

WEBINAR

## Strategi og indsatser mod madspild

- indspil til klima-arbejdet i  
kommuner og virksomheder

10. februar 2022  
Online via  
ZOOM/Youtube

Læs mere her!

i-REXFO

A sustainable business model to reduce food waste in the circular economy

Eli Jacobsen – RAGN-SELLS

Francesco Fantozzi – UNIVERSITY OF PERUGIA - Department of Engineering



Partner of





# THE FACTS ON FOOD WASTE



1/3 of ALL food  
produced  
**IN THE WORLD**  
IS WASTED

OR

1.3  
**BILLION**  
— pounds —



  
**ENOUGH**  
— to feed —  
3 **BILLION**  
PEOPLE

IN A WORLD  
WHERE **805**  
**MILLION**  
GO HUNGRY  
every year

**FOOD  
WASTE**  
DOESN'T  
MAKE  
SENSE



Source: <http://blog.kulikulifoods.com/wp-content/uploads/2015/09/Food-Waste-Infographic.png>



A.D. 1308  
**unipg**  
UNIVERSITÀ DEGLI STUDI  
DI PERUGIA

 **SES LAB**  
Sustainable Energy Systems Laboratory

i-REFO  
Increase in the REduction and REcovery of EXpired FOod

**RAGN SELLS**  


Partner of





# IN THE EU (Estimates, 2012)

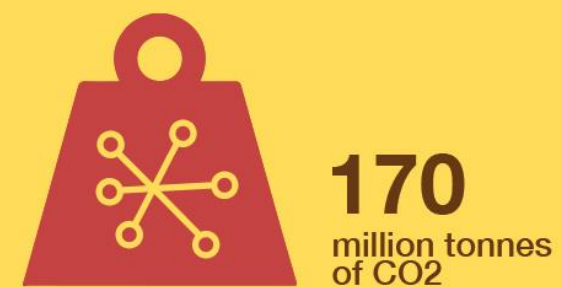
FOOD IS LOST OR WASTED THROUGHOUT THE ENTIRE SUPPLY CHAIN



from **agricultural production** to final **household consumption**



of food are wasted per year



emitted from production and disposal of EU food waste







In developing countries  
40% of losses occur during  
**harvest** and **processing level**



In industrialized countries  
40% of losses happen at the  
**retail** or **consumer level**



