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RESEARCH ON SHIP AND SYSTEMS FOR WASTE MANAGEMENT IN THE SEA: OPTIMIZATION OF WING CONVEYOR ON SHIPS AS MARINE DEBRIS CLEANING TECHNOLOGY

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ABSTRACT

Alternative method that uses ships and their systems will developed be part of waste management that is useful for cleaning marine debris. This research is divided into four sub-theme sections. First is current conditions regarding other research and technology on this topic and challenges ahead. Second is preliminary concept of ships for collectings marine debris in shallow water. Third, hydrodynamic analysis of different ship types with variations in location and angle of wing conveyor. Last, experiment to find out how effective the use of wing conveyors is in collecting marine debris.

SHIPS FOR WASTE MANAGEMENT IN INDONESIAN SEAS: CONTEXTS AND CHALLENGES

Designing ships for sea-born waste management is a multidisciplinary matter. Ships may be used for waste collection and storage; for waste collection, storage, and drying; for waste collection, storage, drying, and sorting; and for waste collection, storage, drying, sorting, and processing. In the future, meanwhile, it is possible to incorporate hybrid ships, waste bases, integrated waste management, and comprehensive and sustainable approaches.

‘BUY MARINE DEBRIS’: A DIGITAL PLATFORM FOR SUSTAINABLE MARINE DEBRIS MANAGEMENT INVOLVING FISHERMEN

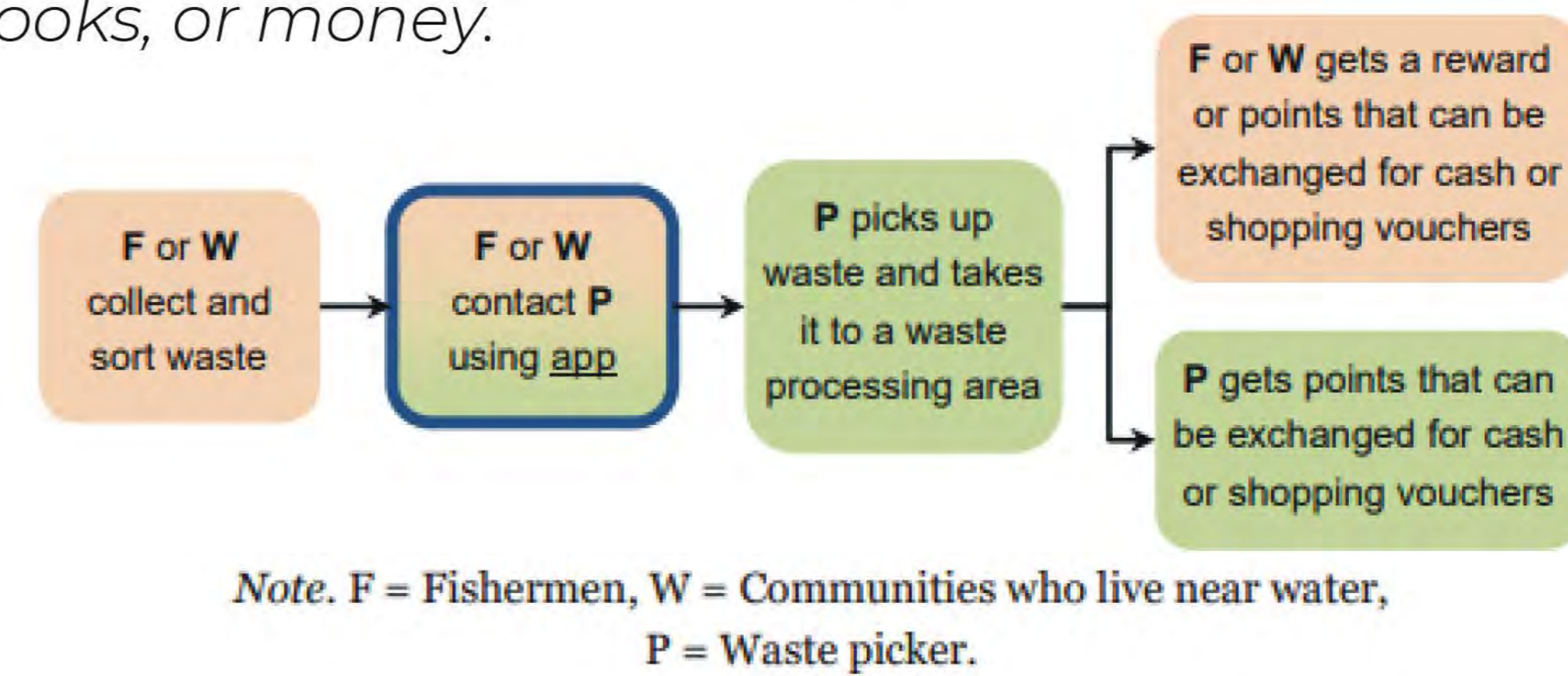
In this concept, fishermen and other community members collect waste in the waters around their homes, sort it, and then use a digital application to call for collection. Stakeholders check the community communities' reports, then ask waste pickers or collectors to fetch the waste, which stakeholders exchange for health care, food vouchers, schoolbooks, or money.



