Opportunities for innovation in wastewater treatment to mitigate microplastic pollution

GOJELLY FINAL MEETING

29 NOV.-1 DEC. 2021

STUDY OBJECTIVES

Determine whether one marine hazard, jellyfish blooms could help to mitigate another, microplastic pollution.

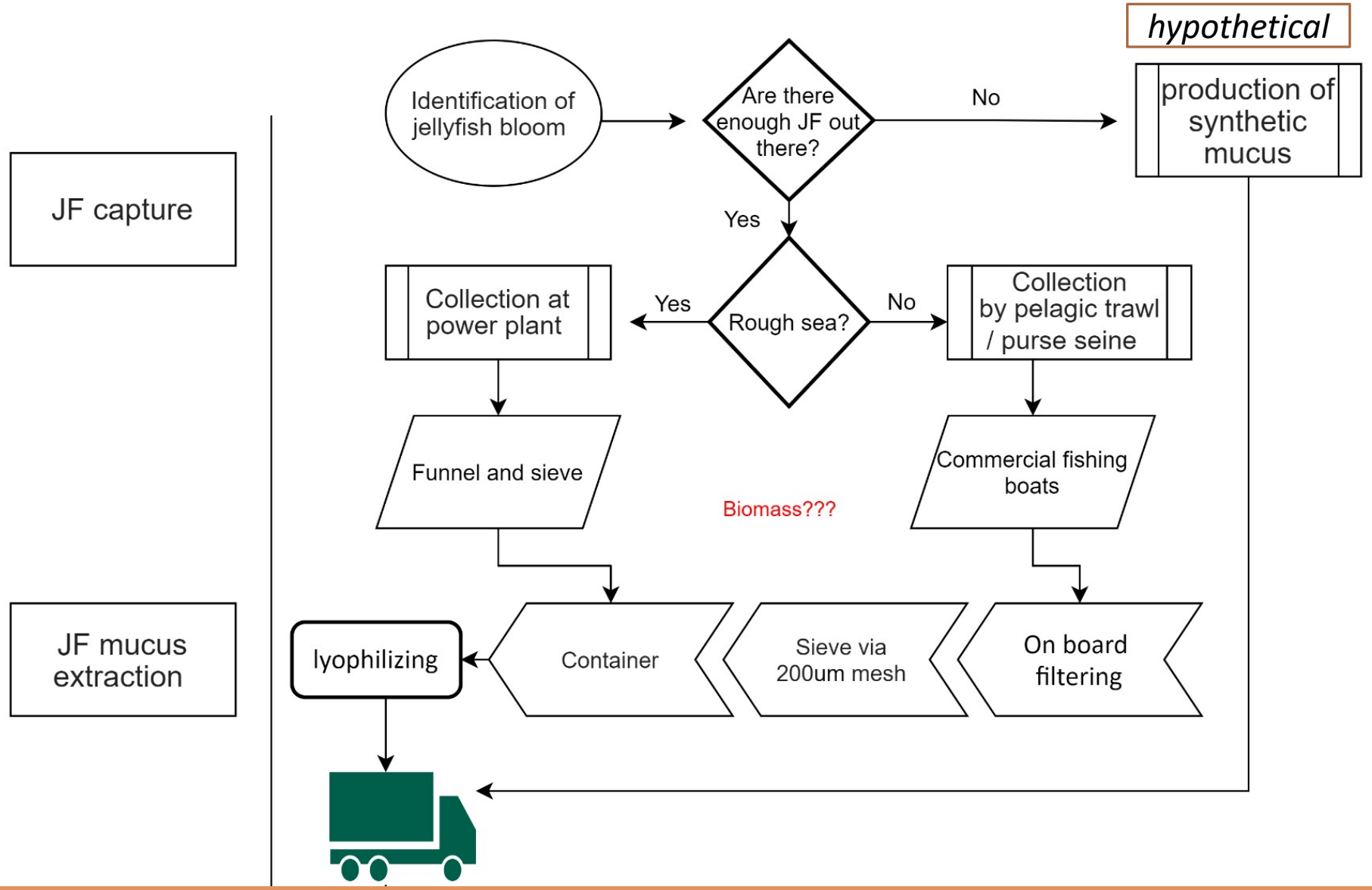
RESEARCH QUESTIONS

1. Can jellyfish mucus be used to filter microplastic particles from wastewater during the treatment process?
2. Under what conditions is investment in a mucus-based filtration system economically viable?

