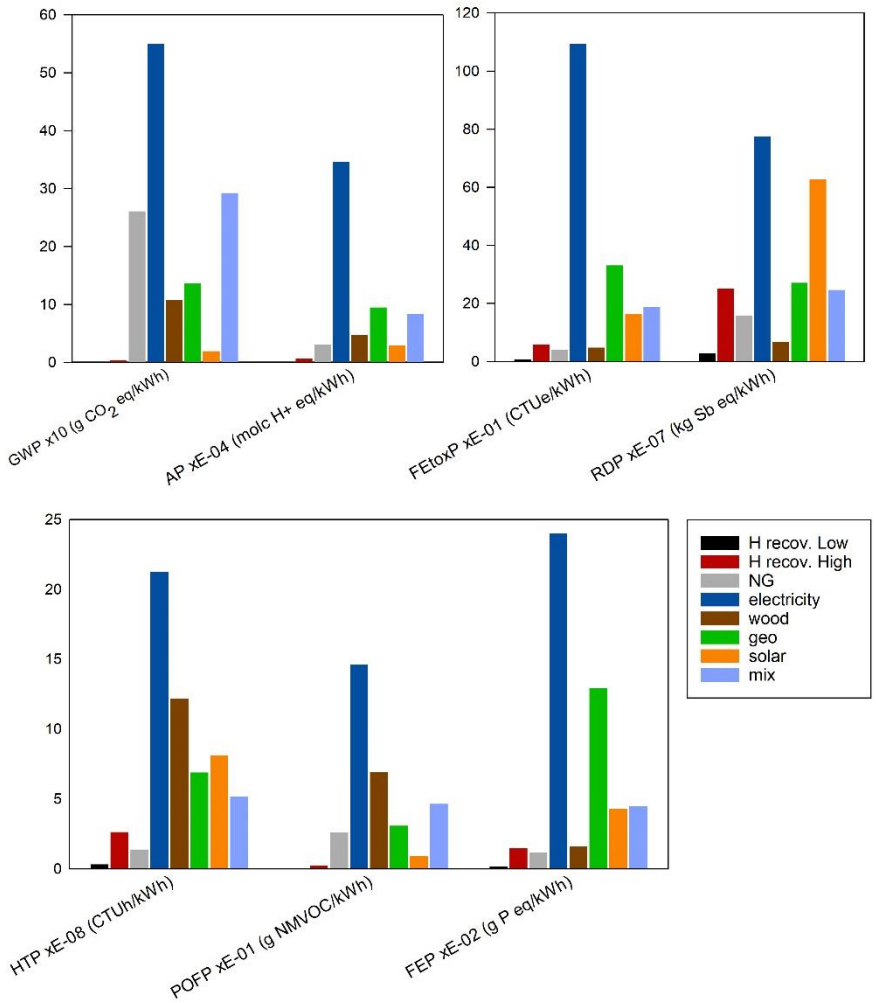
Supplementary Material

Introducing a Calculator for the Environmental and Financial Potential of Drain Water Heat Recovery in Commercial Kitchens

Isabel Schestak [1],*, Jan Spriet [2], David Styles [3], A. Prysor Williams [1]

[1] School of Natural Sciences, Bangor University, Bangor LL57 2UW, United Kingdom
[2] Department of Civil, Structural and Environmental Engineering, Trinity College, The University of Dublin, College Green, D02 PN40 Dublin, Ireland
[3] Bernal Institute, School of Engineering, University of Limerick, V94 T9PX Limerick, Ireland
* Correspondence: isabel.schestak@bangor.ac.uk

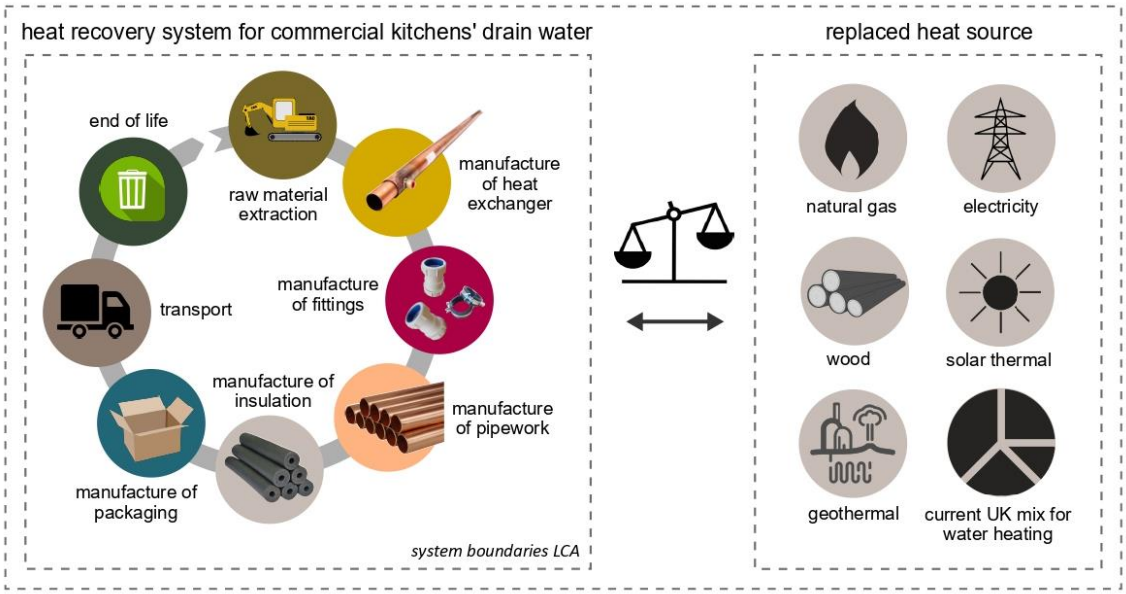
Figure S1: Comparison of environmental impacts from heating water through heat recovery or conventional energy sources.



Environmental impacts per kWh for water heating. Comparison of heat recovery from drain water with other renewable and non-renewable heat sources, including the current UK energy mix for water heating ("mix"). Burdens of the heat recovery system considered with two different water flow-rates found in UK commercial food outlets. H recov. Low: low impact case due to higher flow-rate of 12,500 L/day. H recov. High: high impact case due to lower flowrate of 360 L/day. NG: natural gas, electricity: UK grid mix, wood: wood biomass combustion, geo: geothermal, solar: solar thermal. GWP: Global Warming Potential; HTP: Human Toxicity Potential; POFP: Photochemical Ozone Formation Potential; AP: Acidification

Potential; FEP: Freshwater Eutrophication Potential; FEToxP: Freshwater Ecotoxicity Potential; RDP: Mineral, fossil & renewable Resource Depletion Potential. From [1]

Figure S2: Life Cycle steps included in the environmental footprint of the heat recovery system



System boundaries of the Life Cycle Assessment on the heat recovery system (left) and extended boundaries for evaluating the savings potential through the replacement of heat energy sources (right), from [1].

References:

[1] I. Schestak, J. Spriet, D. Styles, and A. P. Williams, "Emissions down the drain: Balancing life cycle energy and greenhouse gas savings with resource use for heat recovery from kitchen drains," *J. Environ. Manage.*, vol. 271, no. February, p. 110988, 2020.