

Procurement of a Medium-Scale Desalination Plant in Jaffna, Sri Lanka



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Outline

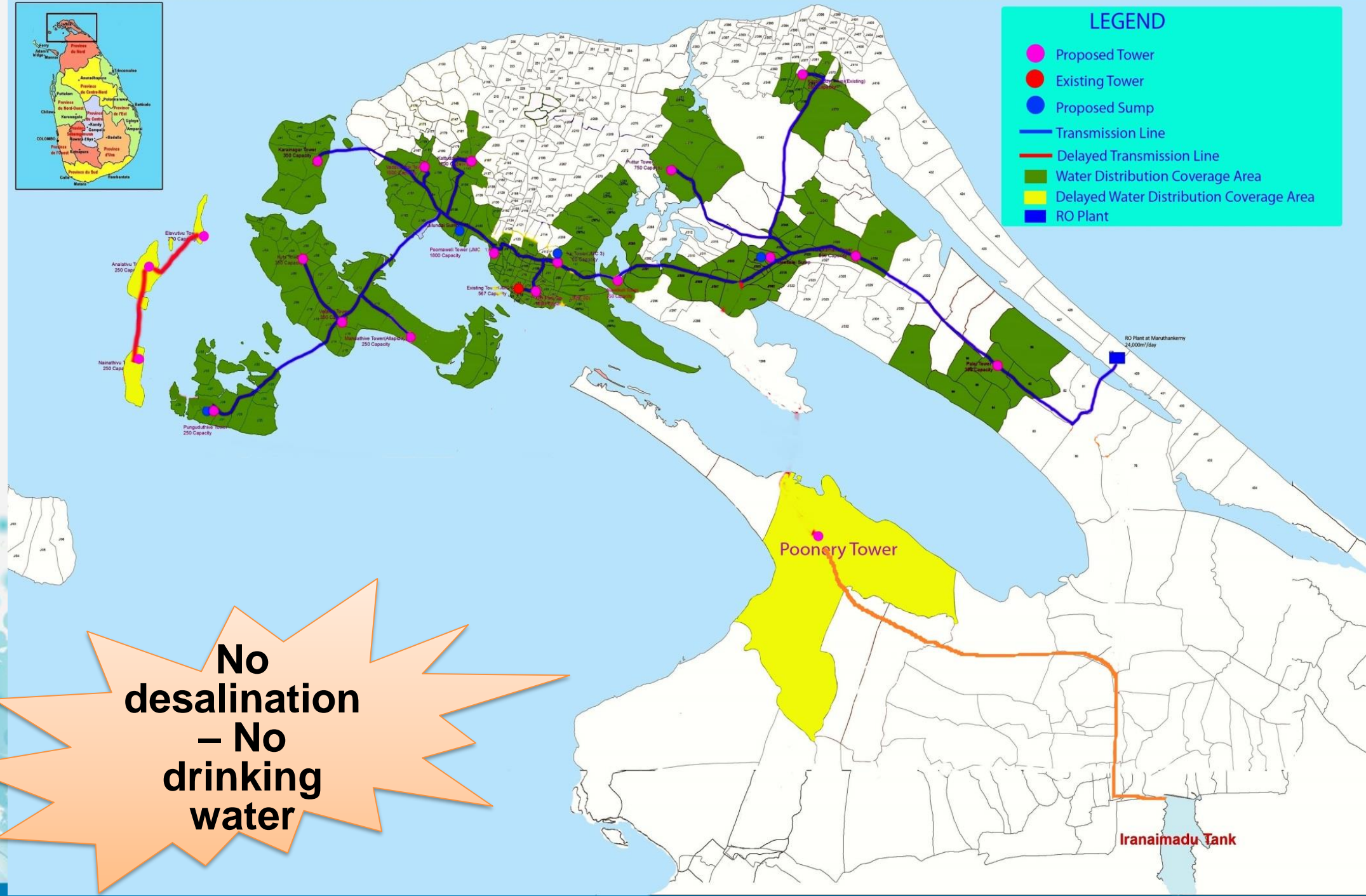
- Detail of the project, desalination and technology
- How the procurement method was decided and implemented;
- Lessons emerged and recommendations; and
- Future prospects.