Destroyed in  
transport



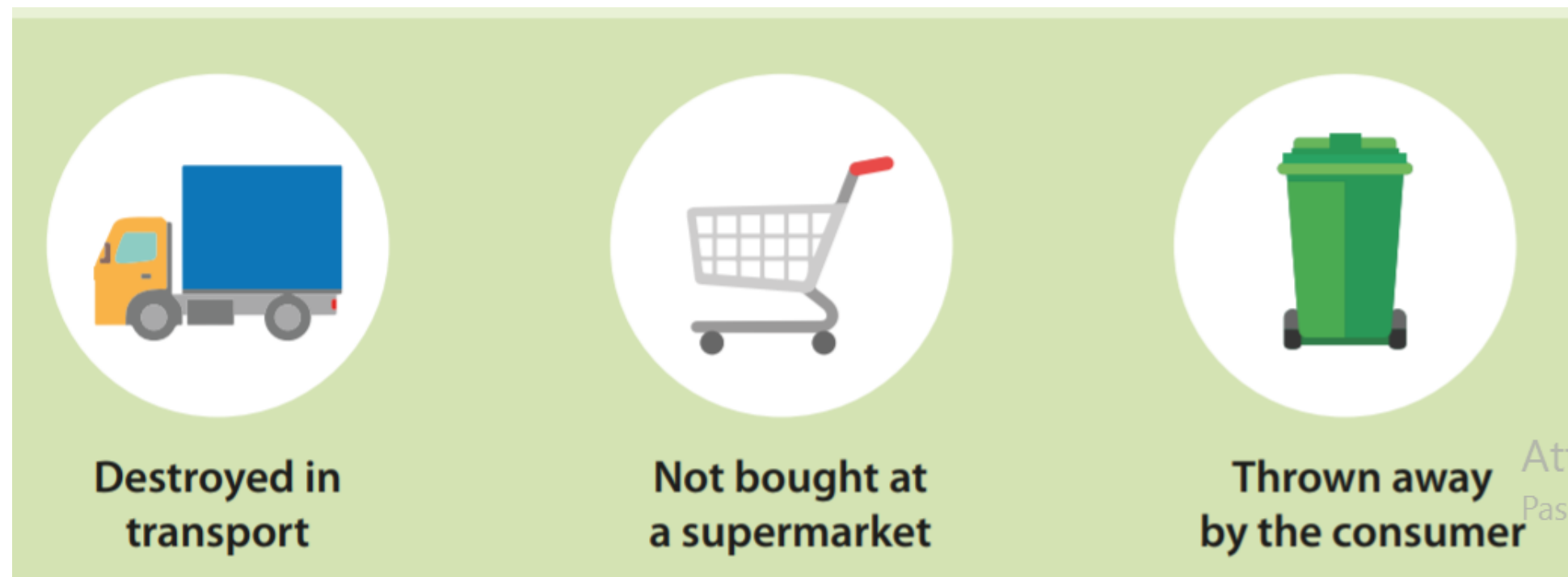
Not bought at  
a supermarket



Thrown away  
by the consumer







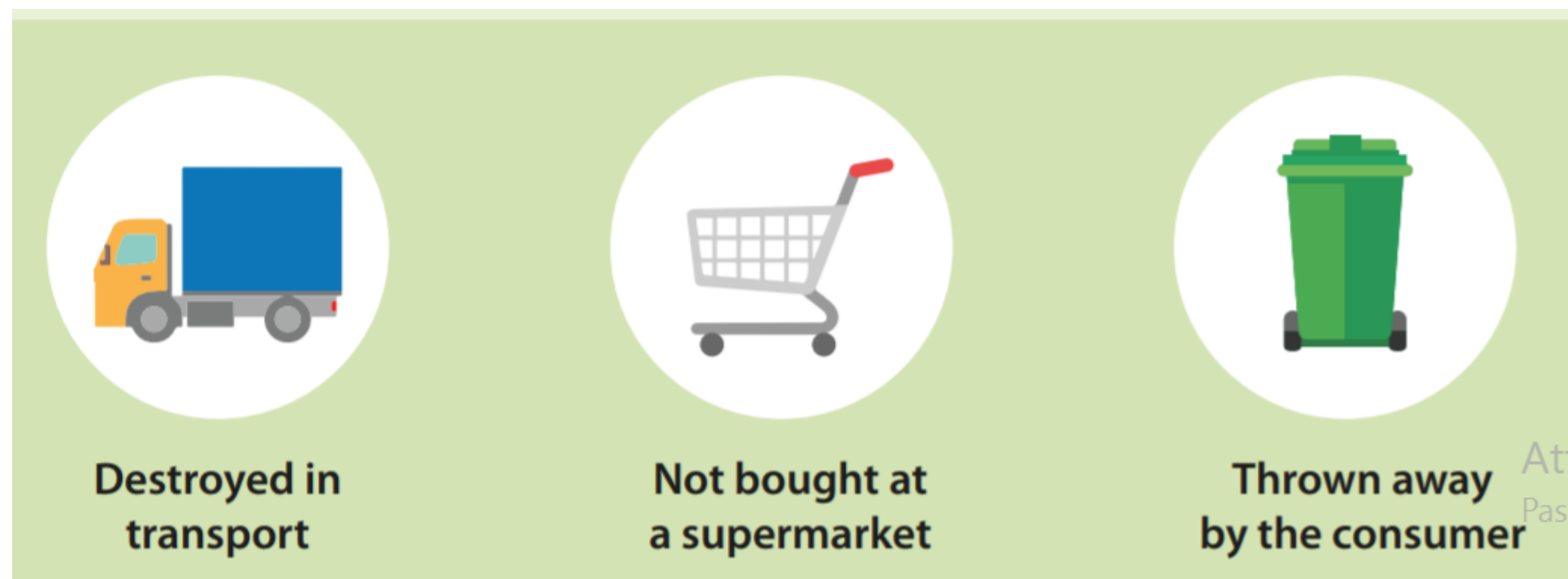
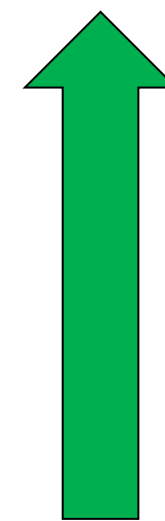
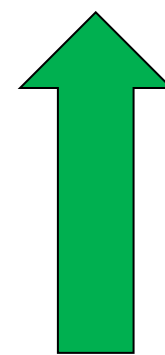
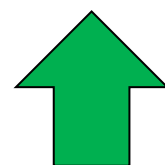




