

NOOR OUARZAZATE COMPLEX

Février 2020



masen

endless power for progress



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

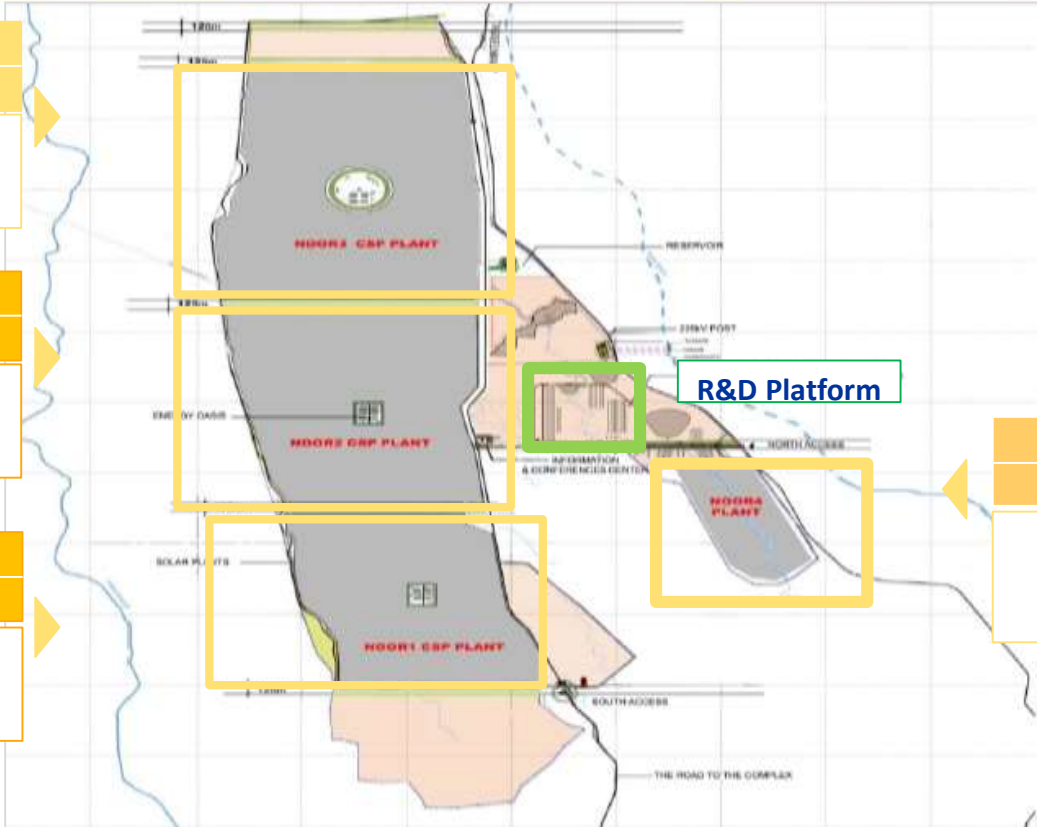

NOOR₃ III
150 MW
CSP Tower



NOOR₂ II
200 MW
CSP Parabolic trough



NOOR₁ I
160 MW
CSP Parabolic trough

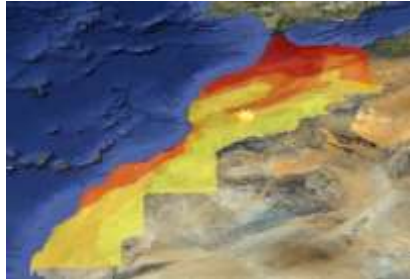


NOOR₄ IV
~ 70 MW
PV



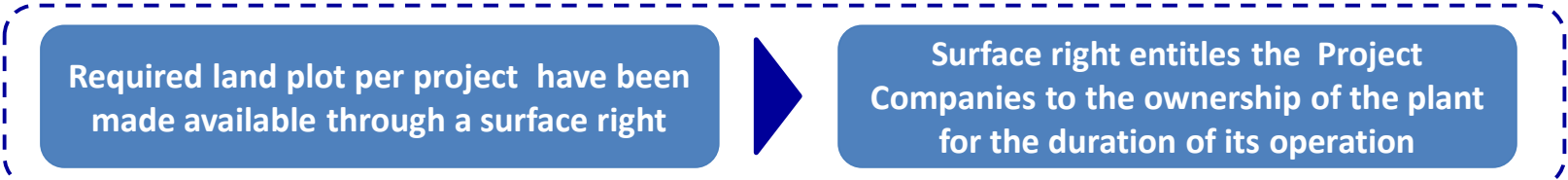
SELECTING ADEQUATE SITES AND ACQUIRING THE LAND

For the purpose of the development of the complex NOOR, Masen has acquired the necessary land



COMPLEX NOOR

3000 hectares	10 km North-Est of Ouarzazate
Near a 440 hm3 dam	Next to 225/60 KV substation and lines



Masen has aslo performed all qualification studies related to the site

NEED TO DEFINE CLEAR RISK ALLOCATION AND MODALITIES

Clear and optimized risk allocation translated into contractual documents made available to bidders

Construction Risk	
Masen	SPC
<ul style="list-style-type: none">LandCommon Infrastructures	<ul style="list-style-type: none">Construction of the plantAcceptancePerformance of the plant

Operating Risk	
Masen	SPC
<ul style="list-style-type: none">TransmissionPerformance and availability of InfrastructuresAvailability of water	<ul style="list-style-type: none">Management of the plantSolar resource

Commercial Risk	
Masen	SPC
<ul style="list-style-type: none">Offtake volume	<ul style="list-style-type: none">Payment

Environmental Risk	
Masen	SPC
<ul style="list-style-type: none">Land	<ul style="list-style-type: none">Plant

NOOR OUARZAZATE: A MULTI TECHNOLOGIES COMPLEX



A SOLAR COMPLEX OF 580 MW COMBINING 3 DIFFERENT SOLAR TECHNOLOGIES



NOORo I



IN OPERATION

- **Technology : CSP trough wet cooling**
- **Capacity : 160 MW**
- **Storage : 3 heures**
- **Location : Ouarzazate complex**
- **Emissions CO2 évitées : ~ 280 000 tCO2 / an**
- **Industrial Integration : 30%***

NOORo II



IN OPERATION

- **Technology : CSP trough dry cooling**
- **Capacity: 200 MW**
- **Storage : > 7 heures**
- **Location : Ouarzazate complex**
- **Emissions CO2 évitées : ~ 380 000 tCO2 / an**
- **Industrial Integration : 35%**

NOORo III



IN OPERATION

- **Technology : CSP Tower dry cooling**
- **Capacity: 150 MW**
- **Storage : > 7 heures**
- **Location : Ouarzazate complex**
- **Emissions CO2 évitées : ~ 250 000 tCO2 / an**
- **Industrial Integration : 35%**

NOORo PV I



IN OPERATION

- **Technology : PV avec tracking**
- **Capacity: 170 MW**
- **Location : Ouarzazate complex, Emission CO2 évitées pour ~ 87 000 tCO2 / an**

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



* Real industrial integration reached: 34%

NOOR OUARZAZATE: THE PERFORMANCE

