Environmental Initiatives at Seaports Worldwide
A snapshot of best practices

PORT OF PORTLAND

Possibility. In every direction.

I2S2 International Institute of Sustainable Seaports

TEC inc

Sustainable Port Development: Summary of Environmental Initiatives

Noeleen Tillman

International Institute for Sustainable Seaports

Richard Vincent

Port of Portland

Presentation Overview

- Introduction
- International Institute for Sustainable Seaports
- Objective of Research
- Research Parameters
- Research Highlights
- Summary
- Questions

The *I2S2* is the *Institute for Sustainable Seaports*:

- Non-profit **Center of Excellence**
- Designed to support port authorities, tenants and members of the maritime community implement sustainable practices

Research Objective

- ***To provide stakeholders (internal and external) with a greater awareness and understanding of how seaports are managing natural resources, adopting new operating methods and planning for sustainability***

- ***To provide readers with a better understanding of the geographic, community, financial and regulatory context that led to the implementation decisions***

Research Parameters

- Snapshot (Summer/Fall 2009)
- I2S2 and Port of Portland Staff
  - I2S2: International Ports
  - Port of Portland: North American Ports
- Interviews
- Literature search

Research Parameters

- Tools:
  - Questionnaire
    - Air quality; climate change; water quality; waste minimization; dredging; energy conservation; natural resources; sustainability; environmental management systems.
- Data Pool
  - International Association of Harbors and Ports
    - Environmental committee
  - American Association of Port Authorities
    - Harbors Navigation and Environment Committee

Research Highlights

- Air Quality
- Water Resources
- Recycling
- Energy Conservation and Renewable Energy
- Natural Resources Management
- Sustainability
- Dredging
- Climate Change

Air Quality

- Replace equipment with cleaner more efficient models
- Repower equipment
- Retrofit current equipment with emission control devices
- Refuel equipment with cleaner burning fuels
- Reduce emissions through operational changes

Air Quality

Shore Power

- Where it works
  - Cruise industry
  - Harbor craft
  - Same vessel repeat port calls
- Challenges
  - Standard for connections
  - Varying power demands for different types of ships
  - Expensive infrastructure

Shore Power

Shore Power for Harbor Vessels

- Partnership between Port of Portland and Shaver Transportation Company

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Water Resources

- Stormwater discharge limits getting stricter
- Ports using infiltration to address stricter discharge limits
- EPA regulations attempt to standardize the approach for regulating stormwater runoff; however, state, regional and municipal regulations lead to additional requirements that must be fulfilled.
- Water conservation efforts focused on landscaping irrigation and use of water restriction devices in buildings

Water Resources

Storm water management:

- Bioswales, infiltration basins
- Low impact development
- Pervious pavement

Conservation

- Landscape irrigation
- Water use restrictions
- Building fixture replacement with more efficient devices
- Best Management Practices
  - Port of Brisbane (efficient fittings, education, usage of non-potable water)

Porous Pavement

Recycling

- Ports using both in-house and local community programs
- Municipal ordinances often drive port programs to achieve various levels of recovery of recycled material
- Construction project related recycling is widespread
- Several ports include reduce-recycle-reuse policies as part of their Environmental Management Systems (EMS) and sustainability programs

Recycling

Common materials being recycled

- Construction debris (metal, wood, concrete)
- Glass, plastic, paper
- Compostable materials
- Government Support:
  - Japan

Energy Conservation & Renewable Energy

- Reliance on the ability to purchase “green power” or renewable energy credits from local energy providers
- Cruise terminals appear to be a popular choice for the installation of solar equipment
- Partnerships with local power providers and tenants

Solar and Wind Power

- Installation of renewable energy sources such as solar or wind power generation equipment on port facilities is beginning to be implemented
  - Wind - Japan, Amsterdam
  - Solar – San Diego, New York/New Jersey
  - Feasibility studies for installations being conducted

Natural Resource Management

- "One size fits all" solution to management port natural resource issues does not work
- Two common approaches
  - Formal wetland mitigation and shoreline protection programs
  - Case by case or project by project approach.
- Teaming on mitigation projects with local municipalities, state agencies and community groups
- Establishing mitigation banks
- Financial support for projects at off-site locations by other entities in order to obtain mitigation credits to offset wetland impacts on port facilities.

