IMPLEMENTATION OF
THE GREEN PORT MASTER PLAN
(2019 – 2023)

“An aspiring Smart-Green Gateway in the Pacific”
1. OBJECTIVE

2. OVERVIEW
   I. ALIGNMENT
   II. FOCUS AREAS

3. IMPLEMENTATION
   I. ACTIVITIES
   II. ENERGY MANAGEMENT
   III. GREEN PROJECTS

4. CONCLUSION
This masterplan aligns with:

• FPCL’s Five-Year Strategic Plan;
• SPC’s Green Pacific Port Concept; and
• Contributes to the achievement of the United Nations Sustainable Development Goals (SDGs)
# Focus Areas

## Environment
- **↓** Greenhouse gas (GHG) emissions
- **↓** Air Pollution
- **↓** Water Pollution
- **↓** Land based water and litter
- **↑** Resource usage
- **↑** Cleaner Port
- **↑** Well maintained green spaces in port areas

## Stakeholder Engagement
- **↑** Raising awareness of green port issues and environmental concerns
- **↑** Enforcement of regulations
- **↑** Enabling assistance - helping stakeholders reduce their own environmental footprints

## Assessing and Reporting
- **↓** Carbon footprint
- **↓** Air quality index
- **↓** Water quality
- **↓** Land based waste and litter
- **↑** Port cleanliness measured
- **↑** Port green space growth
IMPLEMENTATION

GREEN TASK FORCE
- Sustainability Sub-Committee
- Executive Team
- Green Port Champions

FUNDING THE PLAN
- FPCL and Grant Funding
- Cost Savings through Green Port projects

DELIVERY
- Deliverables and KPIs based on the Action Plan

REVIEW AND UPDATE
- Master Plan and Annual Action Plan
- Annual Budgetary Cycle
- Review and update in 2021 & 2022

Sustainability Sub-Committee
Executive Team
Green Port Champions
FPCL and Grant Funding
Cost Savings through Green Port projects
Deliverables and KPIs based on the Action Plan
Master Plan and Annual Action Plan
Annual Budgetary Cycle
Review and update in 2021 & 2022
FPCL GREEN PORT MASTERPLAN IMPLEMENTATION DASHBOARD 2019 - 2023

Number of Activities by Area

- Grand Total: 88
- FPCL: 34
- Green Port: 41
- Masterplan: 13
- Implementation: 8

Focus Area Completion Status

- Total: 88
- Completed: 37%
- In-Progress: 21%
- Pending: 4%
- Assessment and reporting: 1%
- Environment: 8%
- Stakeholder engagement: 8%

Focus Areas by Suggested Years of Implementation

- 2019: 5%
- 2020: 14%
- 2021: 12%
- 2022: 10%
- 2023: 2%

Focus Areas by FPCL’s Strategic Goal 5

- Stakeholder engagement: 41
- Environment: 21
- Assessment and reporting: 7
- FPCL: 5
- Green Port: 4
- Masterplan: 2
- Implementation: 1

Strategic Activity Completion Status

- 5.1 Port Sustainability Goals: 100%
- 5.2 Environment Management System: 100%
- 5.3 Environment education engagement: 25%
- 5.4 Enforcement of regulations: 25%
- 5.5 Upgrade waste mgmt practice: 25%
- 5.6 Def Collab: 25%
- 5.7 Protection of port land area: 25%
- 5.8 Staff Capacity & workplan: 25%
- 5.9 Dredge monitoring: 50%
- 5.10 Carbon Neutral: 25%
- 5.11 Energy efficiency: 25%
## Green Port Action Plan 2021

