

الدورة 12

مؤتمر تحلية المياه في الدول العربية

19-18 شعبان 1440 | 24-23 ابريل 2019

فندق انتركونتيننتال سيتي ستارز، القاهرة، جمهورية مصر العربية



Technology Localization and Commercialization (TLC)

Renewable Desalination

**K·A·CARE TLC Office
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Outline

- K·A·CARE Mission and Mandate
- NIDL P
- Technology localization & commercialization (TLC) initiative
- TLC 2019 RFPs
 - Overview and Key Requirements
 - Technology topics and objectives
 - Review of proposal and contract requirements
 - An example
- Conclusion and summary

K·A·CARE's mandate for renewable energy

- K·A·CARE was established as a specialized entity entrusted with setting and implementing atomic and renewable energy in the Kingdom
 - Foster scientific research and development
 - **Localize technology**
 - Coordinate activities of the scientific research institutions and centers in the Kingdom
 - Determine priorities and national policies to build a scientific technical base in power and water generation, medicine, industry, agriculture, and mining
- To achieve its purposes, K·A·CARE may:
 - Propose national policy and regulations, and set the plan and strategy for implementation
 - Implement applied scientific research programs, whether independently or jointly with others
 - **Motivate the private sector to develop research and products**
 - Provide scholarships and training programs for scientific research
 - Represent the Kingdom before relevant international organizations
 - Encourage research through research contracts and providing facilities, experts, and materials
 - **Establish and operate projects** that achieve the purposes of the City, independently or **jointly with others**
 - **Cooperate with peer organizations and entities in other countries**



