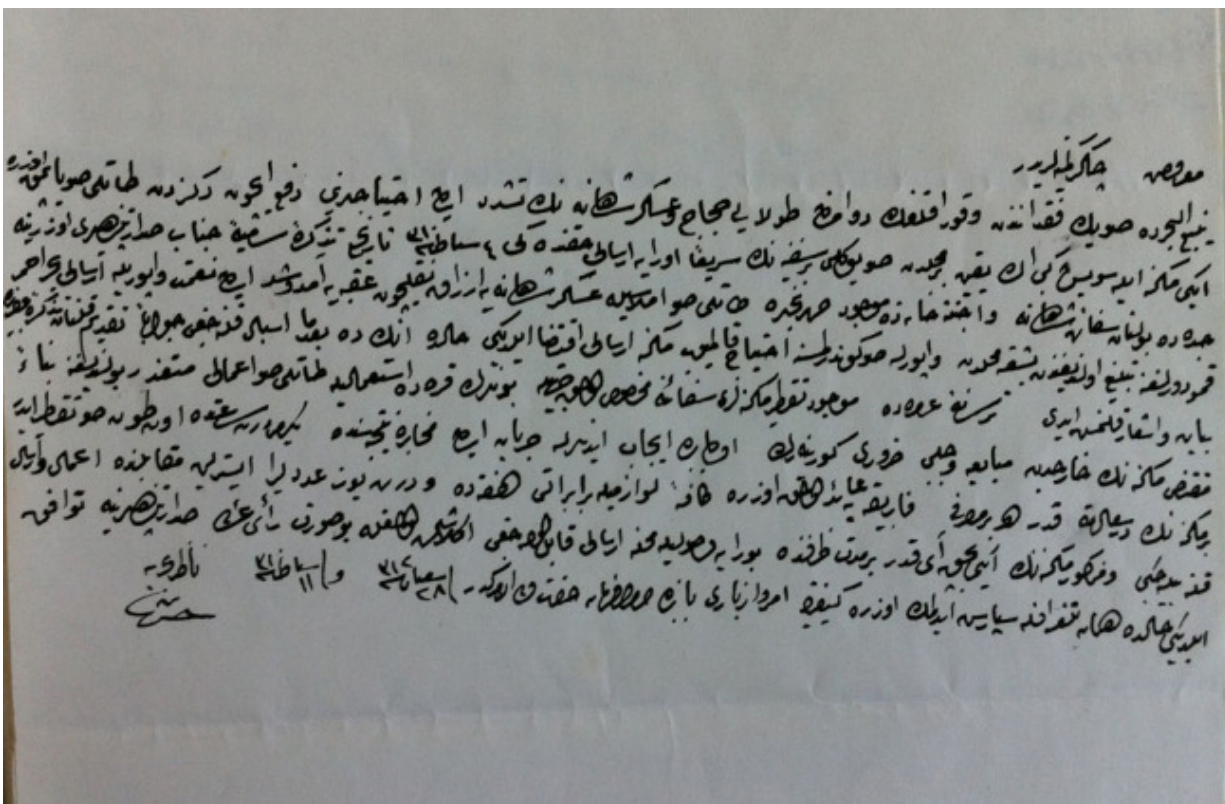


Historian examines environmental cost of tapping alternate sources for water, oil

November 2 2015



Michael Christopher Low translated this 19th century document from the Ottoman Archives in Istanbul that details Ottoman efforts to provided filtered water as early as 1894-1895. Image courtesy: Başbakanlık Osmanlı Arşivi. Document number: BOA/BEO 577/43260

Saudi Arabia is known as one of the top oil producing countries in the

world. However, it may have never earned that reputation if not for a quest to find fresh drinking water in the late 19th century, because of drought and repeated cholera outbreaks.

In an essay published in the journal *Comparative Studies in Society and History*, Michael Christopher Low, an assistant professor of history at Iowa State University, explains how the search for [water](#) led to the discovery of [oil](#). It's ironic, given the country's current dependence on oil to produce drinking water, he said.

