



Port Shape

Environmental efficiency, Energy efficiency, Efficient port maintenance

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Port Shape

- Environmental Efficiency
- Energy Efficiency
- Efficient port maintenance

Halla - Kajatkari – Pitkälä 2016



Halla 8.3.2016

Considers all aspects related to port operations

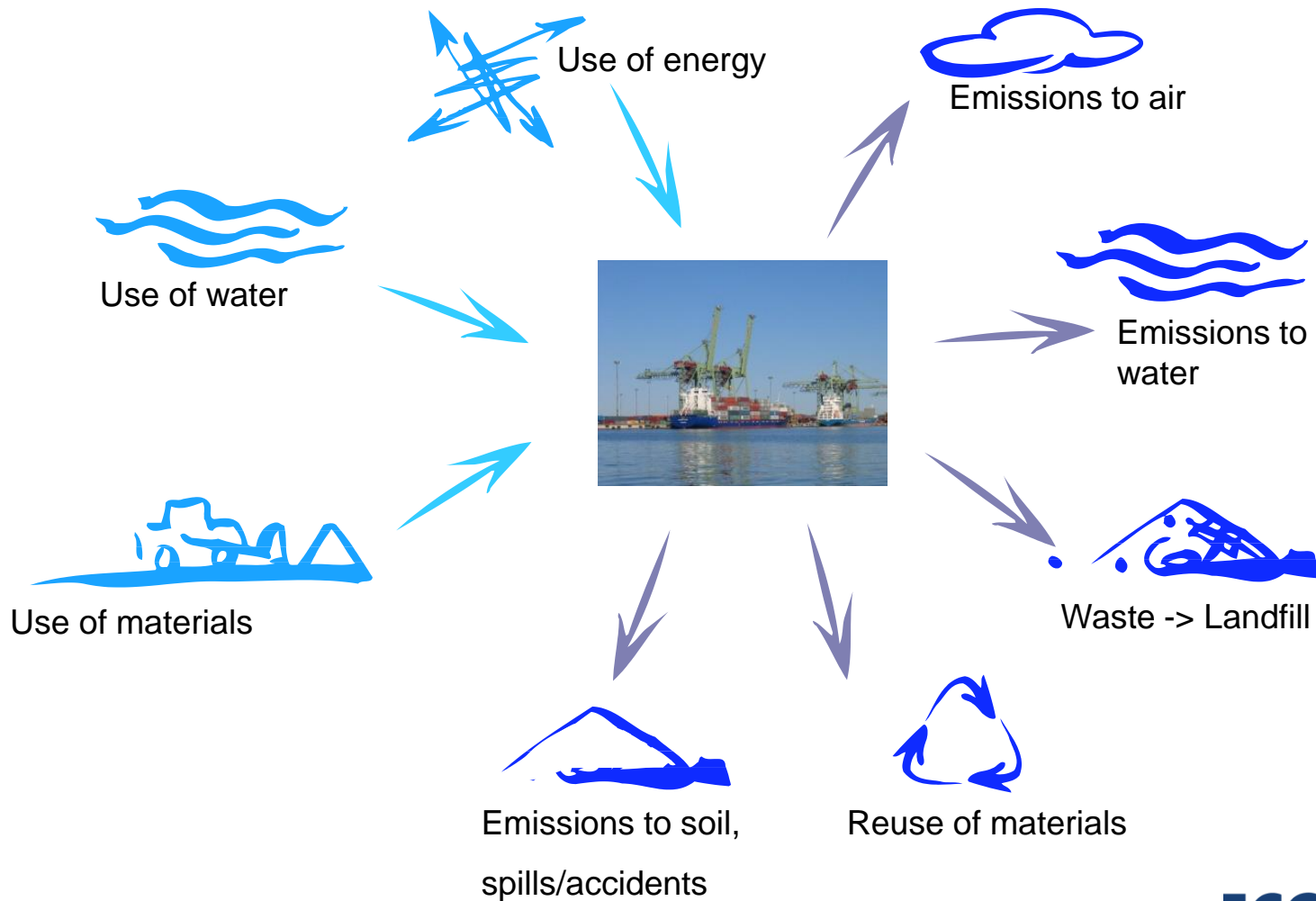
1. Emission (air, water, soil), noise & dust control
Waste management
 - Environmental monitoring
 - Machinery, traffic, vessels
2. Efficient energy use and
Optimized use of lights, heating, fuels etc.
 - Measuring the use of energy
3. Optimized maintenance
 - Monitoring information about infrastructure and equipment and their maintenance
 - Knowledge about infrastructure e.g. acceptable loads, depths, technical specifications



