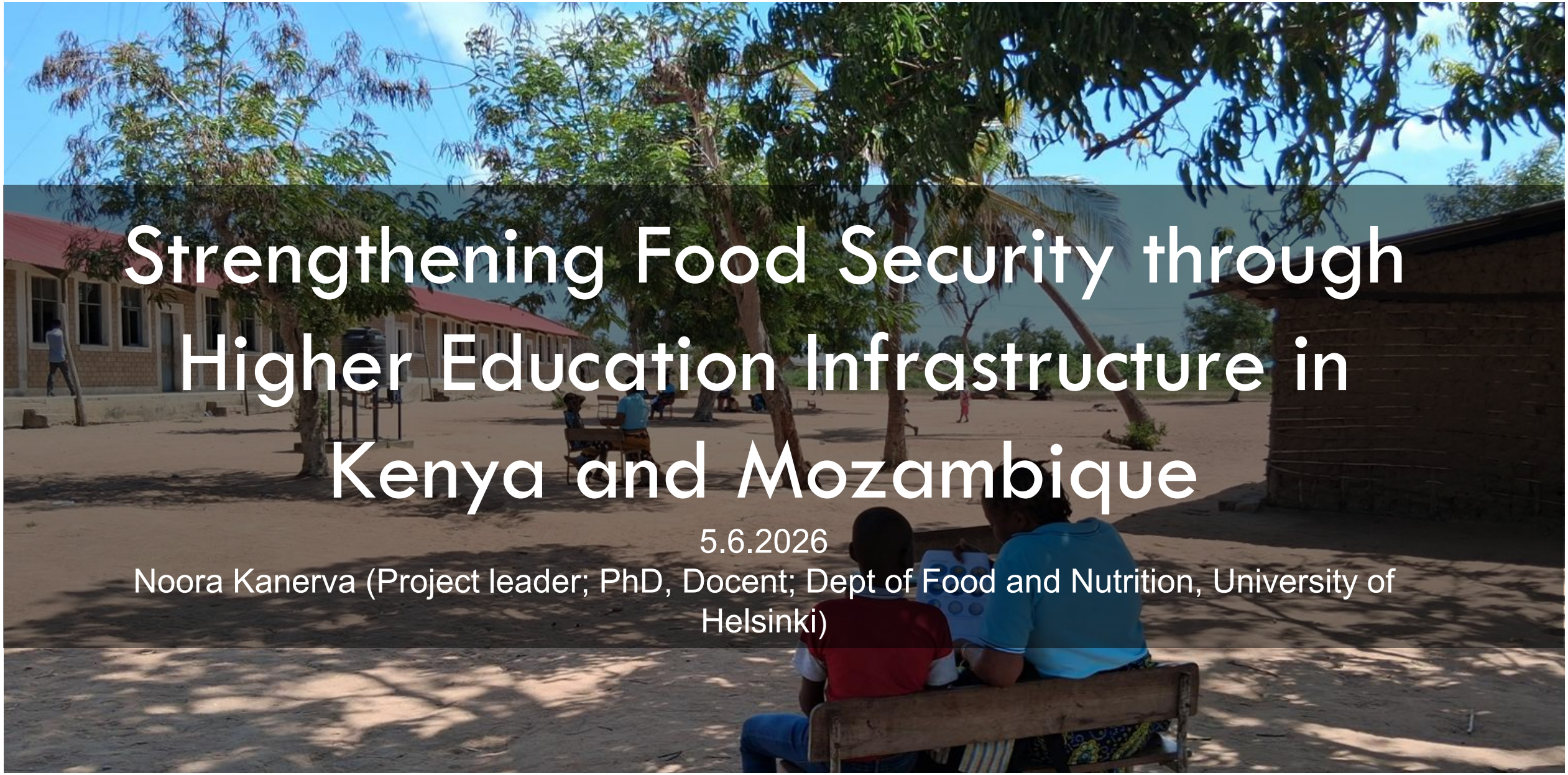
10:50–11:00 – Open Discussion

PRACTICAL GUIDELINES

- The Teams interpreter agent is allowed. AI agents (e.g., Otter.ai, Fireflies.ai, Read.ai) are removed from the meeting.
- Please keep your microphone muted unless you are speaking.
- EDUFI events follow the principles of a safer space:

Safer Space Principles | Finnish National Agency for Education



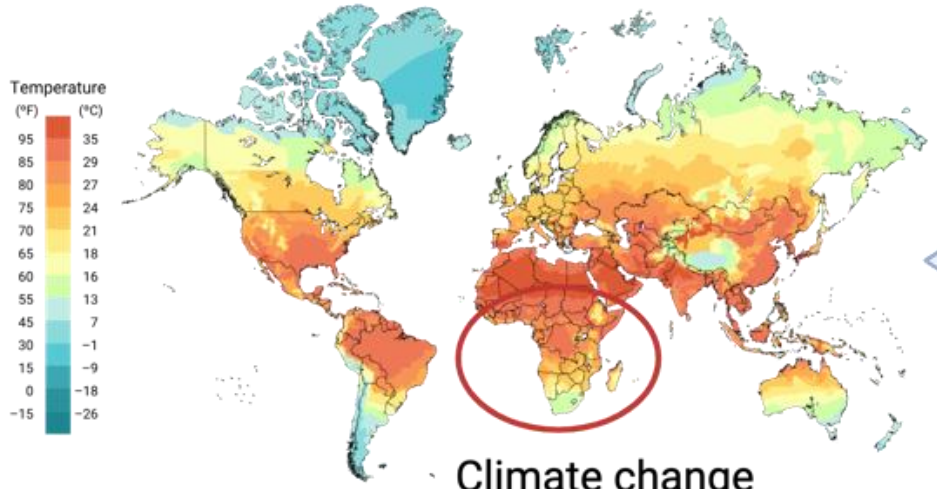


Strengthening Food Security through Higher Education Infrastructure in Kenya and Mozambique

5.6.2026

Noora Kanerva (Project leader; PhD, Docent; Dept of Food and Nutrition, University of Helsinki)

UNIVERSITY OF NAIROBI
UNIVERSIDADE LÚRIO
UNIVERSITY OF HELSINKI
With support from Finland's development cooperation
FINNISH NATIONAL AGENCY FOR EDUCATION
FOODLEADER



Climate change

Planetary Healthy diet

Policy & regulation

Practical implementation

FOOD SYSTEMS in Sub-Saharan Africa

Potential to create demand for healthy and safe food

OUR APPROACH

GAP IN KNOWLEDGE

Data generation by local researchers for evidence-base

BARRIER

Child health

Pesticide residues & Mycotoxins in foods
Monotonous diets

SCHOOL FEEDING PROGRAMMES

BREAKING THE BARRIER

DASAT: harmonised data collection and analysis

Stakeholders & decision makers

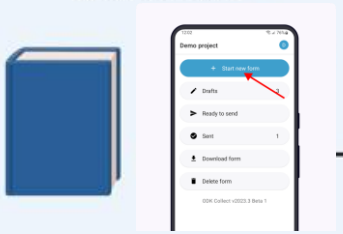
FILLING THE GAP

DIETARY AND FOOD SAFETY ASSESSMENT TOOL (DASAT)

Food sample analysis with GC-MS

Food sample collection and toxin analyses

ODK application for dietary data collection



Photographic food portion size

Atlas

Harmonized coding of chemical risks, and food consumption

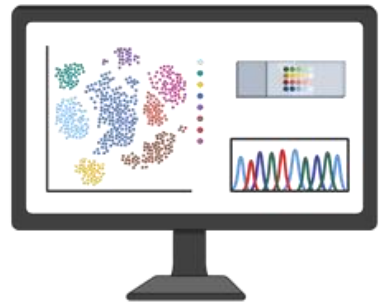
DASAT basic infrastructure

Data to cloud

Recipe collections, cooking demonstrations, validation of food photographs

Food composition, Recipe information, retention and yield factors

dasat.2.rahtiapp.fi



- Calculation of food and nutrient intakes & exposure to food hazards,
- Modelling trade-offs between chemical risks and nutritional benefits from the school meals over long term in a child population
- Result dissemination