Fig 1. (a) Simple tree analysis, (b) Ships in sea-based waste management, (c) Main tree analysis of ship-based waste management, (d) Simple tree analysis of the waste-related dimensions of floating waste management, (e) Simple tree analysis of the waste management-related dimensions of floating waste management, (f) Simple tree analysis of the ship-related dimensions of floating waste management, (g) Simple tree analysis of the sea-related dimensions of floating waste management

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Note. F = Fishermen, W = Communities who live near water, P = Waste picker.

Fig 2. Process involved in the Buy Marine Debris app

HULL NUMBER EFFECT IN SHIP USING CONVEYOR ON OCEAN WASTE COLLECTION

This study aims to choose between the three-ship models, namely the three-ship model, the monohull type U, the catamaran type inner flat hull, and the trimaran type symmetrical. Assessment is based on ship resistance which relates to fuel consumption and flow distribution relates to ocean waste collection

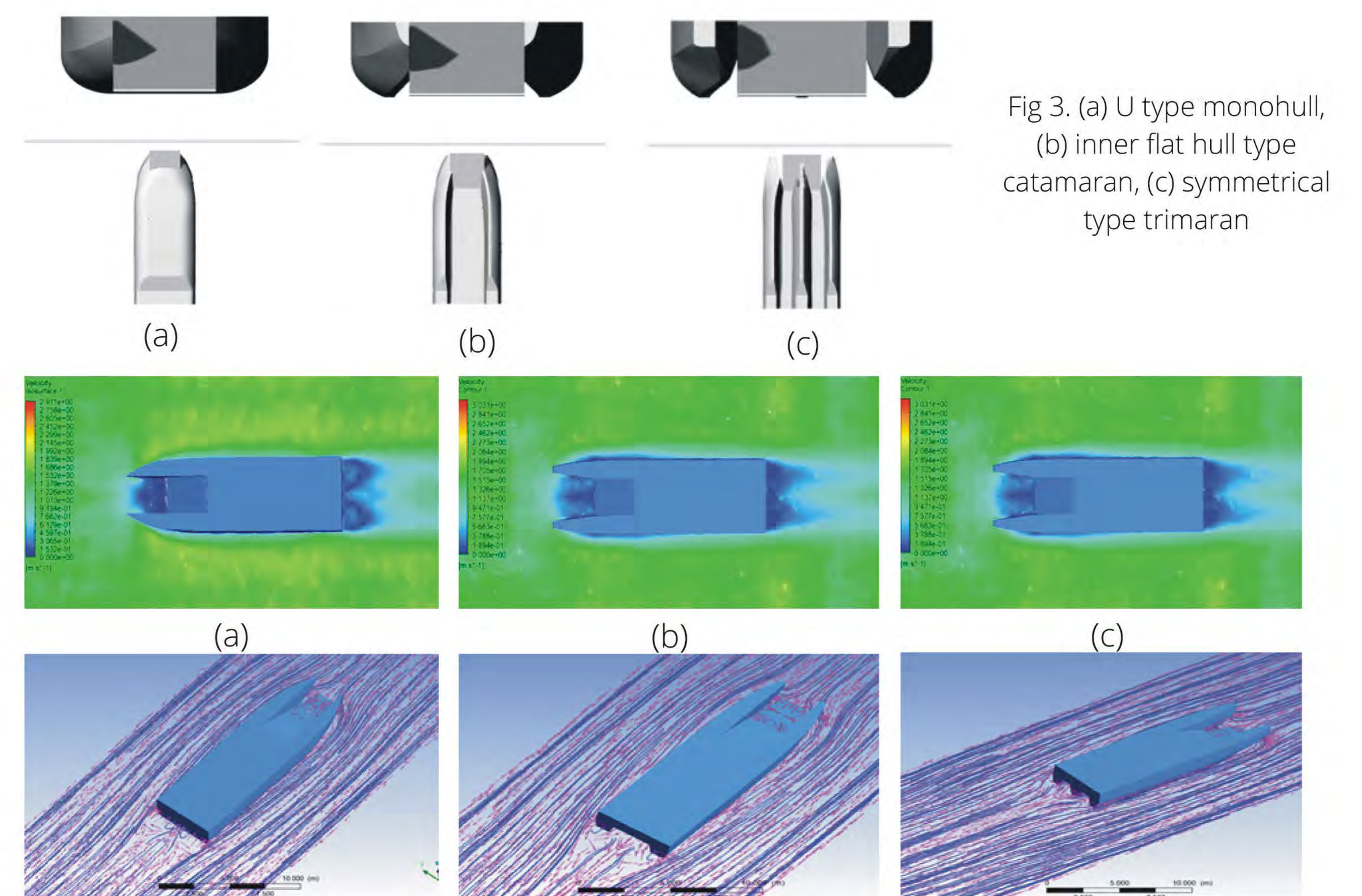


Fig 4. Velocity contour and flow pattern: (a) and (d) U type monohull, (b) and (e) inner flat hull type catamaran, (c) and (f) symmetrical type trimaran

