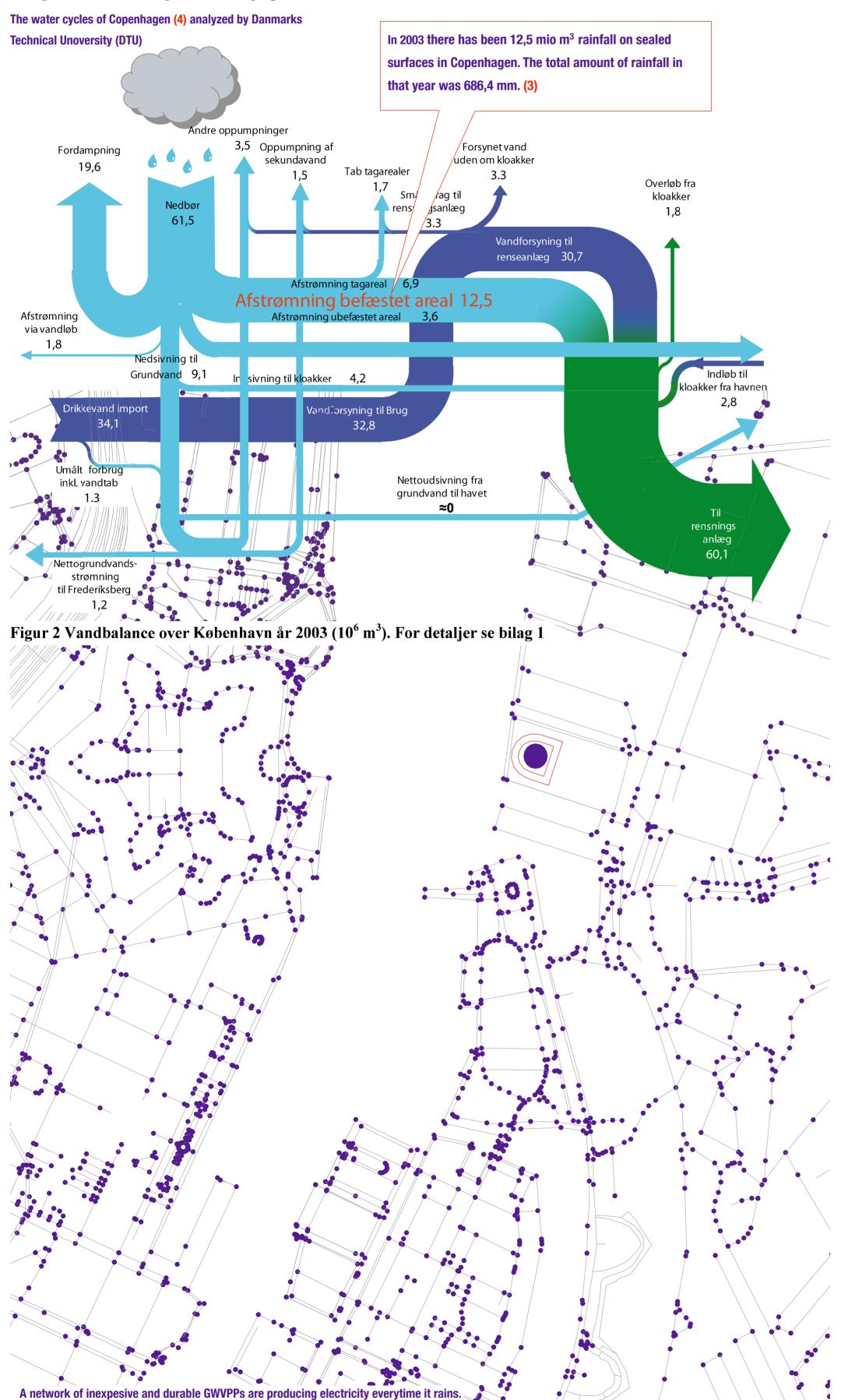
## vand krone

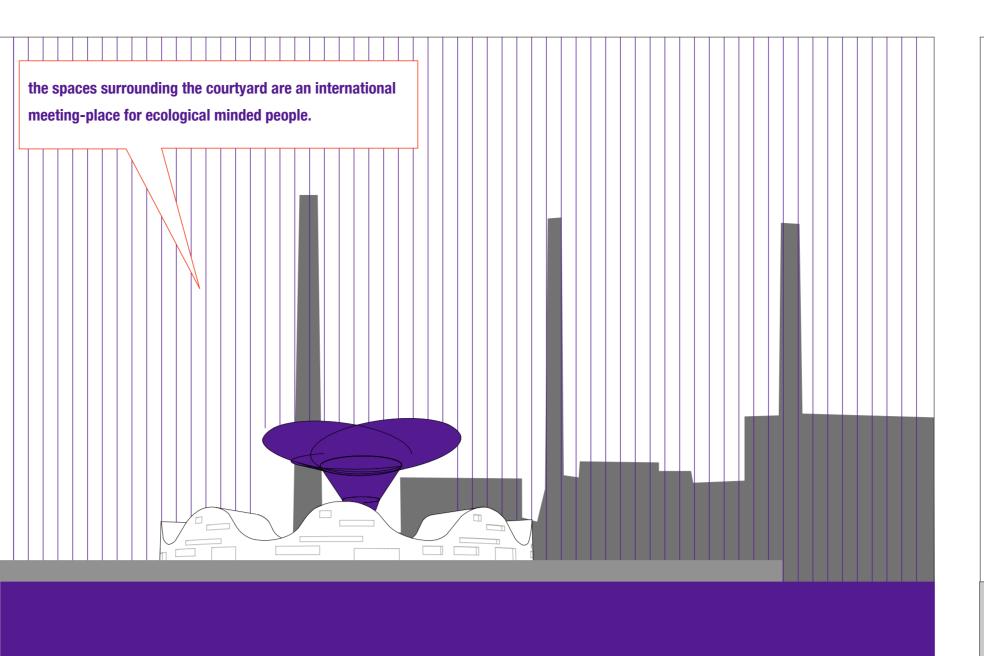
## Gravitation water vortex power plant (1) generates