OECD expert meeting on
“sustainable financing for affordable water services: from theory to practice”

Consumer tariffs in practice

- The Portuguese experience -

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Consumer tariffs in practice: the Portuguese experience

Topics addressed

1. Framing the problem

2. Defining the guiding principles for a solution

3. Outlining, implementing and monitoring the chosen strategy
Framing the problem
The Portuguese water services sector structure

- **Starting point:** fragmented industry structure, yet fully integrated local monopolies at the municipal level.
  - Recent (last 15 years) regional aggregation at the wholesale level;
  - Introduction and expansion of new management models.

- 23 wholesale water service providers who serve more than one municipality
- 275 retail water service providers, of which:
  - 245 cases of direct provision by municipalities
  - 15 municipal corporations
  - 20 municipal concessions
- A Portuguese household may have between 1 and 4 distinct operators involved in the provision of its water supply and wastewater services
- 110 municipalities have less than 10 000 inhabitants
IRAR’s assessment is that the financial sustainability of wholesale water service operators is “challenging” in one third of the cases and another third is “unsustainable” unless significant change is implemented.

Note: EPAL excluded from analysis because it is not a concession. In addition to retail water supply services to Lisbon city, it is also a wholesale water supplier to another 20 operators.
Financial sustainability of wholesale operators
The role of structural factors

• Although structural factors such as scale and demographic concentration play a key role, they do not tell the whole story…

**Wholesale water supply turnover – 2006 (1)**

<table>
<thead>
<tr>
<th>Area Covered (Km²)</th>
<th>Area Served (thousands households)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Algarve</td>
<td>Simtejo</td>
</tr>
<tr>
<td>A. Douro e Paiva</td>
<td>Sanest</td>
</tr>
<tr>
<td>A. Oeste</td>
<td>Simria</td>
</tr>
<tr>
<td>A. Cávado</td>
<td>A. Centro</td>
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<tr>
<td>A. Mondego</td>
<td>A. Santo André</td>
</tr>
<tr>
<td>A. Ave</td>
<td>Simria</td>
</tr>
<tr>
<td>A. Zêzere e Côa</td>
<td>Sanest</td>
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<tr>
<td>A.T.M. Alto Douro</td>
<td>Simarsul</td>
</tr>
<tr>
<td>A. Ave</td>
<td>A. Centro</td>
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<tr>
<td>A. Séqueira e A.</td>
<td>A. Centro</td>
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<tr>
<td>A. Mondego</td>
<td>A. Centro</td>
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<tr>
<td>A. Cávado</td>
<td>A. Norte Alentejano</td>
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<tr>
<td>A. Ave</td>
<td>Simlia</td>
</tr>
<tr>
<td>A. Minho e Lima</td>
<td>A. Centro</td>
</tr>
<tr>
<td>A. Norte Alentejano</td>
<td>Simlia</td>
</tr>
</tbody>
</table>

**Analysis of the impact of contextual factors**

- **Wholesale water supply turnover – 2006 (1)**
- **Area covered (Km²)**
- **Thousands of households served (2)**

(1) EPAL excluded from analysis because it is not a concession. Wholesale water supply activities cover 5 400 Km², serve 1.2 million households and generate a turnover of 90 million euros.

(2) Sum of the number of households served by wholesale water supply services with the number of households served by wholesale wastewater services, when applicable.
Financial sustainability of wholesale operators (ii)
Accumulation of customer receivables

- ... lack of investment on the retail side means that wholesale operators are not being able to sell the volumes for which they sized their infra-structure and,
  - Not only are they selling less, but their customer receivables are also building up...

Days receivables of wholesale water service operators - 2006

<table>
<thead>
<tr>
<th>Operator</th>
<th>Days Receivables</th>
</tr>
</thead>
<tbody>
<tr>
<td>AdDP</td>
<td>54</td>
</tr>
<tr>
<td>EPAL</td>
<td>61</td>
</tr>
<tr>
<td>AdAlgarve</td>
<td>74</td>
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<tr>
<td>AdMondigo</td>
<td>101</td>
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<tr>
<td>Sanest</td>
<td>103</td>
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<td>Simlis</td>
<td>84</td>
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<tr>
<td>AdML</td>
<td>127</td>
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<tr>
<td>AdOeste</td>
<td>138</td>
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<tr>
<td>AdAve</td>
<td>143</td>
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<tr>
<td>AdSA</td>
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<tr>
<td>AdCentro</td>
<td>170</td>
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<td>Simarsul</td>
<td>195</td>
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<td>AdTMAD</td>
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<td>AdCA</td>
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<tr>
<td>Simria</td>
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<tr>
<td>AdNA</td>
<td>528</td>
</tr>
<tr>
<td>Simtejo</td>
<td>81</td>
</tr>
<tr>
<td>SECTOR</td>
<td>311</td>
</tr>
</tbody>
</table>

Retail average (25 to 40 days)
... and the financial bottleneck lies at the retail (municipal) level:

- End-users not being charged the full service costs;
- Competing demands for municipal budget appropriations.

