How political commitment drives the STE/CSP Deployment worldwide

Brussels, 12/01/2017
Overview of CSP In Morocco

RENEWABLE ENERGIES, AT THE HEART OF MOROCCO’S ENERGY STRATEGY

Strong will of increasing renewable energies share within the national mix by 2020 and 2030

REs share evolution within the national mix

Launch of the Moroccan solar plan

2000 MW by 2020
Being 14% of installed capacity by 2020

Roadmap for solar energy deployment with an optimal technological mix in order to meet national needs

26% → 42% → 52% by 2030
Overview of CSP In Morocco

MASSEN, NEW SCOPE FOR REINFORCED SYNERGIES

Reinforcement of the national ambition in terms of RE development: 52% of installed capacities by 2030 from renewable sources

New scope for reinforced synergies

Development of integrated projects in the field of renewable energies

Notably,

- Solar Energy
- Wind Energy
- Hydro Energy

For a sustainable and useful electricity that serves the national economy
Overview of CSP In Morocco

IMPLEMENTATION THROUGH “INTEGRATED” PROJECTS

Electricity Production
- 2000 MW by 2020 and more by 2030

Industrial Integration
- For a competitive industry

Local Development
- For an inclusive development

Research & Development and Training
- For technology improvement and qualified resources

CLUSTER SOLAIRE Climate Innovation Center Morocco
Combination of technologies to provide the best answer to identified needs while optimizing the overall cost of the kilowatt hour and maximizing synergies

CSP technologies
Availability of storage offering a crucial dispatchability through very large-scale plants

PV technologies
Solutions for specific needs through mid-sized plants

NOOR: Confirmed complementarity of both technologies
Overview of CSP In Morocco

NOOR, A MULTI-SITE AND MULTI-TECHNOLOGY PLAN

5 sites with a minimal capacity of 2 000 MW by 2020

NOOR Tata
NOOR Laayoune
NOOR Midelt
NOOR Ouarzazate
NOOR Boujdour

Technologies combination to answer to identified needs while optimizing the overall cost of the kilowatt hour and maximizing synergies.
Overview of CSP In Morocco

Innovative framework for efficient development model
Overview of CSP In Morocco

NOOR OUARZAZATE COMPLEX, A GRADUAL DEPLOYMENT OF MORE THAN 550 MW

NOORo III
150 MW

NOORo II
200 MW

NOORo I
160 MW

R&D Platform

NOORo IV
~ 70 MW

CLUSTER SOLAIRE
Overview of CSP In Morocco

NOORo I PLANT IN OPERATION

- Techno.: Concentrated Solar Power using parabolic trough
- Capacity: 160 MWe Gross Capacity
- Storage: 3 hours Thermal Energy Storage

Financial Institutions: 

Developer: ACWA Power, Acciona, SENER, TSK

EPC: ACCIONA, SENER, TSK

Owner’s Engineer:
Overview of CSP In Morocco
Overview of CSP In Morocco

NOORo II, UNDER CONSTRUCTION Techno.

Techno. Concentrated Solar Power using parabolic trough

Capacity
200 MW Gross Capacity

Storage
> 7 hours

Developer
ACWA POWER

EPC
SENER, SepcoIII, POWERCHINA

Financial Institutions

Climate innovation Center
Morocco
Overview of CSP In Morocco

**NOORo III, UNDER CONSTRUCTION**

- **Techno.**: Concentrated Solar Power using tower
- **Capacity**: 150 MW Gross capacity
- **Storage**: > 7 hours

**Financial Institutions**

**Developer**
- ACWA POWER
- SENER
- SEPCOIII
- POWERCHINA

**EPC**
OFFERS EVEN MORE COMPETITIVE THAN THOSE PROPOSED FOR NOORoI

Peak price reduction of 15.6% (pour NOORo II) and 12.2% (pour NOORo III) compared to NOORo I

An even more competitive price considering:

1. Higher storage hours: 7 to 8 hours
2. Reduction in water consumption: use of dry cooling
3. Higher industrial integration proposal: 35%
OUTSTANDING MOBILISATION OF CONCESSIONAL FINANCING

IFIs confirmed their interest in mobilizing the financing required to cover the entire investment of the three phases of NOOR Ouarzazate
Overview of CSP In Morocco

NEXT SITES TO BE LAUNCHED

1. NOOR Midelt
   - A combination of CSP and PV plants to be developed
   - Call for expression of interest launched in 2015
   - Request for qualification & Tender process launched in July 2016

2. NOOR Tata
   - A combination of CSP and PV plants to be developed
   - Call for expression of interest to be launched in 2016
CSP In Morocco... local content opportunities development

**CLUSTER SOLAIRE** ....new actor for local content development

<table>
<thead>
<tr>
<th>RE projects</th>
<th>Services</th>
<th>Companies (National &amp; International)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Solar Farm" /></td>
<td><img src="image2.png" alt="Cluster Solaire" /></td>
<td><img src="image3.png" alt="Wind Turbine" /></td>
</tr>
</tbody>
</table>

**Needs**

- Capacity building
- Networking
- Technical specifications sharing
- Consulting
- Networking
- Technical support
- Adapted Trainings
- Visibility
- Information
- Opportunities tracking
THE CLUSTER OFFERS TAILORED ASSISTANCE TO CONNECT PREQUALIFIED / QUALIFIED BIDDERS WITH NATIONAL COMPANIES

1. CONNECTION NETWORKS

2. ADVISORY ON LOCAL MARKET

3. LOGISTICAL SUPPORT
THE PREQUALIFIED BIDDERS CAN ACCESS TO THE NATIONAL COMPANIES INFORMATION THROUGH THE MGBN DATABASE

**Development of B2B interactive platform, allowing the access to the details of the main national companies**

- Access to company listing by sector
- Search of companies information and details (size, turnover ...)
- Access to the expertise and capabilities of the companies by sector
- Option of adding companies to the network
- Access to a list of collaborative projects
- ...
In addition to existent rubrics, new rubrics can be added specifically for prequalified bidders.

- Questions to prequalified bidders
- Information sharing
- Exchange areas with companies
- Meeting requests
- Information request to companies
- Prequalified bidders presentation section
THE CLUSTER ALSO OFFERS AN ADVISORY SERVICE TO INFORM THE PREQUALIFIED BIDDERS ON THE CHARACTERISTICS OF THE MOROCCAN MARKET

- Gather the prequalified bidders information needs and questions on the Moroccan market and its specificities (Regulation, laws, market sizing, ....)
- Organize workshop with prequalified bidders and experts for each field of interest
- Follow up session with prequalified bidders
BESIDES THE TECHNICAL ASSISTANCE TO PREQUALIFIED BIDDERS, THE CLUSTER OFFERS SUITABLE FACILITIES

- **Location**: Building Zenith 1, Sidi Maârouf 4th floor – Casablanca
- **Surface**: 278m²

**Meeting rooms facilities**

**Secretary assistance**
(to book meeting with companies)

**Access to Cluster partners contact details**
(universities, regional investment centers ... )
THE CLUSTER ALSO OFFERS VARIOUS SERVICES TO DEVELOP CAPACITIES AND SKILLS OF LOCAL COMPANIES

- Green Business incubator
- Fast track to Market (FT2M)
- Prototyping
- Green Business advisory
- Accompaniment to creation and development
- Information and market awareness
- Skills and capacities enhancement
- Collaborative Working Groups
- Animation and Networking
- Talent Development
- Moroccan Green Business Network
- Organization of national and international events

CSP In Morocco... local content opportunities development
CSP In Morocco... local content opportunities development

32% of local content for Noor I
More than 35% for Noor II & III

➤ Metallic structure
➤ Engineering
➤ Civil Work
Thank you for your attention