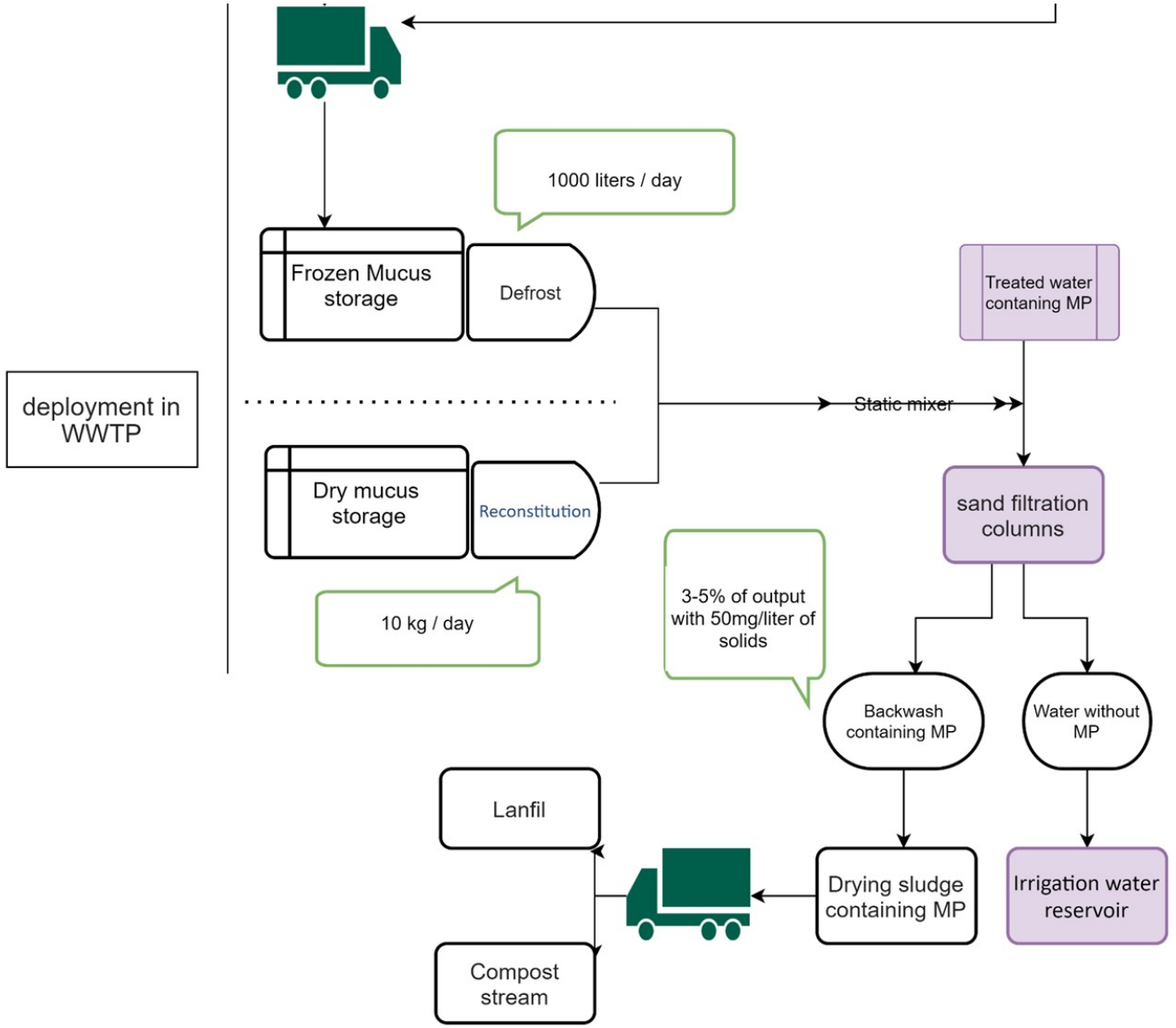
FINDINGS

1. The mucus filter compares favourably to 10 other systems in terms of
   - Effetiveness in removing microplastic particles
   - Energy and water use, time
   - Capital and maintenance costs
2. Jellyfish mucus performance is superior to other sources of mucus (e.g., algae).
3. In the pilot conducted in an Israeli wastewater treatment plant, implementing and operating the filter adds annualized costs of approximately $1 MM Euros.

