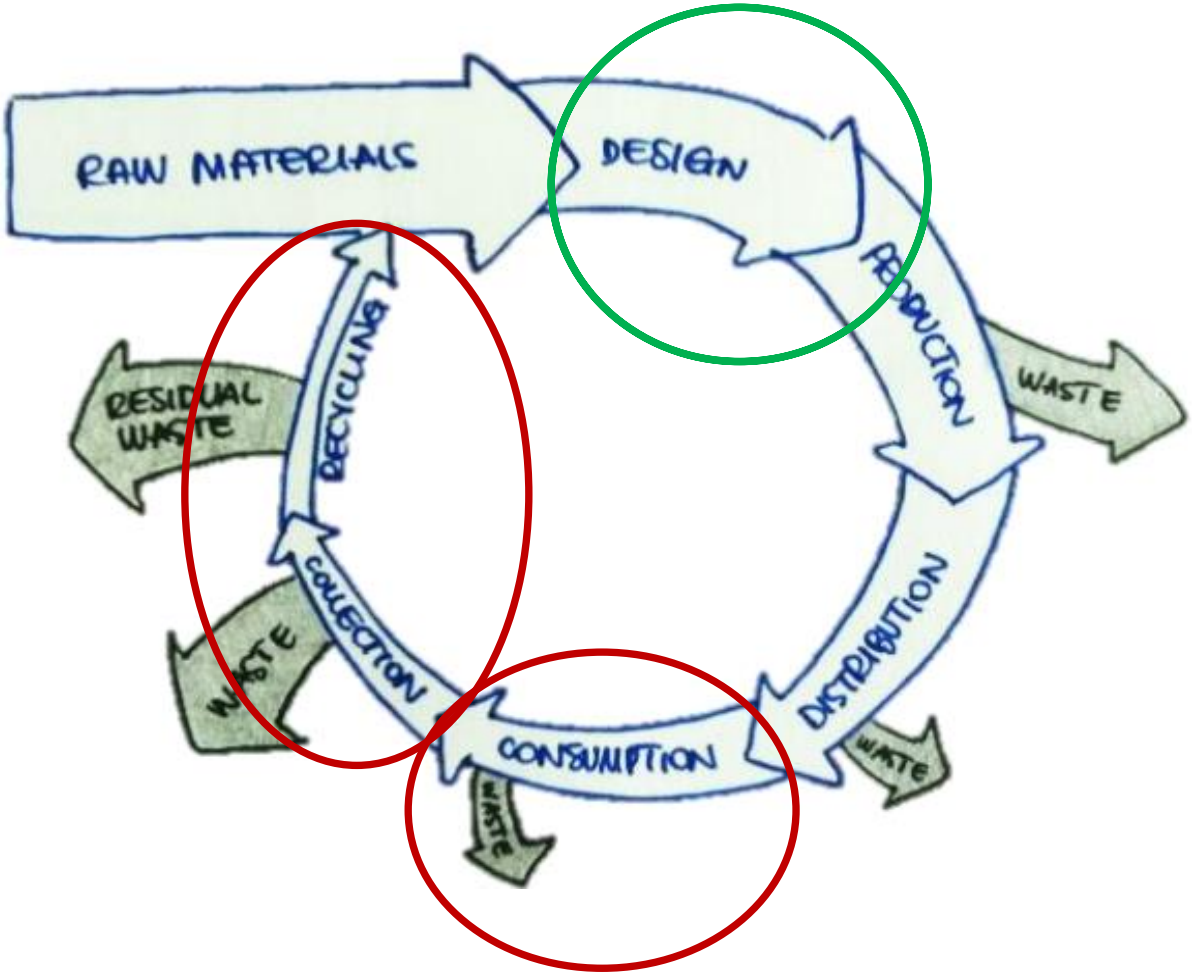
Final Conference
10 November 2020

ENTeR - COVID-19 Pilot Cases

ENTER Project Partners Centrocot – Daniele Piga

PILOT CASE – COVID-19



PILOT CASE – COVID-19

PILOT CASE – COVID-19

- Current procedures for medical textile waste management –
- Materials and chemicals for medical textiles
- Chemicals removal and sanitation
- Environmental evaluation
- Economic evaluation
- Guidelines and best practices

