

An overview of the Algerian renewable energy opportunity

Adel Baba-Aissa

Director of **Renewable Energy Partner**

www.rnepartner.com

a.babaaissa@rnepartner.com

Outline

- 1) Context for renewable energy development in Algeria**
- 2) Overview of the Algerian electricity network**
- 3) Solar potential**
- 4) Algerian renewable energy program**
- 5) Regulatory framework**
- 6) Renewable energy projects**
- 7) Conclusion**



About us

- Project development company and advisory boutique firm specialised in renewable energy projects in emerging markets
- Dedicated to carrying out project development in Africa and the Middle East
- Been present in Algeria since 2013
- Been developing solar PV projects on our own or with local/international partners



A sample of this activity in Algeria

ONGOING PROJECT DEVELOPMENT:

- <5 MWs solar PV plant in BBA with a local industrial partner
- c.30 MWs solar PV plant in M'Sila with a local industrial partner
- ≤5 MWs solar PV plant with a local financial partner
- c.50 MWs solar PV plant in Djelfa with a foreign partner
- c.45 MWs solar PV plant in Guelma on our own
- Securing further sites in Constantine, Biskra and Adrar



A sample of this activity elsewhere

PROJECT DEVELOPMENT:

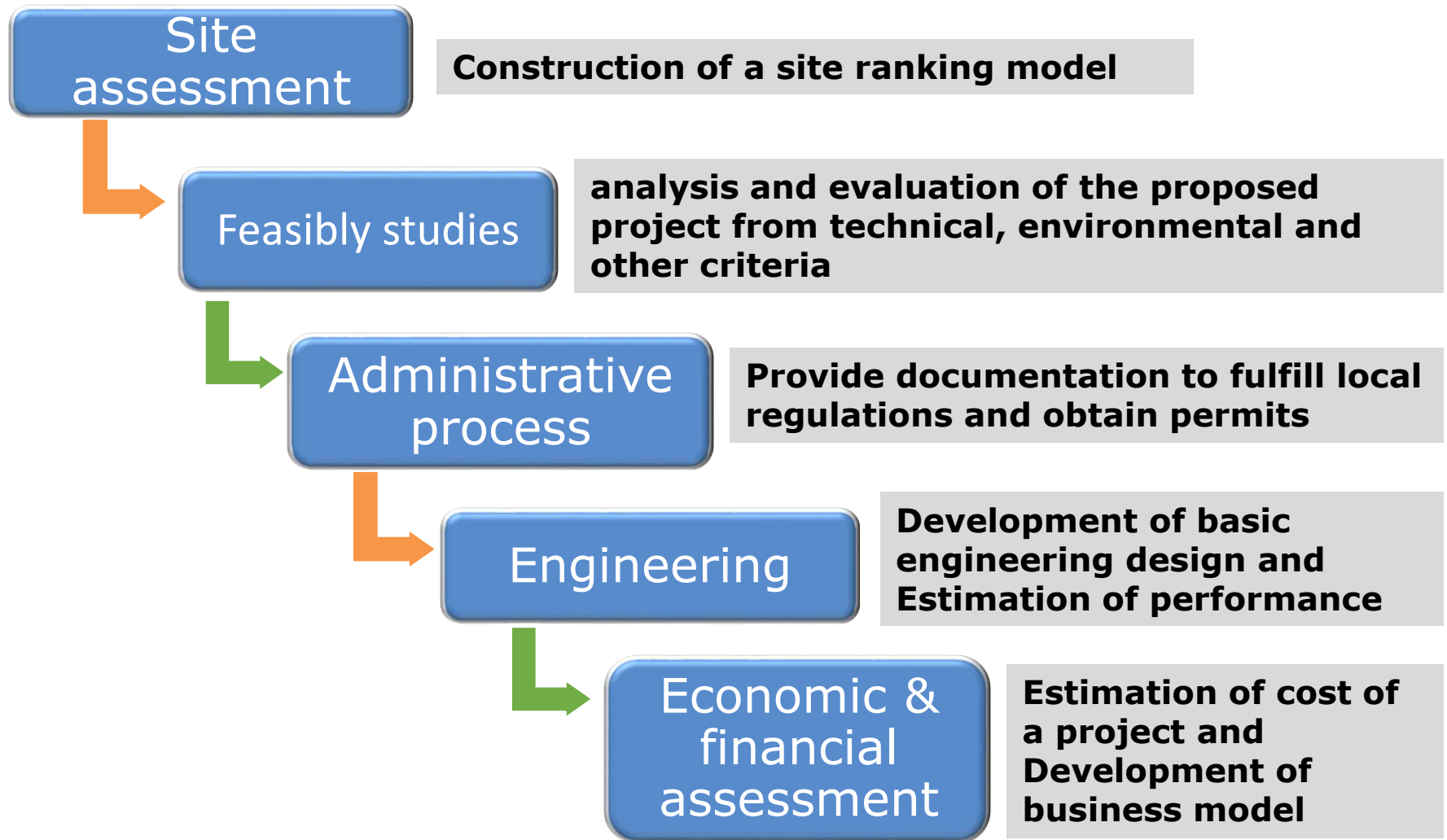
- Developed over 100MWs of RTB projects in the UK
- In the process of developing multi-MW ground-mount solar PV project in Ghana, Nigeria and Zambia
- Also installing large scale rooftop solar and hybrid solutions in North and West Africa