Jaffna Area in North Sri Lanka



**No
desalination
– No
drinking
water**

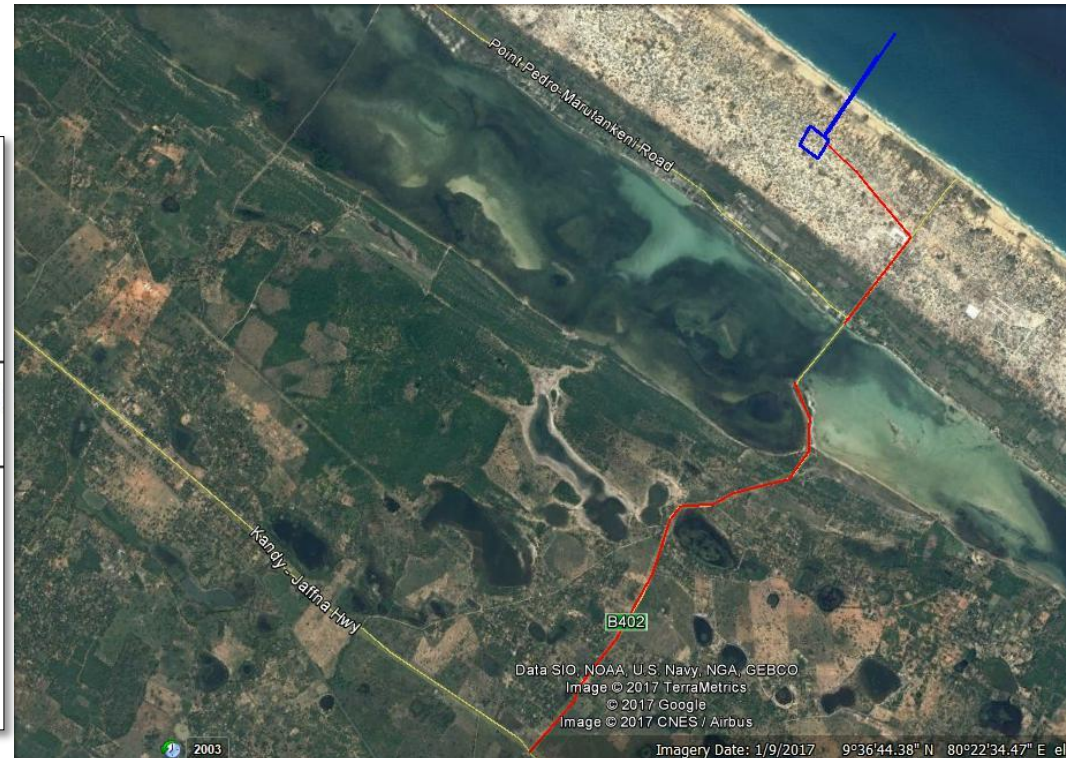
