
# *Unfair charging in the UK?*
# *...Or why Germany is ahead in SuDS*

***Watef Conference 2018***

# Agenda

1. The beginning of a significant SuDS driver in German
2. Sewage charges based on mains water consumption
3. Split sewage charges - economic and ecological questions
4. Implementing the new charges
5. Results in Germany
6. The UK approach

# *The beginning of a significant SuDS driver in Germany*

In Germany sewage which is discharged into a communal sewage system is being separated into:

- Waste water
- Surface water from properties
- Surface water from public roads/highways

The individual states in Germany are responsible for the disposal of sewage. This responsibility is passed on to the community (§ 56 Abs. 1 des Wasserhaushaltsgesetzes i.V.m. den jeweiligen Landesgesetzen)

The property owner is responsible for the cost of the sewage disposal.

In the past the councils had to charge the property owners for the incurred cost based on the “modified fresh water measurement” = Mains cold water intake measured via water meter.

In early 2000 the BUND (federation for environment and nature conversation) supported individual court cases and led to nationwide ruling against the modified fresh water measurement.

# *Sewage charges based on mains water consumption*

Two methods:

a) Charges according to “modified fresh water measurement”
Charges are determined by use of mains water.

b) Split sewerage charges
Separation of sewage disposal charges from surface water charges.
- Sewage disposal determined by mains water usage
- Surface water charge determined by surface area connected to surface water drain

The modified fresh water measurement assumes a “homogenous settlement structure” meaning ratio between covered/impermeable area and the mains water quantity of the area is fairly constant.

# Sewage charges based on mains water consumption

Germany has ~40% owned residential properties.
Rented properties are often multiple occupancy and smaller in area compared to single family homes.

Owned properties
(old states of Germany

| Number of persons | % of all household | m2 living area per household | | | m2 living space per person |
|---|---|---|---|---|---|
| | | 1978 | 1993 | 1998 | 1998 |
| 1 | 36.1 | 75 | 87.4 | 91.4 | 91.4 |
| 2 | 33.4 | 92 | 105.5 | 111.2 | 55.6 |
| 3 | 14.7 | 106 | 119.2 | 124.7 | 41.6 |
| 4 | 11.5 | 117 | 130.2 | 134.6 | 33.7 |
| 5+ | 4.4 | 132 | 146.7 | 148.3 | 29.7 |

Rental properties
(old states of Germany)

| Number of persons | % of all household | m2 living area per household | | | m2 living space per person |
|---|---|---|---|---|---|
| | | 1978 | 1993 | 1998 | 1998 |
| 1 | 36.1 | 52 | 57.3 | 58.7 | 58.7 |
| 2 | 33.4 | 67 | 72.8 | 75.4 | 37.7 |
| 3 | 14.7 | 76 | 81.7 | 84.2 | 28.1 |
| 4 | 11.5 | 11.5 | 89.3 | 91.4 | 22.9 |
| 5+ | 4.4 | 90 | 96.5 | 98.5 | 19,7 |