ADVISORY:

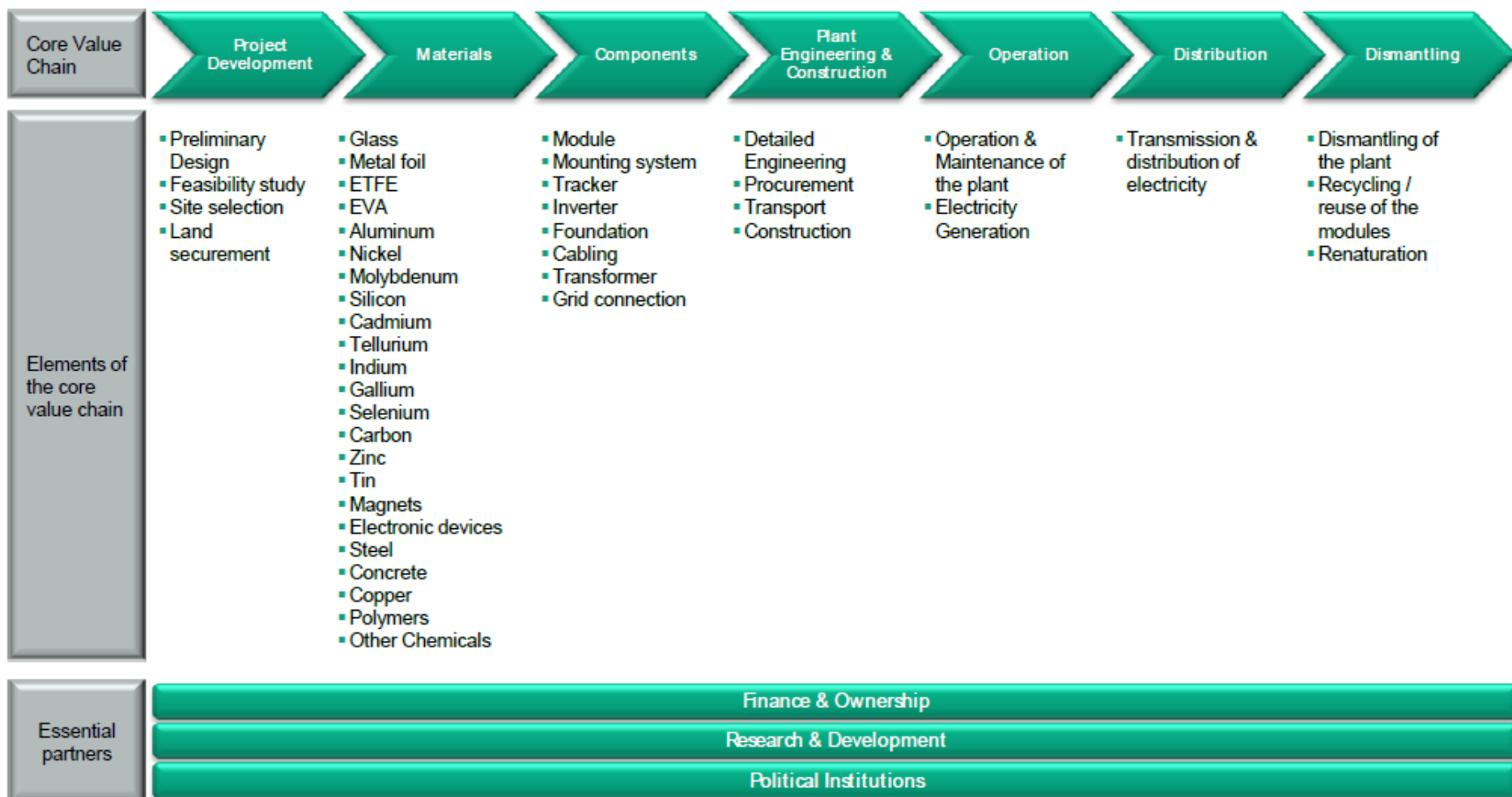
- Advising a Burkinabese group for the development of a 20MW PV project in Burkina Faso
- Aiding a Saudi conglomerate in opening a solar business unit within their group
- Assisting a Jordanian entrepreneur in pursuing solar PV opportunities in Jordan and Qatar
- Overseeing a proposal for a major Chinese manufacturer to produce solar panels in JV in the Maghreb



