

Nature-based solutions in agriculture”: addressing multiple policy targets?

- **Good bacteria**
 1. Use for silage treatment to increase protein and energy level plus reduce wastage.
 2. Treat slurry to save energy (mixing and application) plus more even distribution
 3. Soil treatment (Super Soil)
 4. Probiotics in feed
- **Essential Oils**
 1. Gut health
- **Prebiotics**
 1. Help gut flora.
- **Live yeast.**
 1. Enhance rumen environment and efficiency.
 2. Enhance health and productivity pigs.
 3. YCW enhance immune system plus binding bacteria and some toxins.
- **Clay minerals**
 1. Used for binding mould derived myco-toxins enhancing health and welfare.
 2. Used to bind endotoxins from dead bacteria cells.
- **Soil improvers/plant growth enhancement**
 1. Marine calcium. Improve soil to grow grass/crops and reduce usage of nitrogen. (organic approved)
 2. Leonardite. Reduce nitrogen leaching improve root development. (organic approved)
 3. Potassium humate. Reduce nitrogen leaching.
 4. Pre-biotic soil treatment (Prosoil)
 5. Silicic acid. Improves availability nutrients. (organic)

CPG on Rural Policy: Nature-based solutions in agriculture: addressing multiple policy targets

6th June 2023
18:00–19:30

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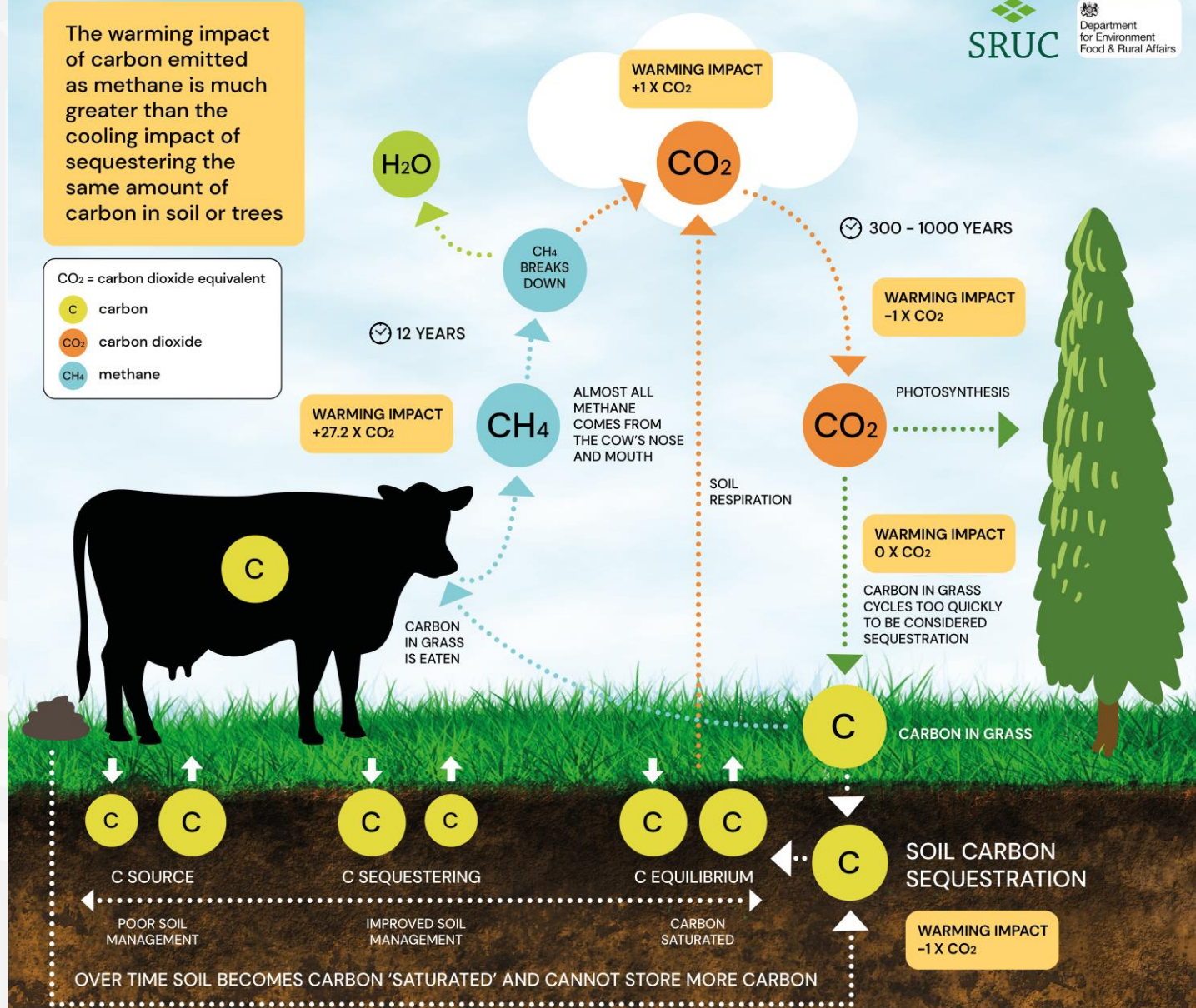
Plant-based feed additives for methane reduction