**Retail water supply charges for residential customers**

| Average for municipal concessions = | €104/ household/ year |
| Arithmetic average for 120 m³ water supply/ year = | €73/ household/ year |

**Retail wastewater treatment charges for residential customers**

| Average for municipal concessions = | €43/ household/ year |
| Arithmetic average for 120 m³ water supply/ year = | €22/ household/ year |

309 Portuguese municipalities (ranked in descending order)

Sources: APDA – Association of Portuguese Water Distributors, 2004; IRAR analysis.
Retail price levels
“Willingness to pay”

• One can start by asking end-users if they “are willing to pay a little bit more to guarantee a higher level of quality” in their water services…
  – Which is what we’ve recently done.

“How do you rate the quality of the water supply services you get?”

- “Bad” 2%
- “Good” 41%
- “Average” 48%

“How do you rate the quality of the wastewater services you get?”

- “Bad” 18%
- “Good” 31%
- “Average” 47%

“Compared with the cost of other utilities my water bill is...?”

- “Cheap” 6%
- “Fair” 48%
- “Expensive” 40%

“Would you be willing to pay a little bit more each month to guarantee a higher level of quality in your water services?”...

- “No” 70%
- “<€2” 19%
- “≤€2” 2%
- “€2 to €5” 9%
- “>€5” 6%

Sources: IRAR “Willingness to Pay Study”, 2007. Results based on national survey comprising 1,010 face-to-face interviews of residential customers.
Willingness to pay
“Why not?”

• ... Yet, the more interesting issue is understanding why they are not willing to pay more...

Reasons advanced by the 70% of residential end-users unwilling to pay a little bit more to guarantee higher quality of their water supply and wastewater services

- “I already pay too much taxes” (44%)
- “I would pay more and nothing would change” (19%)
- “These services are already too expensive” (16%)
- “Government/Institutional” marketing challenge (15%)
- “Business” marketing challenge (5%)

Sources: IRAR “Willingness to Pay Study”, 2007. Results based on national survey comprising 1,010 face-to-face interviews of residential customers.

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• If they are not willing to pay for it, can households at least afford it?
  – One in ten are likely to be strained, and specific mechanisms have been designed to address their situation.

Macro-affordability: “Social issues in the provision and pricing of water services” – OECD, 2002

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland (99)</td>
<td>2.2%</td>
</tr>
<tr>
<td>Hungary (2000)</td>
<td>2.1%</td>
</tr>
<tr>
<td>Turkey (97)</td>
<td>1.2%</td>
</tr>
<tr>
<td>Portugal (97) - OECD</td>
<td>1.8%</td>
</tr>
<tr>
<td>Luxemburg (97)</td>
<td>1.0%</td>
</tr>
<tr>
<td>Netherlands (99)</td>
<td>1.4%</td>
</tr>
<tr>
<td>Austria (97)</td>
<td>1.0%</td>
</tr>
<tr>
<td>Germany (2000)</td>
<td>1.2%</td>
</tr>
<tr>
<td>England &amp; Wales (97-00)</td>
<td>1.2%</td>
</tr>
<tr>
<td>Denmark (98)</td>
<td>1.1%</td>
</tr>
<tr>
<td>France (95)</td>
<td>0.9%</td>
</tr>
<tr>
<td>Slovakia (2001)</td>
<td>0.9%</td>
</tr>
<tr>
<td>Portugal (2000) - INE</td>
<td>0.8%</td>
</tr>
<tr>
<td>Scotland (97-00)</td>
<td>0.7%</td>
</tr>
<tr>
<td>Japan (2000)</td>
<td>0.7%</td>
</tr>
<tr>
<td>Italy (97)</td>
<td>0.7%</td>
</tr>
<tr>
<td>South Corea (97-98)</td>
<td>0.6%</td>
</tr>
<tr>
<td>USA (2000)</td>
<td>0.5%</td>
</tr>
<tr>
<td>Portugal (2004) - IRAR</td>
<td>0.4%</td>
</tr>
</tbody>
</table>


Methodology
• Household income threshold set at one minimum wage (€5,125/ year)
• Consumption level of 120 m³/ year
• Affordability threshold set at 3% of household disposable income (OECD, UK)

Quantification
• 785,000 households below income threshold (19.3% of total Portuguese households)
• Of these, 426,000 exceed the affordability threshold, i.e. 54% of low income households
  – National maximum of 7.5% likely to impact 6,600 households.
• Conclusion: 10.5% of Portuguese households fail the chosen affordability criteria.

Location
• In 60 municipalities (out of 309);
• Mostly (47) in the North and Tagus Valley regions;
• In these municipalities, affordability constraints likely to impact between 15% and 30% of households.

Water supply and wastewater charges as % of household disposable income

... however, for the vast majority of Portuguese households, affordability is, fortunately, not an issue...

