This presentation premiered at WaterSmart Innovations

watersmartinnovations.com
Water Efficiency Around The World

Philip Turton, Demand Management Bulletin, U.K.
Paul W. Lander, University of Colorado/dakotaridge partners

water smart innovations   october 2014
Research: Performance & Economics: Rainwater Tanks

Dr Shirley Gato-Trinidad, Swinburne University of Technology
Dr Kein Gan, Yarra Valley Water

- Payback period: HouseOwners < 20 years
  - Government 1 -12 years
- Size Matters1: Tanks 2300 to 3600L w/o indoor plumbing = highest NPV
- Size Matters2: Program expansion to 4400 households, tank > 4500L =highest NPV
- Installation of rainwater tanks = 42.5% reduction in household water consumption.
<table>
<thead>
<tr>
<th>Tank Size</th>
<th>HH Count</th>
<th>Annual Total, kL</th>
<th>NPV ($)</th>
<th>Savings (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>4391</td>
<td>105</td>
<td>191,760</td>
<td>42.5</td>
</tr>
<tr>
<td>600 – 1000L</td>
<td>237</td>
<td>74</td>
<td>191,760</td>
<td>36.3</td>
</tr>
<tr>
<td>&gt;1000 – 1700L</td>
<td>279</td>
<td>87</td>
<td>272,753</td>
<td>38.3</td>
</tr>
<tr>
<td>&gt;1700 – 2250L</td>
<td>855</td>
<td>95</td>
<td>913,426</td>
<td>40.2</td>
</tr>
<tr>
<td>&gt;2250 – 3600L</td>
<td>846</td>
<td>102</td>
<td>980,566</td>
<td>40.3</td>
</tr>
<tr>
<td>&gt;3600 – 4500L</td>
<td>211</td>
<td>101</td>
<td>247,297</td>
<td>39.8</td>
</tr>
<tr>
<td>&gt;4500L</td>
<td>409</td>
<td>139</td>
<td>680,798</td>
<td>45.4</td>
</tr>
<tr>
<td>2000 - &lt;5000L T&amp;ORL</td>
<td>507</td>
<td>96</td>
<td>377,338</td>
<td>44.4</td>
</tr>
<tr>
<td>&gt;5000L T OR L</td>
<td>482</td>
<td>119</td>
<td>303,370</td>
<td>43.6</td>
</tr>
<tr>
<td>&gt;5000L T &amp; L</td>
<td>565</td>
<td>122</td>
<td>335,725</td>
<td>50.0</td>
</tr>
</tbody>
</table>
Planning strategies under water deficit in the state of Zacatecas, Mexico

Jaqueline Lafragua
Benjamín De León
Results from the Prospective Technical Analysis

Marginal cost
Mexican pesos per m³

Supply
Industrial
Public water
Agricultural

Volume (hm³)

- Activated water
- Dry bath
- Filling waste
- Notill farming
- Irrigation scheduling
- Waterless urinals
- Replacement of showers
- Pressure check
- Wastewater reuse in parks
- Municipal leakage
- Domestic leakage
- Sprinkler irrigation
- High water pressure irrigation
- Shopwater leakage
- New dams
- Aquifers recharge
Setting Performance Indicators:
Towards new urban wastewater treatment Performance Indicators for life quality improvement: experiences from Italy

- The “Service Objectives”: use of appropriate indicators, for monitoring specific objectives over 10 years.
- Medium-term actions for infrastructure development in Districts.
- “Service Objectives” linked to the individual regions and the programming of structural interventions.
- Potential conflicts always problematic, SO
- It is essential that all those actions that could encourage the stakeholder’s acceptability are implemented.

S. De Gisi, L. Petta, P. Mulargia, R. Farina

ITALY
Surveys & Baselines: More regular monitoring of water demand and usage behavior

Rainwater harvesting policies and practices in France: first results from a national survey

Aurélie Gerolin, Charlotte Mucig, CETE de l’Est
Nathalie Le Nouveau, Certu
Bernard de Gouvello, CSTB/LEESU
Sample of 360 projects (nearly 1/3 under preparation) mainly from bibliographical research and press reviews

