Experiences in applying climate change adaptation vulnerability and risk assessment in water and waste water projects

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Overview

- JBA overview
- Our work with JASPERS
- Summary of experience
- Case study examples: Croatia, Slovenia, Romania, Malta
- Lessons learned
JBA OVERVIEW
Socially Just Adaptation to Climate Change in the UK – Joseph Rowntree Foundation (2012)

Ongoing support to UK Committee on Climate Change (2015-2017)


Flood Risk and Coastal Resilience Assessments Paramaribo, Suriname - World Bank (2016-17)
OUR WORK WITH JASPERS
Support the JASPERS team in the assessment of project resilience to:
  - climate change
  - disaster management and the development of national risk assessments related to climate change needs

Two commissions: Sep 2014 – June 2016 and Sep 2016 – June 2017
Focusing on climate change resilience

• JASPERS capacity building
  – CCVRA discussions with water sector staff

• Member State support
  – Workshops on CCVRA concerning flood risk management and water/wastewater projects in:
    • Croatia
    • Slovenia
    • Romania
    • Malta
Case studies
Water and wastewater projects in Croatia

• Project application and CCVRA completed for a water supply and wastewater treatment plant in Croatia

• Key issues and challenges:
  – Vulnerability matrices completed in accordance with Non-paper but limited justification for scoring thresholds and scores given
    • Define these and provide justification
  – Some climate change impacts appeared to be underestimated
    • Thoroughly investigate all impacts
  – Potential need for additional/supplementary water resources identified
    • If potential future measures identified, identify what trigger points would need to be met to implement these
Wastewater project in Slovenia

- Project under development for a wastewater collection system, connecting pipes and new treatment plant

- Key issues and challenges:
  - Building in climate resilience to a project that is largely developed
    - Report on climate impacts considered in development
  - CCVRA of options?
    - Only the preferred option if retrospective
  - Splitting projects into components when comprised of multiple measures
    - Focus on different parts of the project
  - Assessment of climate drivers and climate hazards
    - Focus on climate hazards but include drivers where have extra impacts (e.g. increase in temperatures and drought)
  - Changes made to project as a result of CCVRA
    - High temperatures included as a risk
Climate drivers and climate hazards

<table>
<thead>
<tr>
<th>Primary climate drivers</th>
<th>Secondary effects/climate related hazards</th>
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<tbody>
<tr>
<td>1. Annual/seasonal/monthly average (air) temperature</td>
<td>1. Sea level rise (plus local land movements)</td>
</tr>
<tr>
<td>2. Extreme (air) temperature (frequency and magnitude)</td>
<td>2. Sea/water temperatures</td>
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<tr>
<td>3. Annual/seasonal/monthly average rainfall</td>
<td>3. Water availability</td>
</tr>
<tr>
<td>4. Extreme rainfall (frequency and magnitude)</td>
<td>4. Storm (tracks and intensity) including storm surge</td>
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<td>5. Average wind speed</td>
<td>5. Flood</td>
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<td>7. Humidity</td>
<td>7. Dust storm</td>
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<td>9. Soil erosion</td>
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<td>10. Soil salinity</td>
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<td>11. Wild fire</td>
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<td></td>
<td>12. Air quality</td>
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</tbody>
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Flood risk management project in Romania

• Project application, feasibility study and CCVRA for defence works, storage reservoir, soil erosion control and new bridges

• Key issues and challenges:
  – CCVRA of projects that focus on climate impacts is challenging
  – Initial CCVRA had taken on EIA focus – with and without the project
    • Note that EIA now requires consideration of climate vulnerability
  – Insufficient justification for thresholds and scoring
  – No evidence that flood modelling had built in climate change impacts
  – Unclear how proposed measures address climate change impacts
  – Assessment of climate drivers and climate hazards
    • As with Slovenian project plus combined some climate hazards
  – Uncertain climate projections
    • Project should be reviewed if more certain climate projections produced
Water and wastewater projects in Romania

- Range of projects at different stages in project development, application and CCVRA

- Key issues and challenges:
  - How to split a project into components
    - Better to focus on processes than geography
  - Some confusion between sensitivity and exposure
    - Not intuitive to split but helps ensure assessment is thorough
  - As with others, some confusion around climate drivers/hazards
    - Resolved as previously plus combined some hazards
  - Do vulnerability and risk assessment take project into account?
    - Vulnerability assessment is high level screening, risk assessment takes project into account
Water and wastewater project in Malta

• Water supply and wastewater projects across Malta and Gozo – in project development stage

• Key issues and challenges:
  – Similar issue with project components as others
  – Discussion around stakeholder involvement
    • Ministry of Climate Change agreed to look into providing consistent exposure assessment
  – As with others, some confusion around climate drivers/hazards
    • Resolved as previously plus combined hazards
  – In considering exposure assessment, should existing resilience measures, such as flood defences, be taken into account?
    • Recommended not, but if they are, be specific about this
  – Additional adaptation measures
    • Increase groundwater production, educate stakeholders who abstract to be more efficient
Lessons learned (1)

• Guidance and advice is useful but difficult to explain without actually doing it
  – Justification is of key importance

• Projects can be split in many ways
  – Non-Paper categorisation is not easily applicable to projects with packages of measures

• CCVRA best conducted at the option appraisal stage, so climate change *does* influence option selection
  – When applied retrospectively can focus on preferred option

• Inclusion of climate drivers and hazards can be confusing
  – Both need to be included if the driver and hazard can have different impacts
  – At risk assessment stage, hazards can be combined
Lessons learned (2)

• Setting clear thresholds understood by project team is essential
  – Important to explain these and justify all scores

• Workshops largely attended by environmental experts – need to involve engineers
  – Involving those not in project team can provide new insights

• CCVRA differs from EIA approach
  – But EIA now requires consideration of climate vulnerability so some overlaps
  – Climate impacts ON not OF the project is the key consideration

• Vulnerability assessment is high level screening, risk assessment is focused on detailed project impacts
Overall benefits

• Tests whether proposed projects are robust against a full range of climate change impacts

• Verifies climate resilience measures already built into the project

• Facilitates integration of a wide range of issues e.g. soil loss, agricultural impacts, extension of growing season, greater demand for water etc.

• Every project we have worked with has identified additional adaptation measures that should improve climate resilience as a result of the CCVRA
Any questions?
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For info or further questions on this workshop and the activities of the JASPERS Networking Platform, please contact:

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