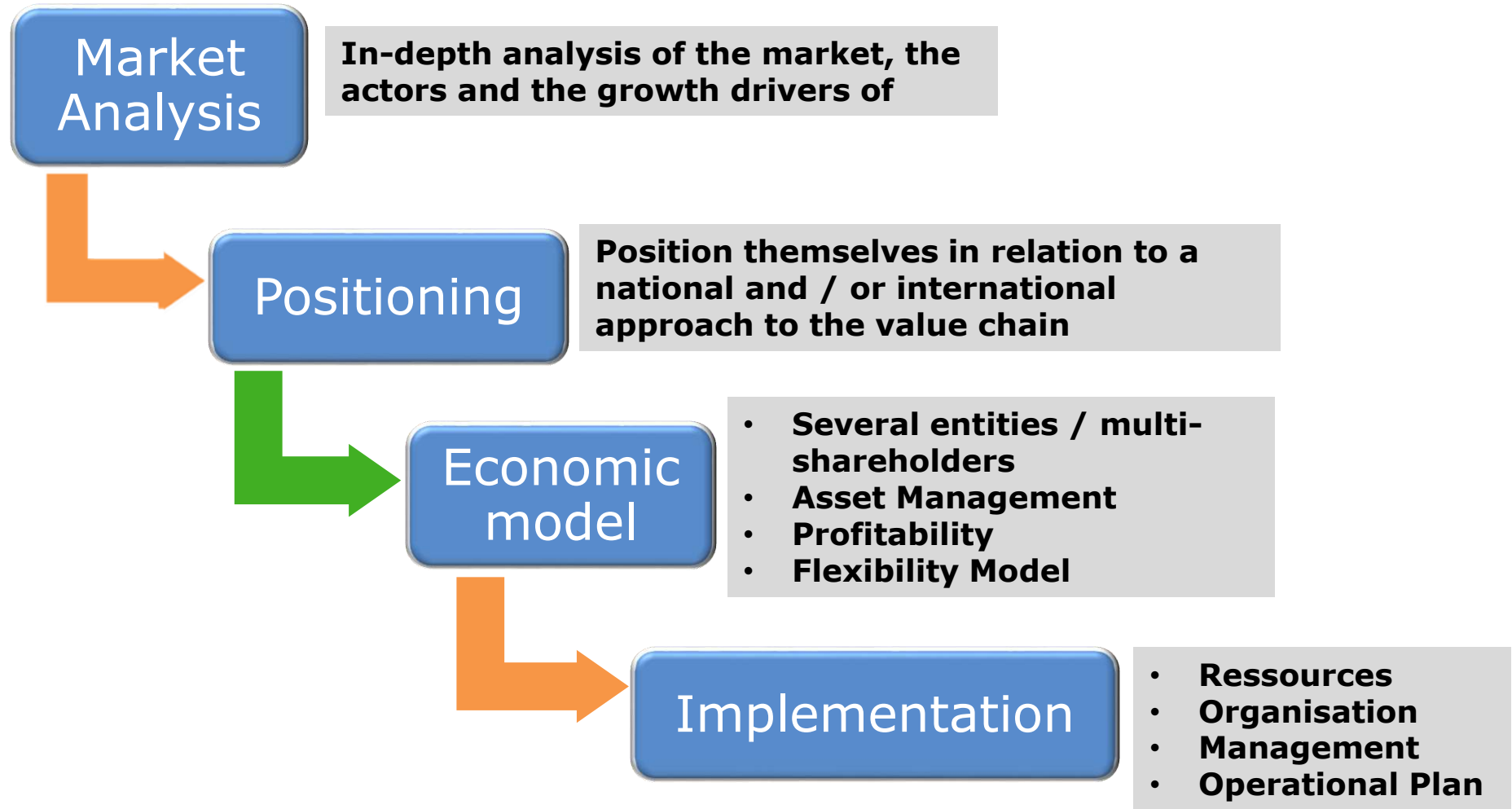
Project development steps



Value Chain



Market Entry Strategy



Context for renewable energy development in Algeria



Context

- Important solar potential
- Decreasing cost of renewables
- Uncertainty over oil and gas prices
- Uncertainty over oil and gas reserves
- Environmental issues and sustainable development

Challenges

- Development of alternative energy sources
- Development of a renewable energy industry
- Diversification of the national economy
- Becoming an actor in the world market of renewable energy