FOODLEADER

APPLYING NEW INFRASTRUCTURE AND LEARNING FOR SOCIETAL OUTREACH

Immediate goal: stronger local capacity → **Long-term goals**

IMPROVED INFRASTRUCTURE
- GC-MS
- DASAT

IMPROVED TEACHING CAPACITY
- Use of new tools
- Digicampus course

School food systems

School meals — Pesticide and mycotoxin analyses

Pupils aged 9.7–13.9y — Dietary assessment, anthropometric measurements

New evidence on school meals' role in supporting nutrition and health

Development of local solutions together with the future "Food Leaders" and schools

Commitment to monitor and improve school feeding programme

SDG1

Zero Hunger SDG2

SDG3
SDG4
SDG5
SDG8

FOODLEADER

CONTACT US:

University of Helsinki

Dr. Noora Kanerva, leader, noora.kanerva@helsinki.fi

Ms. Katri Salo, coordinator, katri.salo@helsinki.fi

University of Nairobi

Prof Catherine Kunyanga, leader, ckunyanga@uonbi.ac.ke

Ms. Grace Werikhe, coordinator, werikhe8@gmail.com

University of Lúrio

Dr. Almeida Machamba, leader, amachamba@unilurio.ac.mz

Mr. Rui Diaz, coordinator, r.diaz@unilurio.ac.mz

FOODLEADER

Strengthening Nutrition Education and Research Capacity in Universities in Nepal (NERC project)

OPH webinar on 5th June 2026

Tampere University

Tribhuvan University
Central Department of Public Health
Central Department of Home Science

With support from Finland's development cooperation

FINANCING FROM FINNISH NATIONAL AGENCY FOR EDUCATION

A new food composition database (FCD) for Nepal

Introduction: WHY?

- FCDs describe the **energy and nutrient contents** of foods
- FCDs are needed for
  - **Research**
  - Determining **nutrient adequacy**
  - Developing **dietary guidelines**
  - Developing nutrition and health **policies**
  - Formulating **diets and food labels**
- Earlier Nepalese FCT 2017
  - 14 nutrient components for mainly raw foods
- **Need**: An FCD of Nepalese foods and a low-cost, tailored dietary intake calculation tool

Methods: HOW?

- **Data source:** Indian Food Composition Table
  - 151 nutrient components, 528 food items (raw)
  - All are laboratory-analyzed values
- Borrowed nutrient values from **other FCDs**
- **Recipe calculation method – why?**
  - The **changes** in weight and nutrient content of food items **during cooking** are taken into account
  - Allows compiler to develop many recipe **variations**
  - Laboratory analyses expensive and time consuming
- Followed **INFOODs guidelines:** comparable
- A data layout strategist developed an integrated Excel-based intake calculator

2

Results: WHAT?

- The new Excel-based Nepalese FCD includes
  - more than **1000 commonly consumed food items** (raw, cooked and packaged)
  - **41 nutrient components**
- Clear **food names and description**, and unique **food codes**
- Categorized into food group and sub-groups
- **Well documented**; recipe details, documented at nutrient values level
- An integrated dietary **intake calculator**

Conclusions: SO WHAT?

- A **user-friendly, cost-free** FCD and dietary intake calculation tool for Nepal
- In May, our team trained about 30 nutrition teachers and 50 dietitians in Nepal to use the new FCD and calculator
- The FCD will be **accessible to users** via Central Department of Public Health, Tribhuvan University, and FAO website
- A journal article to be published later

Rationale for Revision of Curriculum

- Update curricula to address emerging nutrition and public health challenges in Nepal.
- Limited integration of food security, Dietary Assessment methods and sustainability concepts in existing curriculum
- Academic institutions are essential for producing skilled professionals capable of addressing food and nutrition security challenges.