<table>
<thead>
<tr>
<th>Type of projects</th>
<th>Category</th>
<th>Sub-total per type of project</th>
<th>Sub-total per category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-dwelling units</td>
<td>Housing (except from individual housings)</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>Accomodation housings</td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Housing estates, housing projects</td>
<td></td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Schools</td>
<td>Buildings open to the public (except from Housing)</td>
<td>24</td>
<td>142</td>
</tr>
<tr>
<td>Secondary / high schools</td>
<td></td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Offices</td>
<td></td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Commercial buildings</td>
<td></td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Public equipments, community facilities</td>
<td></td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Public watering, lawns and ornamental plants watering</td>
<td>Watering and cleaning operations (except from individual housings)</td>
<td>59</td>
<td>91</td>
</tr>
<tr>
<td>Cleaning operations (car fleets, roads,…)</td>
<td></td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Industrial processes</td>
<td>Other</td>
<td>9</td>
<td>49</td>
</tr>
<tr>
<td>Agricultural uses</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Other (community gardens, firefighting,…)</td>
<td></td>
<td>37</td>
<td></td>
</tr>
</tbody>
</table>
108 Financial incentives at different scales
(including Guadeloupe and Martinique)

- Some geographical concentrations
- Peak in 2007, then a decrease
- Implication of French Regions
- Also aids from Water Agencies (not represented)
- Various forms and eligibility criteria
Mining Our Own Data: Research to optimize water resources

GIS - CAMM
Conservation Asset Management and Marketing Tool

CIS
WSA
GIS

U. S. A.

Matthew S. Dickens
Resource Conservation Manager
Usage Data for Demand Projections

Water Consumption (m³)

- Beverages
- Dry Foods
- Wet Processing
- Pre-processed

Manufacturers of Drink

Manufacturers of Food

Paul Birchall.
Environment & Business Manager, Demand Management

U.K.

Wednesday, October 8, 14
Is actual use in restricted periods less than modelled unrestricted use?

Post-Program Evaluation for Adaptive Management


Wednesday, October 8, 14
Increased demand in 2012 was modest; weather meant there was no sustained high usage

Use in winter 2011/12 appears lower than typical for a number of zones

Demand was 1-2% lower than forecast during the period of leading up to and during the TUB. This is not statistically significant

In the run-up to the TUB the maximum decrease was 6.5% of forecast. During the TUB this figure increased to 10%
### AgAdapt: Adapting water use by the agriculture sector

**Global audit of European Reuse Water**

<table>
<thead>
<tr>
<th>Country</th>
<th>Spain</th>
<th>France</th>
<th>Italy</th>
<th>Cyprus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site #</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Settler UF</td>
<td>Filter</td>
<td>UV</td>
<td>Lagoon</td>
</tr>
<tr>
<td>Distribution (km)</td>
<td>-</td>
<td>Channel</td>
<td>25</td>
<td>60</td>
</tr>
<tr>
<td>Irrigated surface (ha)</td>
<td>600</td>
<td>1200</td>
<td>250</td>
<td>700</td>
</tr>
<tr>
<td>Reuse volume (MM³/y)</td>
<td>2,0</td>
<td>45</td>
<td>0,5</td>
<td>1,1</td>
</tr>
<tr>
<td>Main cultures</td>
<td>Grapes</td>
<td>Rice</td>
<td>Fruits</td>
<td>Cereal</td>
</tr>
<tr>
<td>Irrigation devices</td>
<td>Drip</td>
<td>Flooding</td>
<td>Drip</td>
<td>Sprinkling</td>
</tr>
</tbody>
</table>
Which crop for Which place with What Water?

Water quality targets
- Organic matter & Nutrients (N, P)
- Suspended solids
- Micropollutants
- Microbiological indicators
- Salts

Regulation Critical issue

Human crops

Sanitary risk

Crop types

Specific cultures

Agronomic risk

Product quality
Production yield
Environment

O&M costs

Workers
Public - Consumers

Technological risk

Crop types

Soil nature

Soil

Eutrophication

Environmental risk

Crop types

Irrigation technologies

Distribuition

Storage

Irrigation devices

Sanitary risk

Non human crops

Non public landscape irrigation

Technology risk

Workers
Public - Consumers

Regulation Critical issue

Water quality targets
- Organic matter & Nutrients (N, P)
- Suspended solids
- Micropollutants
- Microbiological indicators
- Salts

Soil

Wednesday, October 8, 14
Water Impact IndeX

An operational Water footprint indicator

Water footprint background

→ Water footprint is not just a matter of volume

The volume is a good indicator to raise awareness ...

Water Impact IndeX : method

the **Water Impact Index (WIIIX)** is a

→ simplified indicator for water footprinting

- The Water Impact IndeX assesses the impact of a human activity on the availability of water resources
- It illustrates how the other users (humans and ecosystems) may be deprived of this resource

![Water footprint index calculation](image)

**Worldwide**

Wednesday, October 8, 14
Why water and energy efficiency?

Approximate one quarter of domestic CO₂ emissions are from hot water use in the home.

