

# Innovative Feed Production from Food Waste and Poultry Slaughterhouse by-products: A Techno-economic Evaluation

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# The F4F Project

Overview of the Pilot Unit

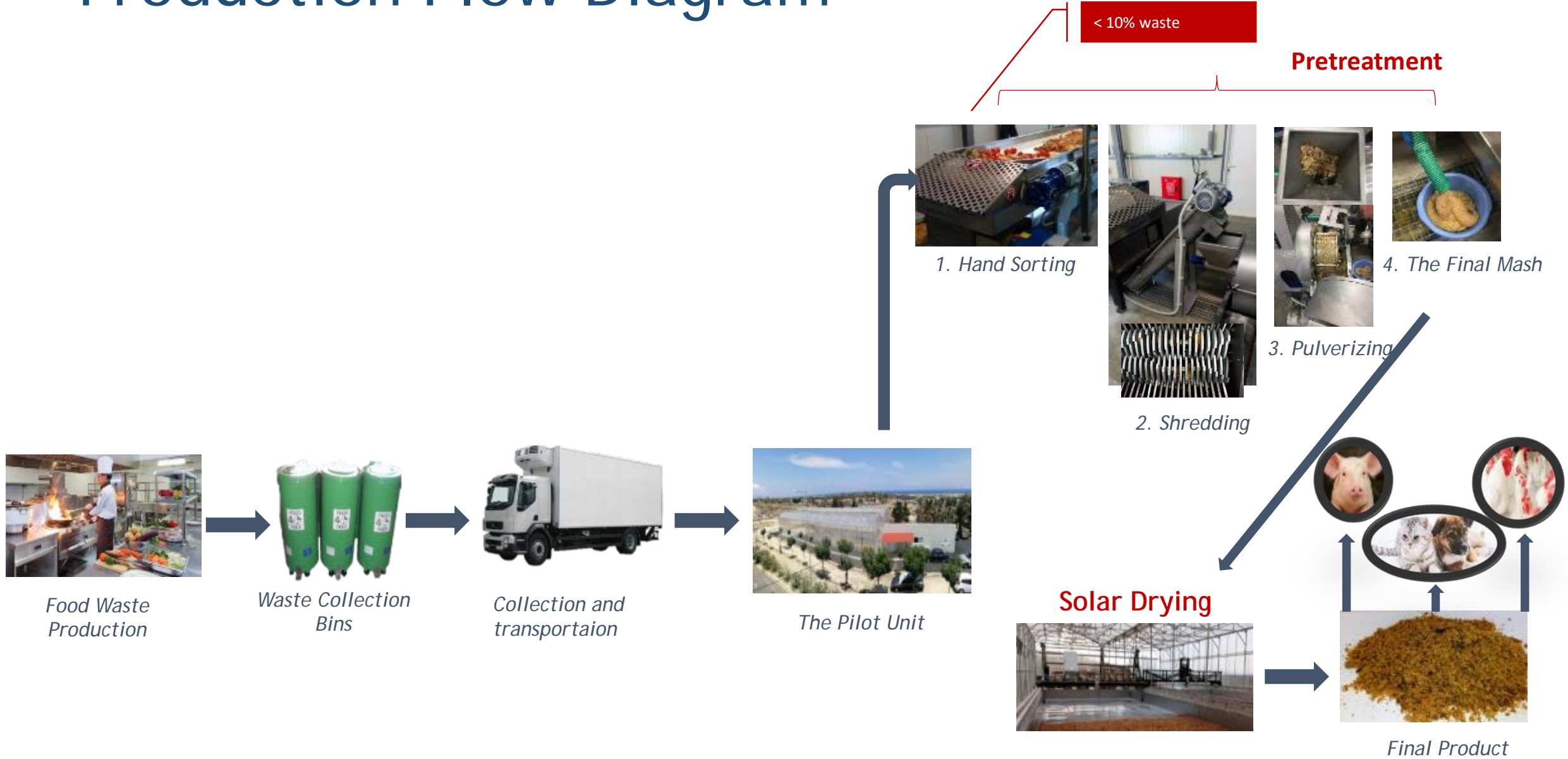