National Industrial Development and Logistics Program-NIDL

برنامج تطوير الصناعة
الوطنية والخدمات
اللوجيستية



Initiative execution strategy: Cost-sharing programs

Government

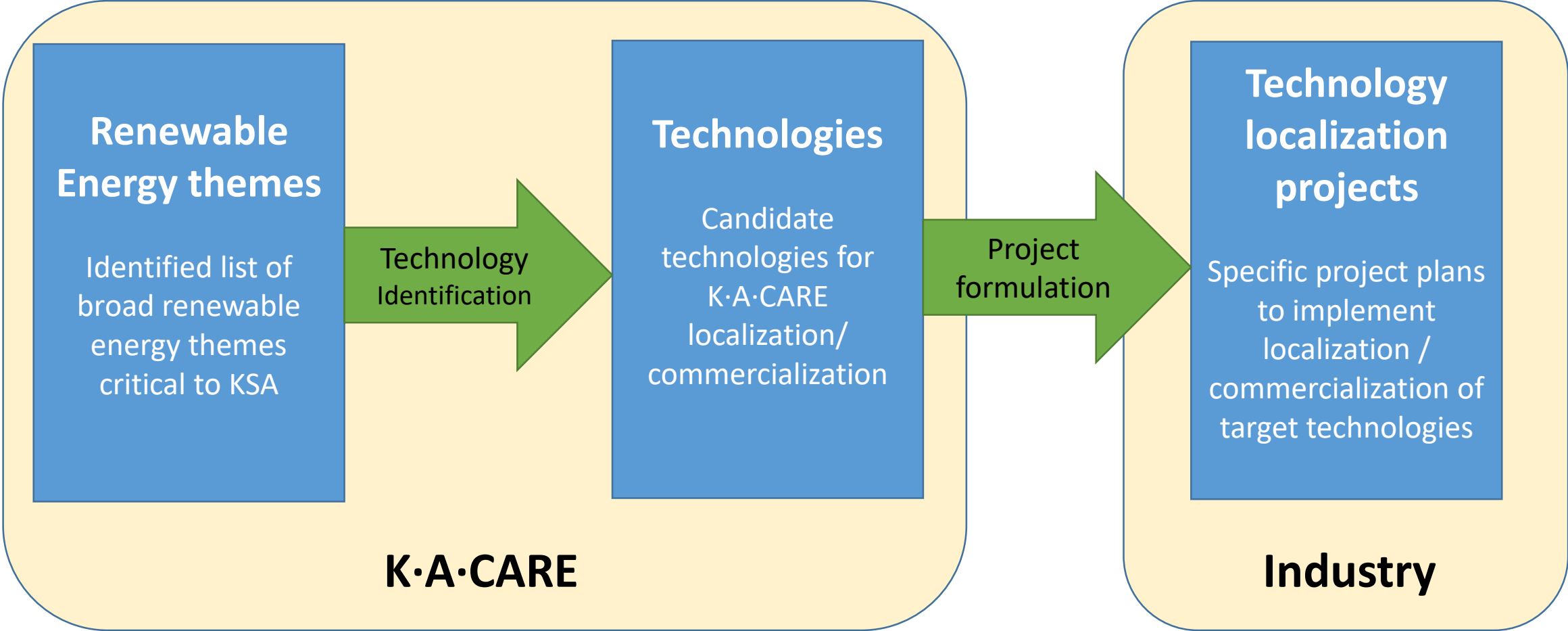


Private Sector

- Cost sharing is an **arrangement** between **K.A.CARE** and the **private** sector under which **costs** of the projects under the program are **shared** according to an agreed upon formula.
- This **well known policy** is adopted for the purpose of **reducing the risk** in localizing renewable energy technologies from the **R&D** stage to **commercialization** . **Minimization** of this risk barrier is expected to **encourage** the private sector to **participate** in the renewable energy technology localization **efforts**.
- **Saudi procurement** law is **not the proper tool** for such objective



Technology localization & commercialization process



2019 RFP Topics and Maximum Awards

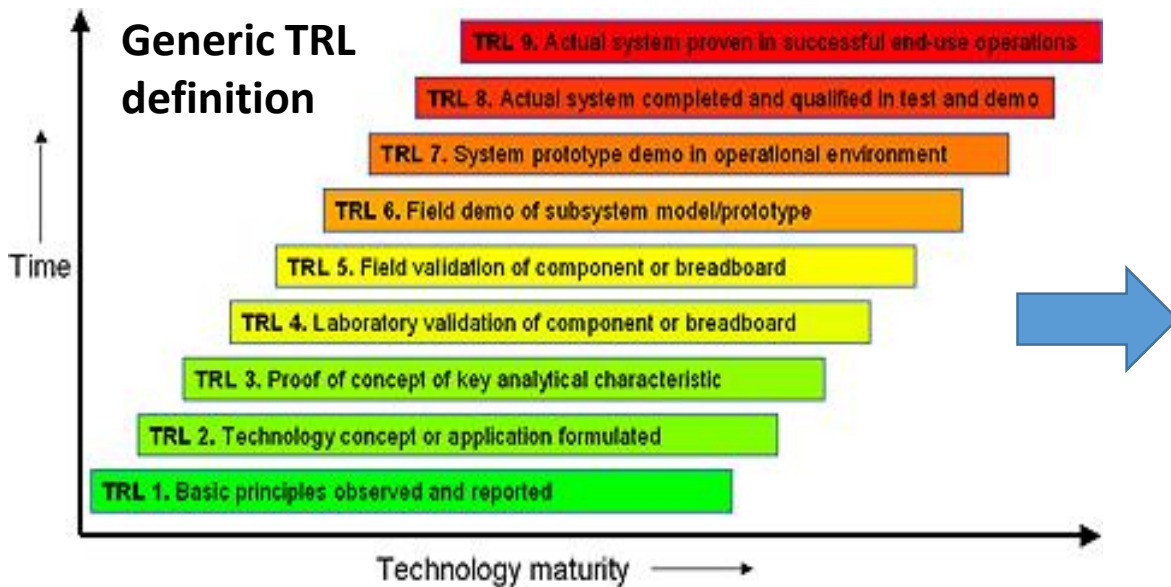
Topic Area	Max award (K·A·CARE Share)	Max Duration (Months G)
Renewable Desalination	SAR 30m	36 months
solar cooling	SAR 5m	36 months
Shallow geothermal application for heating and cooling	SAR 10m	36 months
Energy storage	SAR 10m	36 months
Renewable Energy Integrated Microgrids	SAR 30m	36 months
Renewable Polygeneration Systems	SAR 30m	36 months
Demand Side Management	SAR 30m	36 months
Renewable Energy in Building	SAR 30m	36 months
Solar heat for industrial processes	SAR 15m	36 months