CO₂ emissions from hot water use in the home is 5% of UK emissions.

About same as aviation!
CO₂ emissions from domestic water use in a home with gas heating.

- **Existing stock base case**: 23% water, 77% space heat
- **New build, 2006 Building Regulations**: 39% water, 61% space heat
- **Passivhaus building**: 72% water, 28% space heat
UK Water Efficiency Awards 2014

The Environment Agency and Waterwise UK Water Efficiency Awards were supported this year by Anglian Water Business and sponsored by AquaFund, Ofwat, Welsh Government, the Consumer Council (Northern Ireland) and the Scottish Government.

The WWF’s Living Planet Centre in Woking was the ideal venue for the awards ceremony on the evening of 16 June. In his welcome address, David Nasubaum, WWF CEO, informed the audience how the WWF building is an exemplar for water, energy and carbon efficiency.

In his opening address, Anglian Water Business Director Bob Wilson emphasised the need, given the opening of the water business to retail competition 2017, for water companies to be responsible retailers in supporting water efficiency.

The keynote address was given by Trevor Bishop, Deputy Director of Water Resources at the Environment Agency. He asserted that there had been a 'real shift' in understanding the evidence about water efficiency while using economics to best advantage, as well as winning hearts and minds.

There has been progress across the ground on the water/energy/carbon agenda as well as the affordability issues. Trevor did, though, issue a big warning: 'don't grab defeat from the jaws of victory, build on evidence and best practice and win hearts and minds to do the right thing'.

Nicci Russell, Director of Parliamentary and Public Affairs at Ofwat, completed the addresses. She saw the continuing need for water companies to build relationships with customers. Ofwat’s new four year plan included an emphasis on innovation and on the environment. Nicci said there was a need to engage widely on performance monitoring and cited the Blueprint for Water analysis described on page 6.

Waterwise’s Jacob Tomkins introduced Environment Agency Board Member, Karen Burrows, to present the awards with him. These included a new special award in memory of Clare Ridgewell. It was given to Brian Hooper for his work at South West Water and then as a consultant ‘championing new products and new approaches’.

Philip Turton, Editor

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Editor: Philip Turton, email: pipturton@aol.com
2014-08-03

Water Efficiency Watch is the online newsletter of the Alliance for Water Efficiency, edited by Peter Mayer.

In this issue of Water Efficiency Watch:

- AWE Releases White Paper on Financial Instruments to Manage Weather-Related Risk
- Toilet Politics - U.S. House Blocks Federal Funding for Efficient Toilets
- Drought Updates:
  - California Issues State-Wide Drought Regulations, AWE Cited
  - Groundwater Levels in Colorado Basin at Historic Low
  - Drought Forces Curtailment at New Mexico Irrigation District
- Critical Drainline Carry Study Proceeds with Funding in Place
- WaterSense Releases Updated Professional Certification Labeling System
- IAPMO, Plumbing Industry Coalition Support Energy Efficiency Legislation
- Registration Opens for One Water Leadership Summit
- AWE Announces Meeting Schedule for Water Smart Innovations 2014
- IAPMO Green Plumbers and QWEL Unite for Training
- House Spending Bill Slashes EPA Budget
- Eight Arrested as Detroit Residents Protest Water Shutoffs
- San Bernadino County Water Conference Set for Aug. 22
- News Briefs and Web Links
- How to Submit Content for Water Efficiency Watch
RESOURCES:

E.U.
TRUST : Transitions to the Urban Water Services of Tomorrow, initiative of the E.U.
UVValencia, Spain
U Exeter, U.K.

NAmerica
Water Efficiency Watch/AWE
Pacific Institute, CA
POLIS Project, UVVictoria, CAN
Arid Land Institute, CA
CalUrbWaterConsCouncil
Western Resource Advocates, CO

AUS
Swinburne University of Technology
University of Technology, Sydney

pipturton@aol.com
paul.dakotaridge@gmail.com
1. Paris Highlights:
Most of Presentations Focus on Efficient Urban Water Systems (Provider).

While N.Am. focus has been on Effic End-Use (Customer)
rainwater as Reliable Resource

Still large Focus on Program Review (before/after), but no std methodologies

Most data/msrmt still mostly aimed at System Level:
‘provision of urban services’; leakage; Non-Rev Wtr; Pressure Mgmt; WQ; Energy/GHG; Optimization; Better Use of Data-Creating More Responsive Networks
>Rather than end-use efficiency

2. DMgmt Bulletin
   Surveys

3. AWE/ WiserWatch
   Outdoor Res Update- Gap