

# Does the Answer to Water Security in the UAE Lie in Pakistan?

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## Situation

- Annual floods occurring in Pakistan
- The Mirani Dam discharges potable water into the ocean [1]
- UAE's production of potable water is inefficient (Desalination)

**Is importing water into the UAE a practical solution from technological, political and environmental perspectives?**



Figure 1: Gulf of Oman Map

## Problems

The flaws of desalination :

- Environmental pollution due to emissions [2]
- Climate change due to pollution
- High cost due to the complexity of the process.
- Inefficient; input to output ratio

Lack of potable water in UAE:

- Water is scarce; only source is through desalination
- Lack of rainfall causing lack of usable water
- Lack of rivers causing lack of usable water
- Ground water is depleting
- Drawing water from aquifers leads to salinity

## Solutions

### First Alternative

- Suspended pipeline from Dasht river to Ras Al Khaimah
- Phase one is to enlarge the Mirani Dam
- Phase two is the transmission line [3]
- Phase three is the sea crossing [3]
- Controlling technology

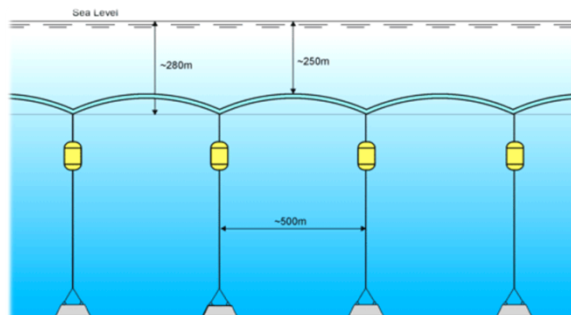


Figure 2: Suspended Pipeline [4]

### Second Alternative

- High strength concrete lined tunnel from Dasht River to Iran
- Pipeline spanning through the sea bed from Iran to Ras Al Khaimah
- Tunnel Boring Machine will be used for the underground pipeline
- Controlling technology

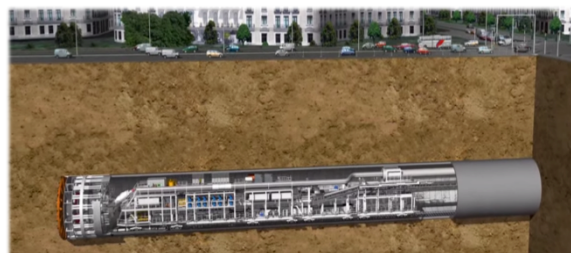


Figure 3: Tunnel Boring Machine (TBM) [5]

## Evaluation

	First Alternative	Second Alternative	Tankers
Cost	\$2 Billion + Variable costs	\$2.2 Billion + Variable costs	Variable costs
Construction Time	8 to 10 years	15 years + Maintenance time of TBM	No construction
Construction Maintenance	Negligible	Takes 12 hours when necessary	No process
Operational Maintenance	On demand	On demand	Regularly
Environmental Impact	1. Ships' exhaust fumes pollute air. 2. Ships' waste pollutes water	1. TBM's exhaust fumes pollute air 2. Destruction of the geology	1. High air pollution 2. High water pollution
Lifespan	100+ years	75 years	Infinite

Figure 4: Evaluation Comparison

The third alternative is good for a short-term **only** since the cost is variable and depends on the amount of water imported. However, tankers pollute the air and the sea. Therefore, the third alternative has been excluded for its impracticality with a long-term sustainable solution to the problem of water security.

## References

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