PILOT CASE – COVID-19

Procedures for medical textile waste management

HEALTHCARE SECTOR

dangerous
infectious

- Collection
- Storage
- Thermal destruction

Possibility to sanitation

MUNICIPAL WASTE

Collection unsorted
or residual waste

Materials and chemicals for medical textiles

Non-woven structure:
- Polypropylene
- Polyester
- Hydrophobic cotton

Meltblown or spunbond technology

Laces:
- 2 elastics
- 4 cotton laces

Nose clip:
- Metal
- Plastic

Possible hydrophobic finishing
like fluorocarbon or silicone

Chemicals removal and sanitation

Sanitation uses in medical sector:

- No sorting
- Shredding to make unrecognizable

Different procedures:
Vapour
Hydrogen peroxide vapour
UV radiation

VAPOUR	HYDROGEN PEROXIDE	UV RADIATION
65 °C	35% hydrogen peroxide	UV-c lamp (80 W 254 nm)
RH 85%	480 ppm in decontamination room	15 minutes on each side
Log 5 = 99,999% reduction	30-40 minutes	Log 5 = 99,999% reduction
	Log 6 = 99,9999% reduction	

Environmental evaluation

LIFE CYCLE ASSESSMENT

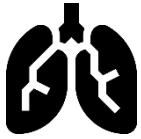
GENERAL METHODOLOGY

UNI EN ISO 14040:2006 “Environmental management – Life cycle assessment – Principles and framework.”
UNI EN ISO 14044:2006 “Environmental management - Life cycle assessment – Requirements and guidelines.”
Zampori and Pant, 2019. Product Environmental Footprint guidance for transition phase.

Climate change and Ozone depletion

Acidification

Resource use (mineral and metals, fossil)