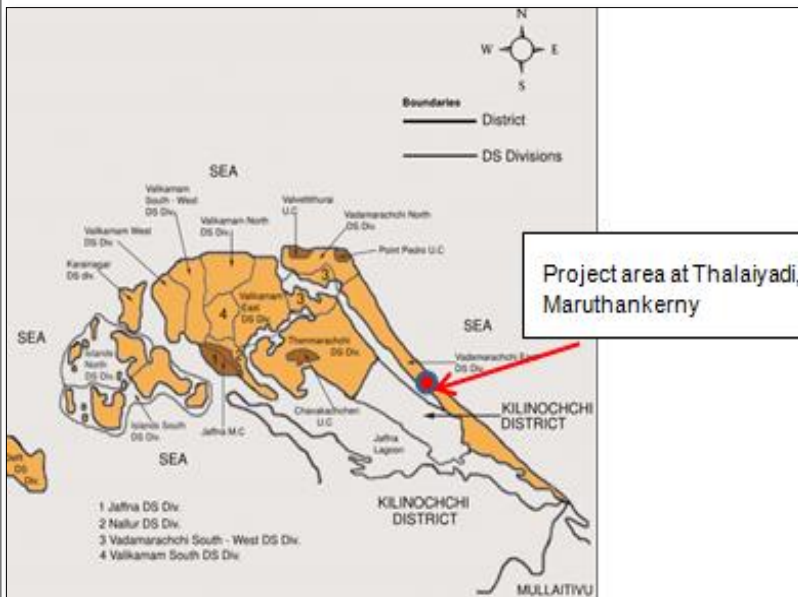
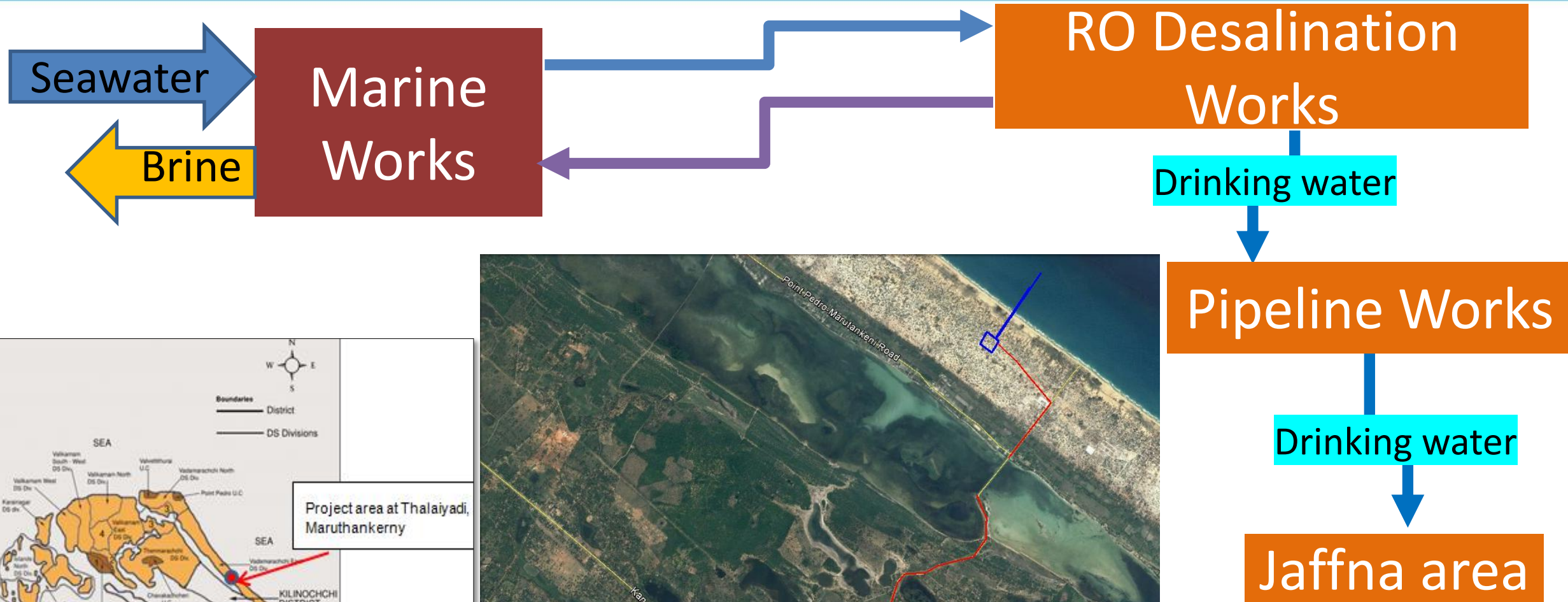


