

Under the challenging influence of global change the Helmholtz Centre for Environmental Research – UFZ performs significant scientific work to safeguard the basic requirements of life and the opportunities for individual development also for future generations. In this way the UFZ contributes towards a sustainable development.

The Department of Environmental Biotechnology (UBZ) offers a position for a

PhD Student (m/f)

to conduct a project entitled:

“Constructed Wetlands for Decentralised Wastewater Treatment in Arid Regions:-
Evaluation of Treatment Performance, Evapotranspiration Losses and Salinity Issues”

Background:

A highly motivated and suitably qualified PhD candidate is required to work as part of a team investigating the use of constructed wetland technologies for decentralised wastewater treatment in arid regions. The appointment is for 3 years and is funded via the German Federal Ministry for Education and Research (BMBF), within the framework of the multilateral SMART and Dead Sea Projects between institutions in Germany, Israel, Palestine and Jordan. Within these projects we aim to develop appropriate wastewater treatment systems for rural and semi-urban populations of the arid Jordan Rift Valley and the Dead Sea region. Although constructed wetlands are a highly promising technology for such applications, their evapotranspiration results in a loss of valuable water and an increase in wastewater salt concentration, potentially increasing problems of soil salinisation in irrigation reuse areas. Thus, there is a need to investigate the water and salt balance of constructed wetlands under arid conditions, and to develop design adaptations to overcome any such limitations, before their wide-spread adoption will be realised.

Specific Tasks:

Components of the research will be conducted using existing infrastructure at the Helmholtz Centre for Environmental Research in Leipzig, Germany, and in cooperation with Al Balqa' University at a decentralised wastewater treatment and reuse demonstration site near Amman in Jordan. Aspects of the project will include, but are not limited to:

- Evaluation of treatment performance of pilot-scale subsurface flow wetlands in Jordan with regard to satisfying relevant guidelines and regulations for effluent reuse (e.g. pathogens, nutrients, salts, Sodium Absorption Ratio).
- Assessment of the salt and water balance of pilot-scale subsurface flow wetlands with and without plants in Jordan and Germany.
- Comparison of evapotranspiration and salt uptake rates of different wetland plant species occurring within the Jordan Rift Valley and assessment of their suitability for constructed wetlands in arid regions.
- Assessment of the risk of increasing soil salinisation when various ecological treatment systems (such as subsurface-flow wetlands, surface-flow wetlands, sand filters, ponds) are used for wastewater treatment prior to irrigation reuse.

Requirements:

The candidate should hold the equivalent of a diploma (Masters) in an appropriate discipline related to Environmental Science, Biology, Environmental Engineering, or Ecology. A good knowledge of natural wastewater treatment technologies (such as constructed wetlands), water quality measurements, water budget calculations, plant growth assessment techniques and a fluency in English is required. The candidate will be expected to publish the findings of the research in refereed international scientific journals and to assist with associated technology transfer projects.

The UFZ offers well-structured additional support and career development opportunities for PhD students in the form of its new interdisciplinary Graduate School HIGRADE (<http://www.higrade.ufz.de/>).

For further information please contact (see also www.ufz.de):

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The place of work will be Leipzig (Germany) with a component of field work conducted in Jordan in cooperation with the Al-Balqa' Applied University (Amman).

Salary will be according to the appropriate civil service level 13/2 (TVöD). Women are explicitly encouraged to apply to increase their share in science and research. Physically handicapped persons will be favoured if they are equally qualified.

Application assessment will start immediately and the advertisement remains open until the position is filled. The position is open from 18th of July 2008. To apply, please send a complete CV, your contact information, names and contact information of 2-3 referees, and a one-page cover letter stating your qualifications, background and reasons for applying, under the code **73/2008** to the Personnel Department of the Helmholtz-Centre of Environmental Research P.O. box 500136, D-04318 Leipzig, Germany or by E-Mail to application@ufz.de.