Curriculum Revision under NERC Project

- Central Department of Public Health (CDPH)
  - Masters and Bachelor Level Courses, Master level: 4 courses revised, BPH: 1 Course revised
- Central Department of Home Science (CDHS)
  - Master level and Bachelor level Courses, Master level: 3 courses revised

Key Focus Areas

Food security

Dietary assessment methods

Sustainable food systems (newly introduced)

Pedagogy

Implementation Approach

- Shift from **theory-based to practice-oriented teaching**
- Hands-on training in:
  - 24-hour dietary recall
  - Food diary methods
  - Food Frequency Questionnaire (FFQ)
- Classroom-based practical exercises (Role-Play Exercises, Self-Assessment, Peer Assessment, Data Interpretation)
- Updated learning materials and teaching methods
- Faculty orientation and capacity building activities

Food security-related contents were strengthened and updated

Concept and dimensions of food security

Determinants of food security and insecurity

Household and individual food insecurity assessment approaches

Nutrition-sensitive agriculture and food systems

Food environment and dietary transition patterns

Linkages between food security, nutrition, and climate change

Food and nutrition policies, strategies, and programs in Nepal

Role of multisectoral approaches in addressing food insecurity

Emerging challenges in food security

Implementation experience

Increased student engagement

Improved understanding of dietary assessment methods

Enhanced skills in dietary assessment methods

Enhanced understanding on food security and sustainable food system contents

Positive student feedback from students

THANK YOU

SF-BioVac

SF-BioVac Project

Promoting Circularity With Cassava Waste for Energy Recovery & Agricultural Use

HEP FOOD SECURITY WEBINAR

5th June 2026, Online

Cynthia Söderbacka

Finnish National Agency for Education

With support from Finland's development cooperation

COPPERBELT UNIVERSITY

NOVIA UNIVERSITY OF APPLIED SCIENCES

UNIVERSITY OF OULU

UNIVERSITY OF ZAMBIA

SF-BioVac

About the project

NOVIA UNIVERSITY OF APPLIED SCIENCES — Lead Coordinator

UNIVERSITY OF OULU

https://www.sf-biovac.com/

Project Name: **Sustainable Futures: Biogas Value Chain for Circular Economy Competence Growth in Zambia (SF-BioVac)**

Theme: Climate Change , Circular Economy & Energy Transition

Partner Countries: Finland & Zambia

Period: 1.1.2024-31.12.2026

Finland

Novia University of Applied Sciences (Faculty of Technology & Seafaring)

University of Oulu (Faculty of Technology)

Zambia

Copperbelt University (School of Engineering)

University of Zambia (School of Engineering)

Rural Electrification Authority (REA) as industrial partner

Coordinating Institution: Novia UAS

Total Budget: **€ 1 096 221,89**

With support from Finland's development cooperation

COPPERBELT UNIVERSITY NOVIA UNIVERSITY OF APPLIED SCIENCES UNIVERSITY OF OULU UNIVERSITY OF ZAMBIA

Funder for HEP Programme: Ministry for Foreign Affairs of Finland

- **Main:** The **Higher Education Partnership (HEP) Programme** supports cooperation projects between higher education institutions in Finland and the developing world. The projects support the HEIs as they develop their subject-specific, methodological, educational and administrative capacity. The programme is funded by the **Ministry for Foreign Affairs of Finland** and administered by the **Finnish National Agency for Education**.

- **Project Partners** ca 10%

Finnish National Agency for Education

SF-BioVac

Background

Search for Alternative energy solution

- Biogas
- Uses

Waste management Crisis

- Waterborne dieases during rain season
- Circular economy

Knowledge Gaps

- Potential of biogas as alternative resource
- Uderstanding of feedstock, process design & utilisation patheways

Photo: Rural Electrification Authority, Zambia

Lusaka generates about one million tons of waste annually (2,700 tons per day), but only half of this is taken to the designated dump site.