Poonery Tower

Iranaimadu Tank

Details of the project

24,000 m³/day sea water desalination utility for drinking water supply of 300,000 people in Jaffna





Thalaiyadi desalination proposed site

Photos by Achyuth Rao Aleti



How DBO contract is selected



Typical Desalination Plant: commercialized operation

Photo by Matthew Giesemann

- Single source of water supply;
- No local desalination experience;
- Limited in-country market;
- Little local allied industry;
- 400 km from port facilities (Colombo);
- 40km from nearest town (Jaffna); and
- Selection by qualification and price only.



Procurement processing

- Single stage two envelopes based on time, cost and quality;
- Market assessment;
- Allow sufficient time for bidders;
- DBO contract includes 7 years O&M, based on FIDIC

**Jaffna Desalination package:
270 day bid validity period
written answer >500 questions**

- 1. Qualifications**
- 2. Site Layout**
- 3. Commercial Arrangements**
- 4. Pre-Treatment**
- 5. Electricity Supply**
- 6. Standards**
- 7. Spares**
- 8. Reverse Osmosis**
- 9. Conveyance Pipeline**
- 10. Waste Disposal**

Technical Evaluation

- Qualification Criteria: get qualified bidders
- Technical Criteria: set the standard
- Performance Guarantees: indicators linked to payment
- Employer's Requirements: detailed road map to achieve the goals

Technical Criteria

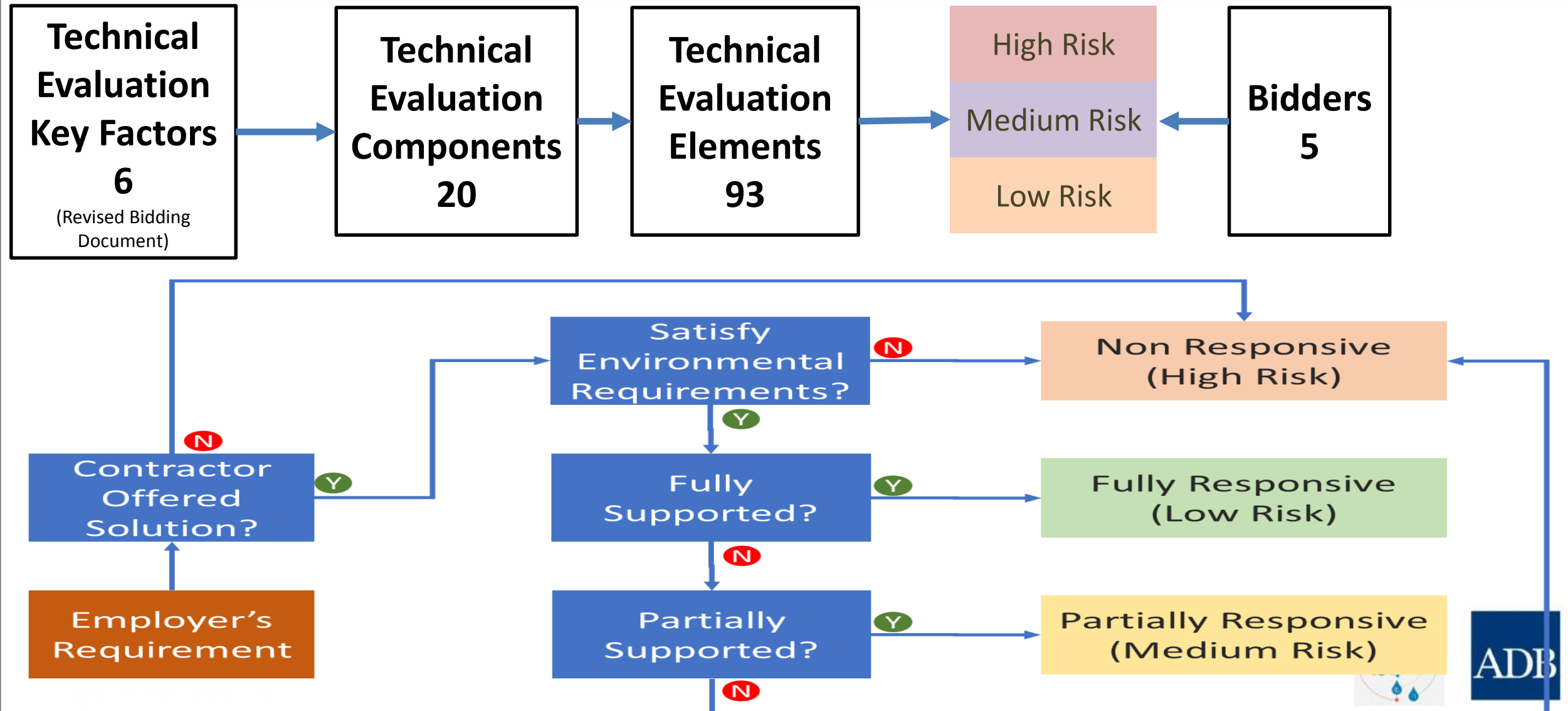
History shows many desalination plants fail to:

1. Deliver required output
2. Deliver required water quality
3. Deliver required reliability
4. Run over time
5. Cost more to run than anticipated
6. Suffer early technical problems
7. Suffer reduced asset lives
8. Technical criteria should address the underlying causes