**Raising Awareness**

**Donation,  
last minute, doggy bags**

**Optimization**



# iREXFO - BUSINESS MODEL



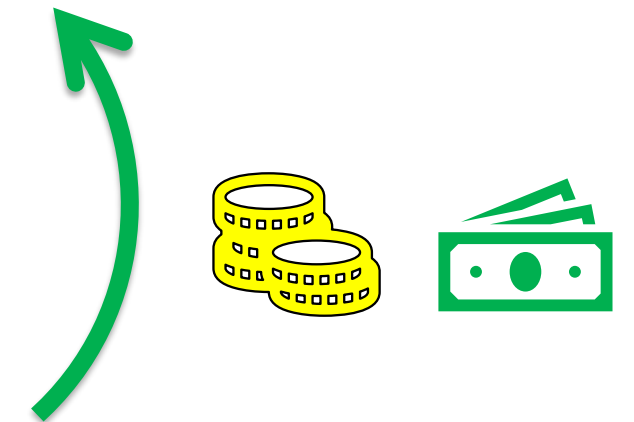


# iREXFO - BUSINESS MODEL



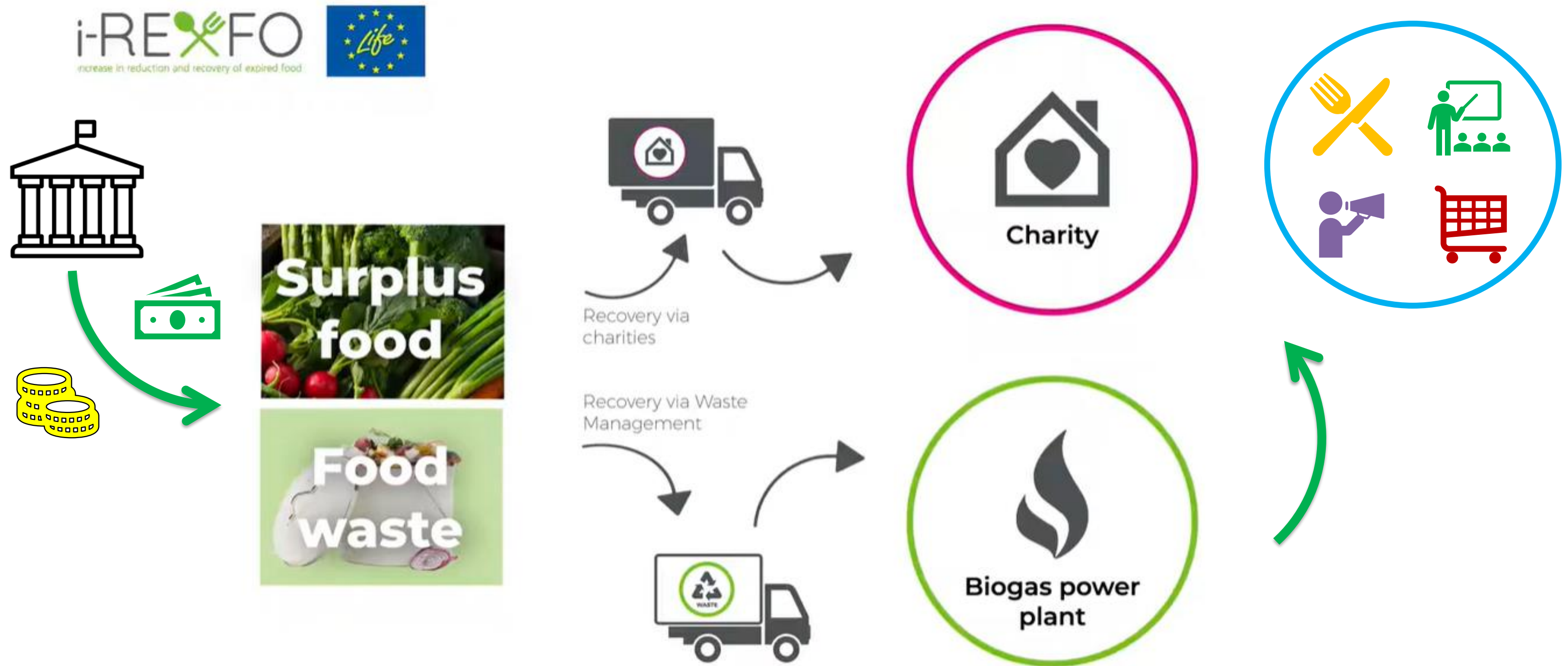


# iREXFO - BUSINESS MODEL



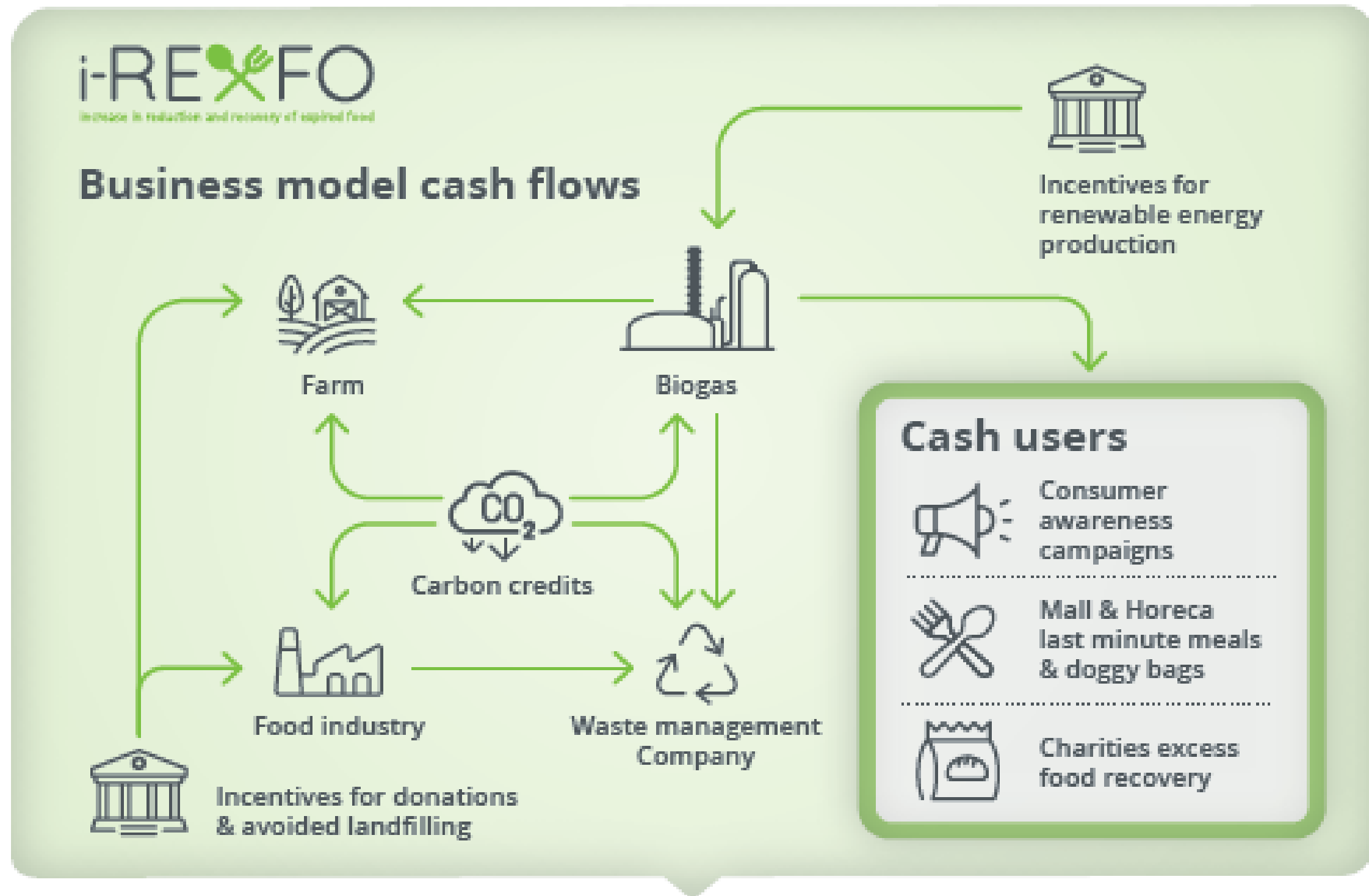
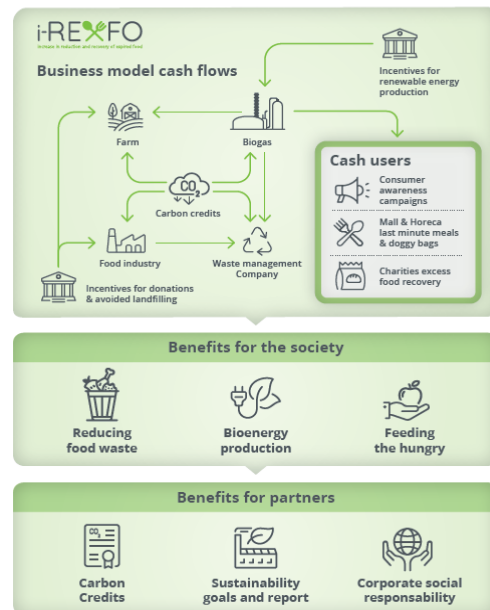