Dr Gemma Miller

Livestock, methane and Net-Zero

The warming impact of carbon emitted as methane is much greater than the cooling impact of sequestering the same amount of carbon in soil or trees

CO₂ = carbon dioxide equivalent
 C carbon
 CO₂ carbon dioxide
 CH₄ methane



Plant-Based Feed Additives For Methane Reduction

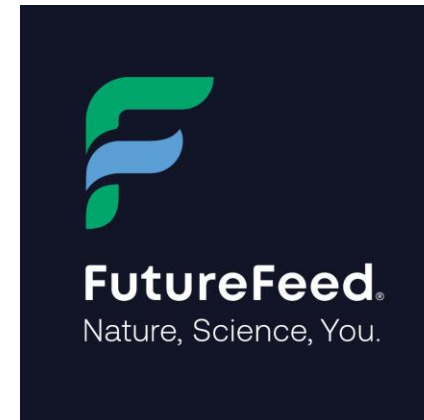


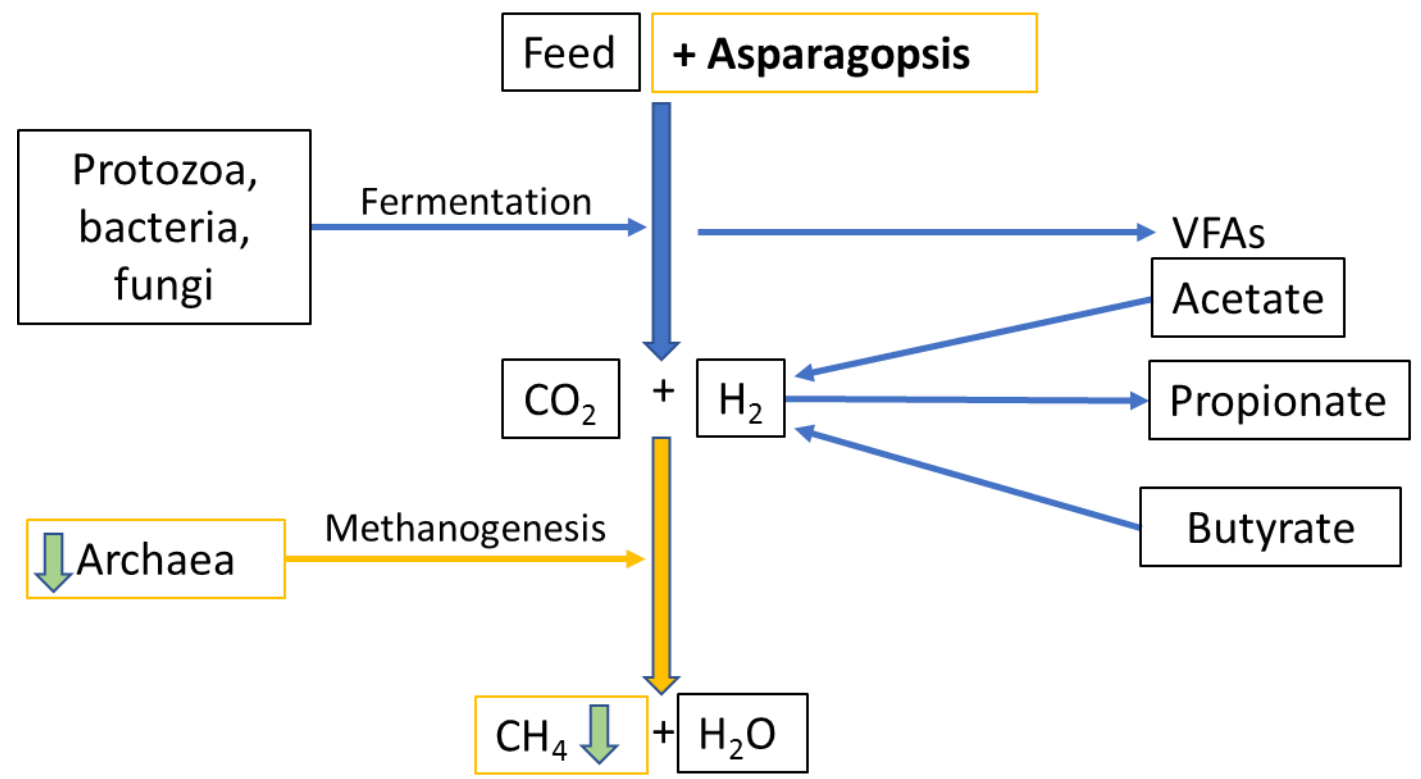
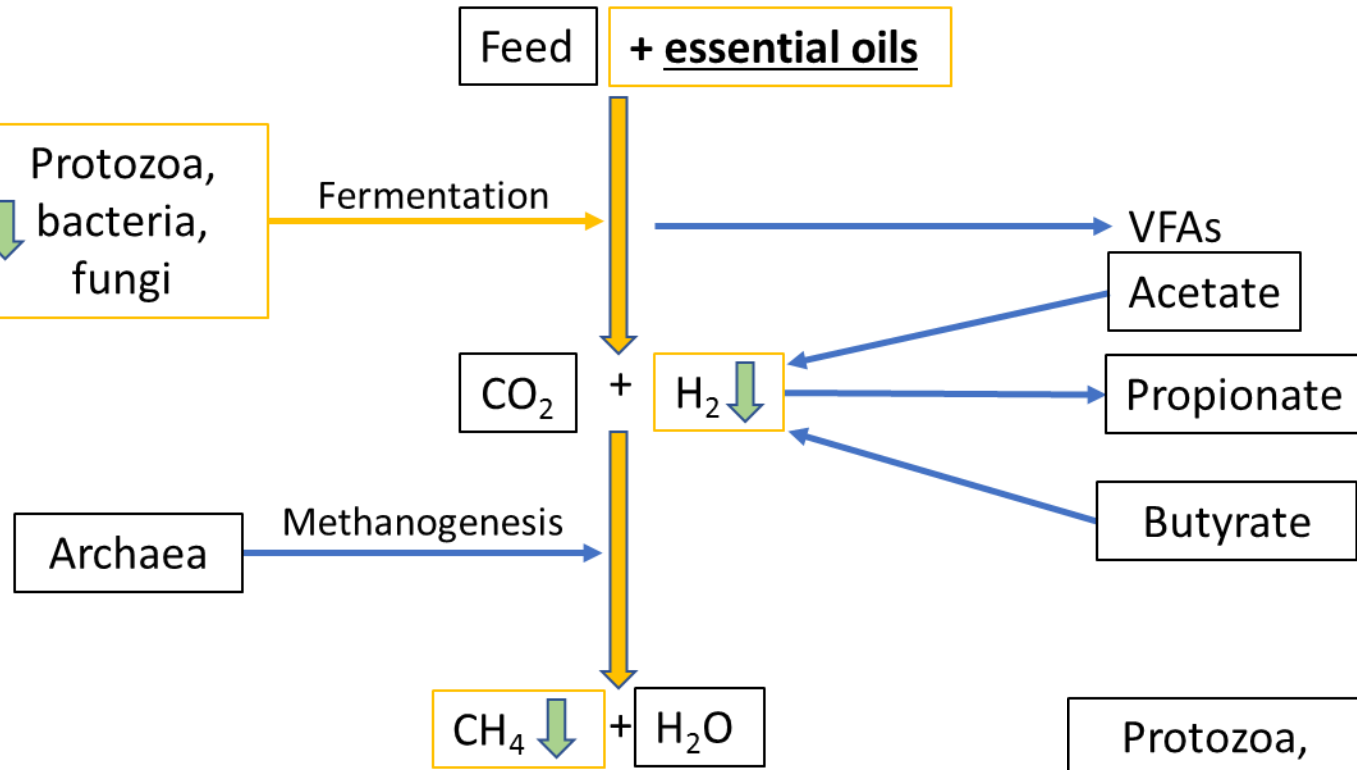
Essential
Oils