Environmental Efficiency



Environmental Aspects – measurable data



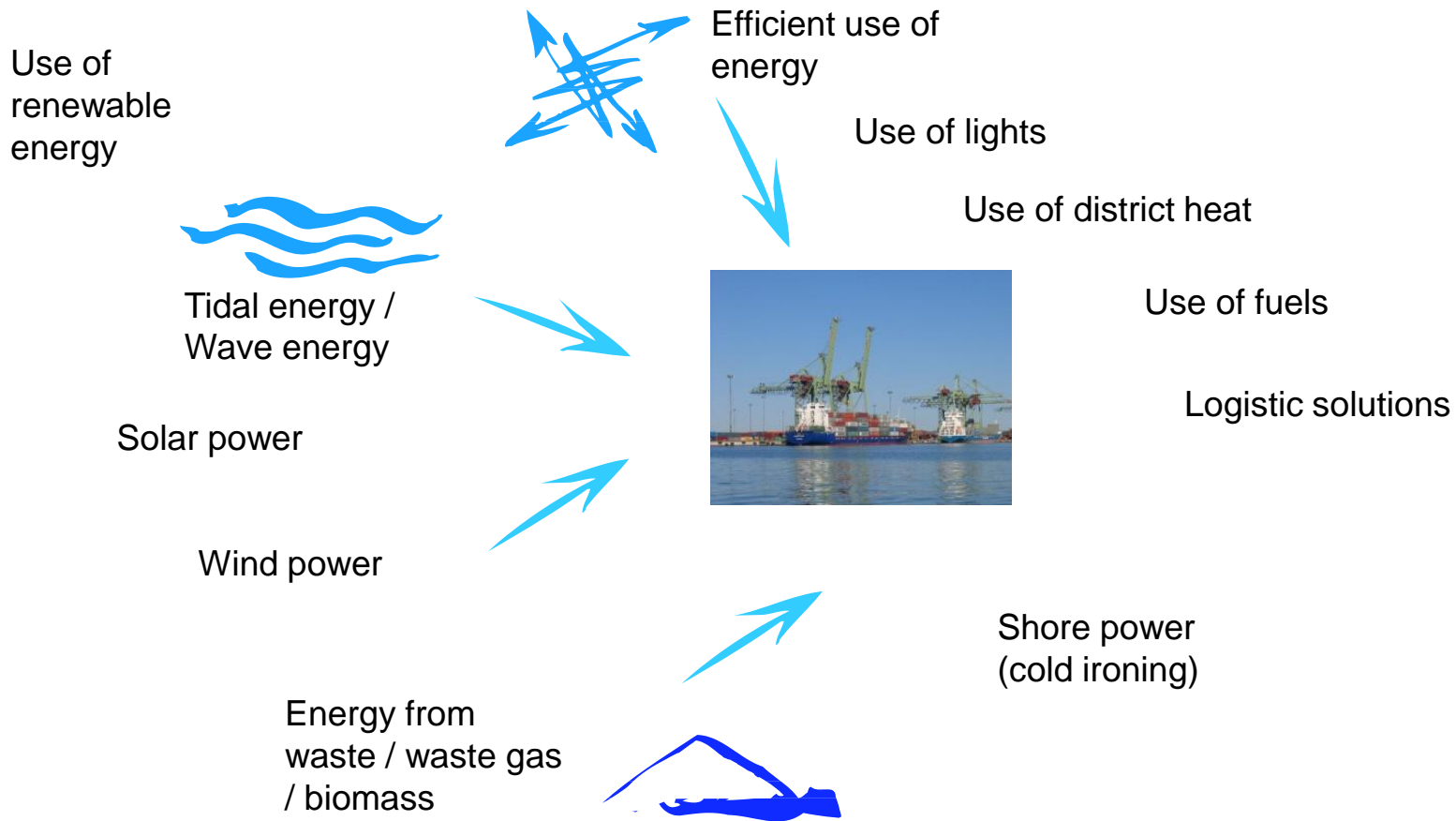
Typical measured features

- Environmental data:
 - water quality, air emissions (SO₂, NO_x, PM_{2,5}, methane, VOCs), noise (urban ports; measurement and modeling), amount of waste.
- Use of energy (kWh and euro)
- Are they really used for improving activities or are they measured and reported based on requirement?

