which do not have potentially available lands for Jatropha cultivation. Overall, the optimisation results reveal a decentralised operation of the Jatropha value chains for biodiesel provision of the country.

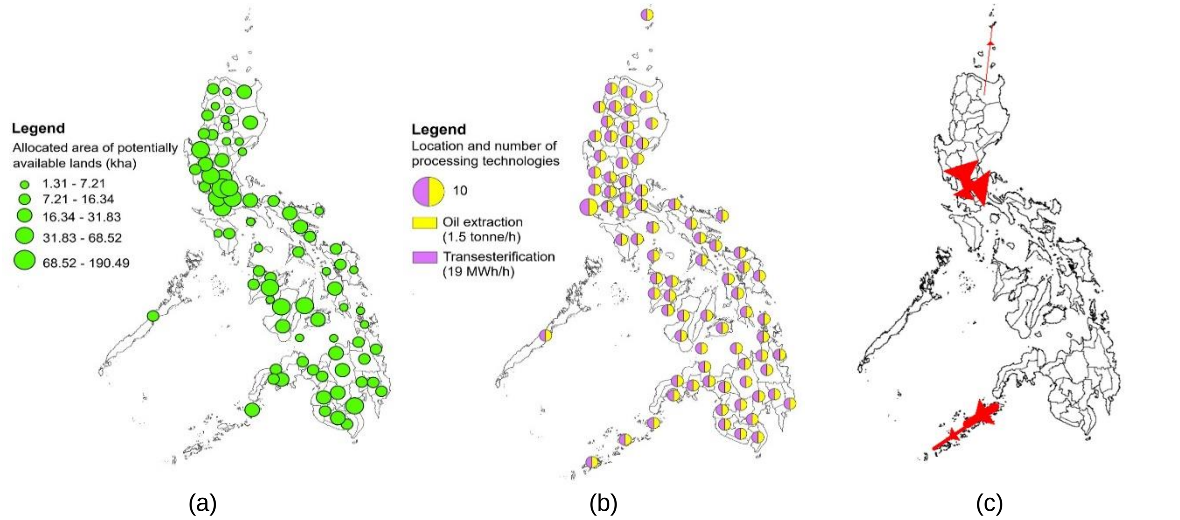

Figure 4. Optimisation results: (a) allocated areas for Jatropha cultivation; (b) location and number of processing technologies; and (c) barge transport of Jatropha fruit.

6. Conclusions

The land suitability modelling revealed 16 million ha of potentially available lands in the Philippines for sustainable cultivation of Jatropha, which would not result in land-use conversion of forests and protected areas. Then a mixed-integer linear programming model was developed for the simultaneous planning, design and operation of multi-product Jatropha value chains. The model was applied to a case study for the total provision of the annual biodiesel demand of the Philippines. The optimal Jatropha value chains were both economically and environmentally favourable within the planning horizon. A decentralised design and operation of the optimal Jatropha value chains for biodiesel provision of the country is recommended.

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