

Water footprint accounting how blue is my grey water?

Sylvain Lhôte – Borealis Group
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Borealis

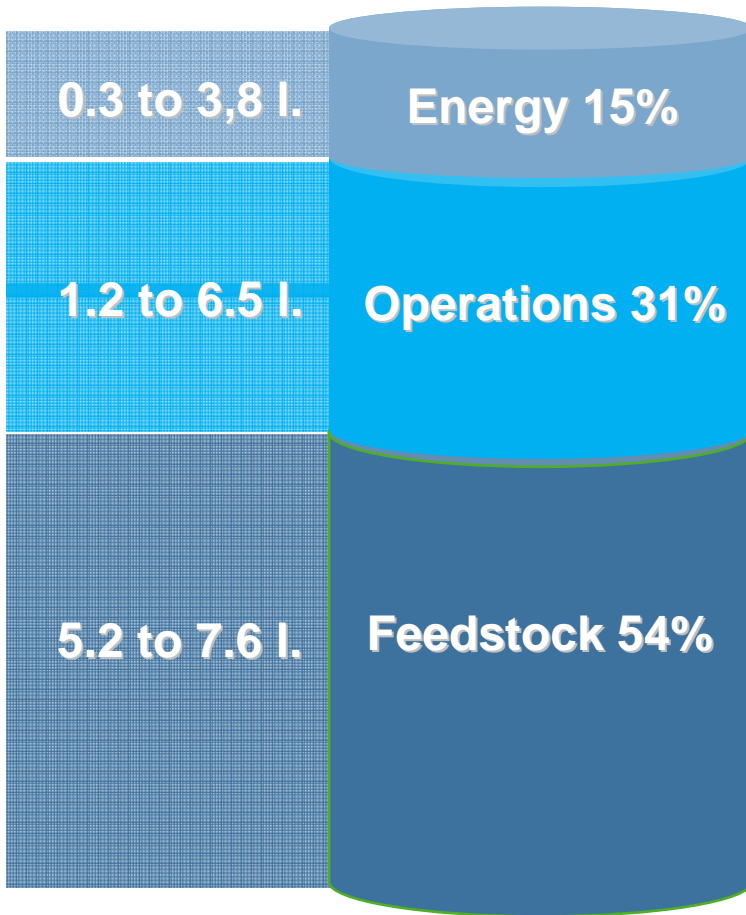
- Leading provider of innovative plastic solutions
- Developing a base chemicals business
- Operating in the EU (AT, BE, DE, IT, SW, FIN), and Americas
- Growing business in Middle-East – Asia

Water Footprint as part of

- PE / PP solutions used in virtually **all value chains**
- Upstream integration with **feedstock** production
- **Local impact assessment** with different tech. and processes
- EU pilot of best-practice to be rolled out in other regions



How much water for this kilo of plastics?



Measurement for Borealis polyolefins chain made with KTH (2008 data)

- Not valid for other plastic materials (e.g. PET , PVC,...)
- Not an industry average; benchmarks not available

Indirect WF based on

- EU average/local energy mix
- Assumption of 100% crude oil to naphtha feedstock (highest water intensity)

How blue is our grey water?

- *The volume of polluted water, calculated as the **volume of water required to dilute pollutants** to such an extent that the quality of the water remains **above agreed water quality standards***
- Chemical status
 - All waste water treated / EU quality standards: no deviation measured
- Biological status
 - Water eco-systems monitored across all sites: no impact measured



Dilution factor applied = 1

But how blue is it?

- EU Water Framework directive good ecological status by 2015?

- River basin management plans (on-going)
- Ecological Quality Ratios as per inter-calibration exercise (Oct. 08)
- 2008 Environmental Quality Standards and priority list of haz. substances (next review in 2011)
- 2009 EU Commission directive on chemical analysis and monitoring
- Revision of IPPC directive (on-going)
- ...

And how grey is this?

- Pellets (or inert solids) releases in water ecosystems?
- Hot water discharges?

Managing the grey zone

- Quality to volume evaluation is already hard in our own boundaries, major data gaps exist in supply chains
 - Grey WF broadens complexity and inconsistencies

- Volume dilution concept does not fit with current HSE and risk management systems and practices
 - Grey WF widens learning curve and gaps for transfer in industry

Accounting for grey water?

- Valuable to distinguish different categories of water flows
- Stress relevance of effective treatment of effluents to minimise WF
- Easier to account for, to manage and to communicate “blue water”
- Keep qualitative aspect for local impact assessment and LCA?



End of presentation
Sylvain Lhôte
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