Sustainability assessment of food waste prevention measures

Thomas Schmidt & Yanne Goossens - Thünen Institute, Germany

G20-MACS 2020
International Virtual Workshop on Water, Energy, Food Nexus
Topic 5 Innovative tools and system approaches to reduce Food Loss & Waste, and its impact on water and energy use

31st August 2020
Riyadh
Kingdom of Saudi Arabia
Which initiative / action / prevention measure can be recommended?
### Background

**Aims**
- SDG Target 12.3 > halve food waste [weight, fresh mass]
- national strategies > achieve the target
- (research) activities > finding instruments, appropriate measures

**Politics**
- campagnes /media, schools, ..
- funding /companies, associations, research, ..
- regulatory law /taxes, fees, legal interdictions, ..

What is the knowledge base for making decisions, for the selection of measures? How do we **EVALUATE**; which **MEASURES** should be prioritised? ..derived from which **INDICATORS**?
Background - state of the art

Aspects considered in the evaluation of food waste prevention measures

- Proposed measures with projected outcomes (n=23)
- Implemented measures with measured outcomes (n=25)

Number of measures

- Effectiveness: 23 proposed, 24 implemented
- Environmental: 22 proposed, 9 implemented
- Economic: 23 proposed, 16 implemented
- Social: 21 proposed, 2 implemented
- Efficiency: 21 proposed, 8 implemented

(Goossens, Wegner, Schmidt, 2019)
Method  - suggested

EFFECTIVENESS
Food waste reduction potential

SUSTAINABILITY ACROSS THREE DIMENSIONS

ENVIRONMENTAL DIMENSION
Avoided embodied impacts/costs
Avoided disposal impacts/costs
Implementation related benefits, impacts or costs

ECONOMIC DIMENSION

SOCIAL DIMENSION

EFFICIENCY
Net benefits - savings

(Goossens, Wegner, Schmidt, 2019)
Factsheet – FLW measures

i. Description of measure
   - Problem identification; definition of aims, objectives and baseline

ii. Food waste reduction
   - Types, quantities, waste collection and treatment

iii. Sustainability evaluation
   - Economic-, environmental-, social effects: net benefits and savings

iv. Taking the measure into the future
   - Sustainability over time
   - Transferability and scalability
   - Inter-sectorial cooperation
   - Key success factors and barriers

v. Data quality of the data collected
   - Rating score: complete/not available

(Caldeira, De Laurentiis, Sala, 2019)
FACTSHEET - Food waste reduction and sustainability

RESOURCES
- Implementation related inputs
  - Monetary investments
  - Additional resources
  - Employment, labour

RESULTS - SAVINGS
- Avoided food waste
  - Purchasing value of food
  - Product-impacts (throughout the life-cycle)
    - water footprint, carbon footprint
- Avoided food waste disposal
  - Disposal costs
  - Disposal impacts
- Implementation related savings
  - Monetary savings
  - Other resource savings
  - Job creation
  - Food donation

NET BENEFITS
- Net monetary savings
- Net resource savings
- Net social benefits
Conclusion

Sustainable development consider not only the waste reduction but also (implementation) costs, relevant ecological indicators and social effects!

The water-energy-food nexus footprint of FW measures

- Water /water footprint of food waste measure
- Energy /carbon footprint of food waste measure
- Food /nutritional value (kcal) of edible food parts saved by food waste measure
Sustainability assessment of food waste prevention measures

Dr. Thomas G. Schmidt
Thünen Institute of Market Analysis
Bundesallee 63
38116 Braunschweig
Germany
Phone 0049 531 596 5507
Mail thomas.schmidt@thuenen.de
Web http://www.thuenen.de
References


Related work by Thünen Institute on this topic:

