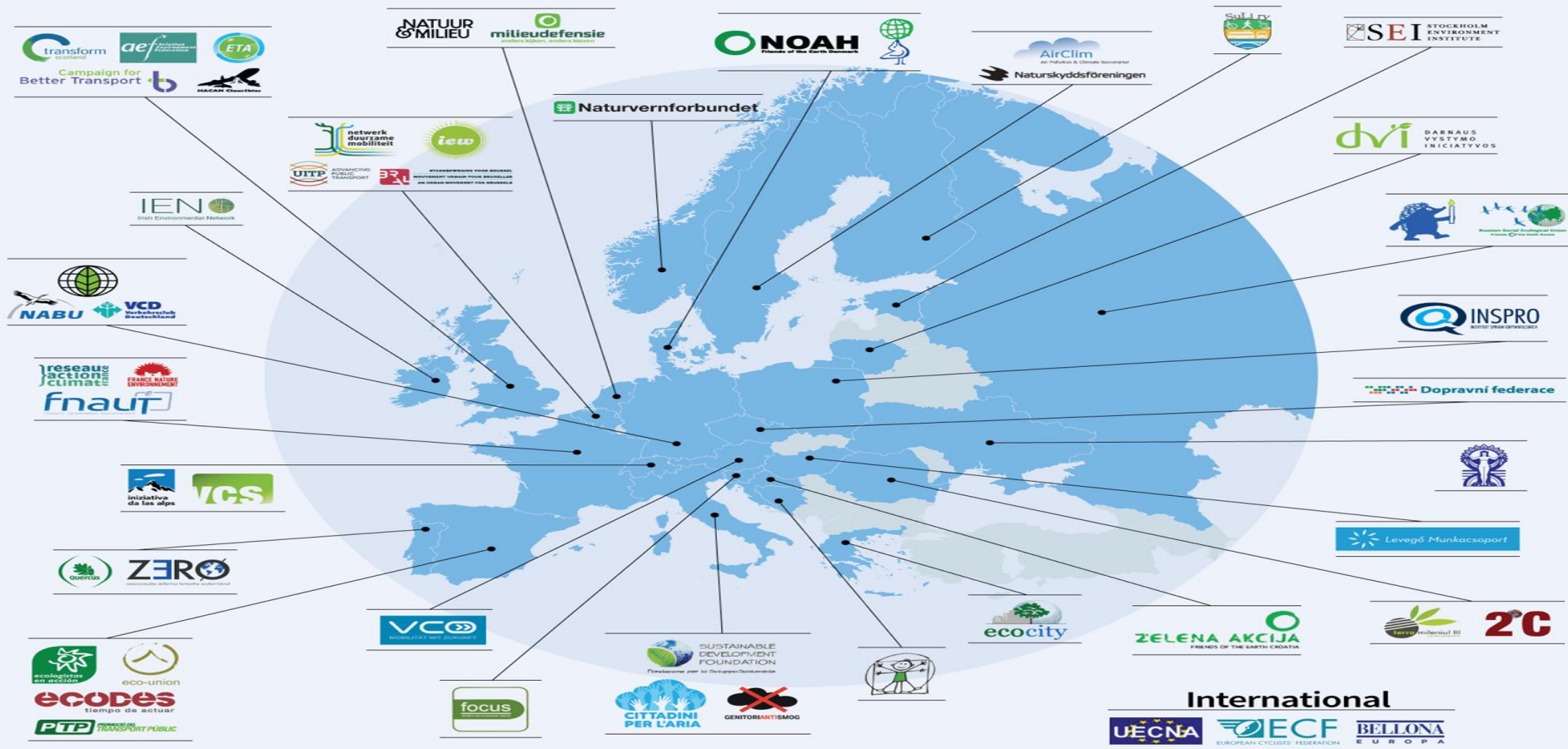




**Regulating Ship Air Pollution
Bill Hemmings**

58 members in 26 countries



Tip #1; Europe did it first! Can we keep it up?

First in Baltic in 1990s - acid rain

Europe invented SECAS

North America beat EU to Neca

0.5% S in 2020 is not the end but a waystation

Our port cities are choking

Where are we on OPS?

NRMM for inland waterways a disappointment

Lesson # 2

Are we falling Behind?

Dont forget Dieseldate; It will come to shipping
Its not just Sulphur. What about PM - filters - and NOx
We let the cruise sector slip through the net
Sulphur Directive for 2020 was a win and a loss
Sealed the fate of 0.5% global in 2020
But left a patchwork. We need an EU ECA
All EU must move to 0.1%. Then 10 ppm and filters

Tip # 3; Its the NOx stupid

1. **NECAs are not enough; EU can/must do more**
2. **No EU NOx regulation!**
3. **Stand-alone NOx levy** - revenues are not earmarked.
4. **NOx levy with fund** - revenues to fund NOx abatement
5. **Slow steaming with NOx levy; fund as alternative compliance** - revenues are used to fund uptake of NOx abatement measures.

Tip # 4; LNG is a false God

Impressive AQ benefits

Nil or little GHG reduction

IMO GHG strategy means LNG decarbonisation dead end

Enormous misguided Member state infrastructure spend

=> stranded assets

Retrofitting industry nightmare; would have to do again

Better ways to spend moneys

Tip # 5

GHG & AQ measures converge

IMO Interim target means the future is new technologies

Hydrogen Fuel Cells - byproduct = water, no emissions

Ammonia Fuel cells - byproduct = nitrogen and water

Ammonia as fuels => NO_x - needs to be controlled.

- if blended with MDO, soot can be formed = SCR & DPF

Batteries - zero emissions

Immediate measures; slow steaming, tighter EEDI < emissions