WATER-EFFICIENT FIXTURES

STRATEGY

Water-efficient fixtures are products designed to reduce overall water consumption in buildings without compromising performance. These fixtures replace typical fittings and appliances with, for example, low-flow shower heads and faucets, low-flush, dual-flush or waterless urinals and toilets, and/or water-efficient household appliances. Implementing water-efficient fixtures often does not require large infrastructural changes, yet reduces water consumption by 20-60%, depending on the type and usage. Water savings also reduce energy demand for hot water and contributes credits to attain green building certificates. Together with rainwater harvesting and water reuse, water-efficient fixtures can contibute to an overall water saving and reuse strategy.

INPUT STREAMS

- Drinking water
- Treated water

SHOWERS & FAUCETS

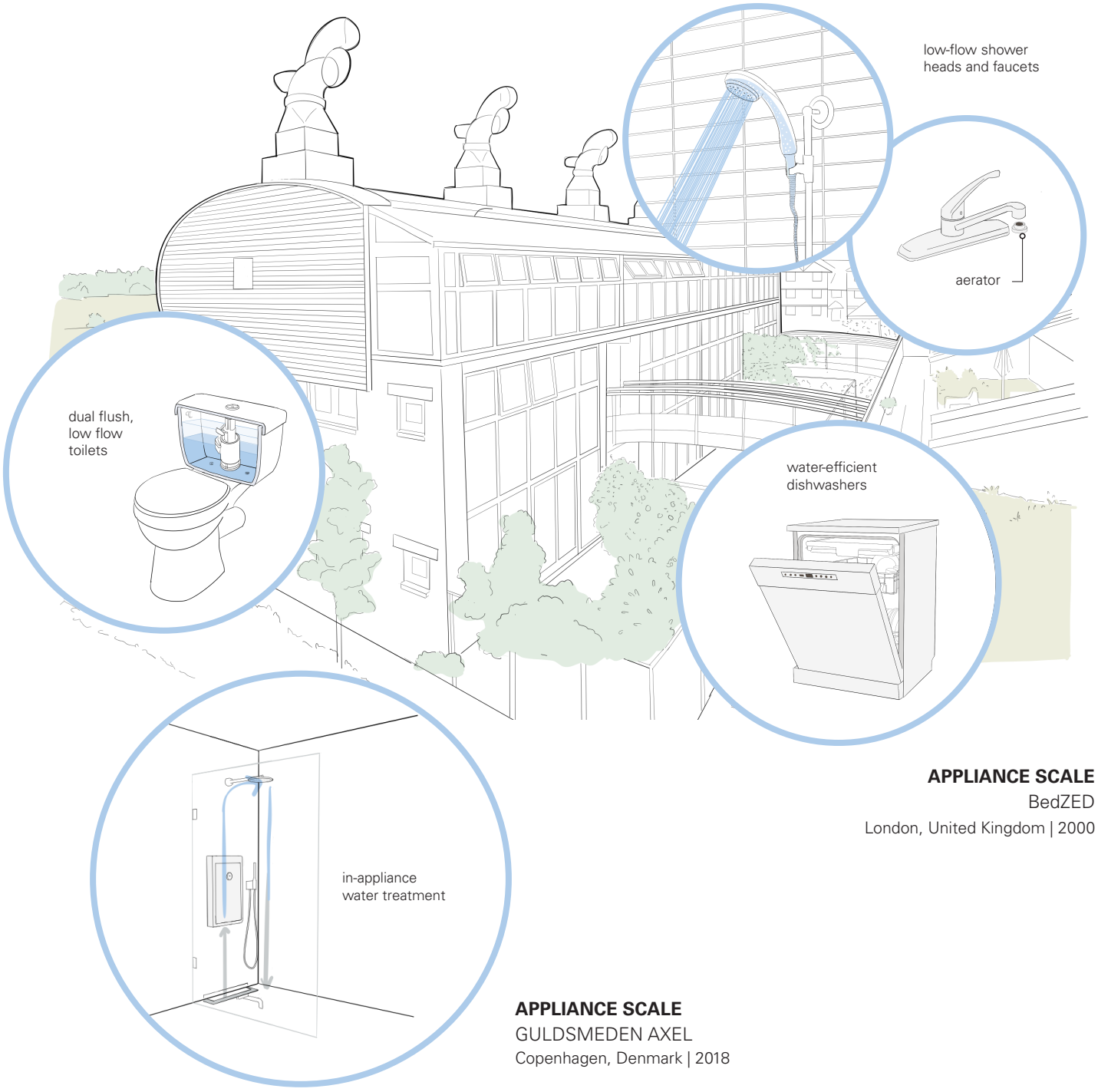
Watersaving flow restrictors (e.g., aerators) in shower and faucet fittings can be installed to reduce water consumption at the tap. Some bathtubs are sculpted to lower the volume of water they can hold. Showers that recirculate water, via in-appliance treatment also reduce water use.