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</thead>
<tbody>
<tr>
<td>1</td>
<td>Annual workshop on greenport initiatives to review progress and maintain momentum</td>
<td>5.2</td>
<td>17. Partnership for the goals</td>
<td>Quality Management</td>
<td>ENGM</td>
<td>MCO</td>
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<tr>
<td>2</td>
<td>Develop Environment Management System (EMS) in accordance with ISO 14001</td>
<td>5.2</td>
<td>3. Industry, innovation and infrastructure</td>
<td>Quality Management</td>
<td>ENVO</td>
<td>QO</td>
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<tr>
<td>3</td>
<td>Annual stakeholder meetings and briefings</td>
<td>5.3</td>
<td>17. Partnership for the goals</td>
<td>Environmental Management</td>
<td>COO</td>
<td>MCO/ENGM/ENVO</td>
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<td>4</td>
<td>Actively develop and update the green-port section of FPCL’s website</td>
<td>5.3</td>
<td>17. Partnership for the goals</td>
<td>Environmental Management</td>
<td>MCT</td>
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<td>5</td>
<td>Encouraging FPTL to upgrade yard lighting to LED, incorporating dimming controlled by guards</td>
<td>5.3</td>
<td>7. Affordable and clean energy &amp; 9. Industry, innovation and infrastructure &amp; 13. Climate action</td>
<td>Energy Conservation</td>
<td>CIPO</td>
<td>PE/COO</td>
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<tr>
<td>6</td>
<td>Establish standards and enforce improved handling of cement offload at the Suva terminal.</td>
<td>5.3</td>
<td>3. Good health and well being &amp; 14. Life below water</td>
<td>Quality Management</td>
<td>COO</td>
<td>ENFO</td>
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<tr>
<td>7</td>
<td>Establish standards around hydraulic oil leakage and leakage clean up (don’t hose into sea or into drains) and enforce</td>
<td>5.3</td>
<td>14. Life below water</td>
<td>Quality Management</td>
<td>COO</td>
<td>ENFO</td>
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<td>8</td>
<td>Purchase of pollution boat for Lautoka</td>
<td>5.4</td>
<td>14. Life below water</td>
<td>Pollution Response</td>
<td>COO/HMLTK</td>
<td>PC</td>
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<tr>
<td>9</td>
<td>Improve capacity to detect water pollution then using this to detect and prosecute water pollution by vessels.</td>
<td>5.4</td>
<td>14. Life below water</td>
<td>Pollution Response</td>
<td>HMPLU/HMLKT</td>
<td>ENFO/QO</td>
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<tr>
<td>10</td>
<td>Develop and use pollution detection methodologies, procedures and checklists</td>
<td>5.4</td>
<td>14. Life below water</td>
<td>Pollution Response</td>
<td>HMPLU/HMLKT</td>
<td>ENFO</td>
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<tr>
<td>11</td>
<td>Signage on wharfs about spills, littering, dumping and penalties that apply</td>
<td>5.5</td>
<td>3. Good health and well being &amp; 14. Life below water &amp; 15. Life on land</td>
<td>Waste Management</td>
<td>AMO</td>
<td>ENVO</td>
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<tr>
<td>12</td>
<td>Upgrade waste management practices and enforcement for international vessels.</td>
<td>5.5</td>
<td>15. Life on land</td>
<td>Waste Management</td>
<td>COO</td>
<td>AMO/ENFO</td>
<td>T</td>
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<tr>
<td>13</td>
<td>Upgrade of bins in port areas (more bins, bins for different recycling streams), entering into contracts for collection of recycled waste</td>
<td>5.5</td>
<td>3. Good health and wellbeing &amp; 15. Life on land</td>
<td>Waste Management</td>
<td>AMO</td>
<td>AMC</td>
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<tr>
<td>14</td>
<td>Deploy segregated bins in office areas</td>
<td>5.5</td>
<td>3. Good health and wellbeing &amp; 15. Life on land</td>
<td>Waste Management</td>
<td>AMO</td>
<td>AMC</td>
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<tr>
<td>15</td>
<td>Make the cleaners responsible for ensuring the different waste streams are properly processed</td>
<td>5.5</td>
<td>3. Good health and wellbeing &amp; 15. Life on land</td>
<td>Waste Management</td>
<td>AMO</td>
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<td>16</td>
<td>Roster one cleaner to work a half day on the weekend.</td>
<td>5.5</td>
<td>3. Good health and wellbeing &amp; 15. Life on land</td>
<td>Waste Management</td>
<td>AMO</td>
<td>AMC</td>
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The Green Port Master Plan is delivered through yearly action plans.
<table>
<thead>
<tr>
<th>FPCL GREEN PORT DASHBOARD - NOVEMBER 2021</th>
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<tbody>
<tr>
<td><strong>3,607</strong> Mwh</td>
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<tr>
<td>FPCL's Average Energy Consumption per Annum</td>
</tr>
<tr>
<td><strong>11%</strong></td>
</tr>
<tr>
<td>Average Reduction of Energy Consumption over the last 5 years</td>
</tr>
<tr>
<td><strong>25%</strong></td>
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<tr>
<td>Expected Reduction of Energy Consumption by 2023</td>
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<tr>
<td><strong>1,291</strong> t CO$_2$-e</td>
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<tr>
<td>FPCL's Carbon Footprint per Annum</td>
</tr>
<tr>
<td><strong>$1.1M</strong></td>
</tr>
<tr>
<td>Total Invested</td>
</tr>
<tr>
<td><strong>11%</strong></td>
</tr>
<tr>
<td>Average Carbon Footprint Reduction over the last 5 years</td>
</tr>
<tr>
<td><strong>220</strong> t CO$_2$-e</td>
</tr>
<tr>
<td>Expected Carbon Footprint Reduction by 2023</td>
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</tbody>
</table>
FPCL’s ENERGY REDUCTIONS