Energy Efficiency



Energy Aspects – measurable data



Energy Efficiency – measure and manage

- Key Performance Indicators
- Examples of efficient energy use
 1. Lighting control system
 2. Use of LED lights
 3. Efficient logistic
 4. Warming and heating and their optimized efficiency
 5. Waste energy usage
 6. Machinery and equipment, fuels and energy efficiency
 7. IT and smart energy solutions



Optimized maintenance





Optimized maintenance - benefits

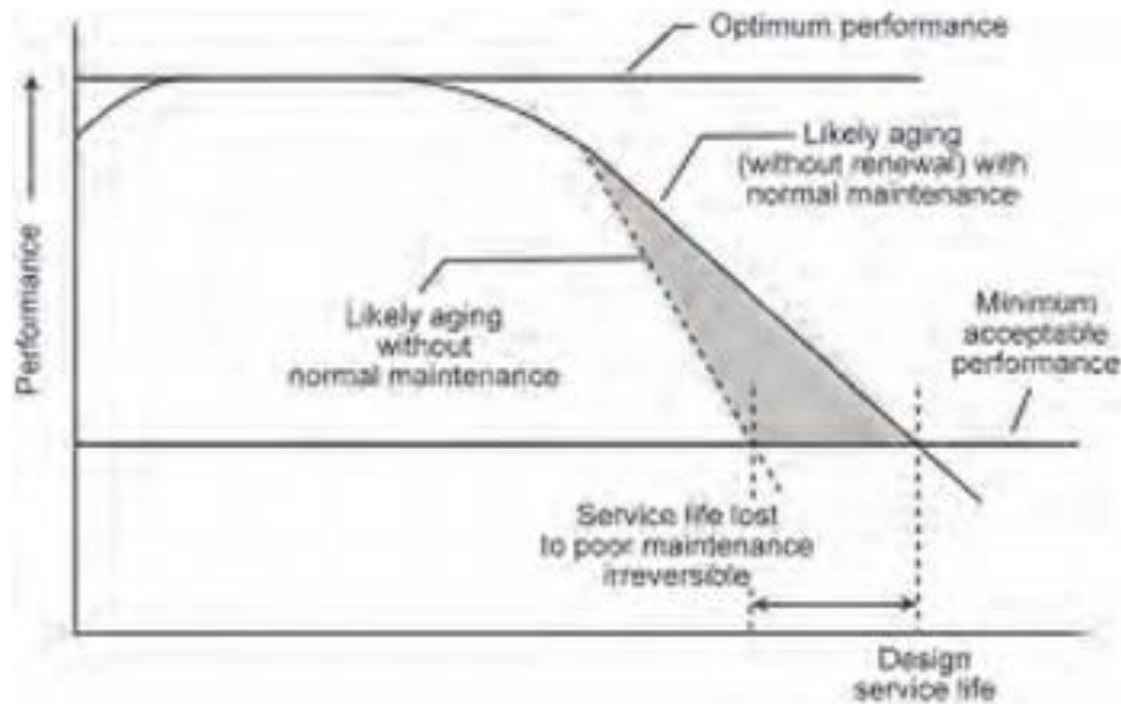


Figure 2.4.1. Effect of adequate and timely maintenance and repairs on the service life of a building (National Research Council 1998).

Source: The Federal Energy Management Program's Operations and Maintenance (O&M) Best Practices Guide.

Benefit having all relevant data in one system

- All port infrastructure and equipment to be put into same model with any relevant user data, data in numerical form with location information.
- Administrators and suppliers from different fields can help keeping model up to date.
- Maintenance program to be programmed with alerts
- Benefits in inspections, maintenance and repairs
- May also be used as a tool in planning, decision making, reporting, monitoring etc.
- Achieve economic efficiency and cost savings.



Conclusion

- Environmental Efficiency
- Energy Efficiency
- Efficient port maintenance
- Improved
 - economy
 - use of energy
 - state of environment
 - maintenance and life time and knowledge of infrastructure
 - safety and risk management

For more information

- Consultancy when improving environmental status and environmental efficiency
- Consultancy when optimizing maintenance
- Consultancy when combining all information into one system, in numerical form with location data, either with current system or with a new system
- Environmental management: Managing Director Taru Halla, M.Sc. (Chem. Eng.), Ecobio Oy, taru.halla@ecobio.fi, www.ecobio.fi
- Optimized maintenance, spatial planning: Managing Director Tommi Pitkälä, M.Sc., Pitkälä Oy, tommi@pitkala.fi , www.pitkala.fi
- Riitta Kajatkari, M.Sc. (Technology - Civil engineering), riitta.kajatkari@outlook.com