# iREXFO - BUSINESS MODEL





# iREXFO - BUSINESS MODEL





# iREXFO - BUSINESS MODEL

## Benefits for the society



**Reducing  
food waste**

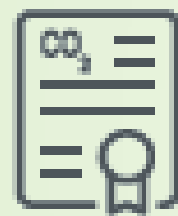


**Bioenergy  
production**

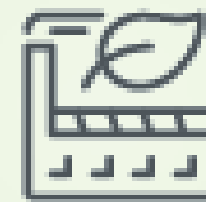


**Feeding  
the hungry**

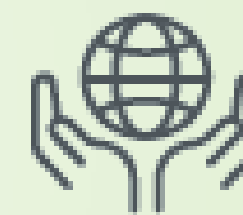
## Benefits for partners



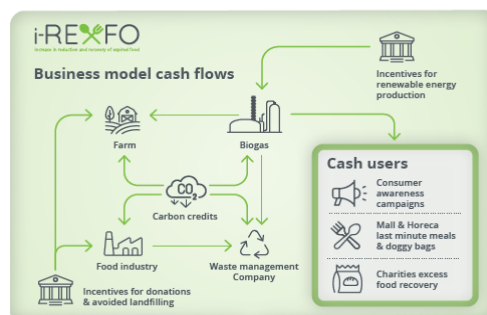
**Carbon  
Credits**



**Sustainability  
goals and report**



**Corporate social  
responsability**

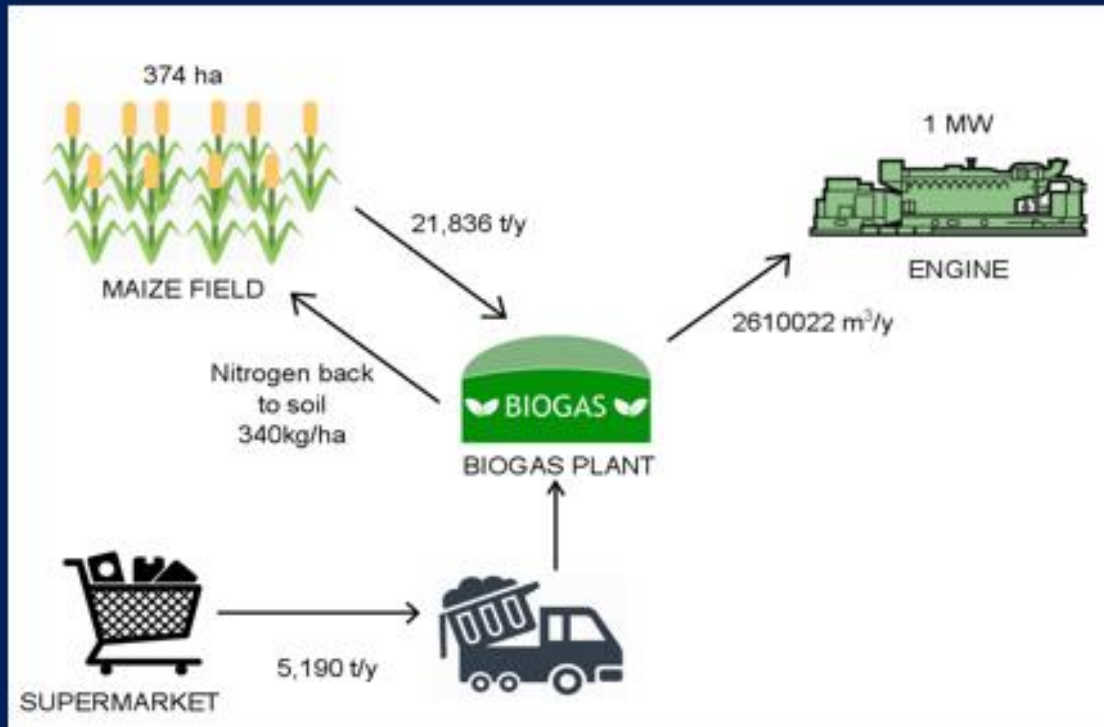
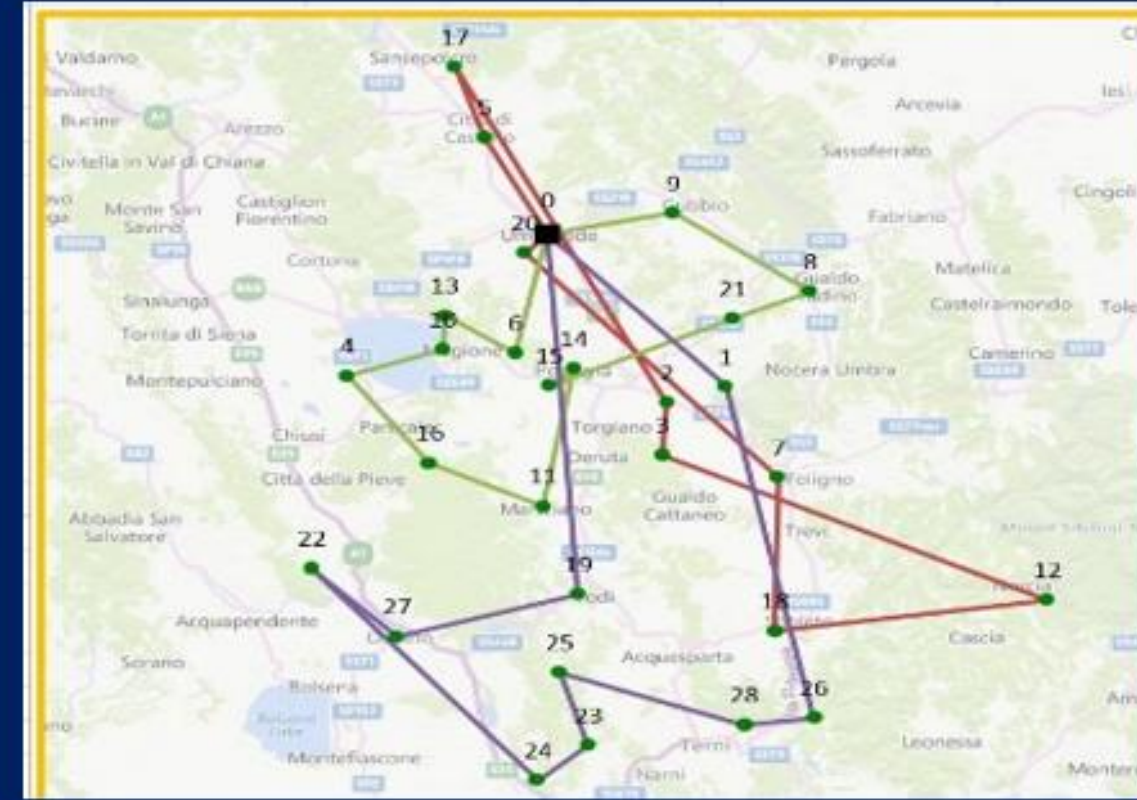




# A design tool







Annual Profit (€)	<input type="text"/>	
Annual carbon footprint (kgCO <sub>2</sub> eq)	<input type="text"/>	
Annual ecological footprint (m <sup>2</sup> /a)	<input type="text"/>	
Annual water footprint (m <sup>3</sup> )	<input type="text"/>	
Annual energy demand (MJ)	<input type="text"/>	
Profit splitting quota		
Biogas plant (€)	Charity (€)	Communication Campaign (€)
<input type="text"/>	<input type="text"/>	<input type="text"/>
Avoided Food Waste (t)		
<input type="text"/>		



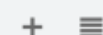
## Chemical and physical characterization of expired food waste to improve their use in anaerobic digestion plant

Katarzyna Słowiecka<sup>a</sup>, Federica Liberti<sup>a</sup>, Sara Massoli<sup>a</sup>, Pietro Bartocci<sup>b</sup>, Francesco Fantozzi<sup>a</sup>

	H	I	J	K	L	M	N
	2.93	5.7	0.95	2.18	7.47	480	
	0.9	4.2	1.09	4.16	1	430	
	6.3	7	0.36	0.73	12	395	
	3.4	19.5	0.52	1.22	18.54	514	
	1.1	3	1.52	3.45	72.04	435	[5]
	23.6	47.5	0.70	2.99	34	495	
	1.1	2.2	1.40	4.72	16.79	282	
	5.3	11.1	0.85	1.13	54	520	
	0.5	16.16	0.09	0.77	12	463	