**Residential utility expenditure as % of total household expenditure – Portuguese average - 2000**

- Household utilities: 7.33%
- Water supply and wastewater: 0.76%
- Residential energy (gas & electricity): 3.44%
- Telco services: 3.12%
- Other household expenditures: 92.67%

**Annual household expenditure with different consumption categories – Portuguese average - 2000**

- Clothing & footwear: €912/year
- Personal transport vehicles: €804/year
- Hygiene & personal care: €310/year
- Tobacco products: €218/year
- Alcoholic beverages: €171/year
- Water supply and wastewater: €106/year

• ... In fact, during the early 1980’s, over a five-year period, retail water supply prices more than doubled in real terms in Lisbon city.
To address the problem, one needs to understand the system mechanics governing the interactions among stakeholders and decision makers that govern decision outcomes around water service pricing.
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Service provision cost efficiency also needs to be improved and that requires the clarification of the “ground rules” needed to allow capturing potential:

- Economies of scale (increasing the geographical market served)
- Economies of scope (synergies between water supply and wastewater services)
- Process economies (synergies in the vertical integration between wholesale and retail services)
Key principles of the “Pricing regime governing water and solid waste services provided to end-users”:

– Full long-term service cost recovery in a continuous improvement scenario
– Promoting the efficient use of water resources and the protection of their quality
– (Urban solid waste: RRRR)
– Defending end-users from monopolistic price-quality value offerings
– Ensuring affordability conditions for those who need them
– Avoiding cross-subsidisation
– Transparency and public disclosure
– Common tariff structure and terminology nationwide
– Equilibrium and common sense
New national legislation
Common tariff structure: rationale

- The rationale for a common pricing structure needs to be explicitly articulated, openly discussed, bought into and then, written in stone.

![Marginal cost of water supply service to end-users](Image)

\[
\text{Wastewater variable} = \left(\frac{\text{Water volume} \times 0.8}{\text{water volume}}\right) \times \left(\frac{\text{water variable component}}{\text{water volume}}\right) \times \text{relative cost} = \text{x\% of water variable component}
\]

\[
\text{€1 household expenditure} = \frac{(1 + \text{VAT rate})}{(1 - \text{CIT marginal rate})} = \text{€1.45 business expenditure}
\]

Water consumption level during each 30 day interval (m³)
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### Residential end-users

- **Water supply tariff structure**
  - Fixed (availability) tariff (€/30 days), equal regardless of meter nominal diameter (up to 25 mm)
  - Variable tariff (€/m³), with 4 increasing blocks
    - 0 a 5 m³/30 days (25 a 45% of end-users)
    - 5 to 15 m³/30 days (30 to 60%)
    - 15 to 25 m³/30 days (10 a 20%)
    - Above 25 m³/30 days (0 a 10%)

- **Wastewater treatment tariff structure**
  - Fixed (availability) tariff (€/30 days)
  - Variable tariff (equivalent to a % of the variable water supply component)

- **Possibility of “social” price plan for low income households (below 2 minimum wages)**

### Non-residential end-users

- **Water supply tariff structure**
  - Fixed (availability) tariff (€/30 days), differentiated according to meter nominal diameter
  - Flat variable tariff (€/m³), set equal to the 3rd residential block

- **Wastewater treatment tariff structure**
  - Fixed (availability) tariff (€/30 days)
  - Variable tariff (equivalent to a % of the variable water supply component) or flat variable tariff when measurement is technically and economically justifiable

- **All non-residential end-users pay according to a common price plan**
  - Government, municipalities, …
  - Only possible exception is non-government social solidarity institutions

### Other clarified aspects

- End user and operator rights and duties
- Minimum information requirements and terminology for invoices, meter reading periodicity, invoicing frequency and payment terms
- Possibility of seasonal variable water tariffs (peak-load pricing) in the case of excess demand/abnormal resource scarcity
- Clarification of activities are already included in the service tariffs and, therefore, cannot be charged separately
- Identification of auxiliary services that can be charged specifically
- Cost items to be included in the determination of service costs
- Rounding procedures
The strategy reflected in the new legislation seeks to ensure an adequate and politically balance in terms of decision-right allocation:

- Some key features become a matter of law and are mandatory;
- In addition, the regulator issues non-binding recommendations (coaching role, in addition to controller);
- Significant margin for discretion is still given to local authorities who approve water service tariffs.

### “Principles in the new legislation (Tariff Regime)”

+ “Common tariff structure”
+ “Specific local circumstances”
  + (“IRAR recommendation”
    x “degree of discretion used by ultimate decision maker”)
  = “Water service tariffs”
  x Service utilisation (time and intensity)
  = Service costs for each end-user
IRAR’s role will go beyond the mere enforcement and supervision of the adherence to new legal requirements

- It will also act as a coach to help the most challenged operators to gradually change.

On-going activities

- Development of software applications aimed at assisting the operators in implementing the tariff regime
  - Management accounting criteria and tools to determine each service’s P&L
  - “On-line Tariff Regime” (simulation of tariff compliance with legislation and IRAR’s recommendation, revenue simulator and interface for data reporting)
- Training initiatives, ad-hoc financial audits and inspection initiatives to monitor compliance with new legislation
IRAR will monitor the pace of conversion towards a full cost recovery zone, which in some cases will be quite challenging…

Sources: APDA – Association of Portuguese Water Distributors, 2004; IRAR analysis.
Regulation as an instrument to improve the efficiency and the effectiveness of public water and waste services

Thank you!