agolin[®]

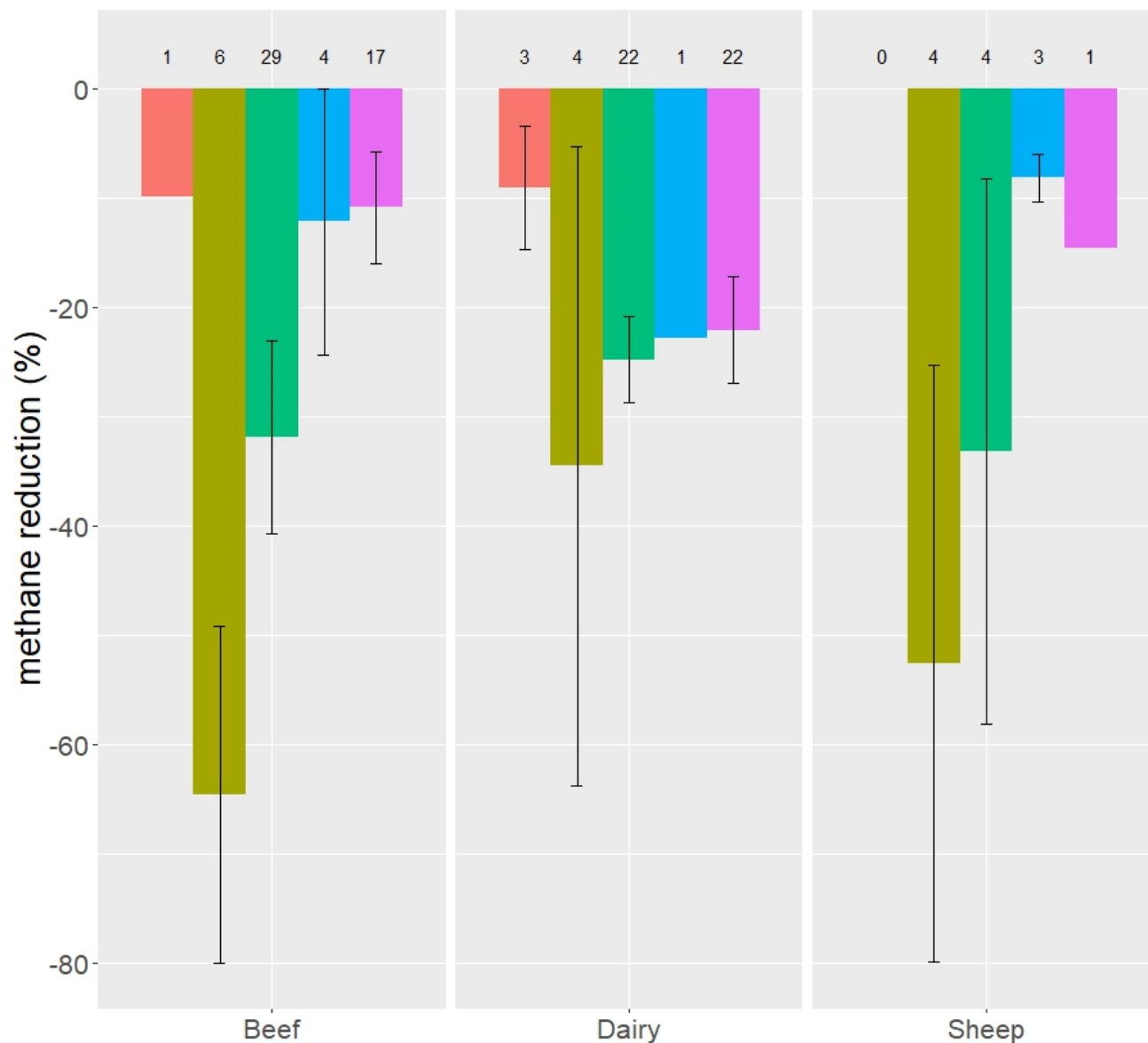
Seaweed
(*A. taxiformis*)