Performance Guarantees

Specified	Performance Measure	Damage
	Water Production Quantity	Payment reduced if water not provided Payment reduced if supply is unreliable
	Water Production Quality	Payment reduced if out of specification Payment reduced if water quality not tested Payment reduced if discharge licence breached
	<i>Energy Usage – SWRO</i>	Payment reduced by 1.5 times excess over cap
Bid	<i>Energy Usage – Other</i>	Payment reduced by 1.5 times excess over cap
	<i>Chemical Usage</i>	Payment capped at bid chemical usage
	<i>Replacement of ultrafilters</i>	Payment only made in accordance with asset replacement fund
	<i>Replacement of cartridge filters</i>	Payment only made in accordance with asset replacement fund

Evaluation of Employer's Requirements



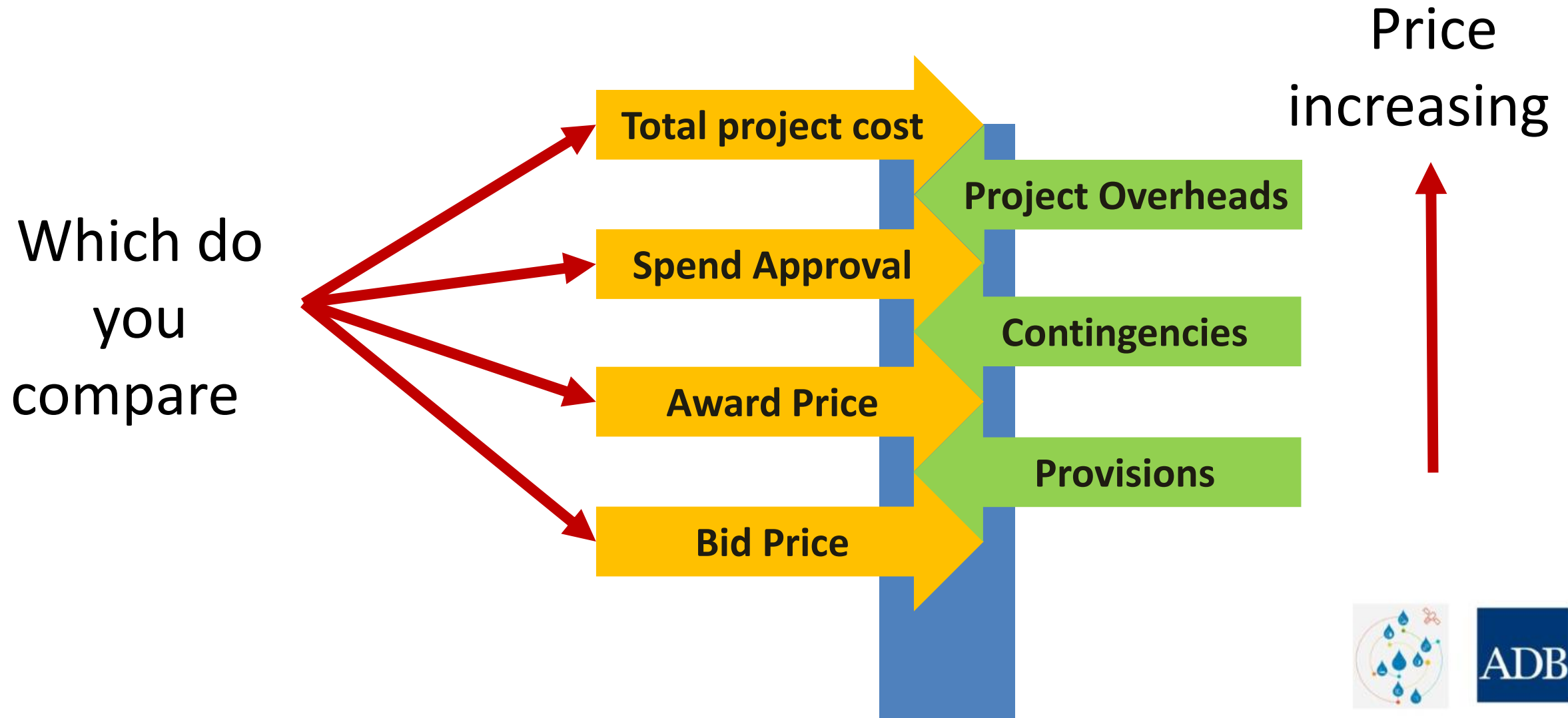
Financial Evaluation

- Methodology
- Real Costs
- Net present value
- Comparison of Bids

Project cost
Bid Evaluation
Cost Recovery (Pricing)