- **15-30 awards anticipated**
- Proposed cost is a major evaluation factor
- Cost share based on technology maturity

Technology Readiness Level (TRL) and Cost Share

Proposed project characteristics	Allowable K·A·CARE cost share
Projects with a significant degree of technology risk (TRL 5-6)	up to 80%
Projects with higher maturity (TRL 6-7) but with an initial gap in competitiveness or with high initial business start-up obstacles	up to 50%
Projects with mature technology (TRL 7+) being demonstrated at commercial scale	up to 20%

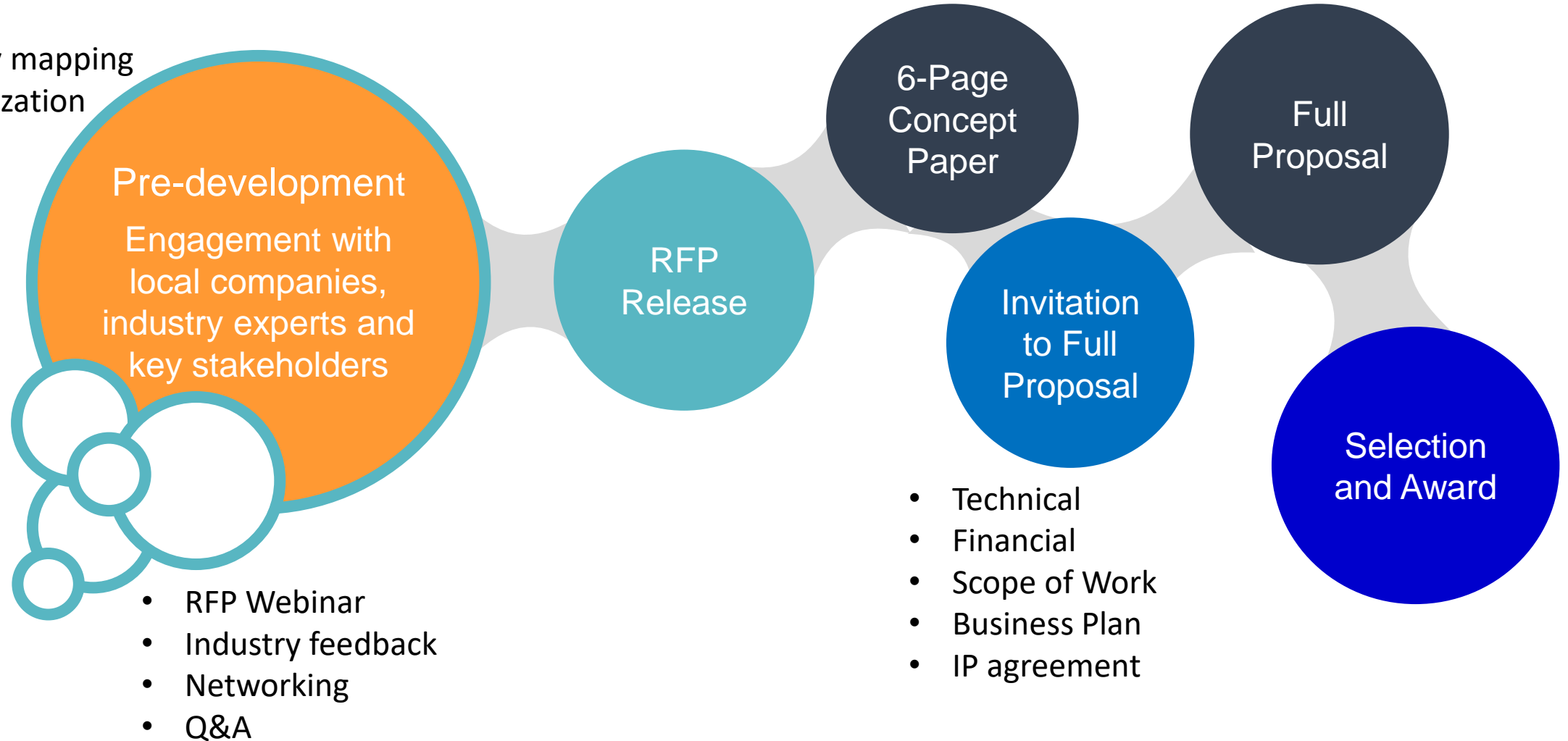
- The maximum cost share percentage can range anywhere from 20% to 80%, with the primary factor being the TRL of the proposed work.
- Proposals offering a higher proportion of industry funding will be considered more favorably, other factors being equal.
- K·A·CARE cost share must be commensurate with technology and business risk.
- **COST SHARE IS A MAJOR EVALUATION FACTOR**