Human toxicity

Eutrophication

Water use

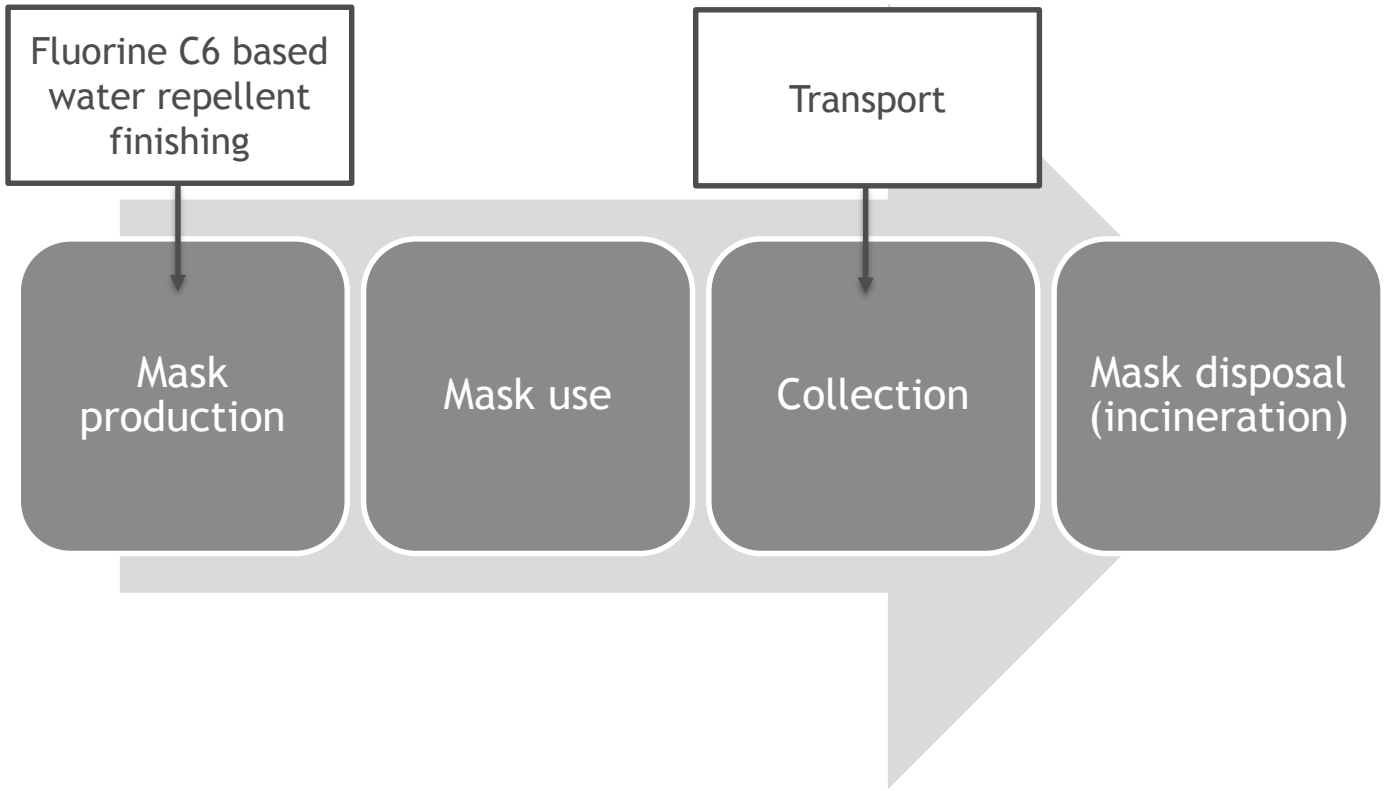
Ecotoxicity

Particles emission to air

Land use

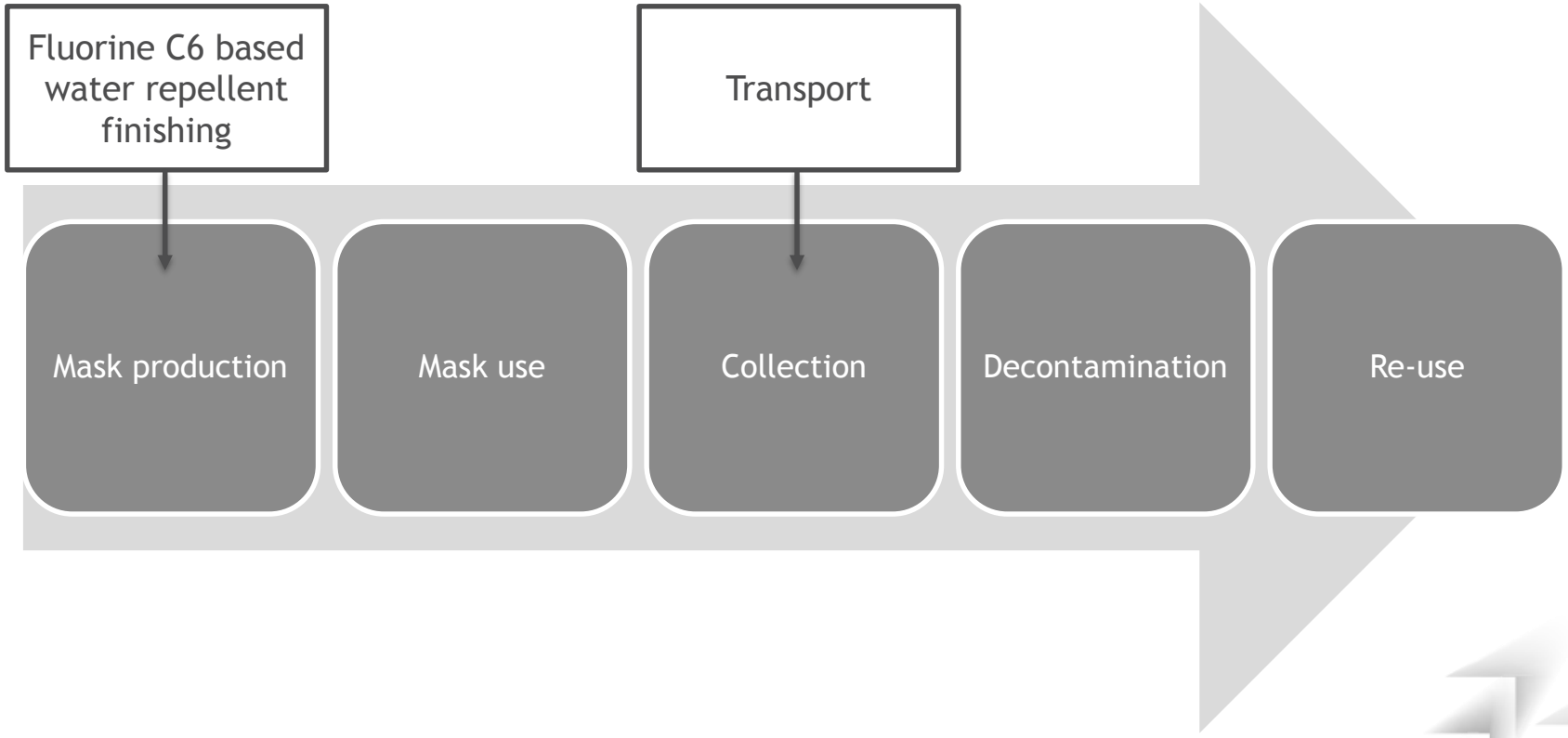
Environmental evaluation

System boundaries - baseline



Environmental evaluation