Yearly energy reductions

<table>
<thead>
<tr>
<th>Years</th>
<th>Total Energy Consumption (kWh)</th>
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</thead>
<tbody>
<tr>
<td>2016</td>
<td>4,878,685</td>
</tr>
<tr>
<td>2017</td>
<td>3,881,869</td>
</tr>
<tr>
<td>2018</td>
<td>3,134,608</td>
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<tr>
<td>2019</td>
<td>3,058,574</td>
</tr>
<tr>
<td>2020</td>
<td>3,079,528</td>
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<tr>
<td>2021</td>
<td>1,468,522</td>
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</tbody>
</table>

N.B. - 2021 data is up to the month of June only.

FPCL tracks and monitors its energy consumption and GHG emissions through a dedicated energy tracker.

Yearly GHG reductions

<table>
<thead>
<tr>
<th>Years</th>
<th>Total GHG emissions (t CO₂-e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>1,747.96</td>
</tr>
<tr>
<td>2017</td>
<td>1,390.50</td>
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<tr>
<td>2018</td>
<td>1,108.61</td>
</tr>
<tr>
<td>2019</td>
<td>1,114.66</td>
</tr>
<tr>
<td>2020</td>
<td>1,091.22</td>
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<tr>
<td>2021</td>
<td>519.98</td>
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</tbody>
</table>
Reduction of energy consumption is achieved through:

- LED lighting upgrades
- Air conditioning upgrades
- Efficient appliances (laptops, refrigerators, etc.)
- Solar PV systems
- Light sensors
- Other

N.B. - 2021 data is up to the month of June only.
## GREEN PROJECTS

<table>
<thead>
<tr>
<th>Port of Suva Smart LED Lighting Upgrade Project</th>
<th>Electric Incinerator at Suva Port</th>
<th>Old incinerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description: Upgrading of 35 units of 2000W Metal Halides to 1200W high-efficiency LED lighting. 45% reduction in energy usage and an estimated electricity cost savings of $50k-$61k per year. Reduction of 53tCO₂e per year.</td>
<td>Description: Fiji’s first electric-powered incinerator was installed at Port of Suva in 2019. This has allowed FPCL to move away from the old inefficient diesel powered, high carbon emitting incinerator.</td>
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### Muaiwalu 2 Renewable Energy Carpark Facility

**Description:**
FPCL's first facility which operates on 100% renewable energy making it a net zero facility. 6kW Solar PV System, Solar carpark lights and other energy efficient upgrades have been installed. Estimated electricity cost savings $1,600 per year. Reduction of 2.2tCO₂e per year.

### Muaiwalu 2 Waiting Shed Solar PV System Installation – Ongoing

**Description:**
A 22kW Solar PV System is planned to be installed. Estimated electricity cost savings $11,100 per year. Reduction of 19.2tCO₂e per year.
<table>
<thead>
<tr>
<th><strong>Green Space at Muaiwalu 2 Carpark</strong></th>
<th><strong>Ship Waste Management</strong></th>
<th><strong>Smart Metering</strong></th>
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<tr>
<td>Description: Supporting FPCL’s Green Port Initiative, the landscaping works were done at Muaiwalu 2 Carpark to establish a green space.</td>
<td>Description: In compliance with MSAF’s regulations and to protect Fiji’s marine environment and its marine resources, FPCL has engaged services to allow appropriate reception facilities to manage ship discharged waste.</td>
<td>Description: Implementation of smart metering is in progress to monitor water consumption, leakages and electricity consumption which can assist in eliminating resource wastages and have significant cost savings.</td>
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### Before:

![Before Image](image1)

### After:

![After Image](image2)
OTHER GREEN INITIATIVES

Implementation of Smart Green Technologies:

• Implementation of a Computerized Maintenance Management System (CMMS).
• Use of Inverter type air conditioning systems for replacement units: 30 – 45% energy savings.
• Purchasing of Energy Star rated appliances.
• Facility LED lighting upgrades and installation of sensors to reduce energy consumption.
• Solar PV Projects.
• Power factor correction.

Other:

• ISO14001:2015 Environmental Management Systems
• Support extended to external stakeholder initiatives.
• Cleanup campaigns.
• Waste Management Plan – Draft
• Upgrading of dated facilities.
• Incorporation of NSW Green Port Guidelines for upcoming major development projects – Lautoka Yard 4, Muaiwalu 2 Interisland terminal facility, etc.
• Draunibota Clinker Discharge Facility Project - Relocation of Clinker Operation from Kings Wharf.
THANK YOU

FPCL's Green Port Master Plan Launch - Lautoka