With support from Finland's development cooperation

COPPERBELT UNIVERSITY NOVIA UNIVERSITY OF APPLIED SCIENCES UNIVERSITY OF OULU UNIVERSITY OF ZAMBIA

Project objective

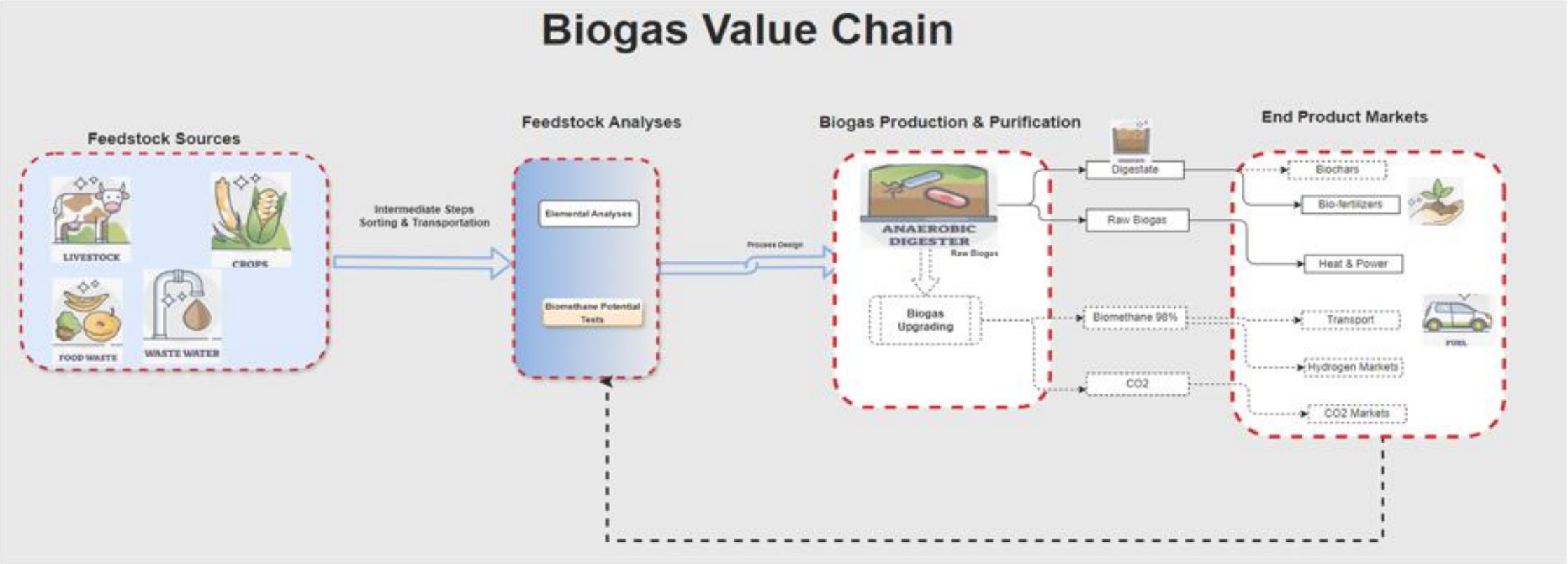
Capacity building in Zambia's HEIs through practical & theoretical training in Circular Economy in the Waste-2-Energy sector with focus on the biogas value chain.

Key results to be achieved:

1. Provide working-life relevant higher education through strengthened capacities at institutional level in partner HEIs.

2. Improved pedagogical approaches, with increased technical capacities of staff in the field of circular economy.

Why biogas?


Biogas Value Chain
Feedstock Sources
LIVESTOCK
CROPS
FOOD WASTE
WASTE WATER
Intermediate Steps
Sorting & Transportation
Feedstock Analyses
Elemental Analyses
Biomethane Potential Tests
Process Design
Biogas Production & Purification
ANAEROBIC DIGESTER
Raw Biogas
Biogas Upgrading
Digestate
Raw Biogas
Biomethane 98%
CO2
End Product Markets
Biochars
Bio-fertilizers
Heat & Power
Transport
FUEL
Hydrogen Markets
CO2 Markets

SF-BioVac Cassava Waste for Energy Recovery

SF-BioVac

Result-: Biochemical Methane Potential of Cassava

Table 7: Results on sample characterisation, BMP tests and energy contents of various cassava parts.

