GREEN LOGISTICS – THE CONCEPT OF ZERO EMISSIONS PORT’S ENERGY MANAGEMENT

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Content:

- Green Supply Chain Management
- Green Logistic
- Intelligent Methods for Energy Management
- Analysis
- Conclusions
GREEN SUPPLY CHAIN MANAGEMENT

- Focuses on environmental aspect of sustainability
- Integrate environmental concerns with supply chain management
- Control environmental impacts of products in its life cycle besides reducing supply chain's energy consumption sustainable supply chain
GREEN SUPPLY CHAIN MANAGEMENT

Green Design

Reverse Logistics

Green Sourcing

Green Supply Chain Management

Green Transportation

Green Manufacturing

Green Packaging
GREEN LOGISTICS

• Describes all attempts to measure and minimize the ecological impact of logistics activities

• All activities of the forward and reverse flows of products, information and services between the point of origin and the point of consumption
GREEN LOGISTICS

Economic growth industrialisation and new technology resulting in increased waste, dumping and poor disposal.

Open economics/free trade – increased travel causing an increase in the carbon footprint.

- ECONOMY
- IMPACT

- SOCIETY
  - Poor health, less agricultural production, climate change, etc.

- ENVIRONMENT
  - Air pollution, deforestation, reduced air quality, land degradation, bio diversity, waste, etc.

Green Logistics

IMPACT
GREEN LOGISTICS

- Green Supply Chain
- Positive impact on financial performance
- Sustainability of Resources
- Lowered Costs/Increased Efficiency
- Product Differentiation and Competitive Advantage
- Adapting to Regulation and Reducing Risk
- Improved quality and products
GREEN LOGISTICS
INTELLIGENT METHODS FOR ENERGY MANAGEMENT

• A neural network for energy management in residential applications

• A hierarchical energy management scheme with a central coordinator in grid connected microgrids

• An energy management system consisting of a central controller which controls both loads and battery to assure energy balance at peak times
INTELLIGENT METHODS FOR ENERGY MANAGEMENT

• A Q-learning algorithm with a two-step ahead horizon for energy management of a grid connected wind generator system, which composed by a battery, a variable electrical load and a wind generator

• A photovoltaic system using a Q-learning algorithm with three-step ahead horizon in order to schedule the battery usage

• A multi-agent system for power management of a stand-alone residential grid by shedding loads
INTELLIGENT METHODS FOR ENERGY MANAGEMENT

- A deep reinforcement learning framework for energy management of storage units in a photovoltaic system
- A multi-agent system with local agents and a central coordinator for optimal response to emergency power demand
- A multi-agent system for power generation planning and energy management (8 different types of agents, separated by their operation)
ANALYSIS
## ANALYSIS

<table>
<thead>
<tr>
<th>POLITICAL</th>
<th>ECONOMIC</th>
<th>SOCIAL</th>
<th>TECHNOLOGICAL</th>
<th>ENVIRONMENTAL</th>
<th>LEGAL</th>
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</thead>
<tbody>
<tr>
<td>Taxation (high taxation is disadvantage)</td>
<td>GDP</td>
<td>Living condition in city of port is difficult (air pollution, etc.)</td>
<td>Research &amp; Technology (exploitation of new technologies i.e. Artificial Intelligence etc.)</td>
<td>the natural environment near the port is in danger (marine pollution, air pollution etc.)</td>
<td>Environment protection laws unsatisfactory protection for constructions and the natural environment</td>
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<td>Energy policies (friendly in environment)</td>
<td>Investments in alternative energy sources (i.e. sun, air etc.)</td>
<td>the local community is receptive to environment</td>
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<td>Political stability</td>
<td>Local economy &amp; Commercial Unions</td>
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Intelligent Energy Management and Green Port framework (IEMGPF)
CONCLUSIONS

• Ports are a key element to the supply chain and the green logistics

• The concept of zero emissions’ port is referred to a port powered mainly from renewable energies in order to fulfill its power requirements and to reduce the air emissions

• The IEMGPF is effective and sustainable framework for ports which focus in Zero emissions and sustainable ports operations and development
THANK YOU