TRL definition specific to technology localization in KSA
• TRL 9: system placed into commercial production or deployment in KSA
• TRL 8: system demonstrated in KSA and ready for commercial production or deployment
• TRL 7: means a demonstration in KSA, manufacturing scale-up yet to be done
• TRL 6: means a pre-commercial demonstration (pre-production prototype)
• TRL 5: means a pre-commercial prototype meeting some, but not all, commercial requirements

Two-stage project application process

Technology mapping
and prioritization



Bidder Eligibility

- Prime bidder must be a for-profit Saudi company (LLC or JSC as defined in Saudi law).
- **Bidding Teams can be any type of entity**
 - For-profit, non-profit, academic, industry, Saudi, **foreign**.
 - Non-participating cost share provider (e.g., building owners).
- There is no limit on the number of concept papers or full proposals that any entity may submit, or the number of resulting awards



More About Cost Share

Total award size = K·A·CARE Funds + Recipient Contribution

$$\text{Recipient Cost Share} = \frac{\text{Recipient Contribution}}{\text{K·A·CARE Funds} + \text{Recipient Contribution}}$$

- “Recipient Contribution” can be any combination of private entity funding or public funds including other Saudi Government funding sources
 - The Recipient is legally responsible for paying the entire cost share;
 - The Bidder is solely responsible for managing cost share contributions by the Project Team.
- Eligible costs will be reimbursed based on independently audited invoices and measurable milestone achievements.