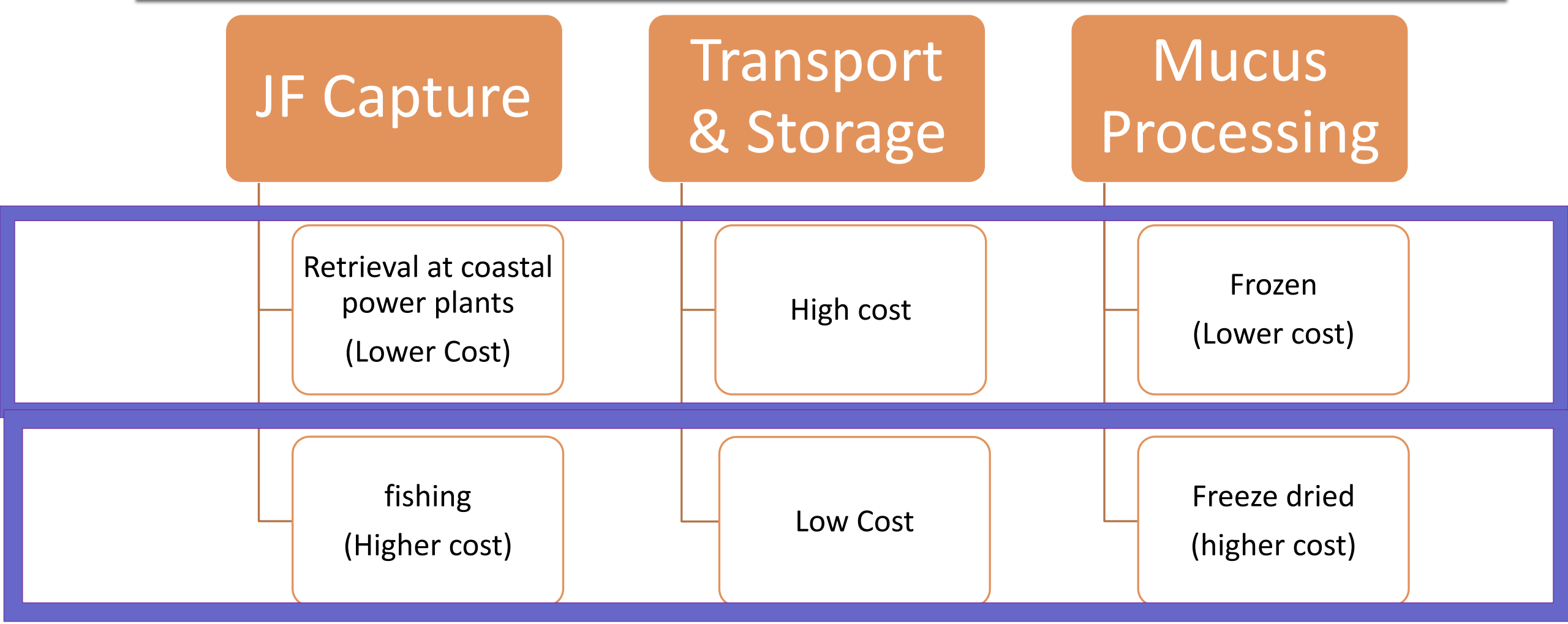
COST MODEL: Jellyfish Mucus capture and extraction



COST MODEL: Filter deployment



COST MODEL DRIVERS



THE CHALLENGE

INVESTMENT IN WASTEWATER TREATMENT INFRASTRUCTURE AND TECHNOLOGIES IS REGULATION DRIVEN IN EUROPE

Municipal wastewater treatment sector in Europe is governed under EU directives (UWWTD, MSFD, WD) and national and local regulations

Local regulations vary in terms of financial, technical, and water quality standards

Until recently, there was no specific requirement for the removal of microplastic particles from municipal wastewater systems

WAYS FORWARD

CHANGES. IN EUROPEAN REGULATION

Major revision to the UWWTD to come into force in early 2022, identifies capture and treatment of MPs from WWTP effluent.

- Will there be standards?
- Will obstacles to investment be removed?

AWARENESS WITHIN THE WASTEWATER SECTOR

Industry publications show attention worldwide of the problems of MPs and the challenges they pose to WWTP operations.

Ageing infrastructure as an opportunity to refit and introduce new technologies

WAYS FORWARD CONT'D

FINANCIAL INCENTIVES TO INVESTMENT

Environmental Impact Financing (EIF) – compensate private investors for assuming risk associated with providing public utilities with technologies with environmental benefits. Examples: Environmental Impact Bonds (EIBs), Technology Efficacy Insurance (TEI)

Laboratory and incubator systems

Government-led innovation subsidies, guarantees coupled with regulation and policy initiatives

THE TEAMS

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Thank you for listening

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