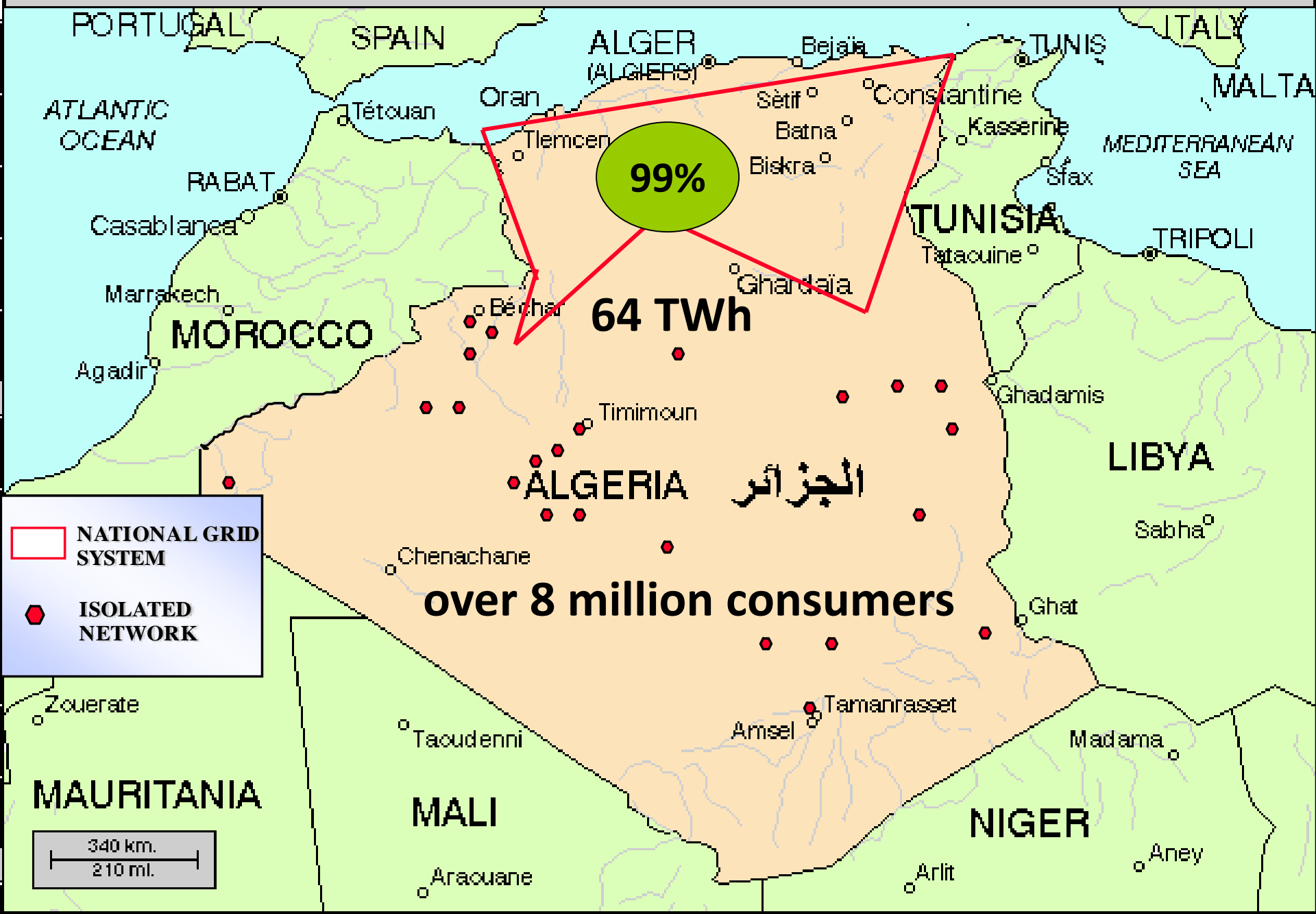


Overview of the Algerian electricity network



Algeria

الجزائر

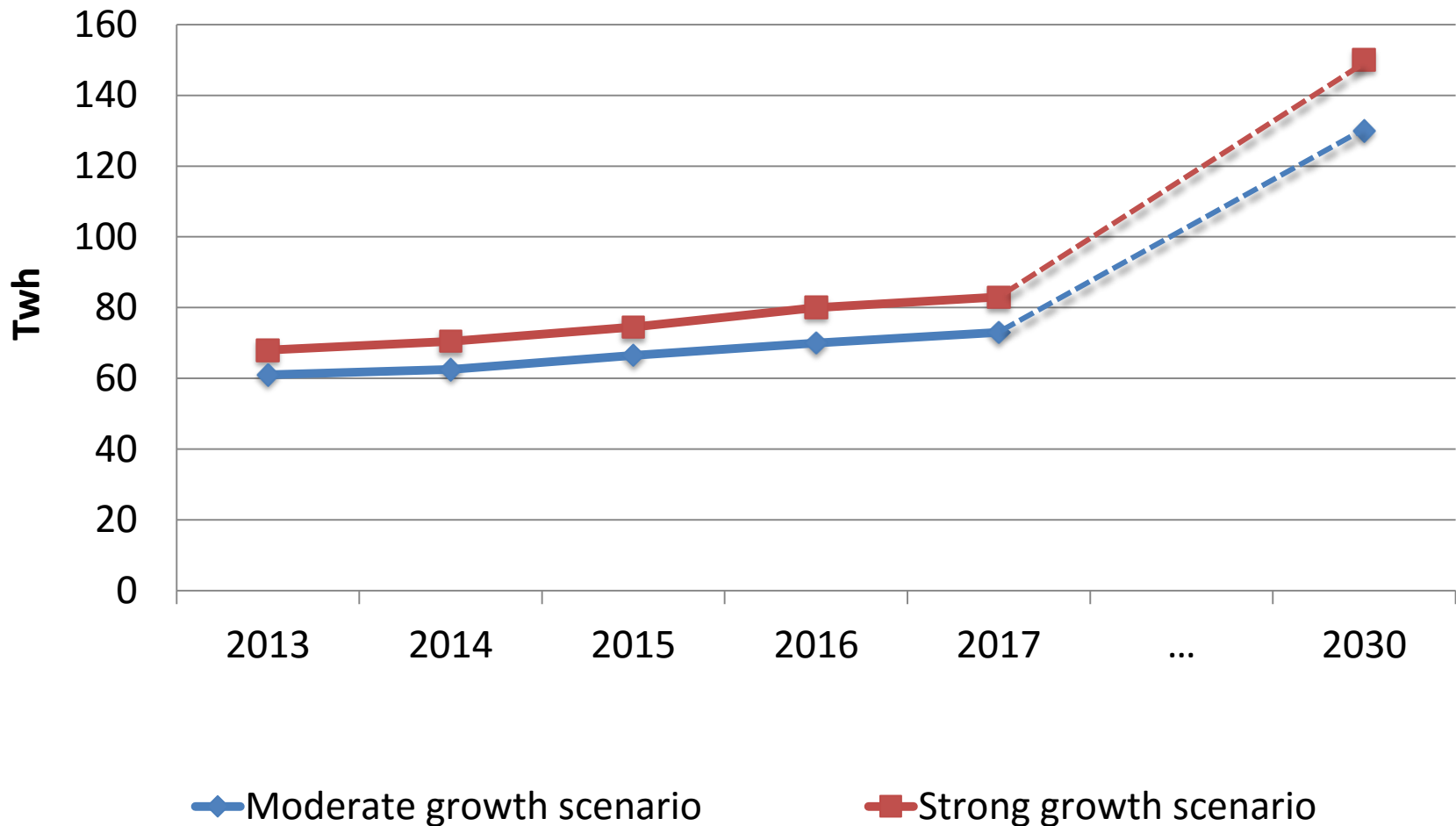


Expansion of the grid

1970	Parameters	2016
650	Installed capacity (MW)	23 573
1670	Power generation (GWh)	64 918
3 600	Transmission network (Km)	24 435