Substrate	Total Solids-TS (%)	Volatile Solids, Dry sample - VS_{TS} (%)	Total Volatile Solids, - Wet Sample VS_{TOT} (%)	BMP (Nml-CH_4/g VS	BMP RSD (%)	Energy Content in 200 kg per sample type (kWh)		
						Raw Biogas LHV (~4.4 kWh/kg)	Raw Biogas HHV 7.3 (kWh/kg)	Biomethane (~13.5 kWh/kg)
Cassava Root	75.5	83.0	75.4	119.2	11.0	71.2	118.1	218.3
Cassava Peel	85.1	97.2	84.0	74.6	20.0	55.9	92.7	171.4
Cassava Pulp	60.4	94.8	59.7	128.6	25.0	48.4	80.2	148.4
Cassava Leaves	11.3	89.9	10.2	19.8	4.9	0.4	0.6	1.1
Mix	31.2	95.3	31.3	80.9	12.0	8.3	13.7	25.4
Inoculum	4.4	70.3	3.1	2.3	6.7	-	-	-
Cellulose	100.0	99.6	99.6	281.1	13.9	295.7	490.5	907.1

I asked AI what 36kWh can power in Zambia

Quick comparison

Technology	Electrical Efficiency	Total (CHP) Efficiency
Gas engine	30–40%	70–90%
Microturbine	25–35%	60–80%
Fuel cell	45–60%	80–90%

What 36 kWh can realistically power

- Basic, efficient usage (lights + small electronics)

You can run for about **5–10 days**:

- 4–6 LED bulbs (5–10W)
- Phone charging daily
- TV (2–4 hours/day)
- Maybe a small efficient fridge

Typical for a **low-income or energy-conscious household**

Take-Away: BMP tests are very controlled & more stable than actual production (Lit values higher than obtained here, VS- insight in inorganic content (bio-fertiliser) & TS on reactor sizing

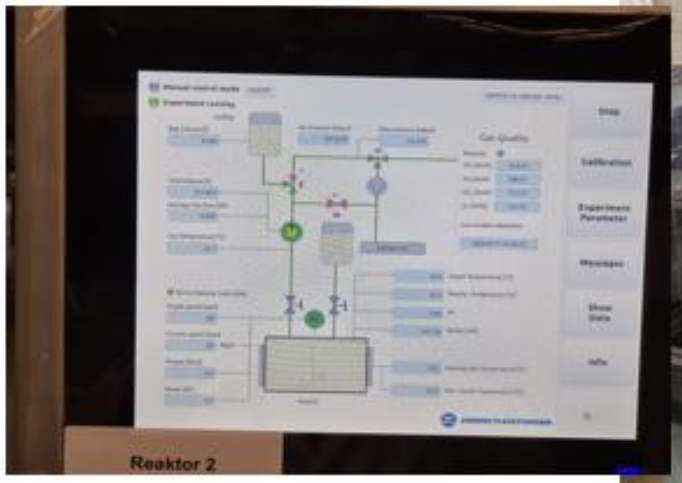
SF-BioVac

Scaling Up: Biogas production from cassava

BMP Test= 0.4L Vs. BTP=15L

- Biogas quality
- Co-digestion with municipal food waste
- Cassava has high carbon content, low nitrogen content (1.5-4% dry weight)-difficult to produce biogas on its own
  - Low pH= biogas producing microbes can't survive
  - Mix with nitrogen-rich wastes like abattoir waste
- No direct competion to food
- Challenges with scaling up

Fresh Cassava: Degree of degradation 26,77%



Dry cassava Degree of degradation: 27,48%

With support from Finland's development cooperation

COPPERBELT UNIVERSITY NOVIA UNIVERSITY OF APPLIED SCIENCES UNIVERSITY OF OULU UNIVERSITY OF ZAMBIA

SF-BioVac

Status quo of biogas in Zambia

Population of Lusaka Zambia= 3.6 million people vs Vaasa Region= 114k people

Site/Farmer	Location	Implementing/Supporting Organisation	Digestor Type & Size	Size (m^3)	Primary Feedstock
Malangwa Farm	Luanshya	SNV	Fixed Dome	14	Cattle manure
Nkuyama Farm	Ndola (PU)	Private supplier	Flexible Tube	7 (4 slurry, 3 gas storage	Cattle manure
Phimwambe Farm	Luanshya-Farm Block	SNV	Fixed Dome	9	Cow dung
Hamatuli Farm	Luanshya	SNV	Dome type	4-5	Cow dung
WeForest-supported Household	Luanshya	WeForest	Not specified	Not specified	Cow dung
Kafubu WSC-Kabushi Pilot Plant	Ndola	KWSC	Fixed Dome	Pilot scale	Sewage sludge
LWSC Machinchi WWTP	Lusaka	LWSC	AD,	40 & 90	Wastewater sludge
Njase Girls Sec Sch.	Choma	REA	Fixed Dome	15 & 6	Cow dung
Chipembi Girls Sec Sch.	Chisamba	REA	Fixed Dome	20 & 9	Cow dung
Kasis Girls Sec Sch.	Chongwe	REA	Fixed Dome	15 & 6	Cow dung

