Best Available Technology (BAT) and Best Environmental Practice (BEP) in Rainbow trout aquaculture in five EU member states

Seminar: GOOD PRACTICES IN ADMINISTRATIVE SIMPLIFICATION FOR THE PROMOTION OF SUSTAINABLE AQUACULTURE

BRUSSELS, 27.10.2016

Stefan Meyer & Jesper Heldbo
Background

Change of regulation of Rainbow trout aquaculture in Denmark

- Until 2012, all production was “feed regulated”
  - Nutrient discharge and water consumption are regulated by allowing more/less feed usage (X tons per year)
  - Easy to administrate, easy to control (feed delivery sheets)
  - BUT creates no incentive to become more resource efficient
- In 2012 new legal framework was introduced, now production is “discharge regulated”
  - The fish farmer is allowed to produce as much fish as they can, as long as they do not exceed certain defined discharge limits
  - This creates an incentive to be very resource efficient in order to be more productive
  - Use of certain technologies and practices are mandatory in order to avoid discharges
  - Small farms (<100 to) can choose if they want to stay under the old regulation or want to opt for the new regulation
Background

The new Danish regulation ("discharge based") is successful in:
- Stimulating more fish production in existing fish farms
- Modernizing existing fish farms with more resource efficient technology (e.g. water treatment systems, aeration, sensors, ...)
- These investments have a positive economic effect on the supply chain (e.g. technical consultancy and technology providers)

But it also causes concerns:
- Not all farmers can afford to invest in the required technology
- Not all farms can be renovated, because of practical/space/other limitations
- Access to financing (e.g. bank loans) not always feasible because of limited production permit durations
- Production costs increased due to higher operation costs and depreciation
- Self-monitoring and documentation requirements increased significantly
What is BAT & BEP

Best Available Technology (BAT) and Best Environmental Practice (BEP)
- Are key elements in the new Danish aquaculture regulation
- Denmark has proposed similar rationales also for other agri-sectors (e.g. pig)

What is BAT & BEP?
- A framework for doing things the right way, providing positive examples, references and knowledge-based proof
- NOT a top-down, micro-management rule of how to do things

What does it mean for the farmers?
- Not much! Because BAT / BEP is their daily profession, but they don’t call it like that
- That’s why it is perceived as “red tape” and additional harassment

This has motivated the Danish EPA to conduct this study...
BAT & BEP study

Review and comparison
◆ Best Available Technology (BAT)
◆ Best Environmental Practice (BEP)
◆ Legal regulations for permission / licensing
◆ Self-monitoring requirements
◆ Cost for “administration”
◆ Perception of “performance” of this framework

Report
◆ Prepared by Jesper Heldbo and Stefan Meyer
◆ for the Danish Environmental Protection Agency
◆ financed by the Agency

Published on 21\textsuperscript{st} October 2016. \textcolor{blue}{DOWNLOAD here}. 
BAT & BEP study

Scope:
- Freshwater, portion-sized Rainbow trout
- Land-based production
- Extensive and intensive production

Comparing five EU member states
- DK, DE, IT, PL and UK (England and Scotland)

Data collected between December 2015 and April 2016

27 interviews with trout producers and producer association representatives, state agency experts and scientists

~200 questions survey for in-depths interviews
## BAT & BEP results

### Table 24: Synopsis of the most relevant categories of country specific regulations affecting permission and production.

<table>
<thead>
<tr>
<th>Obtaining Permission</th>
<th>DK</th>
<th>DE</th>
<th>IT</th>
<th>PL</th>
<th>UK (Eng</th>
<th>Scot)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to obtain permission</td>
<td>? (RAS: 1-2 yr)</td>
<td>?</td>
<td>? (18 mo – 5+ yr)</td>
<td>2 – 12 mo</td>
<td>3 mo</td>
<td>6-12 mo</td>
</tr>
<tr>
<td>Number of permits needed</td>
<td>2</td>
<td>7 [48]</td>
<td>5</td>
<td>7</td>
<td>13 [63]</td>
<td>3</td>
</tr>
<tr>
<td>Validity of (main) permit</td>
<td>10 yr</td>
<td>20 yr - perpetual</td>
<td>4 &amp; up to 40 yr</td>
<td>Max 10 yr</td>
<td>perpetual</td>
<td>perpetual</td>
</tr>
<tr>
<td>Renewal of permits</td>
<td>Easier</td>
<td>Easier</td>
<td>Easier</td>
<td>Same as new</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>EIA mandatory?</td>
<td>Yes</td>
<td>Yes/No</td>
<td>Yes/No</td>
<td>Yes/No</td>
<td>Yes/No</td>
<td>Yes</td>
</tr>
<tr>
<td>Effective cost for permission</td>
<td>1-13 k€</td>
<td>? (up to 100 k€)</td>
<td>?</td>
<td>15 – 30 k€</td>
<td>? (600 – 12 k€)</td>
<td>? (max 21 k€ fee, high internal costs)</td>
</tr>
</tbody>
</table>

### Production

| Limit on facility size | No | No | No | No | No | No |
| Limit on facility type | No | Yes [41] / No | No | No | No | No |
| Limit on production quantity | Yes/No | No | No | No | No | Yes |
| Fee for production, license fee | Yes | No | No | No | Yes | Yes |
| Fee for water abstraction | No | No | No | No | Yes | Yes |
| Fee for water discharge/nutrients | Yes | Yes / No | No | No | No | Yes |
| Feed composition requirements | Yes | Yes [41] | No | No | No | No |
| Limit on feed quota | No | Yes [41] | No | No | No | No |
| Maximum FCR | Yes | No | No | No | No | No |
| Mandatory water treatment | Yes | Yes/No [41] | No | No | Yes/No | Yes/No |
| Limit on chemicals, medicines in outlet | Yes | Yes | Yes | Yes | Yes | Yes |
| Veterinary controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Extent of self-monitoring | 2 - 26 / a | 2-4 / a [41] (regional diff.) | ? (regional diff.) | 2-4 / a | Yes | Yes |

27/10/2016

BAT & BEP IN RAINBOW TROUT AQUACULTURE
Rainbow trout production is diverse!
- Several thousand producers across MS
- Family businesses as well as large SMEs
- Production from less than 1 to/ to more than 1,000 to/a

There is no “one fits all” solution!
- Technology and practice are adapted to scale, site, history, people, legal framework conditions, reality
- Legal conditions differ between MS, regions, municipalities, etc.