Pretreatment



Solar Drying

# Production Flow Diagram



## Results

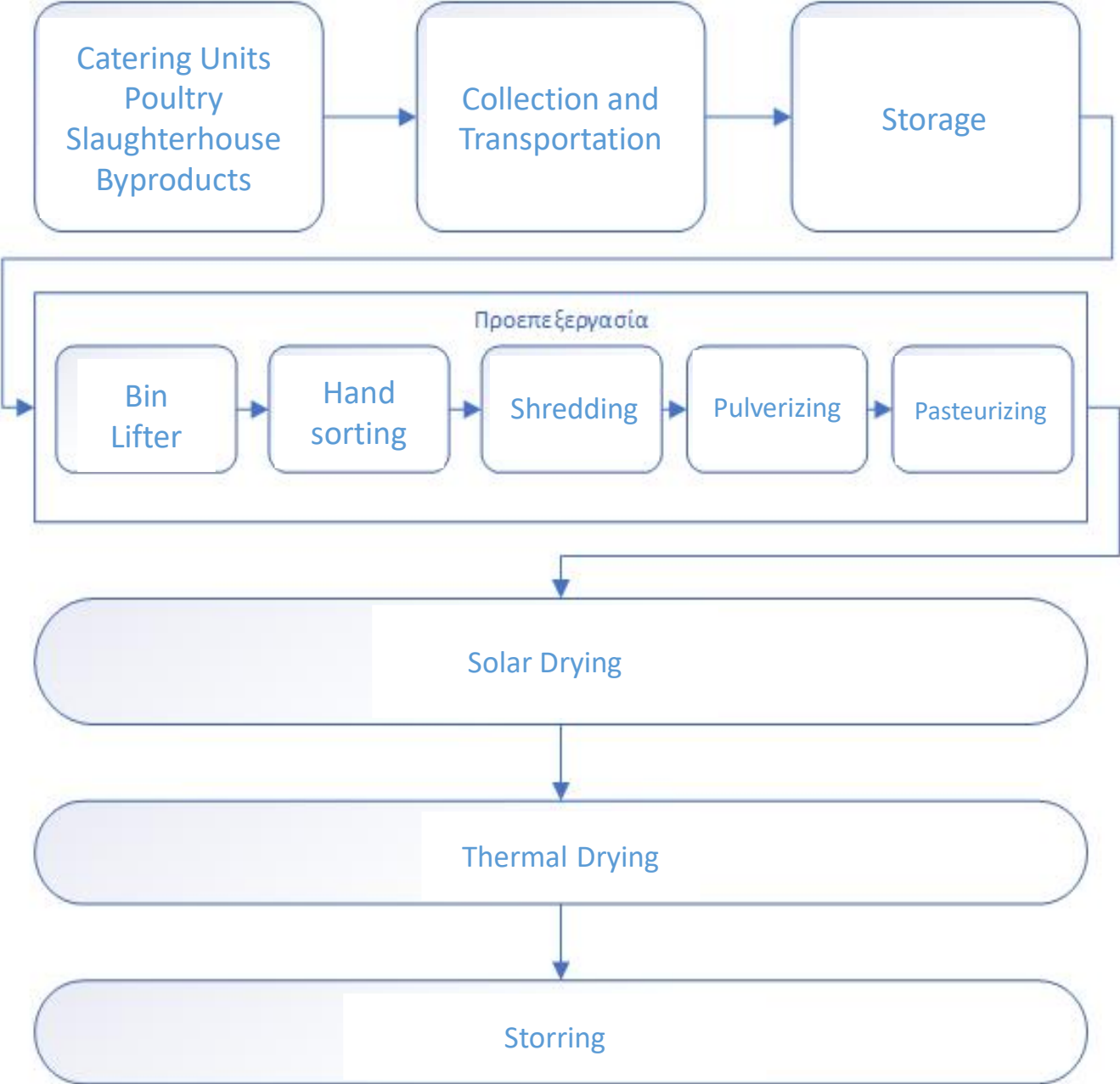


The F4F final product

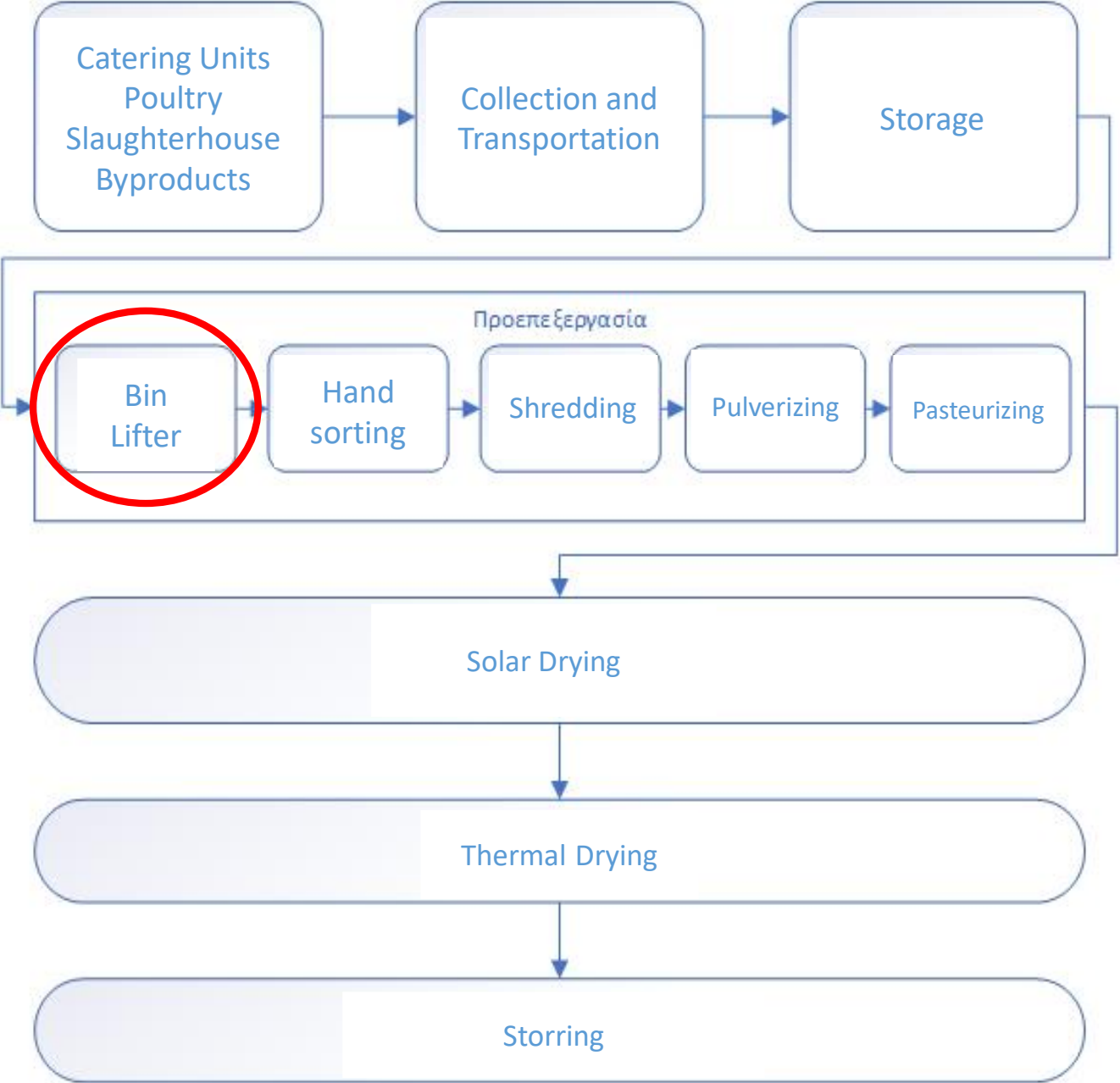
The quality of the produced feed was high regarding a range of parameters, such as dry matter, crude protein, fat, crude fibre, crude ash, soluble protein, amino acid and mineral content. Regarding pathogens, the final product was analyzed for microorganisms with no detection.



