

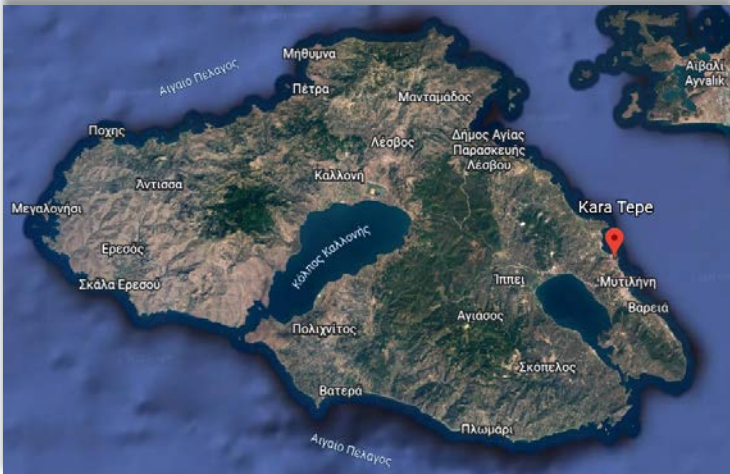


# Optimizing Treatment of food waste in refugee communities. The case study of Kara-Tepe Lesvos Municipal Refugee's Camp

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# IMPORTANCE OF ORGANIC WASTE MANAGEMENT IN REFUGEE CAMPS



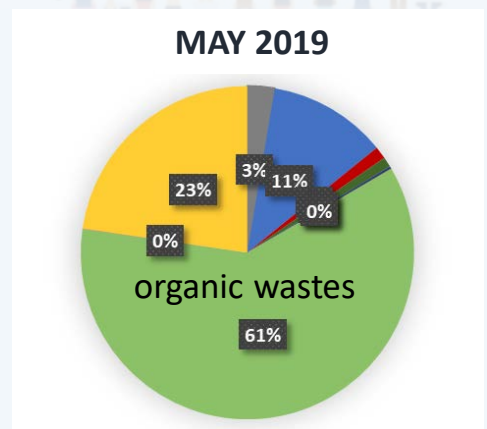
# GOALS

- **Determination of an appropriate population sample**
- **Comparison of final compost for different materials (quality control)**
- **Application in real conditions**
- **On-site treatment**
- **Dimensioning of infrastructure constraints (number of composters)**

# POPULATION DATA 1.



Final Data	May 2019	November 2019
Sample percentage	6,7%	11.7%
Number of sample accommodations	18	30
Sample population	91	156
Total population	1355	1329
Total accommodation	263	258



## POPULATION DATA 2.

Number of inhabitants May 2019	Number of accommodations	Residents per accommodation category	Proportion of inhabitants to the total		Ratio of accommodation to the total		Number of accommodations selected by category
2	9	18	1%	0.2	3%	0.6	1
3	35	105	8%	1.4	13%	2.4	2
4	60	240	18%	3.2	23%	4.1	4
5	57	285	21%	3.8	22%	3.9	4
6	46	276	20%	3.7	17%	3.1	3
7	37	259	19%	3.4	14%	2.5	3
8	9	72	5%	1.0	3%	0.6	1
9	6	54	4%	0.7	2%	0.4	
10	2	20	1%	0.3	1%	0.1	
11	1	11	1%	0.1	0%	0.1	
15	1	15	1%	0.2	0%	0.1	
<b>Total</b>	<b>263</b>	<b>1355</b>					<b>18</b>



# COMPOST TREATMENT 1.

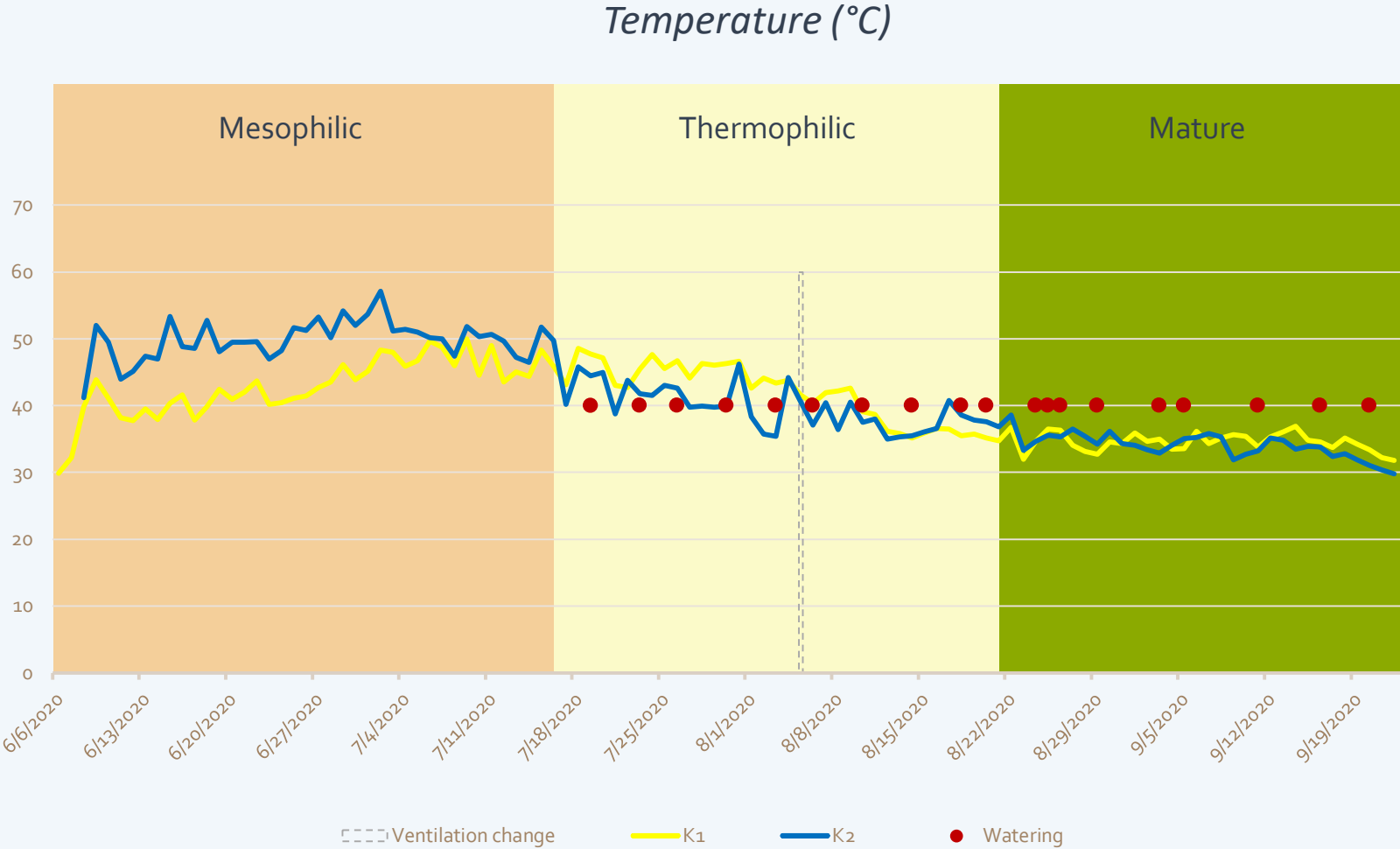


Active Aeration System

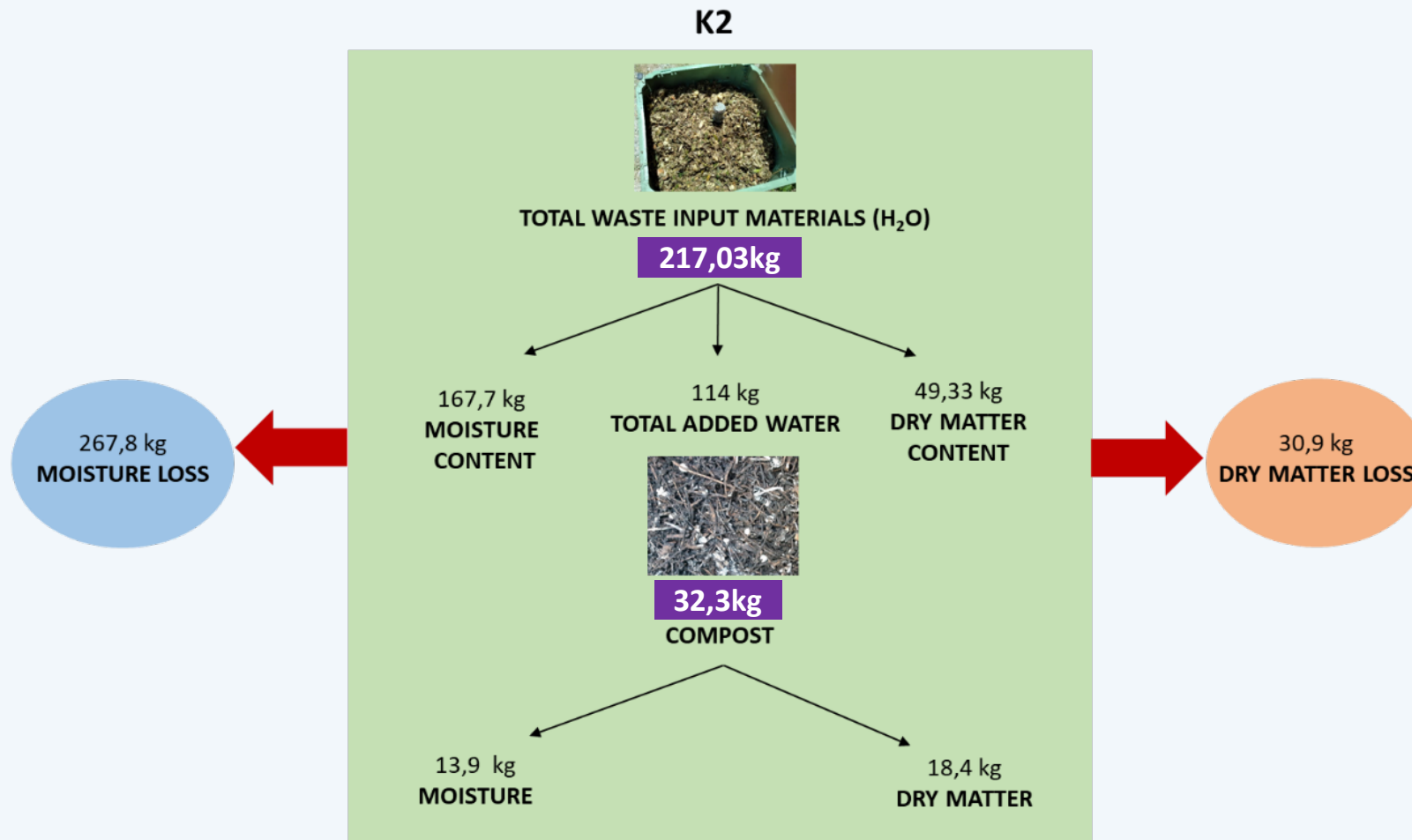
K1	K2
food residues	food residues
olive tree leaves (bulking agent)	olive tree leaves (bulking agent)
-	residues from 2 phase olive mills



# COMPOST TREATMENT 2.

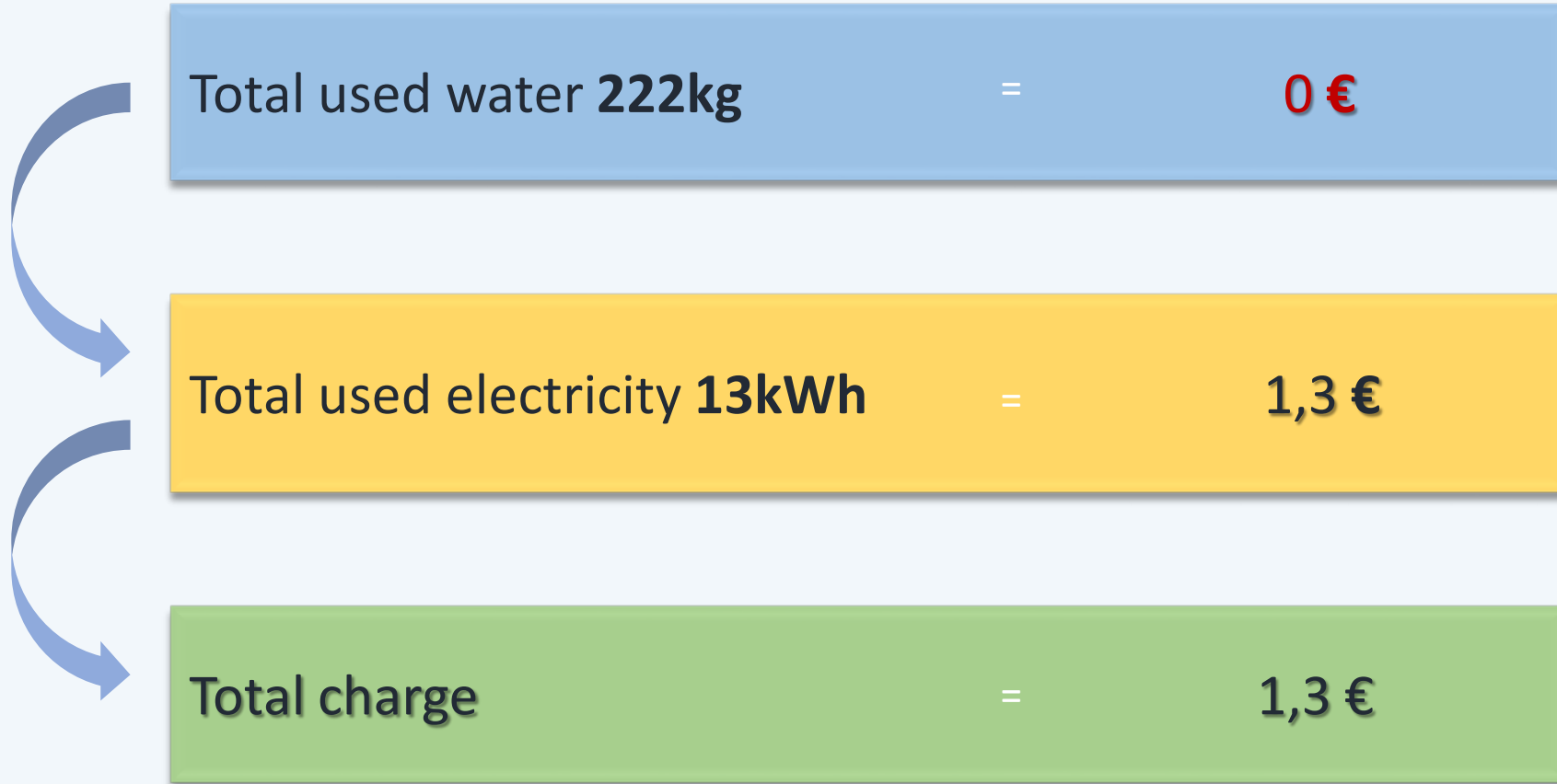


# MASS & WATER BALANCE



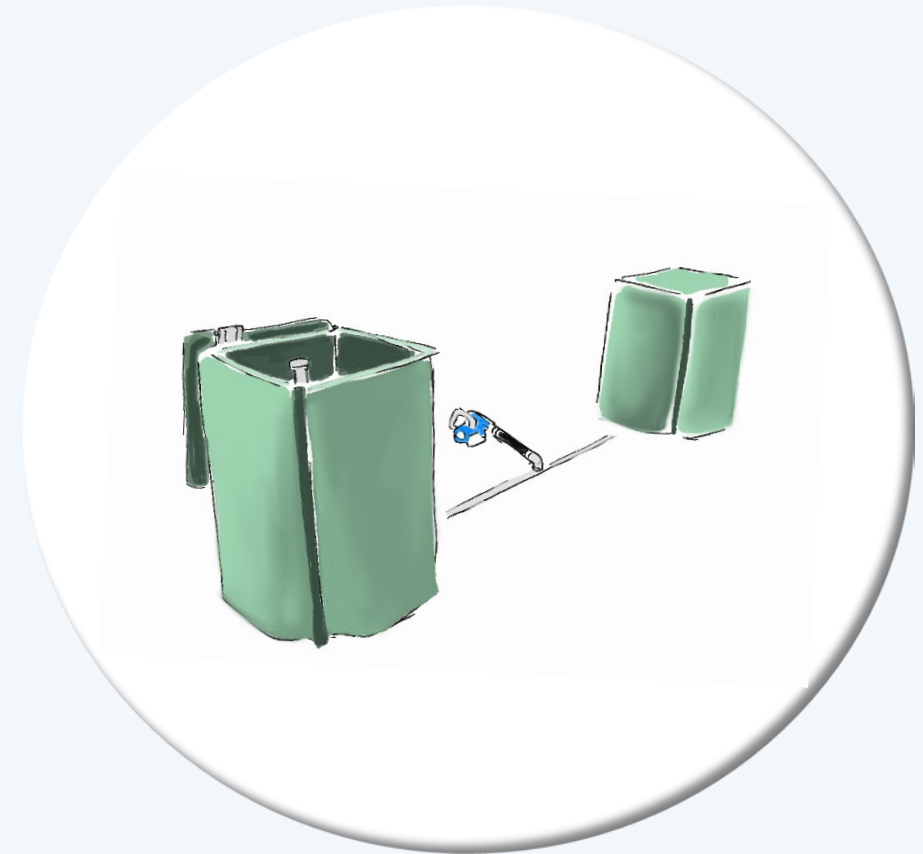


# COSTS OF ELECTRICITY & WATER



# PROPOSED WASTE MANAGEMENT PLAN

Parameters	Values
Quantity of population	1355
Water costs	1,85€/day
Electricity costs	1,51€/day
Total expenses	3,36€/day
Quantity of home composters (0.3m <sup>3</sup> )	~304



# UPCOMING FUTURE WORK

## Optimization of the onsite composting process by:

- **Automation of the temperature measurement process**
- **Optimal control of humidity and oxygen**
- **Heat valorisation (40-60°C) for hot water**
- **Use the compost as fertilizer to agriculture (on-site cultivation of vegetables)**





THANK YOU FOR YOUR ATTENTION