The sectors have developed quite differently
- Age/size structure, scale of integration, ...
- Beyond scope to survey all these factors, but they are important as well!
BAT & BEP results

Technology

- Especially small producers in rural areas do not follow the “technology” logic, i.e. use of electricity, mechanical water treatment, etc.
- The larger the production, the less hesitation to invest in “high tech”
- Use of BAT supports economy of resource efficiency for large producers (>100 to/a)
- Small producers (<100 to/a typically) do not benefit

Practice

- Sensitive topic, because it touches upon the competence and profession of the farmers
- Better practice is welcome, when it makes things easier/cleaner/healthier/more effective
- Change in practice requires training and education
BAT & BEP results

Regulations in all member states encompass:
- Limitations of water use, feed input, nutrient emissions, use of chemicals, etc.
- Not harmonized. Not surprising!

BAT / BEP are used in all MS
- Except for DK, no country calls it like that
  - Other synonyms: Code of Good Practice (CoGP), Best Practice, state of the art, ...
- UK, PL and IT have explicit documents from industry
- DE uses implicit documents (various reports, guidelines, etc.) from public authorities and research

In most cases BAT & BEP is not tangible and visible for people outside the aquaculture business!
- Especially a problem when dealing with non-expert authorities
- Impossible to communicate “best attributes” to stakeholders
# BAT & BEP examples

<table>
<thead>
<tr>
<th>Production size before write-up ($F_{\text{per}}$)</th>
<th>0-25 tonnes feed consumption</th>
<th>&gt; 25 to ≤ 230 tonnes feed consumption</th>
<th>&gt; 230 tonnes feed consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of water recirculation at facilities (min. %)</td>
<td>NA</td>
<td>70</td>
<td>95</td>
</tr>
<tr>
<td>Retention time for water in production facilities/plant lagoons (min. hours)</td>
<td>4</td>
<td>2/12</td>
<td>18/36</td>
</tr>
<tr>
<td>Water flow meter (accuracy of 5%)</td>
<td>Yes - Water meter</td>
<td>Yes - Water meter</td>
<td>Yes - Water meter</td>
</tr>
<tr>
<td>Limited consumption of the water resource (max. l/sec.)</td>
<td>250 per 100 tons related feed consumption</td>
<td>75 per 100 tons related feed consumption</td>
<td>15 per 100 tons related feed consumption</td>
</tr>
<tr>
<td>Sludge basin</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Biofilter</td>
<td>-</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>Facility for particle removal</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Plant lagoon</td>
<td>-</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Size of plant lagoon</td>
<td>-</td>
<td>Min. 40 m² / tons related feed consumption.</td>
<td>Min. 25 m² / tons related feed consumption.</td>
</tr>
</tbody>
</table>
BAT & BEP examples

Figure 8 German recommendation for construction of sedimentation ponds
Figure 9 German recommendation for self-monitoring of indicators for water quality and thus animal welfare
BAT & BEP costs

Costs for BAT & BEP, documentation, controls, license, 3rd party consultancy included here

DE: low cost
DK: high cost

Dr. Tobias Lasner
Palmaille 9
22767 Hamburg-Altona
Germany
+49 40 38905 273
+49 40 38905 261
tobias.lasner@thuenen.de

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“Natural” style
- Not well documented
- Only accessible for experts
- Low level of awareness of BAT with other stakeholders
- “Do something good, but no need to talk about it”

“Industry” style
- High level of profession, detail, communication
- Clear impact with all stakeholders
- “Do something good AND talk about it”
Conclusions

BAT & BEP are needed for **GROWTH** and **SUSTAINABILITY**
- How to formulate it for all EU aquaculture?
  - Following the logic of Industrial Emissions Directive (IED), 2010/75/EU?
  - Defining an Aquaculture BREF?
- **Expert** stakeholders need to **understand the use / benefit** of BAT & BEP
- **All** stakeholders need to agree on BAT & BEP as **level playing field**

How to get there?
- Many MS support BAT & BEP -development with EMFF and national funding
- **Please make this huge pool of BAT/BEP knowledge available to all!**
- Can the EC support/facilitate this? Translation? Compilation? Update?
  - See example of “BAT for fiskeopdræt i Norden” (BAT for fish production in the Nordic countries)
    [DOWNLOAD HERE](#)
  - An update of this report could be realized fast and become basis for a living document / BREF
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Contact details authors:

**Stefan Meyer**  
Kompetenznetzwerk Aquakultur (KNAQ)  
Landwirtschaftskammer SH  
Grüner Kamp 15-17  
24768 Rendsburg  
Germany  
+49 4331 9453 433  
meyer@knaq-sh.de

**Jesper Heldbo**  
Perkulator  
AQUACULTURE INNOVATION  
Pligtgaardsvej 22  
DK-2660 Broendby Strand  
Denmark  
+45 43 54 41 31  
+45 40 22 22 60  
perkulator@heldbo.net

Thank you!