System boundaries - recycling



ECONOMIC EVALUATION

Waste 18.00.00 EWC

Objective:

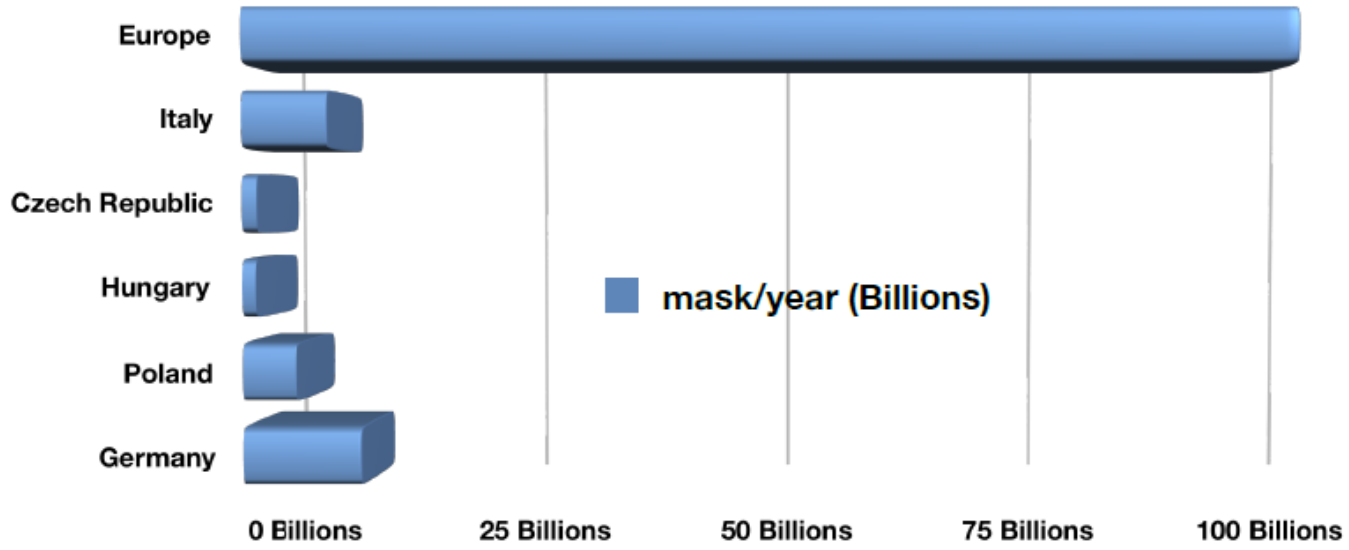
To evaluate the relative costs:

- of the collection,
- to logistics (transport / warehouse),
- sanitation/chemical removal
- recycling of medical textile waste.