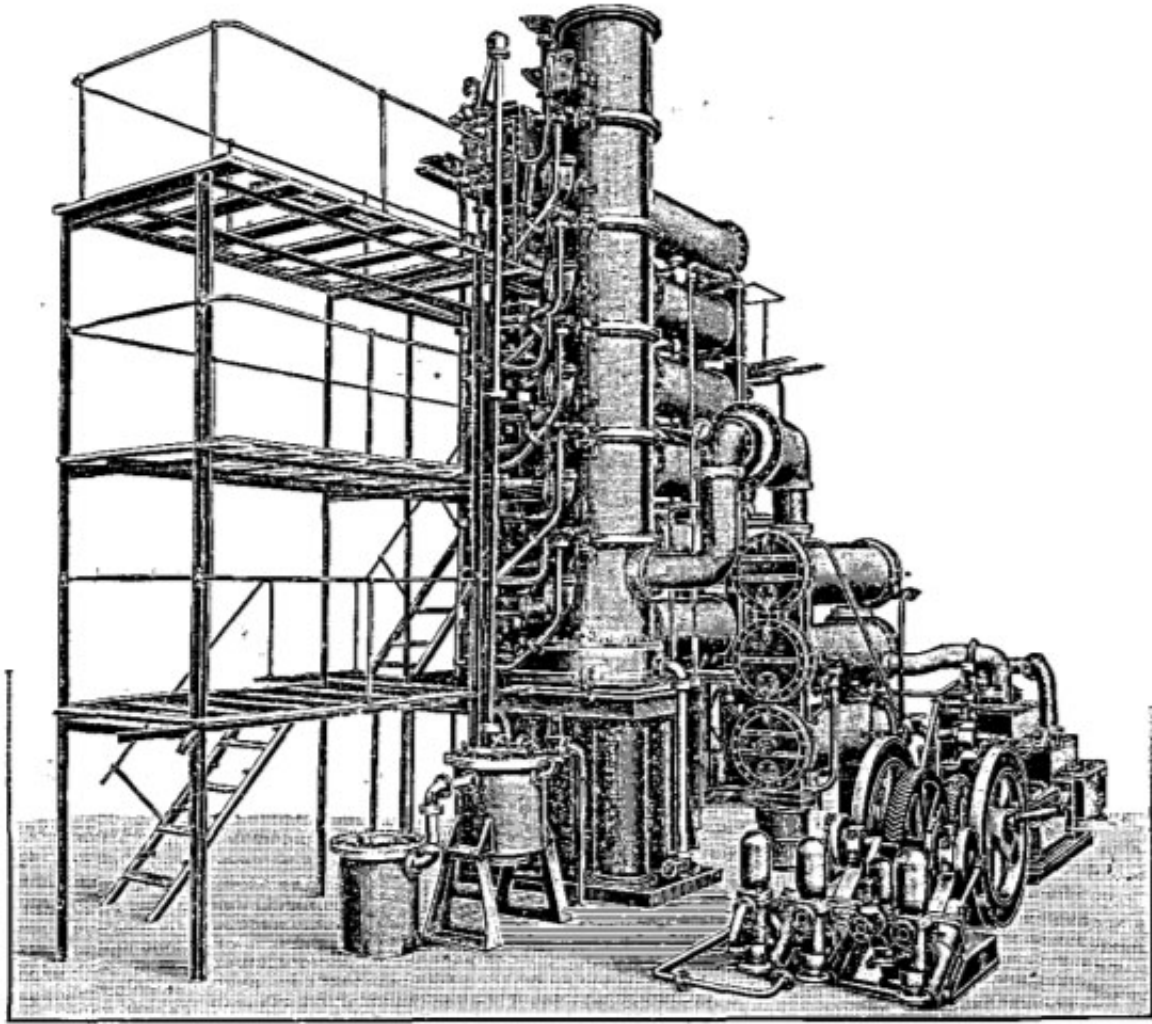
It also highlights the precarious relationship between oil and water in Saudi Arabia as well as the United States. Low, who specializes in modern Middle Eastern and environmental history, says 15 percent of the oil Saudi Arabia produces is used to power its desalination facilities, which convert salt water into potable water.

"Without desalinization there is no possibility that any major cities in Saudi Arabia could exist," Low said. "What happens if there is less oil in the future? The Saudis are completely dependent on oil for water. At what point will they not be able to devote those oil resources to run this energy-guzzling process just to create enough water, never mind the environmental consequences along the coasts?"

There are no simple answers to these questions that have global implications. Low says these are issues the U.S. must also consider as it explores alternatives to lessen dependence on foreign sources of energy. The cost of oil and oil extraction is often defined by gas prices, availability or the impact on the economy, without much consideration of the environmental impact, Low added.

"As we're thinking about the role of shale gas and oil fracking in the western United States, it would behoove us to keep in mind that this is a water-poor environment already," Low said. "This incestuous

relationship between oil extraction, water scarcity and water quality is one that haunts us. That's one way to think about this issue."



شکل - ۱
جهاز صفيه ادارهسى طرفندن جدهده وضع ا.لنان صو تقطير ماكينهسى

A water distillation machine was installed in Jidda in 1911. Credit: Kasm Izzeddin, (Istanbul: Matbaa- Amire, 1330), s. 40

Desalination provides answer to cholera outbreak

Low's essay traces the origins of desalination back to the 1890s, well before it became widely used in the 1970s. The Ottoman state developed the technology to meet the demand for clean water and limit the outbreak of cholera during the annual pilgrimage to Mecca. Insufficient efforts to repair the region's 9th century aqueduct system, and thin, desert water resources made desalination an attractive option.

Low is the first to translate the documents, written in Ottoman Turkish, outlining the prehistory of desalination in Saudi Arabia. His research of Ottoman Turkish, British and American Archives, as well as Arabic printed sources, illustrates how the push to expand the technology overshadowed environmental concerns. With the help of U.S. geological and hydraulic expertise, Saudi Arabia now has more than 30 desalination facilities.

While the country could not survive without desalination, its history is a lesson for other countries. A new desalination plant in Carlsbad, California, is expected to start producing water by the end of the year. The U.S. has had the technology available for decades, but Low says there are reasons for its relatively limited use.

"Partly, because it's expensive and it massively sucks up energy, so it's polluting. The effect of the waste product, the excess saline, is also very damaging and detrimental to the coastline," he said.

According to the project's website, the waste water from the treatment process has twice the salt content of seawater. This water will be discharged back into the ocean.

Florida is another consumer of desalination in the U.S. Low plans to explore the impact of desalination in the U.S. in future work. In addition

to the environmental lessons derived from Saudi Arabia's large-scale dependence on [desalination](#) technology, Low wants his work to offer an alternative to how Middle Eastern states are traditionally defined.

"Saudi Arabia was not always a petro state. In the early stages, it was very much dependent on the pilgrimage and the health of the Hajj. It was the way Saudi Arabia gained its power and legitimacy," Low said. "I'm constantly pushing my students to think about how the Middle East and Islamic world functions and take it down to a granular level. To demystify the Islamic nature of these places and think of them as very much having the same kind of ecological, public health and energy concerns as we do."

More information: *Comparative Studies in Society and History*, [journals.cambridge.org/action/ ... splayJournal?jid=CSS](https://journals.cambridge.org/action/showJournal?jid=CSS)

Provided by Iowa State University

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