up to 50 MW (5) of electricity each year

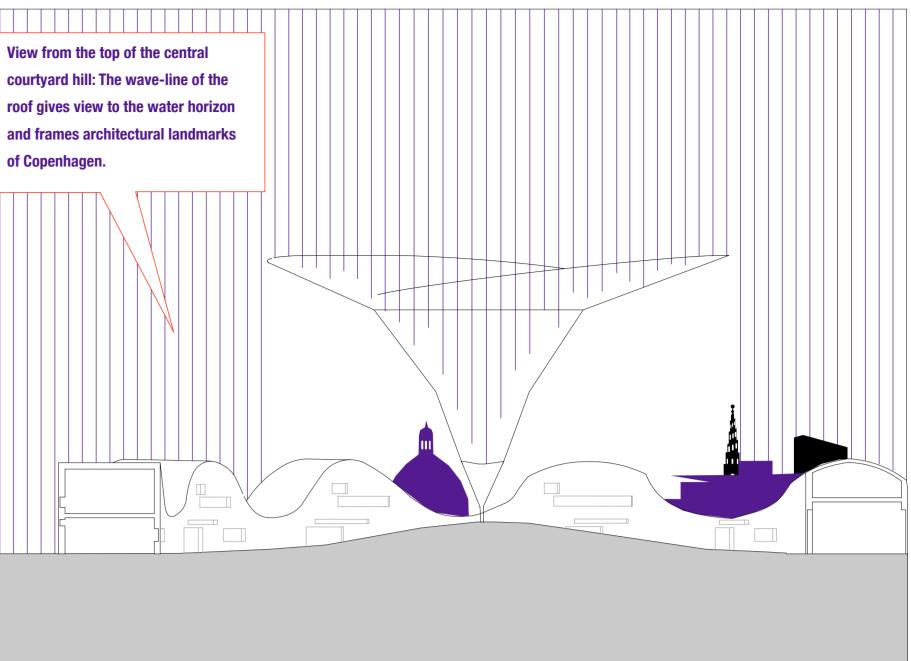
## Integreret håndtering af vand og spildevand i København