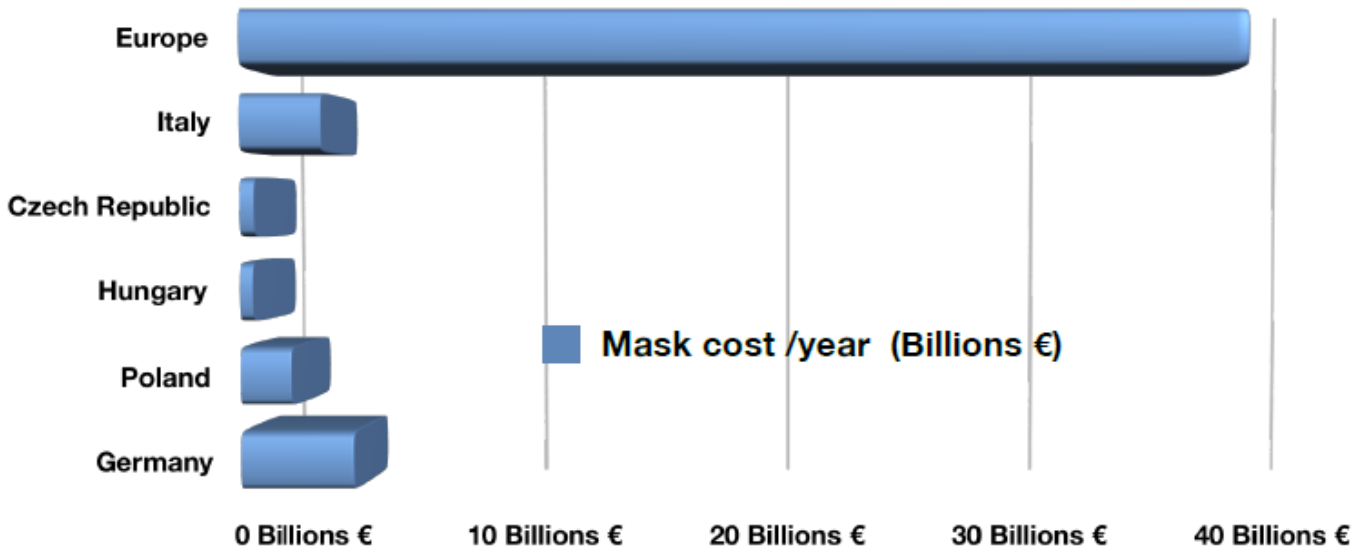
Output:

Comparative study: current waste management practices and proposals to verify if there are significant economic benefits.