41	<b>Cereals</b>													
42	breakfast cereals	6.1	92.70	88	38.3	1.86	2,1(%VS)	11,6(%VS)	86,3(%VS)	0.33	0.85	17.98	360	[5]
43	corn flakes	5.9	91.95	78.96	36.8	1.71	0.8	11.08	87.4	0.07	0.16	21.49	354	
44	cheerios	5.13	91.19	69.96	41.3	1.52	0.56	8.8	83.48	1.39	0.47	26.14	547	
45	cereal bar	6.77	92.41	75.6	35.4	1.4	5.6	7.72	86.68	0.23	0.33	22.55	524	
46	quick oats	6.5	89.97	71.29	43.2	2.96	6.8	15.34	70.7	2.32	0.35	16.41	599	
47	oatmeal	6.8	90.12	72.25	44.3	2.63	7.1	12.6	72.3	0.65	0.54	16.23	594	
48	<b>Bakery wares (BW)</b>	5.37	91.60	88.90	46.5	0.97	11,3(%VS)	10,3(%VS)	78,4(%VS)	0.44	0.75	21.93	465	[5]
49	white bread	4.98	89.34	71.25	47	1.91	0.4	10.9	63.5	0.50	0.13	21.36	507	
50	sliced bread	4.85	90.17	72.19	45.6	1.87	0.45	10.73	64.2	0.22	0.23	21.71	520	
51	flour	6.76	88.59	69.62	40.7	2.89	1	16.51	76.2	0.48	0.11	13.95	540	
52	sandwich	5.6	85.31	71.59	53.5	1.782	18.3	7.2	58	0.59	0.10	11	560	
53	crackers	5.29	90.62	72.9	28.9	3.38	10	19.27	80.1	0.43	0.18	8.42	505	
54	<b>Meat Products</b>													
55	mixed meat	4.42	14.4	13.5	25.01	4.75	13.21	23.57	63.22	0.54	0.61	5	421	[6]
56	beef cooked	5.85	68.2	63.04	22.8	5.23	7.48	32.7	59.82	0.38	0.32	4.35	440	
57	pork cooked	6.57	35.97	29.31	29	4.896	15.69	28.62	55.69	0.37	0.79	4.3	572	
58	chicken cooked	6.6	42.17	38.82	21.73	3.584	10.3	22.4	67.3	2.11	0.74	4.17	329	
59	lamb cooked	6.3	43.18	40.12	26.51	4.29	18.32	27.2	54.48	0.51	1.10	2.3	386	
60	ham scraps	6.71	61.74	58.69	44.2	3.57	18.4	21.87	59.73	0.07	0.17	11.81	358	
61	sliced meat	6.30	61.51	53.66	46.1	3.69	31.1	23.1	45.8	0.94	1.31	12.39	376	
62	offal	5.9	58.37	54.12	32.66	3.95	22.27	21.87	55.86	0.85	0.96	8	420	
63	<b>Fish products</b>	6.4	41.75	34.92	15.9	4.653	4	96	0	1.47	1.46		943	[7,25]



Database

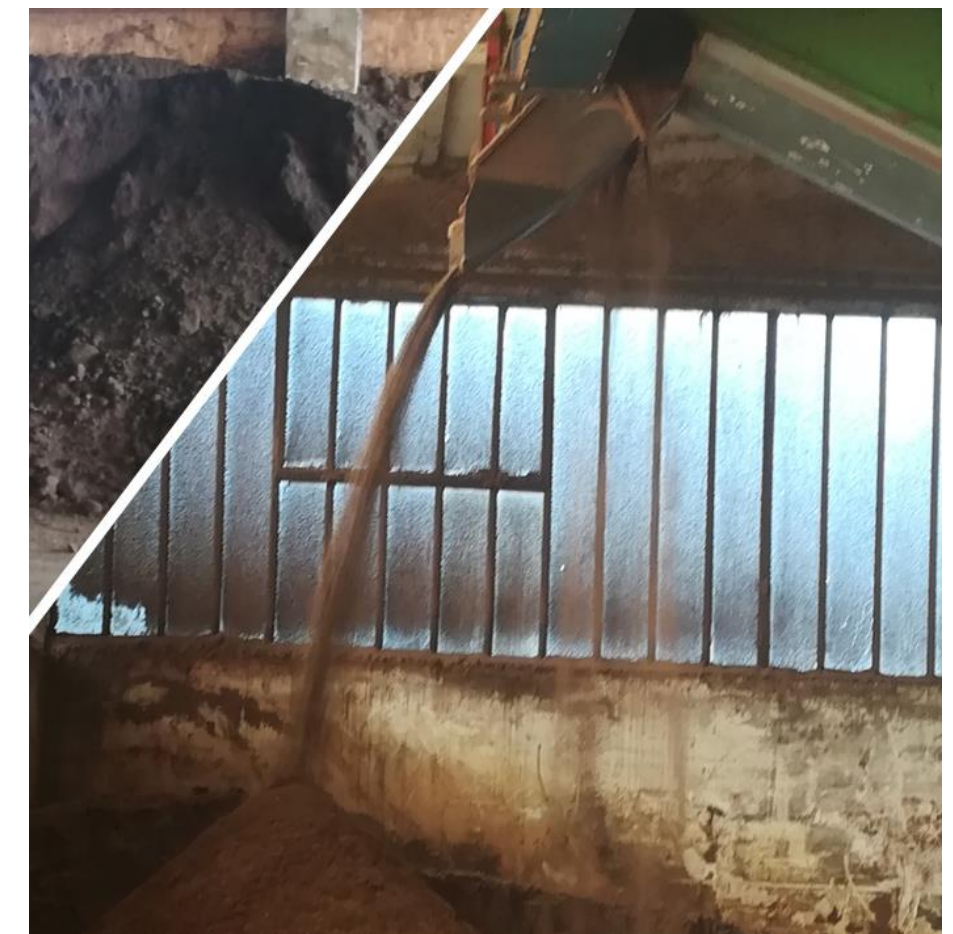
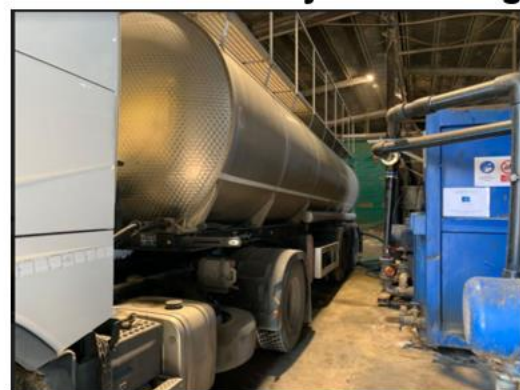
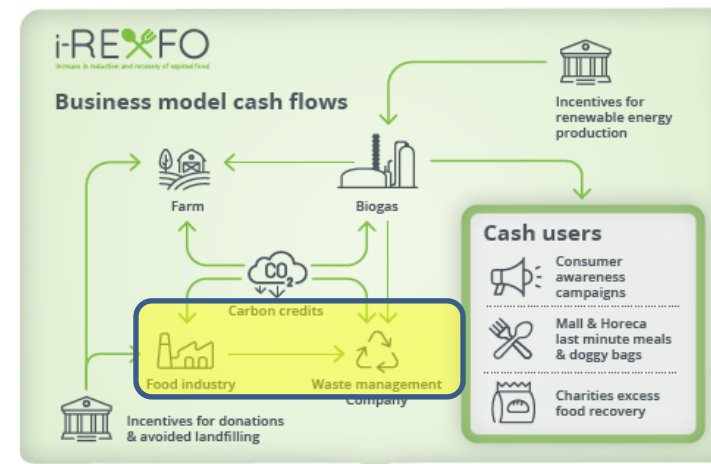
n. analyses



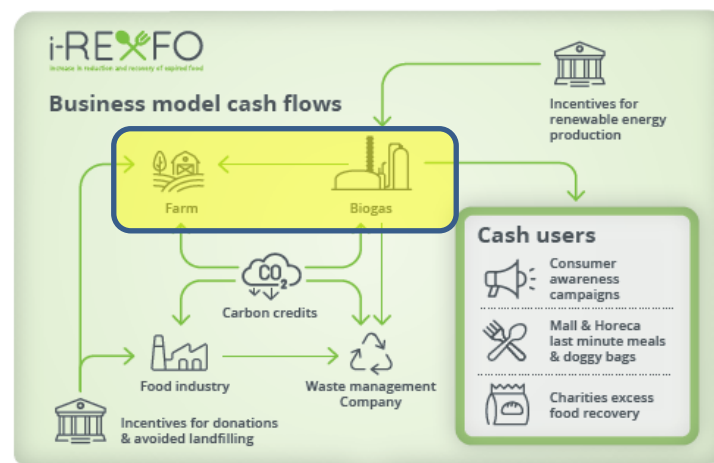
# Demonstration and fine tuning











# Società Agricola IRACI BORGIA SS

Organic wheat



Onions and garlic

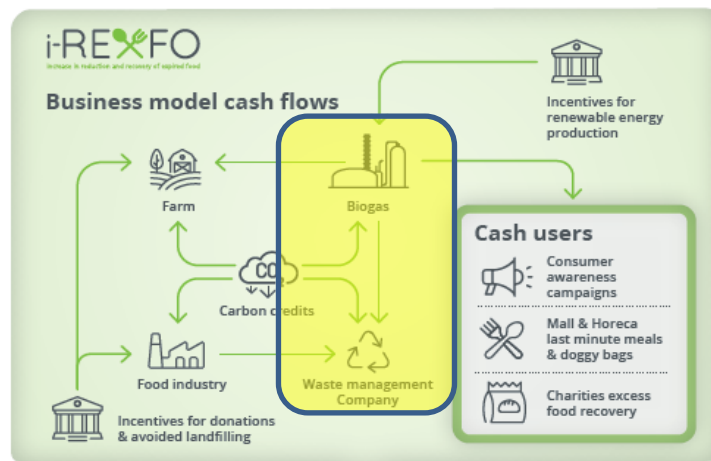


Olive pomace



Cereals and legumes



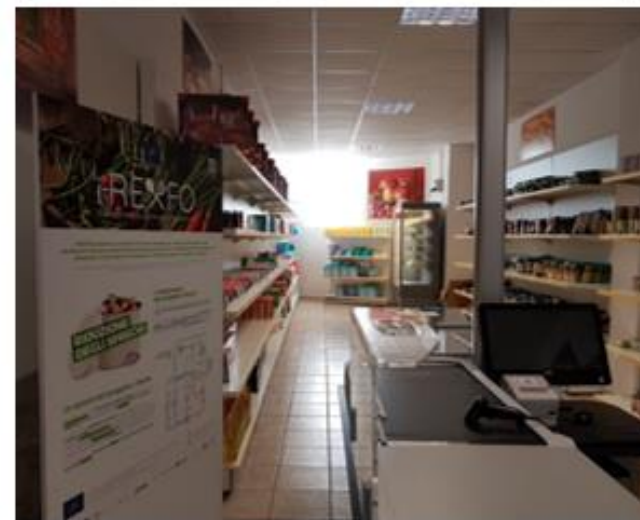
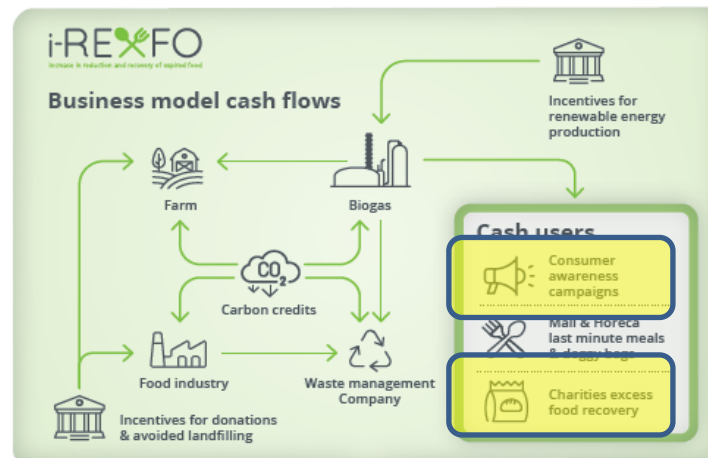


# Societa' Agricola Rapolano Green Energy S.r.l.



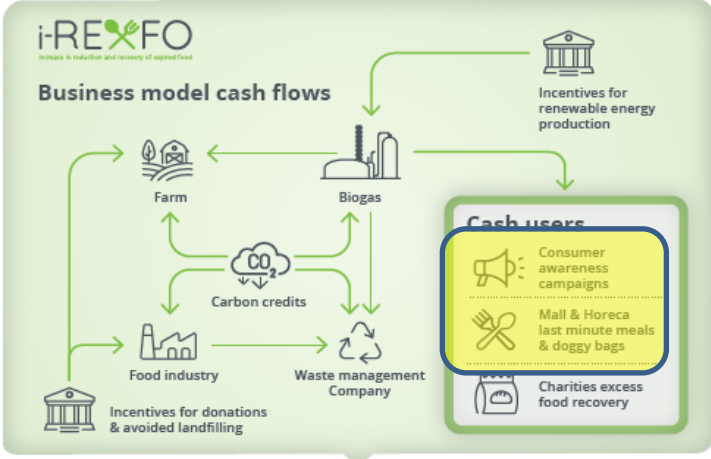


### 3. DEMO – Umbria – Excess food donation to charities





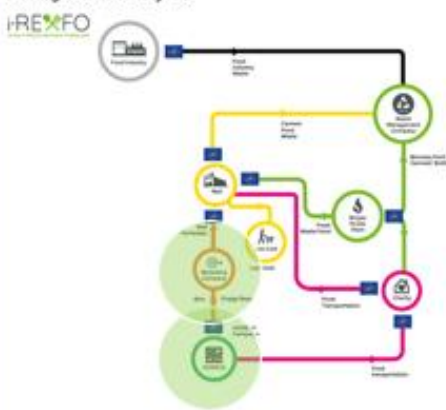
### 3. DEMO – Umbria – Doggy Bag in HORECA





### 3. DEMO – Umbria – Pre-expiration campaign in malls

During the Life Project



**PRODOTTI MARCATI**

**PASTA SECCA E RISI**

**CONSERVE DI POMODORO**

**PRODOTTI DOLCIARI CONFEZIONATI**

**CONSERVE SOTTACETO**

**OLIO EXTRAVERGINE D'OLIVA**

**PESCE IN SCATOLA**

**YOGURT**

**UOVA**

**BISCOTTI SECCHI E CRACKERS**

**TI PRESENTO LA DATA DI SCADENZA!**

**SAI LEGGERE LA DATA DI SCADENZA?**

**RISPONDI ALLE DOMANDE**

**DA CONSUMARSI ENTRO**

**DA CONSUMARSI PREFERIBILMENTE ENTRO**

**PRODOTTI ESSENTI DA RENDICARE LA DATA DI SCADENZA**

**PRODOTTI SUCCELLI**

**CONSERVE DI PASTICCINO**

**PESCE IN SCATOLA**

**YOGURT**

**PRODOTTI DOLCIARI CONFEZIONATI**

**CONSERVE SOTTACETO**

**UOVA**

**PRODOTTI DOLCIARI CONFEZIONATI**

**CONSERVE SOTTACETO**

**PASTA SECCA E RISI**

**CONTROLLA LA RISORSA SUL RETRO E SCOPRI LA SECONDA VITA DEI PRODOTTI ALIMENTARI**



**CONSIGLI DISPENSA**

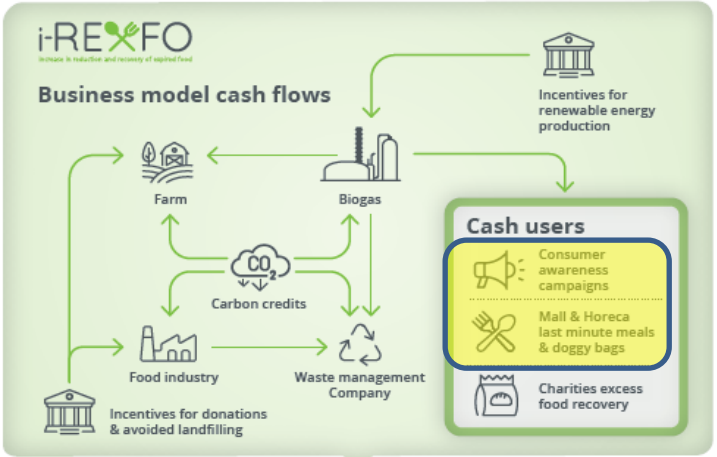
**1. COSA FARE PRIMA DI FARE LA SPESA**

**2. COME CONSERVARE "BENE" GLI ALIMENTI PER ALLUNGARE IL LORO TEMPO DI VITA**

**3. DONA UNA SECONDA VITA AI PRODOTTI ALIMENTARI**

**4. COME CONSERVARE E DISPERDERE I PRODOTTI ALIMENTARI**

**5. SAI LEGGERE BENE LA DATA DI SCADENZA DEI PRODOTTI ALIMENTARI?**





# Transferability & Sustainability





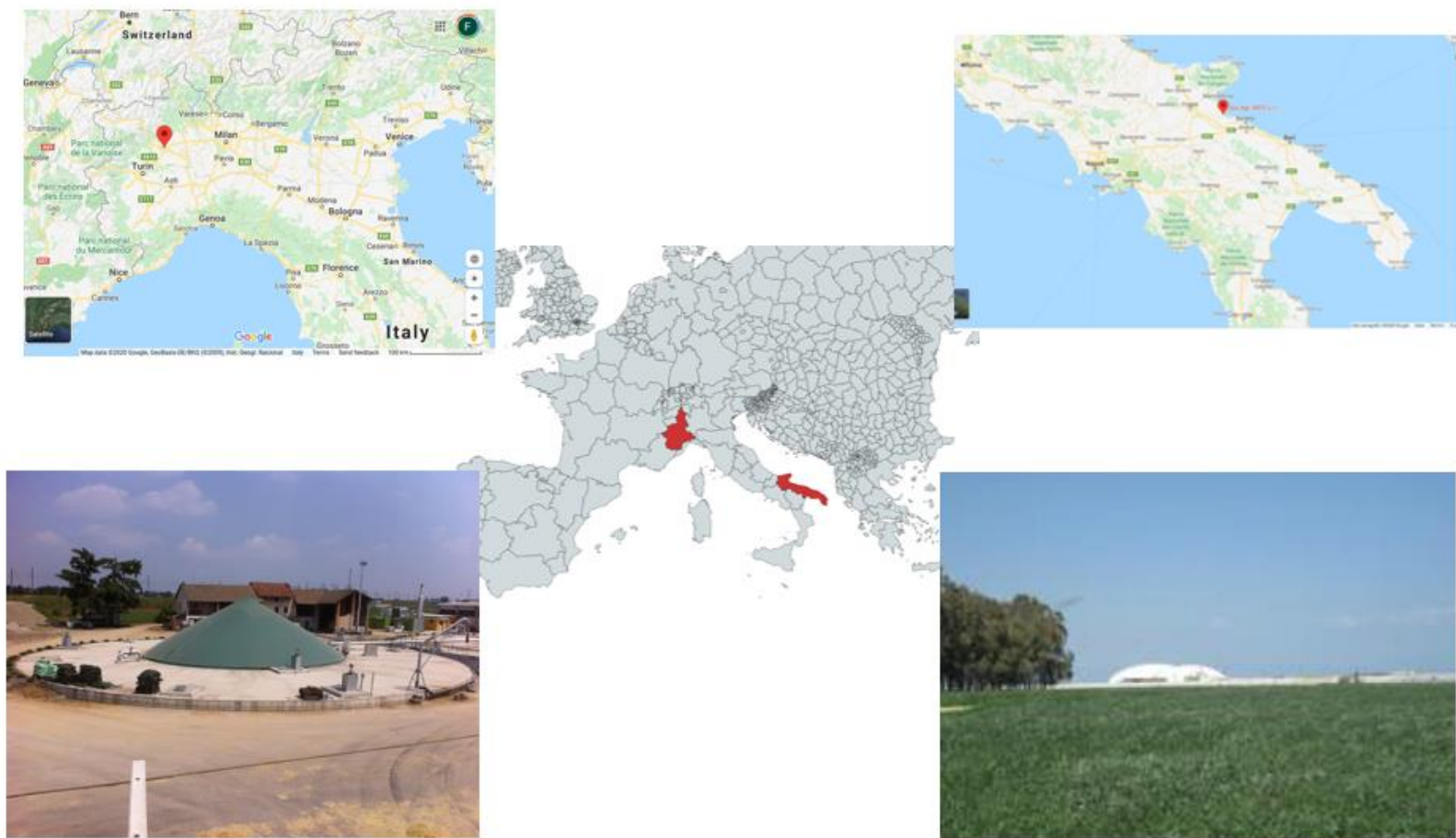


4. TRANSFERABILITY - ITALY

ITALY

Piemonte  
Viverone (BI)  
Azienda Agricola Cascina Bertona  
Engine 999 kW el

Puglia  
Manfredonia (FG)  
Azienda Agricola ARTE srl  
Engine 625 kW el



4. TRANSFERABILITY - HUNGARY

HUNGARY

Northern Central Plain  
Tiszavasvári

Central Transdanubian Region  
Kisber



Partner of





# Communication

The conference is organised by Ragn-Sells and will be held virtually from Denmark on the 27th of May 2021.  
Please be aware that the material and the recording of the conference can be used for work purposes afterwards. Please let us know if you would like us to send you the material afterwards.  
Contact: [natasja.schmidt@ragnsells.com](mailto:natasja.schmidt@ragnsells.com)