# The SAVED project



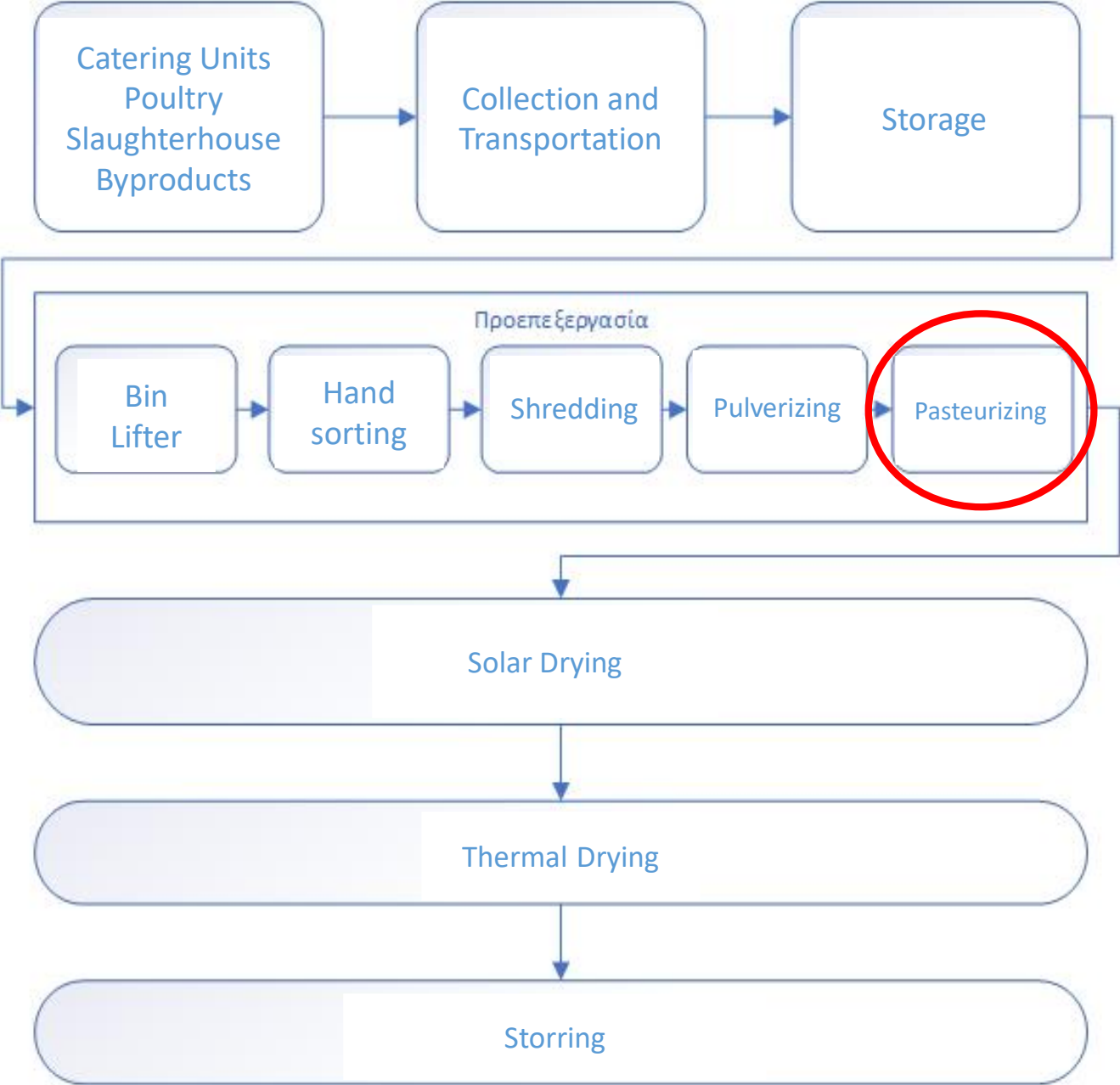
# The SAVED project



