Reducing environmental impact of cruise ships
Actual and perceived pressure
Political pressure

• New regulation for UNESCO heritage fjords
  • No effluents to sea
  • Substantial reduction of emissions to air
  • The coast next?

• 13 municipalities have agreed on joint requirements for a sustainable cruise industry

• Bergen City council asks for
  • 3 cruise ships per day
  • 8000 passengers per day

• Lack of legal tools
  • According to law the port needs to receive all ships
Port of Bergen approach

- Differentiated port dues *(polluter pays)*
- Booking confirmation criteria: \( \text{NOx, OPS} \)
- Municipal Policy: \( 3/8000 \)
- Infrastructure: \( \text{OPS, LNG, H2} \)

*EPI* (Environmental Port Index)
Shore power

Zero emission at quay
City centre, main quays, shore power
Spin-off: A new line of good looking cable management systems
Speeding up the development of shore power in ports
Call patterns means a lot for economics of scale

<table>
<thead>
<tr>
<th></th>
<th>man</th>
<th>tir</th>
<th>ons</th>
<th>tors</th>
<th>fre</th>
<th>lør</th>
<th>søn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Cruise in Bergen
- Short season
- High voltage
- Up to 16 MVA

Supply vessels at Mongstad base
- All year
- Low voltage
- Up to 0,6 MVA
Environmental Port Index
Why EPI

- Environmental accounting
- Stimulate green operations
- Polluter pays
The EPI portal – a good solution for ship and harbours

“Since its launch TUI Cruises are active users of the system. The EPI rewards our onboard investments in green technologies by evaluating and quantifying our good environmental performance in ports”

- Victoria Müller, TUI Cruises

“For us EPI is very easy and fast to use. I don’t see any inhibition to use this application continuously”

- Chief Engineer, AIDAsol
EPI’s automatic production flow

The ship reports into the EPI portal upon departure

The port receives EPI score and the environmental account

Differentiated port dues are calculated in the port admin. system

The ship is invoiced

Quality control by DNVGL

Quality control by the port
Status

2019

4 ports
Trondheim + Stavanger (jan)
Bergen (mai), Oslo (aug)
567 calls
18 ship owners
111 ship

2020

15 ports
1800 calls (est)
Bergen - CO2 emission from cruiseships (ton/month)
There is a large potential for improvement

Variation of EPI score for individual ships over a period of 3 months
Incentives for cruise ship calls in Bergen 2019

- An average ship pays €10,000,- in fees and taxes
  - If EPI score 0: €25,000,-
  - If EPI score 100: €8,250,-

- All ships are reporting
- Approx. 15 ships got a score of 10 or lower

- Visible trend
  - A gradual improvement of EPI score throughout the 2019 season
  - Older ships are disappearing
A new company will be launched early 2020
• Owned by cruise ports
• User support for ships and harbours
• Methodology development in communication with users
• Annual user meeting

Next phase
• Other ship classes to be considered
• Further development of methodology to include other environmental aspects
• International sales
Thank you!

• For further information:
  • Shore power - Plug: thor.andre.berg@bkk.no
  • EPI: even.husby@bergenhavn.no

Even Husby, Head of Environment, Port of Bergen