Comparison of Bids

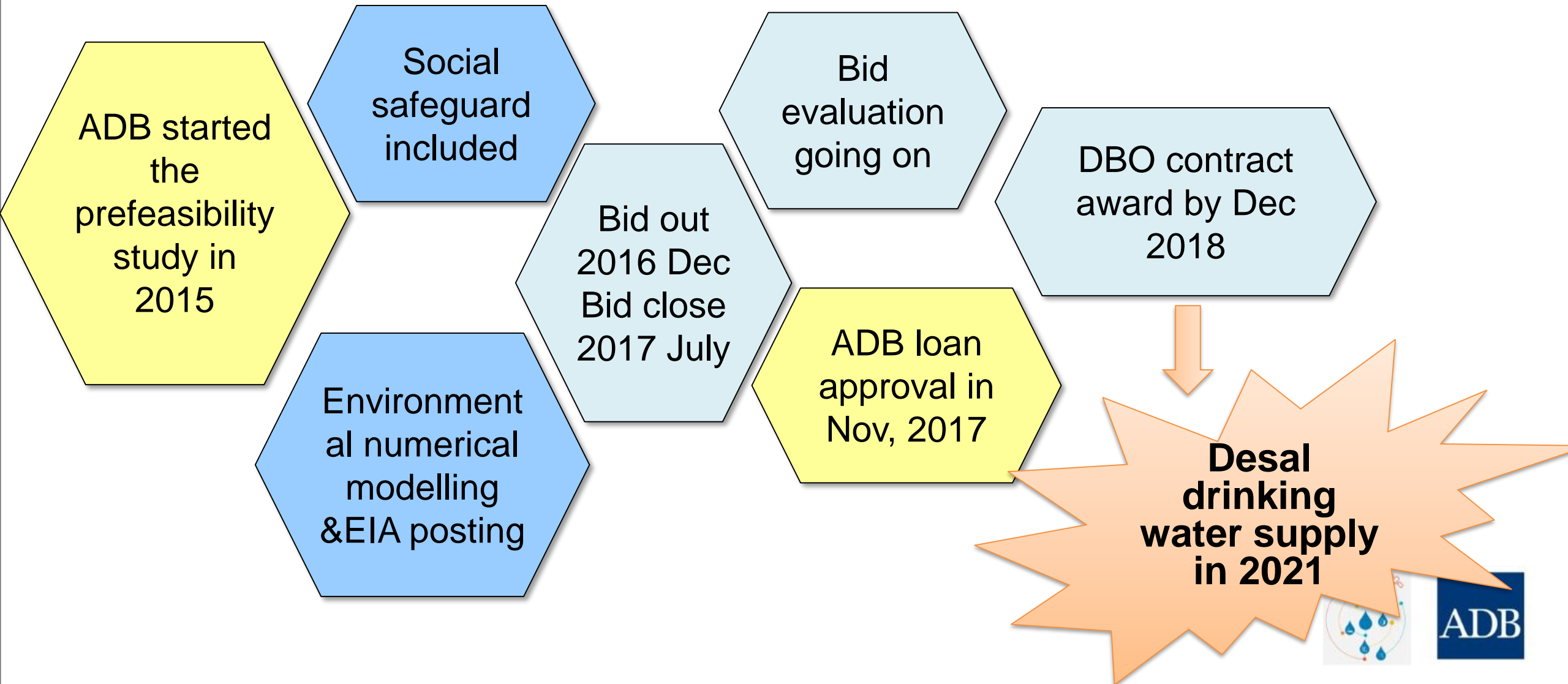


Lessons emerged and recommendations

- Engagement with the desalination industry before the bidding;
- Qualification criteria & evaluation criteria: minimize the risk and cut down the cost;
- Challenges of DBO: setting the interface; setting the O&M targets;



Progress so far





Which two countries have the highest installed desalination plant capacity in the world?



Highest: Saudi Arabia



5 million m³/day

Second Highest: United States
of America



2.8 million m³/day



Thank you.

