Capacity Building

Joint Saudi-German CSP Workshop
The Importance of Local Human Capacities

- Human capacities in CSP are necessary
  - to achieve a high local content over the complete value chain
  - to build high-quality CSP plants to achieve the prospected energetic and economic output
  - to guide the re-structuration of the energy system
  - to prepare and evaluate biddings

→ Sustainable implementation of concentrating solar power plant technology in Saudi Arabia
Proposal: Capacity Building Project

- Deutsche CSP searches a long term cooperation in the field of **Capacity Building** with Saudi
  - Universities
  - Research organizations
  - Companies
  - Policy makers and decision takers

- Local human capacities must be built on different levels
  - University level: Professors → Students
  - Researcher level
  - Engineer and technician level (active company workforce)
  - Policy maker and decision taker level
Proposal: Capacity Building Project

- Proposals for Capacity Building measures
  - Joint R&D activities
  - Development of high-quality training programs for specific target groups and its implementation
  - Planning and establishment of a Saudi-Arabian competence and testing center for CSP components and systems
Proposal: Capacity Building Project (1)

- Proposals for Capacity Building measures
  - Joint R&D activities
    - Resource assessment (DNI, sunshape, extinction)
    - Ageing of CSP Materials under desert conditions
    - Design, construction, testing, and optimization of small-scale prototype and demo plants
  - Development of high-quality training programs for specific target groups and its implementation
  - Planning and establishment of a Saudi-Arabian competence and testing center for CSP components and systems
Proposals for Capacity Building measures
- Joint R&D activities
- Development of high-quality training programs for specific target groups and its implementation
- Planning and establishment of a Saudi-Arabian competence and testing center for CSP components and systems
Proposal: Capacity Building Project (2)

- Proposals for Capacity Building measures
  - Joint R&D activities
  - Development of high-quality training programs for specific target groups and its implementation:
    - University professors → students
      Support with CSP teaching materials and knowledge
    - Engineers and Technicians (e.g. EPC, O&M companies)
    - Researchers
    - Project Developers
    - Policy Maker and Decision Takers
  - Planning and establishment of a Saudi-Arabian competence and testing center for CSP components and systems
Proposal: Capacity Building Project

- Proposals for Capacity Building measures
  - Joint R&D activities
  - Development of high-quality training programs for specific target groups and its implementation
  - Planning and establishment of a Saudi-Arabian competence and testing center for CSP components and systems
Proposals for Capacity Building measures

- Joint R&D activities
- Development of high-quality training programs for specific target groups and its implementation
- Planning and establishment of a Saudi-Arabian competence and testing center for CSP components and systems to check if receivers, mirrors and other components comply with the regulations stated in the biddings
  - Specify necessary test rigs of testing center
  - Training of personnel on test rigs
  - Cooperate on intern. standardization activities
German CSP institutes & companies have wide experience in CSP capacity building programs

- DLR: enerMENA program
  - 2009 – now
  - >50 partners from MENA & EU
  - 5 MENA countries: Jordan, Egypt, Tunisia, Algeria, Morocco
German CSP institutes & companies have wide experience in CSP capacity building programs

- FICHTNER:
  - enerMENA program, focus: Project Planning & Procurement, Project Implementation and Project Management, (2009 – now)
  
  
  - Saudi Arabian Electricity Company (SEC), conventional power: Training for engineering staff of SEC in energy technology (mechanical & electrical) and engineering economics, (2013)
  
  - Brasil: Consultancy to EPE (national company for energy research and planning) for implementation of CSP projects, including training / capacity building, (ongoing)
German CSP institutes & companies have wide experience in CSP capacity building programs

- **SUNTRACE:**
  - India: Capacity building of Indian Institute C-WET to implement the Solar Radiation Resource Assessment and Solar Mapping Program for DNI, based on 51 measurement stations, including training / capacity building, (2012 - ongoing)
  - Jordan: Support of WECSP program to install CSP pilot plant and laboratory at NERC for research purposes, including training / capacity building (2012 - ongoing)
  - Brazil: Advisor to CHESF & ELETROSUL (utilities) and EPE regarding solar radiation measurement program, including training / capacity building, (2013 - ongoing)
The active involvement of Saudi partners is desired

- The following Saudi partners are necessary for the success of the proposal
  - Universities
  - Research Centers
  - KACARE
  - Saudi Companies, e.g.
    - Project developer
    - EPC contractor
    - O&M companies
  - Decision makers
Key Statements

- Human capacities in CSP are necessary to create local content, built high quality plants and evaluate bids effectively

Our Proposal

- Development of high-quality training programs for specific target groups and its implementation
- Planning and establishment of a Saudi-Arabian competence and testing center for CSP components and systems
- Joint R&D activities

Opportunities and benefits for Saudi partners

- Achieve ambitious targets more quickly
- Improve decision process

Why choosing German partners

- Experience in CSP capacity building programs in other Arab countries
- Integration of research center and industry competences
A bright common future is possible by

- paving the way to **know-how transfer** and capacity building between German and Saudi institutions and companies
- working on a **basis of collaboration**

Thus,

- achieving a **balanced local and global content**
- creating a **win-win-situation**
- generating CSP projects with **economic, social and environmental benefit**.