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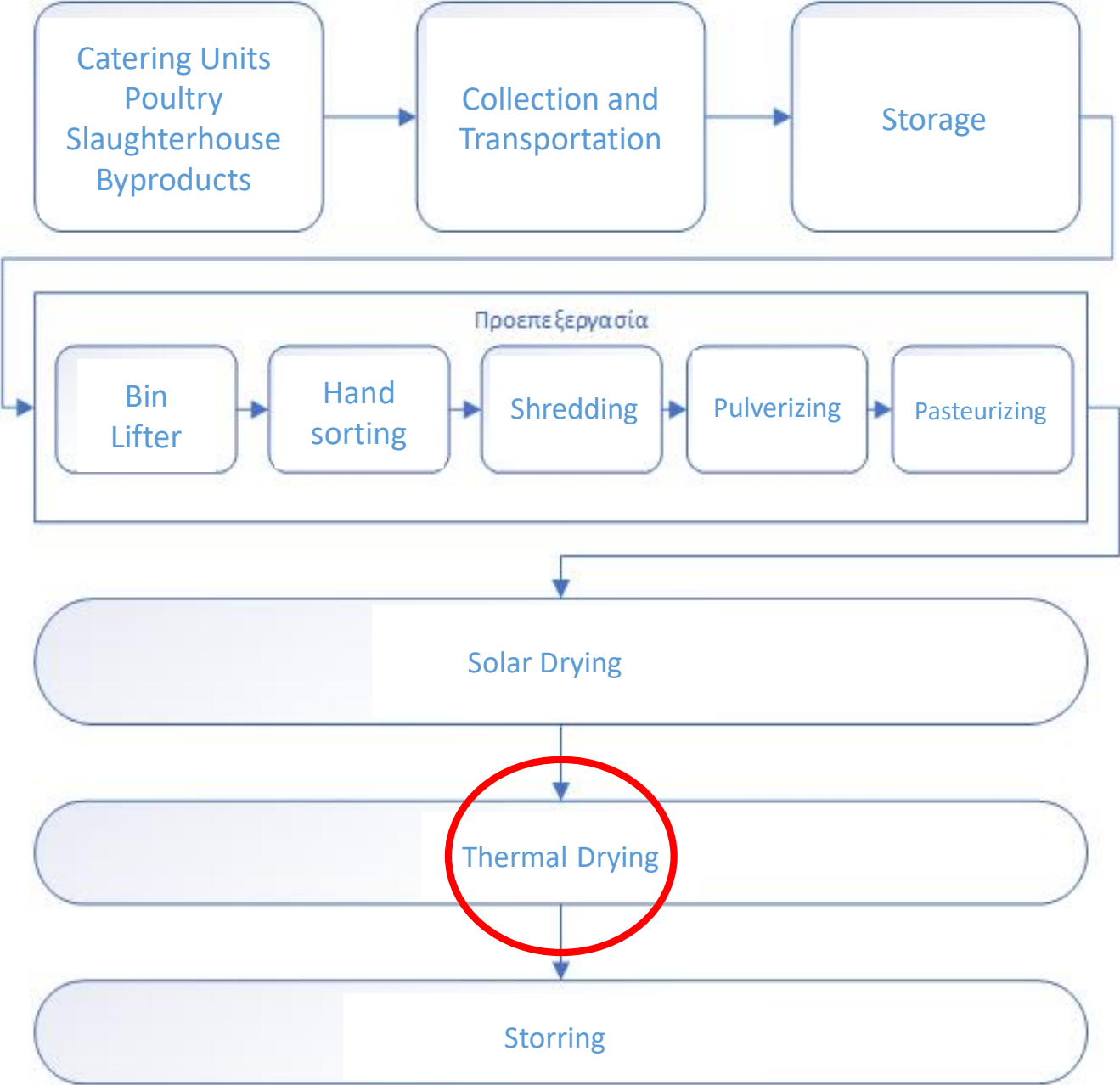
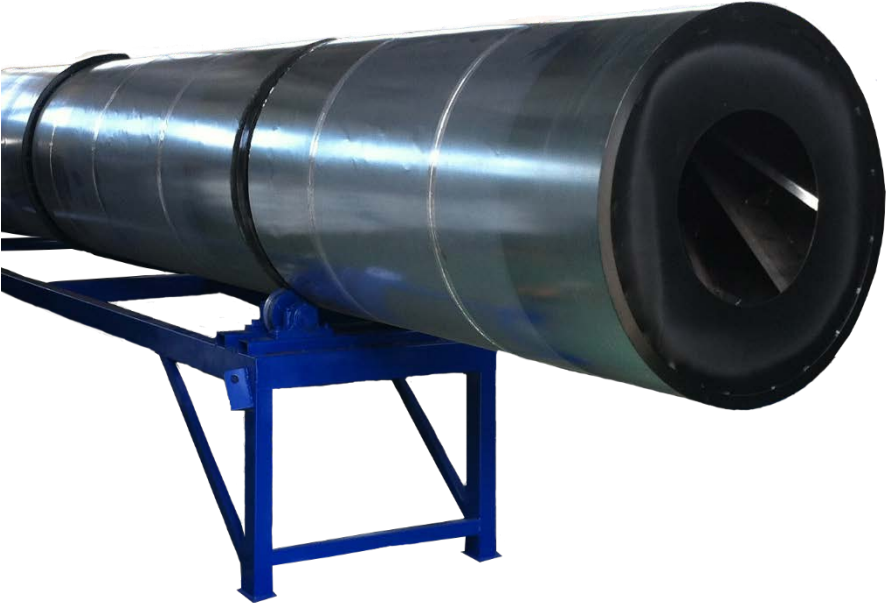