# *Sewage charges based on mains water consumption*

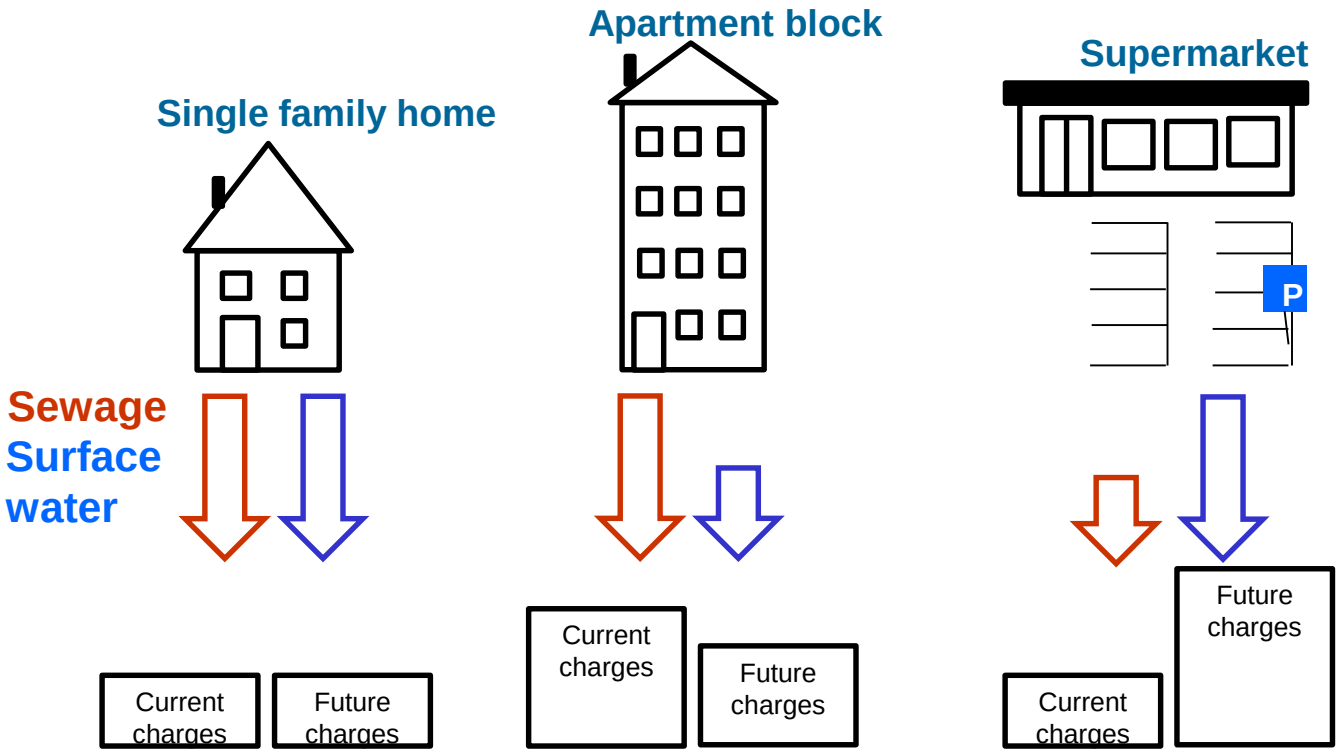
**Other aspects:**

- Individual financial circumstances determine style and size of a property
- Size of driveway and garages are dependant on building owner or regulations but not the number of occupants.
- Mains water consumption of properties with same number of occupants can vary significantly due to individual behaviour. Study of apartment blocks in Dresden: 15l/p/d to 232l/p/d.
- Water efficiency devices can have a significant impact.

**=> Homogenous settlement structure cannot be assumed !!!**

# *Split charges – economic and ecological question*

## a) Potential increase of charges for the household




## b) Cost for the community to introduce and administer the charge

## c) Low surface water disposal cost does not support change

# Implementing the new charges

Examples of yearly surface run-off charges in 2017:

- Wuppertal 1,95 €/m²
- Dresden 1,81 €/m²
- Berlin 1,80 €/m²
- Bonn 1,40 €/m²
- München 1,30 €/m²
- Essen 1,23 €/m²
- Potsdam 1,23 €/m²
- Saarbrücken 0,91 €/m²
- Osnabrück 0,90 €/m²
- Bielefeld 0,86 €/ m²
- Mannheim 0,81 €/m²
- Heidelberg 0,75 €/m²
- Hamburg 0,73 €/m²
- Bremen 0,72 €/m²
- Baden-Baden 0,71 €/m²
- Augsburg 0,71 €/m²
- Stuttgart 0,71 €/m²
- Nürnberg 0,65 €/m²
- Regensburg 0,53 €/m²
- Kaiserslautern 0,50 €/m²
- Tübingen 0,38 €/m²
- Mainz 0,46 €/m²
- Passau 0,42 €/m²
- Karlsruhe 0,40 €/m²
- Überlingen 0,26 €/m²

# *Surface categories for calculation of surface water charges*

Example:

The surfaces are separated in categories with similar degree of permeability. The charges are the result of the multiplication between impermeable area and discharge factor.

Factor 0.9 for areas with completely sealed surface having an impermeable degree of 90% e.g. typical roofs, areas using asphalt, concrete or bitumen.

Factor 0.6 for areas with heavily sealed surface having an impermeable degree of 60% e.g. paving blocks, interlocking stones.

Factor 0.3 for areas with lightly sealed surface having an impermeable degree of 30% e.g. lawn, areas with gravel, shingle, lawn grid stones.

Every m3 of rainwater storage for WC reuse 14m2 deducted. For irrigation 8m2.

# Methods of collecting data

Two methods used:

<u>1) Aerial picture / land register</u>
Aerial picture in combination with the land register
Property owners can provide further information


<u>2) Self-assessment</u>
Property owner do a self-assessment regarding the impermeable area and their classification.
The council would carry out spot checks.

# *Results in Germany*

Impacts:

a) Allocation according to polluter pays principle

b) Omitting social unfairness in charging

c) Financial incentive to unseal surface areas countering urban creep

d) Increased uptake of rainwater harvesting, green roofs, rain gardens and other SuDS measures

e) Allowed for deferral of infrastructure updates and investments in new structures

f) Reduction of potential combined sewer overflows

# *Results in Germany*

Examples:

**Munich**
4.5million m2 impervious surfaces disconnected between 1997-2015
(~240,000m2 per year)

~3000 ML reintroduced into ground or evaporated

**Dresden**
Imperviousness per person reduced from 37m2 to 33.5m2 despite
- population growth by 12% and
- Trend to more detached houses than apartments

**Baden-Wuerttemberg**
After 2 years, 48% of councils reported 11%+ decrease in imperviousness.

# *The UK approach*

Most household customers are charged surface water irrespective of mains water.
Only if property is not connected, the surface water charge is reduced (£20 to £65)

**Water and sewerage companies (WaSCs) approach to surface water drainage charges for non household customers**

8 out of 11 charge non household customers via standard charge, graduated charge or a combination fixed and graduated  or variable charge. None related to surface area.
No partial reductions.

4 WaSCs charge based on the surface area connected.
Areas are grouped in bands instead of charge per m2.
Significant difference between companies for same area.
For charge reduction full disconnection needed.

Currently only one company offering partial reduction, if benefit can be demonstrated.

# *The UK approach*

**Regulator's view:**

OFWAT 2016 has made changed in the requirements for WaSCs in charging but not related directly to surface water discharge.

Currently no incentive.

Requirement from 2020 for all WaSCs to separate their whole sale charges for sewerage charges:

- Foul water
- Trade effluent
- Surface water draining from premises
- Surface water draining from highways

In the meantime little incentive to install new on-site SuDS measures or retrofit them.

***Thank you for your attention***

**www.aqua-lity.co.uk**