

Application for Science Collaboration Symposia – Bahrain, Kuwait, Oman –

Theme: Water Desalination and Clean Energy

Background

The Water-Energy nexus is a high priority research area for both the UK and the Gulf. The EPSRC leads on UK energy research in support of UK Government targets. It has been focusing on large-scale solutions to water scarcity. Fresh water in GCC countries is scarce and existing desalination technologies are incredibly energy intensive. A substantial amount of oil revenue is consumed annually for generating energy for seawater desalination. Rapid growth in population and the desire to have improved standards of living (together with water pollution due to industrial use of water) are increasing the water and energy demands. To secure the supply of future water and energy sources we must make use of alternative sources of energy and technology.

The Science Collaboration Symposia will be held in three countries, Kuwait, Oman and Bahrain, and will invite open discussions and investment in future interdisciplinary research to target water efficiency through emerging clean energy technology, with the aim of forming UK-Gulf country long term collaborations. The symposia will also look into recent advances in desalination and water reuse technologies including the integration of clean energy desalination such as solar thermal desalination. Please refer to Annex 1 for country-specific background information.

The Symposia are organised with the support of British Council, UK Science & Innovation Network the Department of Business and Skills and Research Councils UK, also encourages young scientific researchers to present their stimulating research and knowledge transfer ideas in water and energy. Please select to which of the three country Symposia you would prefer to be allocated to, the dates of each symposium is noted beside the relevant country (Note: you can choose to participate in more than 1 symposium, you can also list the countries in terms of your preference).

I'm interested to take part in the Research Collaboration Symposium in:

- a. Bahrain (14th -15th February)
- b. Kuwait (16th -17th February)
- c. Oman (22nd -23rd March)

Deadline for applications: Friday, 22nd of January 2016

Dr Malak Hamdan, Head of UK Science & Innovation (Gulf)

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Application to be sent to: Mahmoud.Mouselli@sa.britishcouncil.org

Contact Details

Your Name:

Organisation:

Address:

Telephone:

Email:

Job title:

Brief CV of participants.

Brief summary on your current research and innovation topics.

Added value of this activity for your organisation (maximum of 200 words).

Do you have existing professional links with Bahrain, Kuwait or Oman? If yes, please provide a brief description (maximum of 200 words).

Please give a brief description of how you (or your institution) would engage with participants after the end of the symposium in order to strengthen existing or establish potential future links/collaborations (maximum of 200 words).

Cost breakdown – please note that a certain amount per applicant has been allocated for the delegation and flights, accommodation, transport and meals will be provided and organised by SIN/BIS/British Council (eligible costs: flight costs, accommodation and transport in the UK). Please be advised that lunches and dinners will be provided).

Please outline the major elements of other eligible anticipated expenditure and costs.

Item	Cost
Total:	

Note: Funded researchers will be contacted by SIN/BC/BIS following the Symposium by Survey Monkey to monitor and evaluate the impact of the event.

If you have any questions please contact Dr Malak Hamdan, Head of UK Science & Innovation (Gulf),
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Annex 1: Background information

Kuwait

Kuwait is a highly water-stressed country with the lowest level of renewable internal freshwater resources per capita in the world¹. Kuwait's daily consumption per capita of energy and of desalted water is amongst the highest in the world. Total consumption of each is almost doubled every 10 years. The current cost of providing a reliable source of fresh water in Kuwait, through desalination plants exceeds 1.2 US\$ billion annually². The government estimates that by the year 2050, given current consumption patterns, the majority of the country's revenue that is generated by oil will be required to fund the increased production of desalinated water¹. Significant improvements in desalted water and power production methods are necessary. Fuel oil produced in the country can be fully consumed locally in 30 years, with nothing left for export, the main source of income³.

Bahrain

88% of water in Bahrain is from desalination plants, using natural gas as the primary fuel. The total amount of energy used for desalination has been increasing over the last ten years and it is estimated that by 2030 Bahrain will have to import liquefied natural gas, cost of desalination will increase. On current projections, 78 million tonnes of carbon dioxide will be produced by desalination between 2013 and 2030. Additional cost to society includes impact of gaseous emissions to local health, climate change and the effect of brine discharges on marine ecosystems⁴.

Oman

Oman obtains around 10% of its total water resources from desalination compared to 83% from groundwater supplies. The country suffers from a water deficit with demand outstripping renewable resources by 31%, and increasing desalination is a key part of the Sultanate's water strategy. ⁵ The primary desalination technology currently employed is Reverse Osmosis, accounting for 85% of production, which typically attracts the lowest financial operational costs. ⁶ However, all plants to date have relied on non-renewable energy resources, and growth in the sector is expected to add to the country's energy problems. The Research Council in Oman has therefore made desalination one of four main themes in its Renewable Energy Research Programme.⁷

References

1. The Oxford Institute for Energy Studies, 2014
2. Kuwait Institute for Science Research , 2011
3. M.A. Darwish, A.M. Darwish, Energy and water in Kuwait: A sustainability viewpoint, Part II, Desalination Volume 230, Issues 1–3, 30 September 2008, Pages 140–152
4. W. Al-Zubari, Energy, Environment and Resources, the Costs of Municipal Water Supply in Bahrain, , Chatham House, The Royal Institute of International Affairs, 2014
5. Ministry of Regional Municipalities and Water Resources Sultanate of Oman, 2015, taken from conference presentation available from the Water Sciences and Technology Association.
6. R. Al Hashemi et al. 2014. A Review of Desalination Trends in the Gulf Cooperation Council Countries. International Interdisciplinary Journal of Scientific Research: Vol. 1 No. 2.
7. The Research Council, <https://home.trc.gov.om/tabid/1140/language/en-US/Default.aspx>