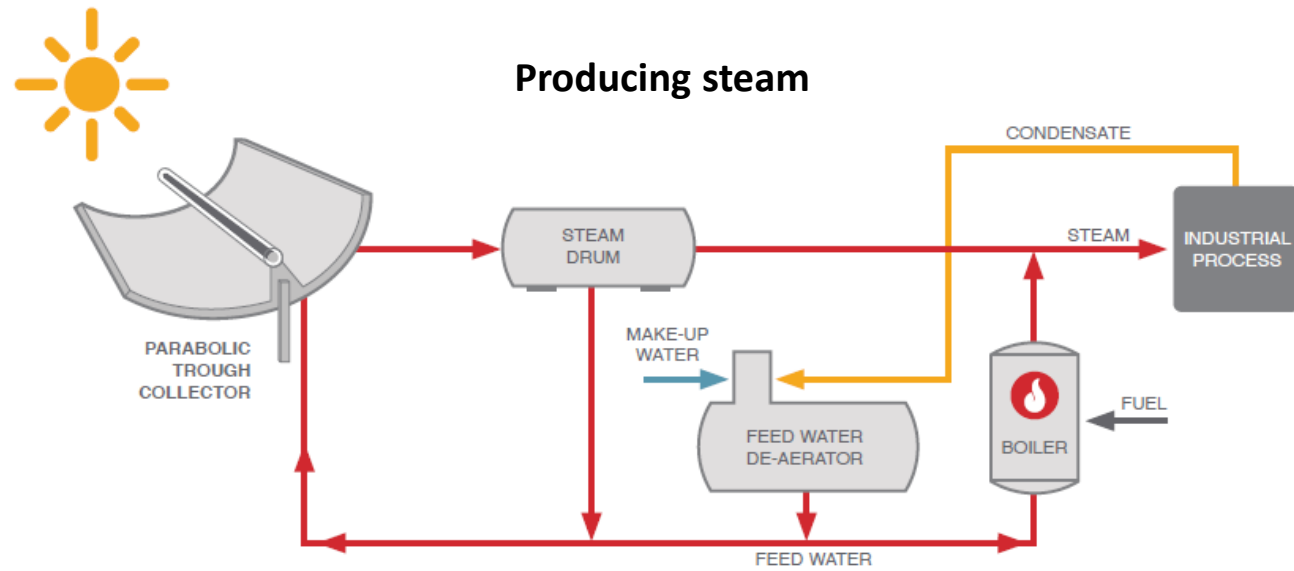
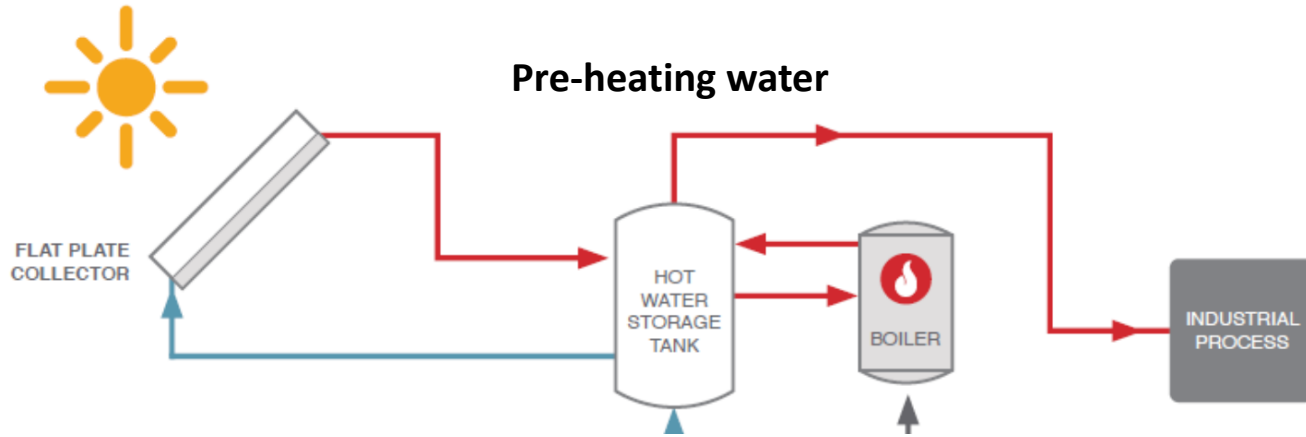


2019 RFP Important Dates

Topic Area	Concept paper Due	Full Proposal Due
Renewable Desalination	1 May 2019	14 July 2019
Solar cooling	1 May 2019	14 July 2019
Shallow geothermal application for heating and cooling	1 May 2019	14 July 2019
Energy storage	1 May 2019	14 July 2019
Renewable Energy Integrated Microgrids	1 May 2019	14 July 2019
Renewable Polygeneration Systems	1 May 2019	14 July 2019
Demand Side Management	1 May 2019	14 July 2019
Renewable Energy in Building	1 May 2019	14 July 2019
Solar heat for industrial processes	1 May 2019	14 July 2019



Solar Heat for Industrial Processes

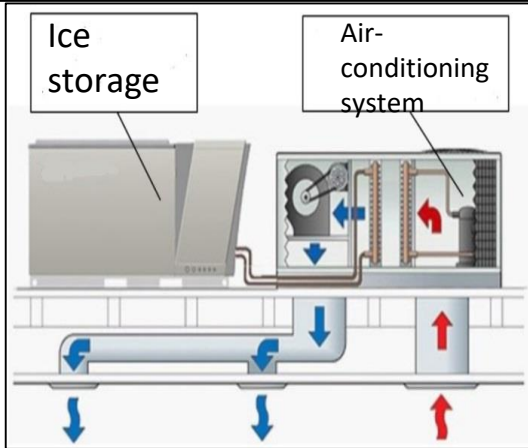
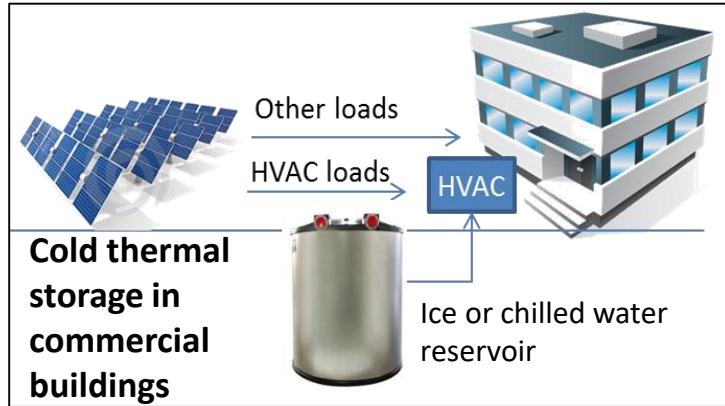


