WFD and sediments: putting the ‘morph’ into hydromorphology

Jan Brooke, PIANC*
Chair, WFD Navigation Task Group
jan@janbrooke.co.uk

* With thanks to Henrich Roeper, HPA and SedNet
What do we think of when we think about sediments?
Annex VIII of the WFD lists ‘materials in suspension’ on the Indicative List of Main Pollutants

...maybe this is why?
This presentation paints a different picture of sediments...
A picture...

...paints a thousand words
...paints a thousand words
...paints a thousand words
...paints a thousand words
paints a thousand words
...paints a thousand words
Why do sediments matter to the WFD?
In a natural system,

upstream erosive processes ...
... supply sediment to support habitats like this downstream
Natural coastal erosion provides sediment ...
...to support beaches and dunes downdrift
When we build structures like this ...
...we not only prevent fish migration upstream and affect water flow downstream...
...we also starve riparian habitats...of their sediment supply
If we interrupt/cut-off the sediment supply by constructing dams, breakwaters and groynes...

...instead of this ...
...we can get this
Sediments are an intrinsic element of water systems.

They link the mountains with...
...the sea.

They shape the land.

= morphology
So, what about the WFD Programmes of Measures?
Which interventions impact on sediments?

- River training
- Flood embankments
- Impoundments
- Dredging
- Water level management
- Multiple uses
Sediment management solutions...

- Beneficial use of dredged material
- Habitat creation
- Habitat enhancement
- Soft engineering solutions
- Beach management
- Working with Nature
The importance of sediment (Martin, 2002)

<table>
<thead>
<tr>
<th>Too much sediment</th>
<th>Too little sediment</th>
<th>Sediment as resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstruction of channels</td>
<td>Beaches erode</td>
<td>Construction material</td>
</tr>
<tr>
<td>Rivers fill and flood</td>
<td>Riverbanks erode</td>
<td>Sand for beaches</td>
</tr>
<tr>
<td>Reefs get smothered</td>
<td>Wetlands are lost</td>
<td>Soil enrichment</td>
</tr>
<tr>
<td>Turbidity</td>
<td>River profile degradation</td>
<td>Wetland nourishment</td>
</tr>
</tbody>
</table>

Sediment, an essential and integral part of our river basins
The importance of sediment (Martin, 2002)

<table>
<thead>
<tr>
<th>Too much sediment</th>
<th>Too little sediment</th>
<th>Sediment as resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstruction of channels</td>
<td>Beaches erode</td>
<td>Construction material</td>
</tr>
<tr>
<td>Rivers fill and flood</td>
<td>Riverbanks erode</td>
<td>Sand for beaches</td>
</tr>
<tr>
<td>Reefs get smothered</td>
<td>Wetlands are lost</td>
<td>Soil enrichment</td>
</tr>
<tr>
<td>Turbidity</td>
<td>River profile degradation</td>
<td>Wetland nourishment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Habitat and food for life</td>
</tr>
</tbody>
</table>

Sediment, an essential and integral part KTM5, KTM6 and KTM7
Sediments shape the environment
Shaping the environment = morphology
A key WFD pressure = hydromorphology
And a concluding thought...
When we think about the patterns of nature...
Do sediments come to mind?
If your teenage son plays rugby, YES! 😊