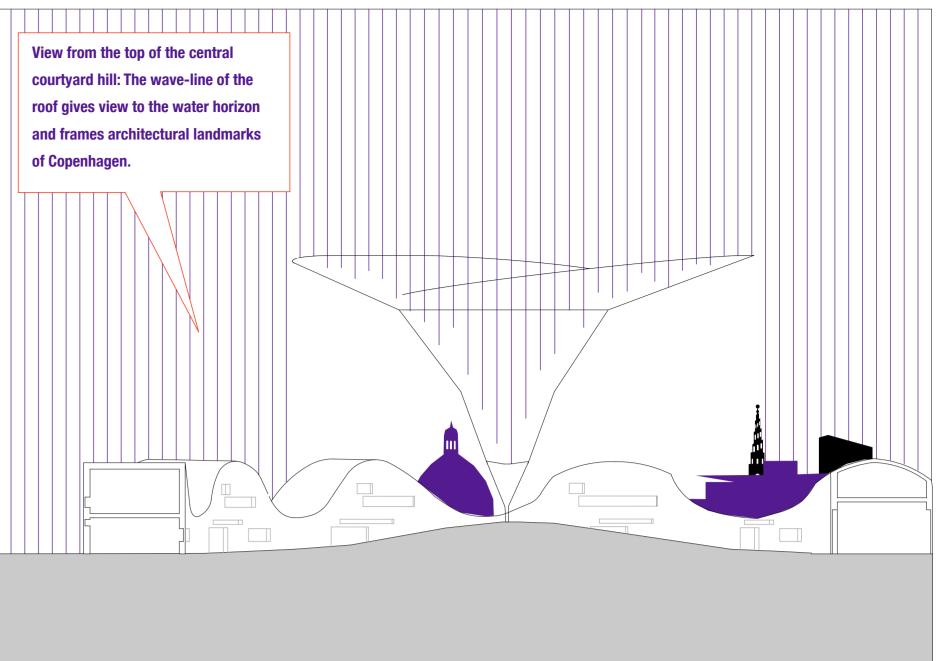
DTU 2006



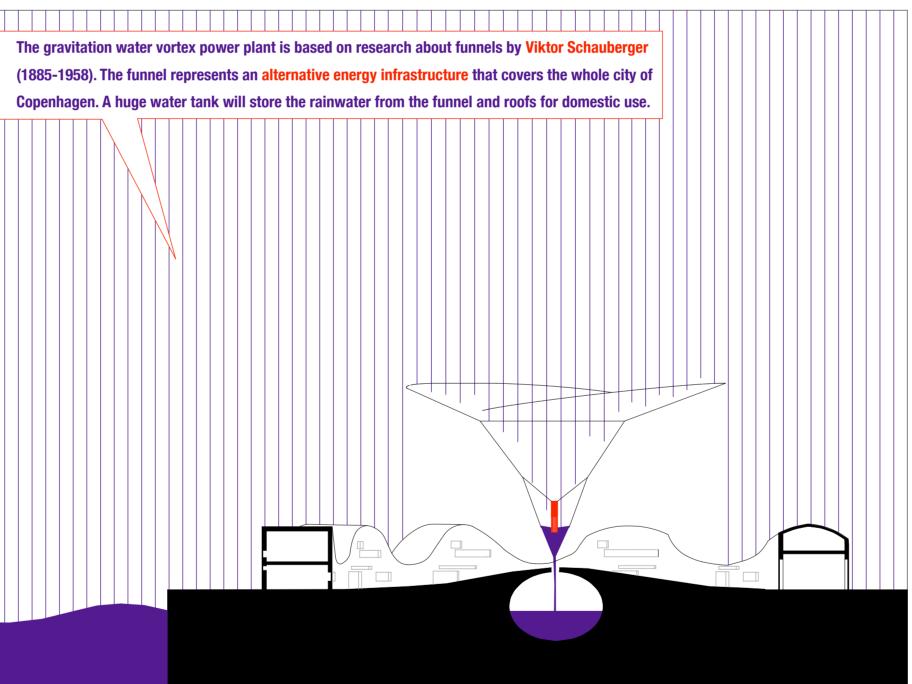
(1) **The gravitation water vortex power plant** is a type of micro hydro power plant which is capable of producing energy using a low hydraulic head of 0.7–3 metres (2 ft 4 in–9 ft 10 in). The technology is based on a round basin with a central drain. Above the drain the water forms a stable line vortex which drives a water turbine. It was invented by Austrian engineer Franz Zotlöterer while attempting to find a way to aerate water without an external power source. (Wikipedia)



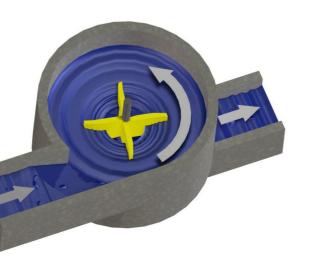




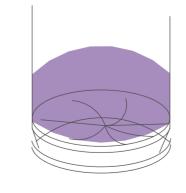
## gravitation water vortex power plant



I calculation based on the data from 2003 25,000,000 kW/s = 34,722.2 kW/h = 34.7 MW/a







closed - collecting rainwater



(2) The principle of the iris control valve:

(3) Min. and Max. amount of rainfall (acquisition period: 43 years): 497mm and 987mm, Source: DMI Station 30370- Botanic garden (4) "Integreret håndtering af vand og spildevand i København", Mikkel Boye Hauger og Philip John Binning, Institut for Miljø & Ressourcer, DTU, 2006 (5) Depending on the actual amount of rainfall. Model calculation: 987mm/a = 50 MW. In coming years the average mount of rainfall and the heavy rain will increase due to climate change. (See Copenhagen Climate Plan)

Micro hydro-generators (GWVPP) in the gullies of Copenhagen produce electricity. According to Zotlöterer the power potential of  $0.1m^3$  water passing through a GWVPP = 1 kW/s (6) To run a permanent magnet generator within the GWVPP the water will be stored and released alternately. The iris control valve (2) that regulates the waterflow is opened and closed by the weight of the incoming water.

inwater on sealed surfaces =