Natural Resource Management

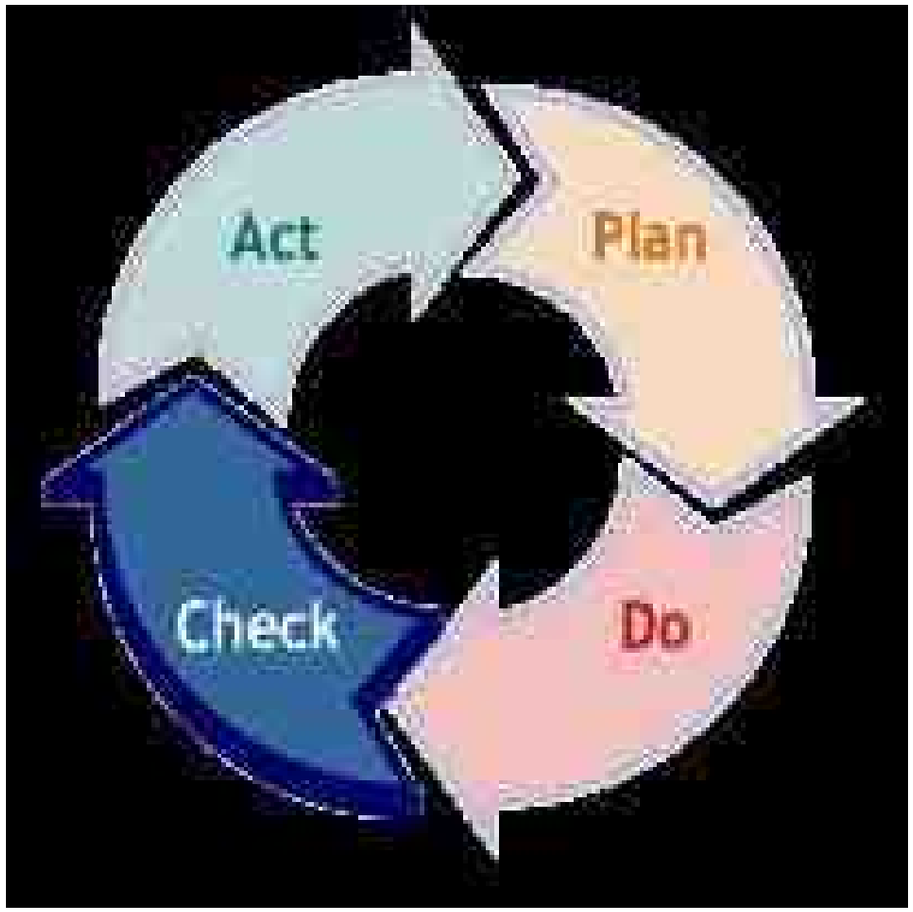
- Partnering
  - Port of Longview, Washington
  - Port Autonome du Havre – Camargue Horses
  - Associated British Ports – Royal Society for the Protection of Birds
- Establishing mitigation banks
  - Port of Portland
- Community investment projects
  - Port of Sydney

Sustainability

- Sustainability policy development.
  - The definition of what sustainability means to each port as well as the focus of the policy varied significantly from port to port.
- Heavy reliance on the Leadership in Energy and Environmental Design (LEED) Green Building Rating within the US
- Many ports have policies in place that dictate new construction meet a specific LEED certification level or similar system
- Creation of development standards and guidance manuals for design and construction of new and redeveloped facilities

Environmental Management Systems (EMS)

- The majority of US ports that utilize an EMS limit the systems to specific properties, operations or programs. This approach is commonly referred to as a “fence line EMS”.
- While the EMSs are becoming more common at ports in the US, full ISO 14001 certification of these programs is often viewed as a time consuming and costly endeavor that only a few ports have completed.



- AAPA Program Port EMS Assistance Project led by AAPA, USEPA and the Global Environment and Technology Foundation (GETF)

Environmental Management Systems (EMS)

- EMSs widely used internationally
  - ISO 14001 (e.g. Port of Genoa)
  - Port Environmental Review System (PERS) Certificate supported by ECOPORTS
  - Eco-Management and Audit Scheme (EMAS) supported by the EU

Dredging Activities

- Water quality and endangered species issues impact projects
- Biological testing involving sediments is becoming a common requirement.
- Placement options for dredge material vary widely
- Fill material for habitat creation
- Upland disposal and confined disposal sites are often used for contaminated dredge material

Dredging

- Placement of facilities in locations with hydrologic conditions that scour berth areas decrease or eliminate the need to dredge
- Unique solutions and technology being evaluated
  - Singapore (MPA) partnership with New Earth Pte Ltd
  - Port of Charleston Sediment Suspension System

Climate Change

- International Agreements/partnerships
  - Green leases, carbon measurement tools
  - World Ports Climate Initiative (WPCI) includes US ports
- Green House Gas (GHG) inventories
- Sea Level Rise – Port of Brisbane
- Building Guidelines – Port of Sydney
- Sustainable Port Development – Port of Cape Town

Summary

Air emissions, climate change and how these issues effect business and the bottom line are the predominant topics on most ports' current environmental agendas.

Summary

- Grant funding, pilot projects are essential sources for completion of (US) projects

Summary

- Exploiting opportunities during new development or redevelopment projects
  - Can upgrade equipment and practices to current standards: can yield increased efficiencies that produce financial and environmental benefits

Summary

- Partnerships
  - Teaming with tenants, community groups, environmental groups, municipalities, state, provincial and federal agencies, associations, NGO's, trade associations and regional consortiums is very common

Summary

- This survey is a snapshot of current environmental initiatives in use at ports around the world
- The global economic downtown has made ports acutely aware of the bottom line
- Each port has a unique set of circumstances that affect the way it approaches environmental matters:
  - Types of operations (auto, cruise, container, breakbulk, bulk, etc.)
  - How the ports manage their facilities (.e. landlord port, facility operator or a combination)

Summary

- Suite of businesses lines that are managed by each port
  - marine terminals,
  - airports,
  - real estate and industrial developments, bridges, bridges, tunnels and ferries, etc.

- Location often determines what environmental conditions are encountered and how they are handled
  - freshwater river system, estuary, saltwater harbor
- Regulations