Finland's 1st Waste Mgt Company, Vaasa Region

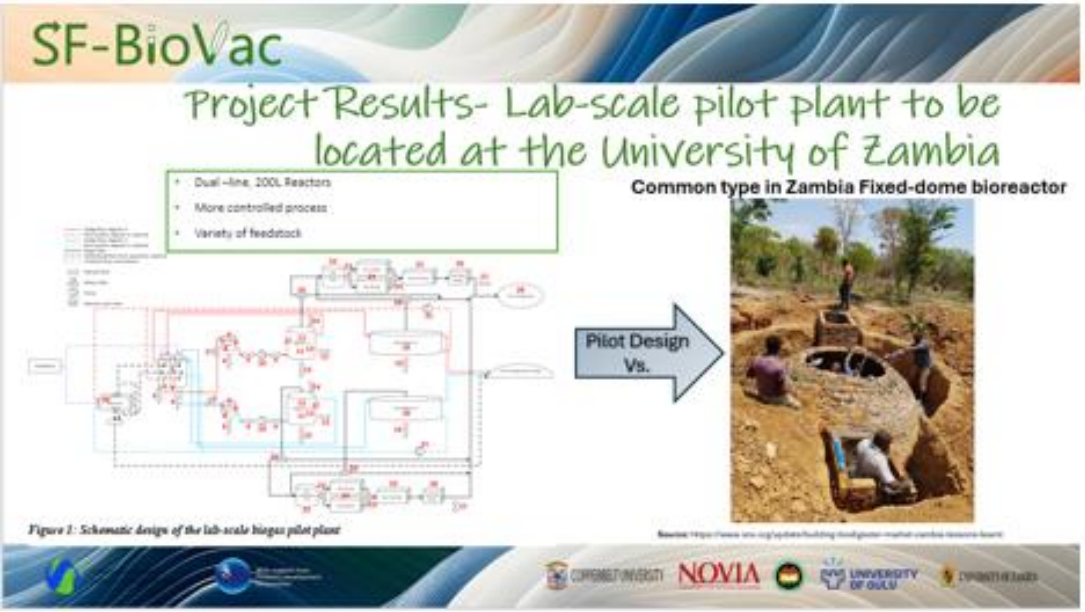
STORMOSSEN

New Reactor Size (m^3)
4400

VIA UNIVERSITY OF APPLIED SCIENCES · REA · UNIVERSITY OF OULU · UNIVERSITY OF ZAMBIA

SF-BioVac

Conclusion



There is interest for biogas in Zambia

Current biogas plants are run inefficienctly due to lack of knowledge on biogas production
- Process preparation & monitoring
- No measurement instruments
- Understaning of feedstock

More efficient scalable biogas plants required
- Sustainable consumption
- Higher yields

Feedstocks varieties not explored
- Feedstock availability
- Bio-fertiliser usage

Societal education on biogas

Cassava a potential feedstock but may require co-digestion with nitrogen –rich feedstocks to get even higher yields & good quality bio-fertiliser.
- Food production
- Energy

Research environment for increased biogas competence
- Closed-Loop Systems
- Circularity
- Sustainable ecosyterns

Thank you!!

Questions

Commentary and research Perspective

Roseanna Avento

PANEL

Panel Question 1.

Looking back at your project, what do you consider its most important long-term achievement?

Based on your experience, what advice would you give to future projects on ensuring that results remain sustainable after external funding ends?

Panel Question 2.

Local ownership: How have local universities and stakeholders helped shape the projects and ensure that the solutions are relevant to local needs?

Open Discussion

FINNISH NATIONAL
AGENCY FOR EDUCATION

Thank you to all speakers and participants!

https://www.linkedin.com/company/edufi-highered/
@EDUFI_HigherEd

hep@oph.fi