Co-watering the grassroots: combining community participation & social entrepreneurship to share roof runoff

AKA ‘Sharing the rain’

Dr Sarah Ward
Challenges/Drivers

Most significant sustainability issues:

- 53.2% Maintaining or expanding asset life
- 18.4% Reducing sanitary sewer overflows
- 15.7% Distribution system water loss
- 31.3% Long-term financial viability
- 11.2% Energy recovery/generation
- 24.4% Customer water rates
- 21.9% Maintaining service with declining budgets
- 20.9% Declining consumption
- 27.1% Energy efficiency

Institutional challenges:

- Water quality: 21%
- Climate change: 25%
- Land use change: 9%
- Increasing demands: 23%
- Competing uses: 8%

Dry Weather:

- Down spout
- Storm drain
- Sewage from domestic, commercial, and industrial sources
- Outfall pipe to river
- Sewer to POTW

Wet Weather:

- Down spout
- Storm drain
- Combined sewage and storm water
- Outfall pipe to river
- Dam
Citizen/community participation & service provision

If we share other things, why not water?

Mexico

Other places already do!

India
Opportunities/Interventions

Traditional rainwater harvesting

RainShare: Commercial - Residential

RainShare: Commercial - Commercial

e.g. Taxi firm washing 3 cars, 2-3 times/week

RainShare: Residential
**Opportunities/Interventions**

*RainShare: Urban Greening*

- distributed communal harvested rainwater storage

*RainShare: Urban Agriculture*

- Connecting people with too much runoff with those who need more!
- Including the end-user - making space for people
- Reconnecting people with water – giving back ownership
- Helping communities grow/wash/flush (swapping non-potable for potable)
- Keeping rainwater out of sewers/slow its entry to sewers (local source control)
How do you get water for the plants?

We bring water with us from home or occasionally fill a water butt using a long hose.

Would storing roof-runoff on the allotments be useful?

Sounds good, let's give it a try.
Take roof runoff from here…

…and use it here!
Technical assessment

RainShare Urban Agriculture

RainCycle Advanced©

Allotments

<table>
<thead>
<tr>
<th>Day</th>
<th>Demand (m³/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term Time</td>
<td>0.02</td>
</tr>
<tr>
<td>Weekends</td>
<td>0.06</td>
</tr>
<tr>
<td>Holidays</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Jan (mm)  Feb  Mar  Apr  May  June  Jul  Aug  Sept  Oct  Nov  Dec
101  87  66  71  66  51  59  64  65  122  107  120

Recommendations

Optimum tank size | 1.4 m³
Community assessment - likely participants:

- Allotment users (Beneficiaries)
- St James Allotment Association (Beneficiaries)
- Powderham Crescent Residents’ Association (Contributors)
- Residents of the houses (Contributors - including private owners, landlords and students)
Actual participants!
Section 50 licence, contractor, road closure (TTRN)

Make-good rainwater goods & install new butts

Duct under path for pipe connecting butts & IBC

Installation of IBC on allotments for communal use
Installation fun!
Conclusions & Next Steps

• Invisible technical & organisational complexities were made visible during the pilot RainShare project
• These were explored through narratives & actor-network/social network analysis approaches
• Co-creation was strengthened by collaborative issue resolution
• Invaluable experiential learning was gained by all
• Extended timescale delayed collection of feasibility/performance evidence to support expansion of projects
What’s next?……

Exeter and East Devon Growth Point

RainShare: Urban Agriculture

RainShare: Residential

RainShare: Urban Greening

= distributed communal harvested rainwater storage

Transition Town Exmouth

Transition Exeter

TREEBOX
Thank you

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