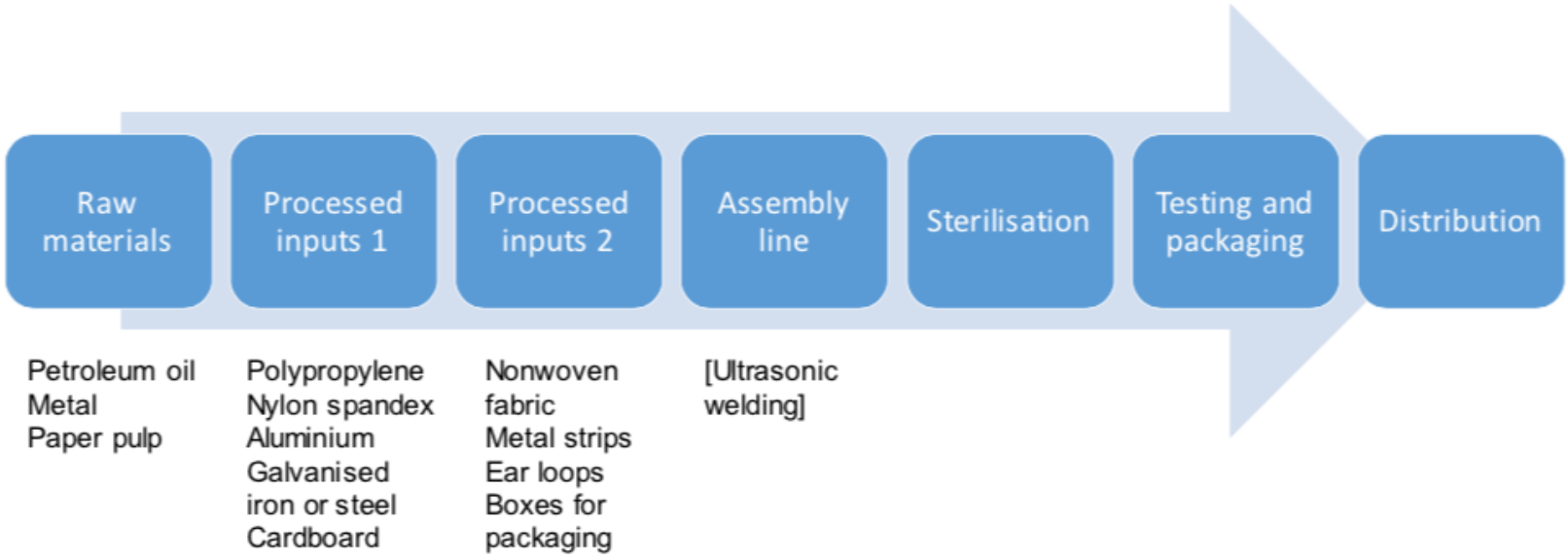
ECONOMIC EVALUATION



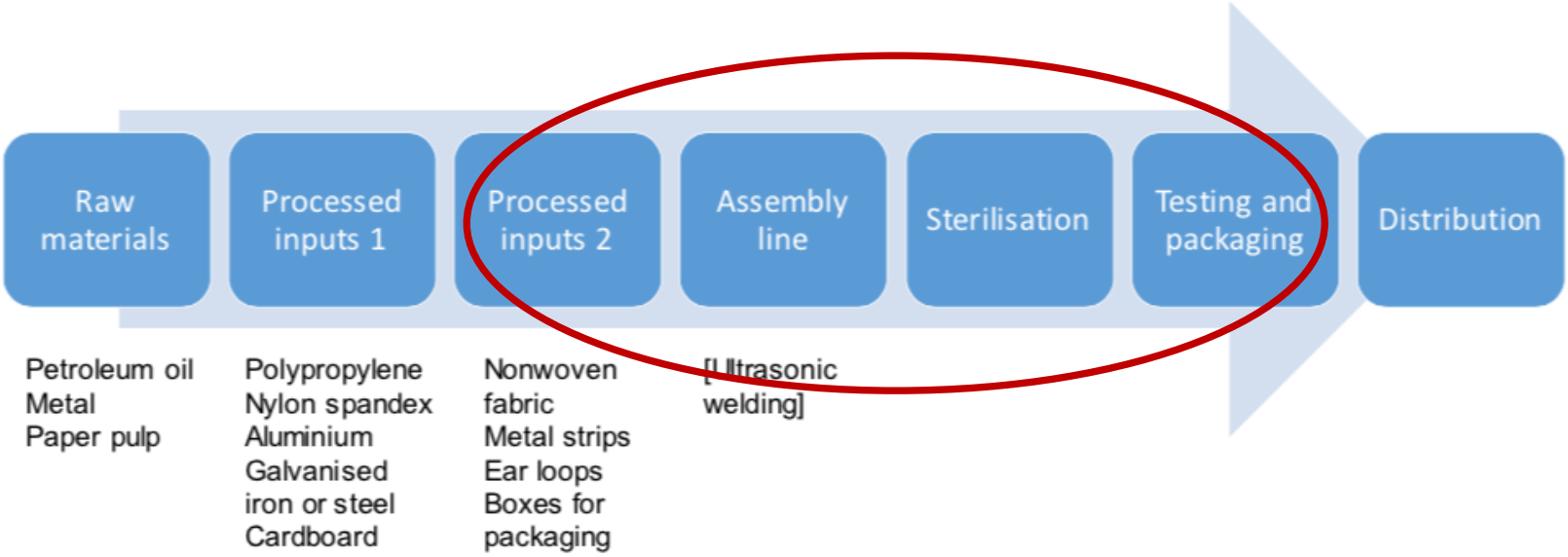
ECONOMIC EVALUATION



ECONOMIC EVALUATION



ECONOMIC EVALUATION



PILOT CASE – COVID-19

Guidelines - Framework

The Aims:
- To reduce the waste destined to destruction
- To help the relevant authorities to manage the large medical textile waste streams

Recovery guidelines

Define standard protocols for the management and treatment of medical textile waste

Treatment guidelines

specific collection and storage procedures

chemical removal and sanitation procedures

Reuse guidelines

recommendation for the production of medical textiles, in order to facilitate the practice of recycling and reuse also following eco-design criteria.

Grazie per l’attenzione

Daniele Piga
daniele.piga@centrocot.it