- Industrial Processes consume 33% of world energy but <math><0.001\%</math> is solar heat
- More than 7000 industrial facilities in KSA with demand for process heat

Solar thermal can provide cost-competitive industrial heat which can serve desalination plants

Energy Storage

Cold Thermal Storage



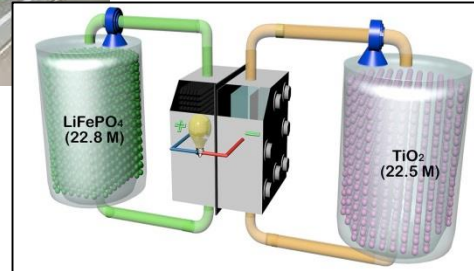
Ice Storage coupled to existing cooling system

Low cost demand response at the point of use

Smart Storage

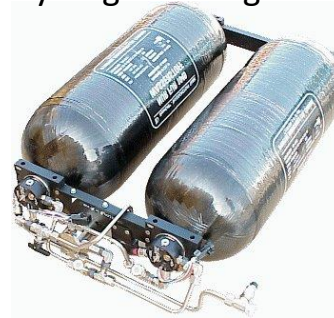


Electrochemical batteries

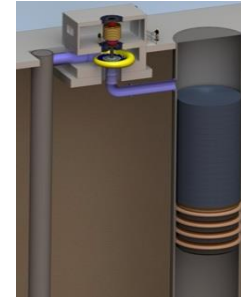


Flow batteries

Hydrogen storage



Potential energy storage



Enables renewable energy arbitrage, load following, frequency & voltage regulation, and off-grid energy supply

Hot Thermal Storage



- For high temperature
 - **Molten salt** is used in CSP plants
- For lower temperature
 - **Steam Drums** for short term storage
 - Pre-commercial — **concrete storage** etc.

Thermal storage can provide 24h process heat

Renewable Desalination

- Increasing population → Increasing demand for water
- Falling water table → Increasing demand for desalinated water
- Energy = 50% of the cost → RE can help reduce the overall cost

- **Improve reliability of water access in rural areas**
- **Reduce the carbon footprint of water**
- **Reduce the unsustainable demand for 'fossil water'**



PV- and wind-powered reverse osmosis



Solar-driven thermal desalination



Evaluation Criteria – Full proposals

- Full compliance with the terms and conditions and provided proposal instructions and templates of this RFP (pass/fail).
- Technical evaluation:
 - Technical innovation (20%)
 - Soundness of the technical plan (20%)
 - Bidder and team capabilities (30%)
 - Business commercialization and localization (30%).
- Financial evaluation:
 - Competitive price and cost realism of bid (50%)
 - Amount and quality of cost share (50%).

Conclusion and summary

- This RFP is a new approach to engagement with industry;
- It provides an opportunity for businesses to target exactly what they need to succeed;
- It provides flexibility for K·A·CARE to support renewable energy technologies across a wide spectrum based on best value to the Kingdom;
- We hope that it unleashes business and technology creativity and innovation;
- Successful projects directly support the transformative goals of Vision 2030 of Saudi Arabia.

Summary and Further Actions

- RFP information :
<https://www.kacare.gov.sa/ar/mediacenter/news/Pages/خبر-صحفي-.063.aspx>
- Webinr Link:
<https://register.gotowebinar.com/recording/4939816969162420227>
- K·A·CARE will remain available for consultation until the due date for concept papers.

THANK YOU

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