


Drought and Water Scarcity Management in the UK

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Opportunities to Overcome Innovative Scarcity?

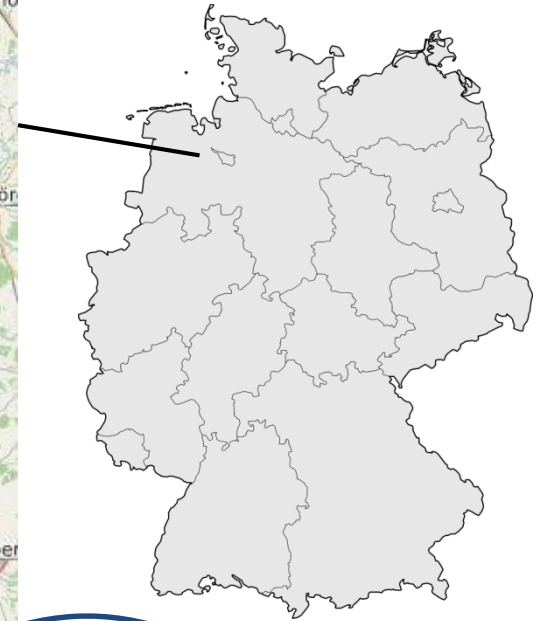
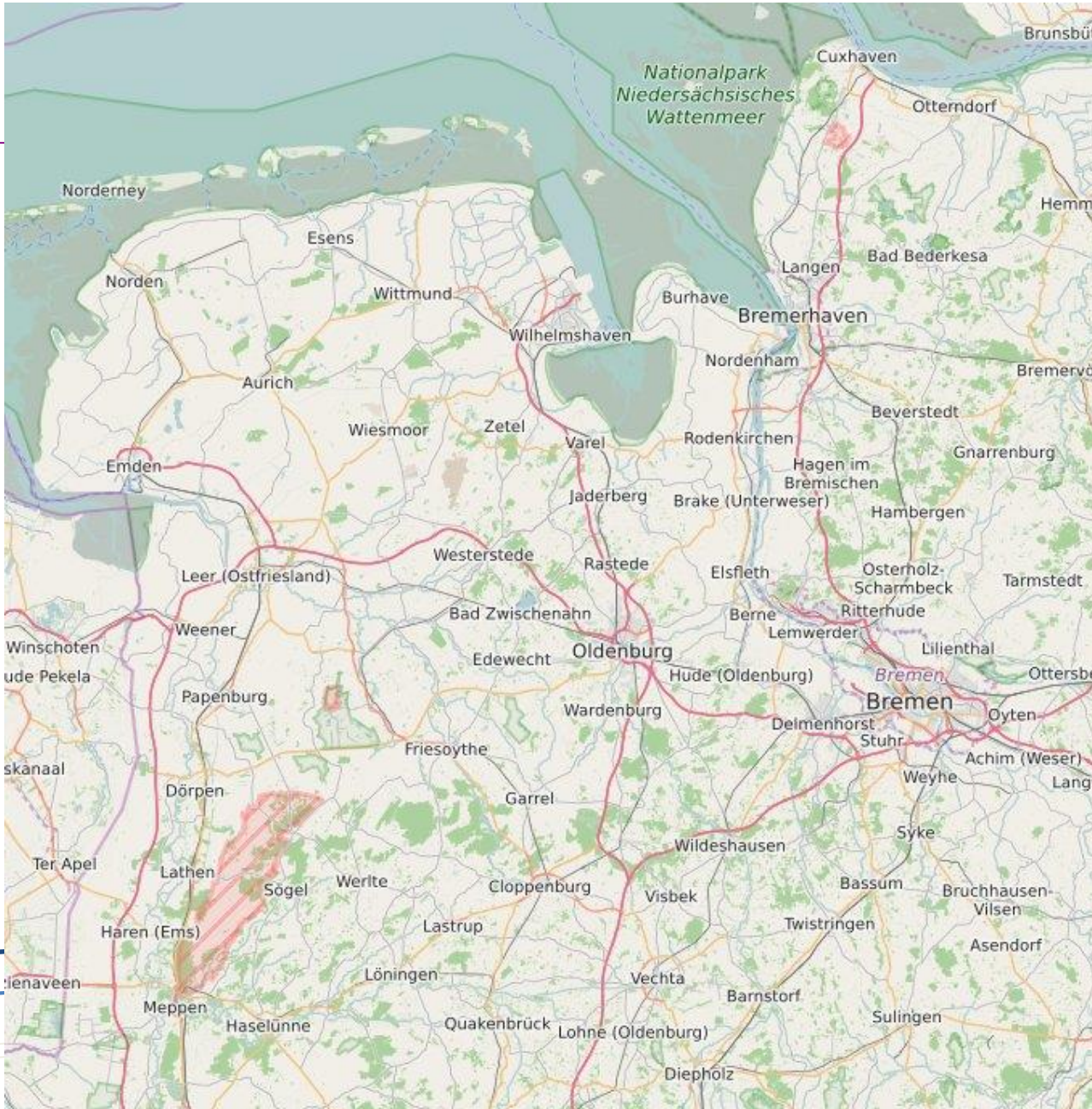
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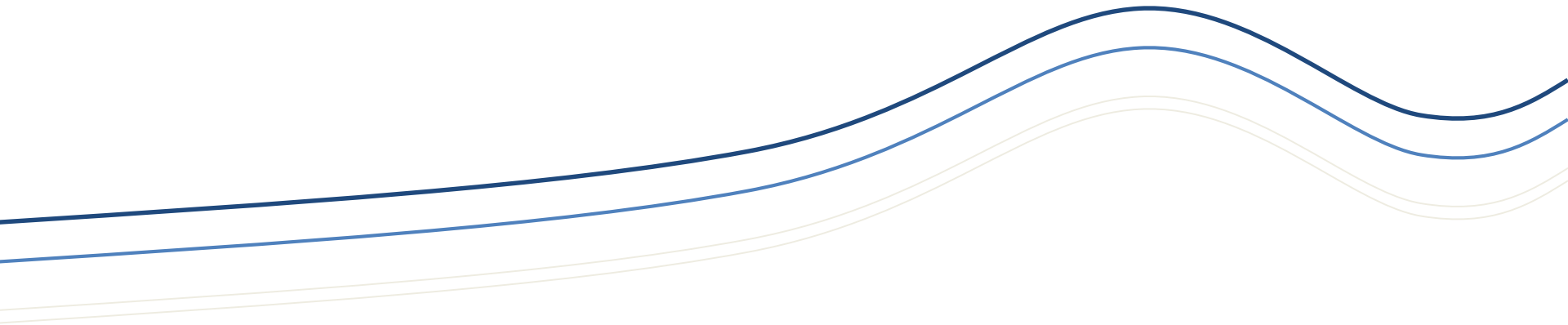
Faust: A swamp lies there below the hill,
Infecting everything I've done
My last and greatest act of will
Succeeds when that foul pool is gone.
Let me make room for many a million,
Not wholly secure, but free to work on.
Green fertile fields, where men and herds
May gain swift comfort from the new-made earth.
Quickly settled in those hills' embrace,
Piled high by a brave, industrious race.
And in the centre here, a Paradise,
Whose boundaries hold back the raging tide,
And though it gnaws to enter in by force,
The common urge unites to halt its course.
Yes, I've surrendered to this thought's insistence,
The last word Wisdom ever has to say:
He only earns his Freedom and Existence,
Who's forced to win them freshly every day.
Childhood, manhood, age's vigorous years,
Surrounded by dangers, they'll spend here.
I wish to gaze again on such a land,
Free earth: where a free race, in freedom, stand.
Then, to the Moment I'd dare say:

'Stay a while! You are so lovely!'
Through aeons, then, never to fade away
This path of mine through all that's earthly.
Anticipating, here, its deep enjoyment,
Now I savour it, that highest moment.
Johann Wolfgang von Goethe; Faust. Part II, Act V,
Scene VI

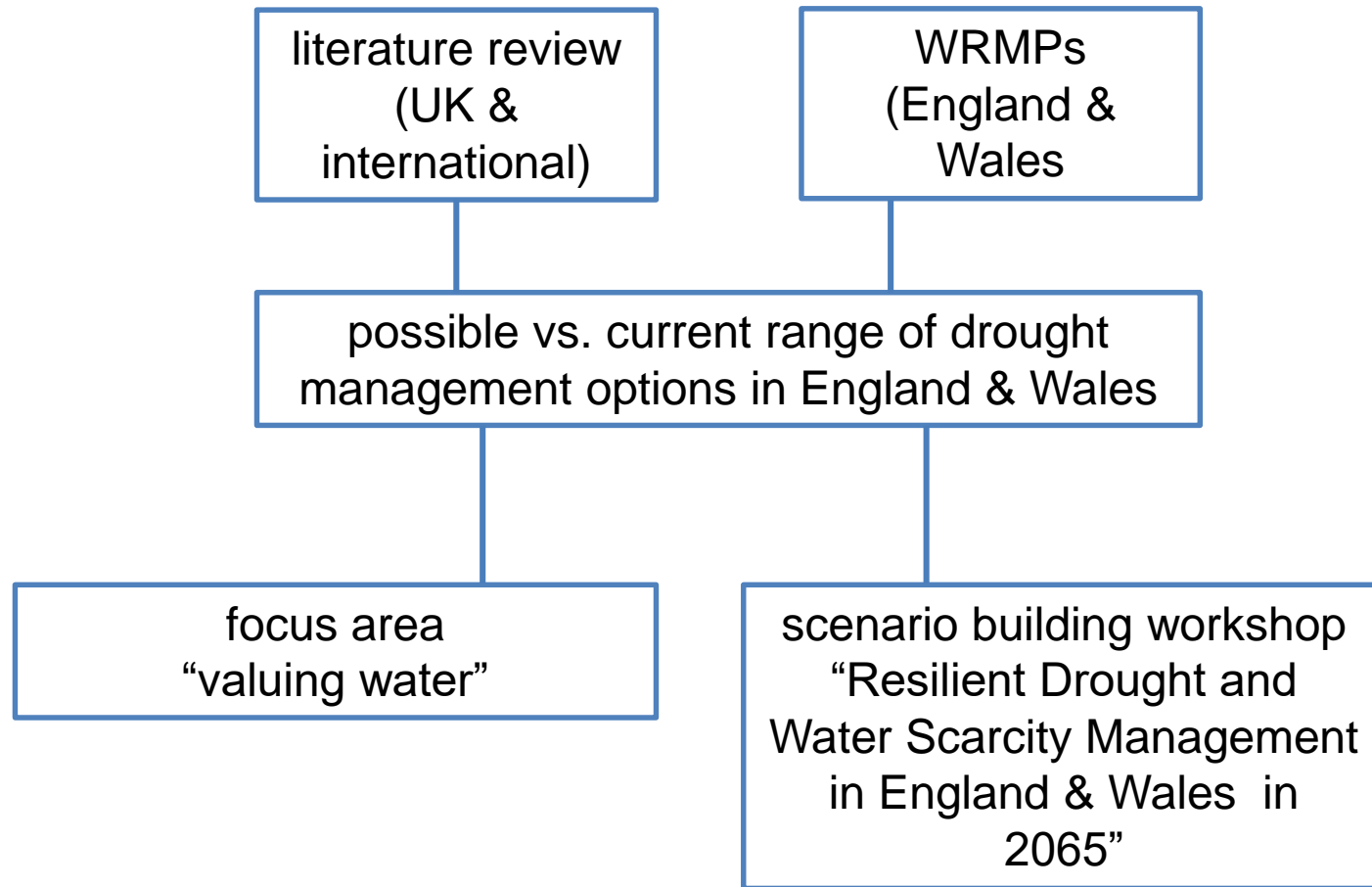
*in a nutshell:
human fight against water
and the daily struggle for
conquering nature is the
moment of greatest luck*



- multi-faceted and complex problem
- requires cross-sectoral collaboration and coordination
- communication
- availability of alternatives (discussions, options) vs. path dependencies



Synthesis and critical evaluation of drought management options





Drought
Options

Purpose

- highlight existing “constrained” range of drought management options in the UK
- provide a list of key drought management options from other countries (non-exhaustive)
- emphasise social science dimensions of choosing drought management options

Analysis of water companies' Water Resources Management Plans



WRMPs

- purpose: patterns, themes, general observations and data mining
- key aspects: ensuring deployable output, strategies on metering, leakage, water efficiency, references to other policy fields, sustainable building standards, levels of service, etc.