Correspondence and enquiries concerning the meeting should be addressed to:  
1. Mrs. Natasja Elmegård Schmidt, Ragn-Sells, [natasja.schmidt@ragnsells.com](mailto:natasja.schmidt@ragnsells.com)  
2. Mr. Massimo Forti, CEO Ragn-Sells, [massimo.forti@ragnsells.com](mailto:massimo.forti@ragnsells.com)

## BACKGROUND

The UN highlighted that in order to reorient current unsustainable development trajectories over the period 2015 to 2030, affordable and practical technological solutions have to be developed, transferred and applied widely in the next fifteen years.

ciency and Sustainable  
pod waste and energy

will focus on one specific  
d to identify obstacles

Human Development  
ough minimisation of risks  
people and communities,  
and support for their  
development

## CONFERENCE ON RESOURCE EFFICIENCY & SUSTAINABLE CONSUMPTION FOOD WASTE – ENERGY – BIOMASS

COPENHAGEN, 27 MAY 2021  
PRESENTATIONS AND DISCUSSION, 9 AM - 12 PM CET  
NETWORKING/DEBATE, 3 PM - 5 PM CET

REGISTER HERE

NOT LATER THAN MAY 21, 2021

### CONFERENCE SPEAKERS



Mrs. Carolina Gonzalez  
"Resource Efficiency in Industries"  
Mr. Luc Reuter  
"Sustainable Consumption and Production "SDG-12"  
Dr. Ali M. Yacoub  
"Cleaner Production Methodology"  
Mr. Morten E. Gyllenberg  
"Recirculation & bio-utilisation of energy and carbon potentials"  
Ms. Sofie Skovrup  
"Denmark paving the way towards minimizing food waste"



## ONLINE FINAL CONFERENCE ON INCREASE IN REDUCTION AND RECOVERY OF EXPIRED FOOD AN INNOVATIVE SUSTAINABLE BUSINESS MODEL COPENHAGEN, 22 FEBRUARY 2022

**Morning Session, 8.30 AM - 10.00 AM CET**  
Challenges and opportunities for food waste reduction with members of i-REXFO ISAAC (International Stakeholders Advisory and Assistance Committee)

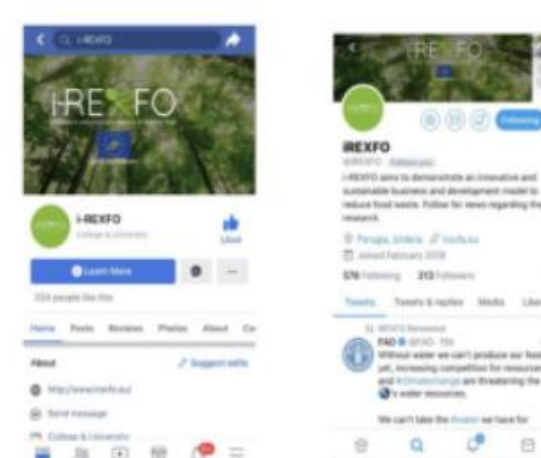
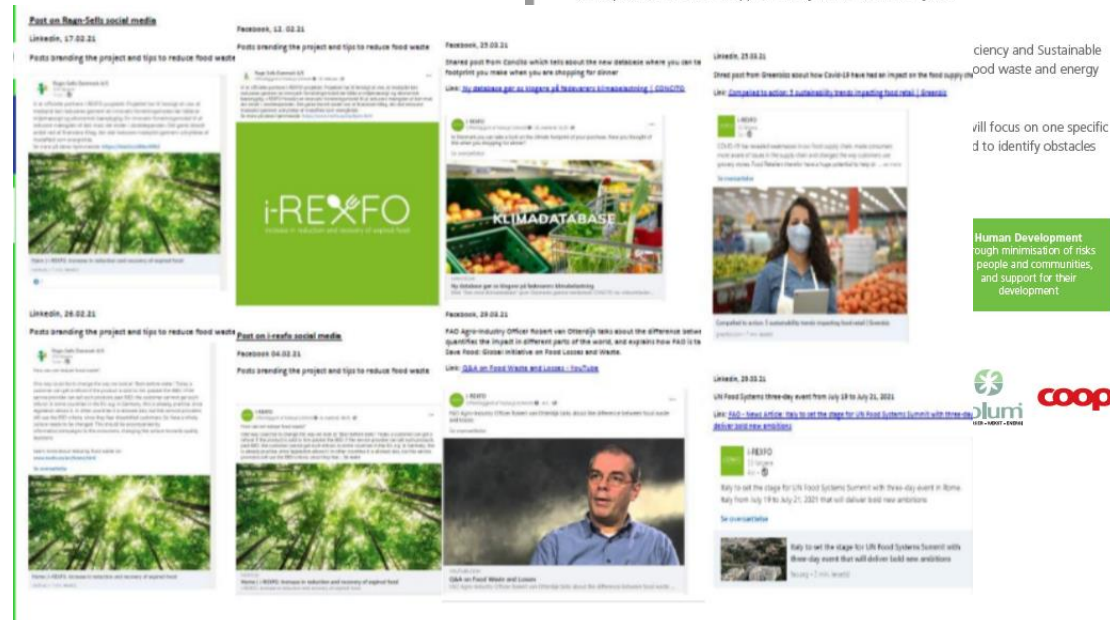
**Noon session, 10.30 AM - 12.00 PM CET**  
i-REXFO Demonstrations: a business model in the circular economy for food waste reduction with i-REXFO partners and ISAAC members

**Last session, 12.00 PM - 13.00 PM CET**  
ISAAC ROUND TABLE – Discussions and Recommendations

Technical hosting: SCANDIC COPENHAGEN

REGISTER HERE

NOT LATER THAN FEBRUARY 14, 2022







## iREXFO Impact

- **CO2 reduction** **8.500 ton/year**
- **Waste Food Reduction** **3.400 ton/year**
- **Water Consumption Reduction** **480.000 m<sup>3</sup>/year**
- **Renewable Energy Production** **2.800 MWh/year**
- **Energy saving** **2.400 MWh/year;**
- **Land Occupation Reduction** **1.100 ha/year**
- **Awareness raised** **128.000 pax**
- **Changing behaviour** **25.000 pax**





“This is not charity. This is business with a social objective, which is to help people get out of poverty.”

Muhammad Yunus

Nobel Prize 2009

## Partners



## associates



[www.irexfo.eu](http://www.irexfo.eu)



<https://www.linkedin.com/company/i-rexfo/>  
<https://www.facebook.com/iREXFO/>  
<https://twitter.com/iREXFO>



Partner of