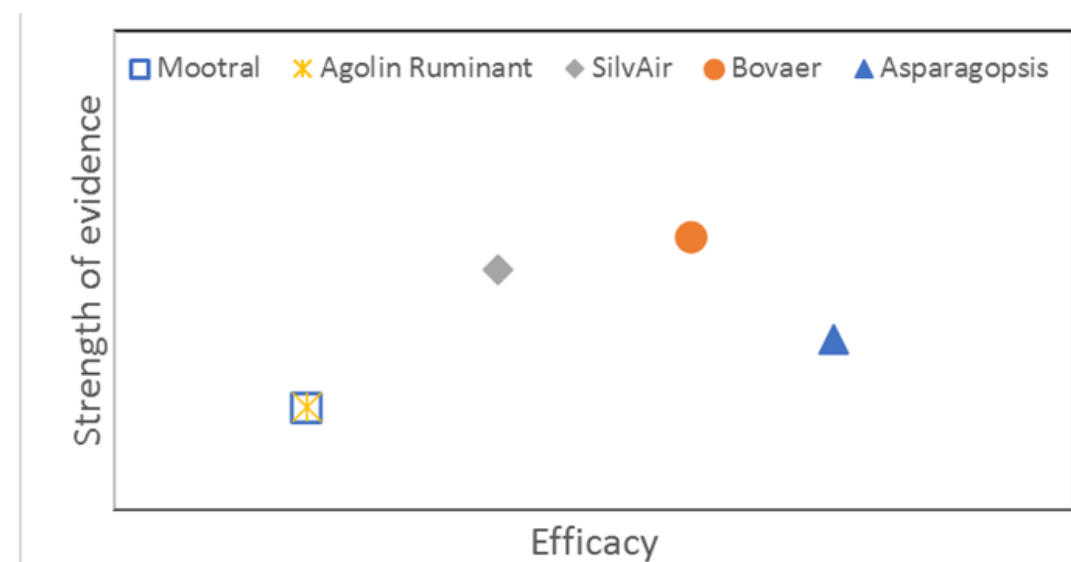
Mode of Action

Efficacy and Evidence Base



- Agolin Ruminant
- Asparagopsis
- Bovaer
- Mootral Ruminant
- SilvAir

Simple mean percentage reductions in methane production (gCH₄/day). Error bars represent 95% confidence intervals. Numbers above bars are the number of estimates. Where there are no error bars, only one estimate was available.



Health and Welfare

- *Asparagopsis*: bioaccumulation of iodine may reach levels where you could not feed enough seaweed to meet CH₄ reduction potential without causing iodine toxicity. Lack of consistent product.
- *Asparagopsis*: contains bromoform – a possible carcinogen. Some evidence of rumen wall damage and transfer to milk. Needs more research.
- *Asparagopsis*: Tropical species, highly invasive, impacts of growing in tanks?
- Agolin and Mootral – no health or welfare concerns.