Results



WRMPs

- tendency to focus on given regulatory framework and portfolio of options
- low innovativeness with a few exceptions
- missed opportunities
- future challenges (e.g. climate change, population growth) are acknowledged

Drought Management Options – Possible Range

Valuing water / attitudes

Drought Awareness information campaigns

Water rights

Creating water saving culture

Ownership of customer supply pipes

Scarcity charge

Water efficiency initiatives

Water Efficiency Community Fund

Water Stewardship

Public goods charge on water

Structural approaches – overarching framework

Better collaboration among water companies and neighbouring policy fields (flooding, housing, planning,...)

Collaborate with local authorities and housing developers to ensure water and energy saving

EU Water Framework Directive

Current regulatory box

Drought management plans / WRMPs

Drought orders

Drought permits

Emergency Drought Orders

Non-essential use restriction

TUBs

Changes in abstraction licenses

Procedural devices

Water Exchanging Centres

Drought Water Bank

Water markets

Metering

Water metering

Tariffs

Supply side / water creation

Greywater reuse by third parties

(Re)use grey water

Water butts

Rain water harvesting (cisterns)

Tankering by lorries

Reservoirs

Explore new sources

Re-commissioning

Desalination

Abstractor group: agriculture

Environmental water budgets

Hydrological outlooks

Drought monitoring

Agricultural Insurance

Catchment management

Reduce water intensive crops

Use indigenous crops

Irrigation management

Soil water holding capacity

Land use planning

Integrate scarcity into planning

Sustainable land use planning

Drought tolerant landscaping

Remove dams

Restore wetlands

Distribute water

Share water

Bulk transfer

Raw water transfer

Technology led

Lower pumps/deepen boreholes

Aquifer storage and recovery

Company led

Better integrated network

Active leakage control

Mains pressure reduction / pressure management

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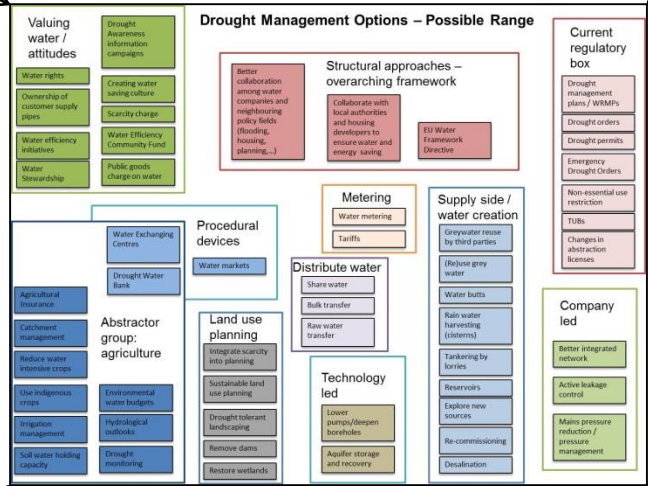
Drought and Water Scarcity Management Toolbox

Abstractor groups & Stakeholders (farmers, large industrial water users, FoE, RSBP, consultancies ,...)

Science

evaluation, comments

add, evaluation, scenarios



add, evaluation, monitor, legislation

DEFRA, EA, ...

coordination and collaboration

add (suggest), select, feedback

Water companies

feedback

Ofwat

Flood policy, Forestry, Local planning, ...

Scenario
Building
Workshop

- Theme: *Resilient Drought and Water Scarcity Management in England & Wales in 2065*
- develop explorative scenarios (*What can happen?*) for drought and water scarcity management
- participants: stakeholders and researchers
- workshop documentation currently being drafted

Scenario Building Workshop – a glimpse at the results

Flood and
drought policy

Billing +
volumetric

Society's
expectations /
Water use
culture

Sharing water

Extreme
weather
events
(droughts)

Demand for
environmental
quality by 2065

Unsustainable
environment

Policy choice:
design event
definition

Cost of
failure

*List of critical
drivers for
drought and
water scarcity in
England &
Wales in 2065
(not ranked)*

Summary and next steps

- increase “water literacy”
- increase collaboration and coordination
- scenario workshop report
- focus area “water values”