APPLIANCES

Water efficient washing machines and dishwashers are examples of appliances that reduce water use. For washing machines, front-loaders generally save more water in comparison to top-loaders.

TOILETS

Flush toilets use large quantities of water per flush (~9 liters). Dual flush toilets allow users to control the amount of water per flush. Waterless urinals, vacuum toilets and dry toilets significantly reduce overall water use. However, their implementation may require additional planning of and infrastructure for the collected streams if they are not sent to sewer. See



APPLIANCE SCALE
BedZED
London, United Kingdom | 2000

APPLIANCE SCALE
GULDSMEDEN AXEL
Copenhagen, Denmark | 2018

TO CONSIDER

COLLECTED STREAM

Water-efficient fittings and fixtures use the same source water as regular ones. Faucet and shower aerators mix small air bubbles into the water to maintain water pressure, while using less water. Reduced water consumption reduces the volume of greywater or mixed wastewater produced, which can impact other water reuse strategies.

SPACE & PLACEMENT

Water-efficient fixtures can replace or be attached to conventional ones, occupying the same amount of space. Usually they are compatible with existing hardware.

RESOURCE INTENSITY

Installing water-efficient faucets and shower heads is often cheap and simple. Dishwashers and washing machines account for higher initial costs, although through the long-term water (and often energy) savings, water-efficient appliances can be a better investment over time. Upfront costs for water-saving toilets are often also higher than conventional ones. Installing dry/vacuum toilets may require a larger infrastructural change.

NEW BUILD VS. RETROFIT

Most fixtures are easily placed in both existing and new build infrastructure. Replacing toilets in existing buildings can require some additional construction, especially for the installation of vacuum and dry sanitation.

HYBRID VS. DECENTRALIZED

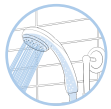
Water saving typically makes sense in all contexts, particularly water-scarce areas.

USER EXPERIENCE

Most water-efficient fittings and fixtures do not compromise their performance or the user experience. Dry toilets are the only fixture that may require a few behavioral changes (e.g., users may be required to add bulking materials, like saw dust after toilet use, and to adjust toilet cleaning practices).

FIXTURE OPTIONS

There are several types of water-efficient fixtures designed to reduce water consumption without compromising performance and user experience. Common fixtures, together with their water use, are listed below.

		FIXTURE	WATER USE
FAUCETS		REGULAR FAUCETS	10 - 15 L/min
		LOW-FLOW FAUCETS	5 - 8 L/min
SHOWERS		REGULAR SHOWERS HEADS	12 - 20 L/min
		LOW-FLOW SHOWER HEADS	6 - 9 L/min
		RECIRCULATING SHOWER	60 - 90% reduction
APPLIANCES		REGULAR DISHWASHERS	~20 L/load
		WATER EFFICIENT DISHWASHERS	9 - 12 L/load
		REGULAR WASHING MACHINES	~150 L/load
		WATER-EFFICIENT WASHING MACHINES	50 - 80 L/load
TOILETS		FLUSH TOILET	6 - 13 L/flush
		LOW-FLUSH TOILET	4 - 6 L/flush
		DUAL-FLUSH TOILET	3 - 6 L/flush
		VACUUM TOILET	<1 L/flush
		WATERLESS/LOW-FLUSH URINAL	0 - 1 L/flush
		DRY TOILET	0 L

USE

WATER & ENERGY SAVINGS

Water-efficient fixtures reduce overall water consumption, conserving valuable resources, especially in drought-prone areas. These fixtures often also reduce energy consumption by reducing the amount of hot water used; less water means less energy required to heat it up.

Water and energy reductions can lead to savings in utility bills over time. Calculated savings vary depending on 1) type and number of fixtures installed, 2) household size, 3) water usage, and 4) local water and energy rates.