Practicalities



- *Asparagopsis*
 - Seaweed classed as a Feed Material so no regulatory barriers
 - Inclusion restrained primarily by iodine concentrations.
 - Use for grazing animals difficult – dosage too high for bolus, licks/mineral blocks may be possible (no guarantee of consumption by animal).
- Mootral
 - Essential oils classed as Sensory Feed Additives so no regulatory barriers.
 - Essential oils are volatile – limits range of feed products it can be incorporated into. Currently only available in a pelleted compound.
 - Verra-certified project – the 'UK CowCredit Project': generating carbon credits which can be sold as emissions off-sets. Currently limited to a small number of dairy farms.
- Agolin
 - Essential oils classed as Sensory Feed Additives so no regulatory barriers
 - Available commercially in UK (under a different brand name).
 - Supplied as a liquid or powder to be incorporated into pre-mixes or concentrates.

Conclusions

- Potential, particularly for *Asparagopsis*, but significant challenges to over-come
 - Research efforts in the UK have turned to finding a native alternative
- More research required to understand variation in response
- Significant challenges in administering to animals at grazing (and in measuring methane for verification)



Nature Based Solutions in Agriculture

Rebekah Strong (she/her)

Nature Based Solutions Policy Adviser

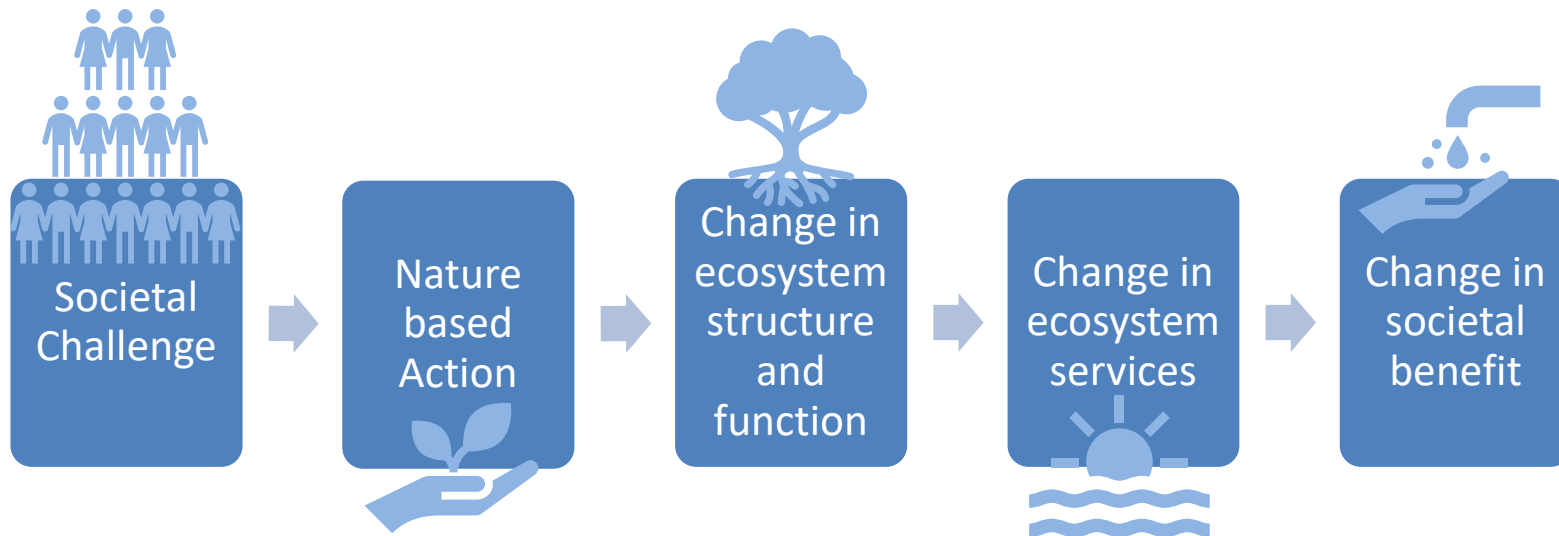




Nature-based Solutions are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits - IUCN

Nature-based Solutions explained

Using tools that nature already provides to address challenges









Nature Positive Policies

- Agriculture Bill – Funding schemes
- Natural Environment Bill – appropriate nature targets
- Nature networks



Conclusion

Nature-based solutions are essential for sustainable food production

- Provide multiple benefits
- Many options for different outcomes and scales
- Robust, flexible support is needed
- Connectivity is key



Thank you for listening.

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