# The SAVED project



# The SAVED project



# Basic Values – Waste & Products

- Catering Waste: 4,750 t / year
  - Produced Feed: 1,300 t / year (12 % moisture)
- Poultry Slaughterhouse By-products: 2,250 t / year
  - Produced Feed: 600 t / year (12 % moisture)
- Incoming waste: 7,000 t / year (8,000 t / year)
  - Produced Feed: 1,900 t / year (2,100 t / year)

# Basic Values – Investment & Funding

- Land cost: 225,000 €
- Buildings: 750,000 €
- Equipment: 505,000 € (not vehicles)
- Solar Drying Units: 900,000 €
- Vehicles: 230,000 €
- Net Metering: 380,000 €
- Consultant work: 217,000 €
- TOTAL COST: 3,210,000 €
- **Total Secured Funding: 1,450,000 €**

# Basic Values – Operational cost




<b>Activity</b>	<b>Total cost</b>	<b>Per t of waste</b>
<b>Collection and Transportation</b>	84.076,57	17,70
<b>Pretreatment</b>	45.108,00	16,33
<b>Personnel cost / Pretreatment</b>	69.194,50	
<b>Pasteurizing</b>	35.000,00	5,00
<b>Solar drying</b>	42.147,86	6,02
<b>Thermal drying</b>	32.537,34	4,65
<b>Packaging</b>	9.303,98	1,33
<b>Labor cost (other)</b>	89.320,00	12,76
<b>Energy (other)</b>	9.342,00	1,33
<b>Various services</b>	50.000,00	7,14
<b>Total Operational Cost</b>	466.030,25	72,27
<b>Saving from Net Metering</b>	144.000,00	20,57
<b>Overall Total Cost</b>	<b>322.030,25</b>	<b>51,69</b>

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# Basic Values – Break Even Point

- A gate fee is needed, between 25 and 45 € / t (catering waste)
- A reasonable sales cost for catering waste originating feed, of about 250 € / t
- A reasonable sales cost for poultry slaughterhouse by products originating feed, of about 350 € / t
- Under these circumstances break even point is between 4 and 6 years.
- Funding is effecting more substantially the viability than any other parameter
- Gate fee importance is reduced only if feed price is comparable with pets and monogastric animals feed