



## Project Description for ARASIA TC Programme

### TC Cycle 2018-2019

**Project Number:** RAS2020

**Project Title:** Assessing the Economic Viability of Alternative Energy Supply Options to Meet Energy and Water Challenges

**Overall Objective:** To enhance the regional capacity towards sustainable energy and water resources management.

**Project Duration:** (2018 – 2019)

**Project Description:** Energy and water demand in the region is increasing due to various socioeconomic and technological developments. Furthermore, the increasing shortages of water resources are driving countries with already existing desalination to increase capacities and other countries will follow. Given that energy and water resources are unevenly distributed in the region, regional solutions may offer a possibility to address such challenges.

**Problem to be addressed:** There is a growing need for energy for several reasons, including: (1) the population is young (pyramid shaped); (2) regional countries are categorized among developing countries, thus the energy per capita is expected to increase for many countries in the next two decades; (3) the lack of fresh water is a serious problem for countries in the region. Countries will start to desalinate water to meet their future needs; (4) energy, water and climate are intricately linked and can be considerably influenced by potential climate change; (5) financing limitations for some of the Member countries make a regional solution a viable option; (6) high levels of economic growth have been one of the features of the region. This requires sustainable and affordable supply of energy for Member countries; (7) unlike Gulf countries, Jordan and Lebanon, for example, suffer from limited natural resources. Integrating and establishing a system that builds on complementarity of limited resources and oil-rich countries; and (8) a lack of a set of unified data that the countries' researchers could tap into.

**This project is proposed as a regional activity for the following reason(s):** Several characteristics deem nuclear power plants (NPPs) viable for being regional projects: (1) the amount of energy produced by one plant is in the giga-watts; (2) investment size: bigger projects are more feasible in the long run. However, this requires pooling of significant amounts of investment that would be more beneficial under the auspices of regional cooperation; (3) financing: NPPs require large upfront capital cost; (4) infrastructure: not all countries have the proper sites for NPP construction; (5) fuel: countries possess uranium ore reserves while others do not; (6) human resources: some



countries possess the human resources for an NPP, while others do not; (7) grid interconnection: the national electricity grids in Member States have already been interconnected among each other; (8) fuel cycle: solution for final disposal for spent fuel and radioactive waste; (9) local content: develop the local industry to support nuclear projects to maximize local content; and (10) sites: provide more alternative sites. All these factors combined lead to regional cooperation in the establishment of a nuclear plant project as not only a viable and realistic, but also a successful option.

**Stakeholders:** Stakeholders include energy and water utilities, atomic energy commissions, and others, which will cooperate in the successful project implementation in accordance with their designated national roles and responsibilities.

**Partnerships:** Partners including energy and water ministries.

**Role of nuclear technology:** The IAEA energy planning tools will be used to examine the viability role of various energy technologies, including nuclear power, in the future sustainable energy mix and water supply in the region.