23 000	Distribution network (Km)	317 097
720	Customers (Thousand)	8 092



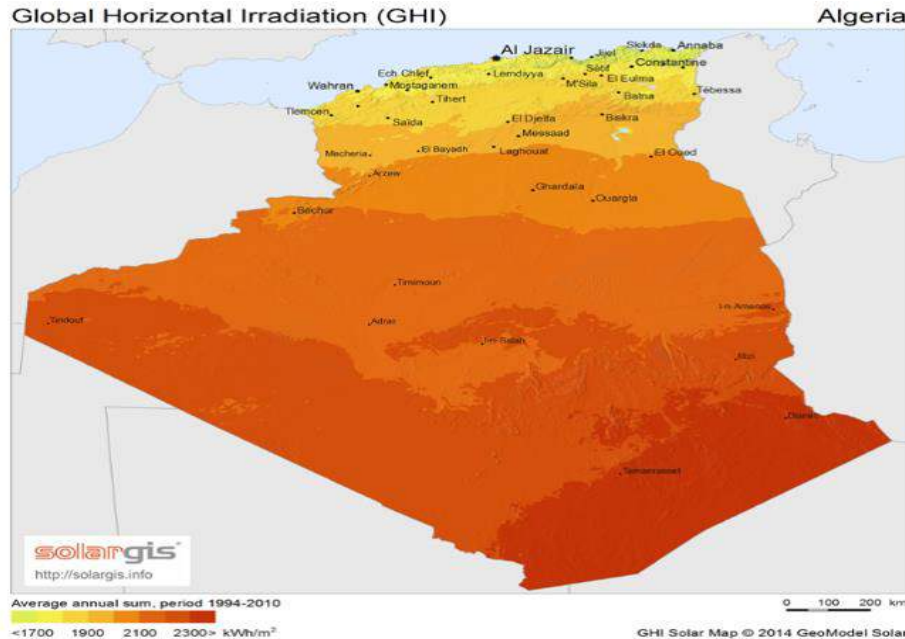
Growth of electricity consumption in Algeria



Solar potential



Solar map of Algeria



- **Average solar energy of 5.70 kWh/m²/day – solar PV**
- **Solar potential of about 170 000 TWh / year, is about 3000 times the current electricity generation of Algeria**

Regions	Coastal	Highlands	Sahara
Area (%)	4	10	86
Average duration of sunshine (hours / year)	2650	3000	3500
Average energy received (kWh/m ² /year)	1700	1900	2650

The renewable energy and energy efficiency program

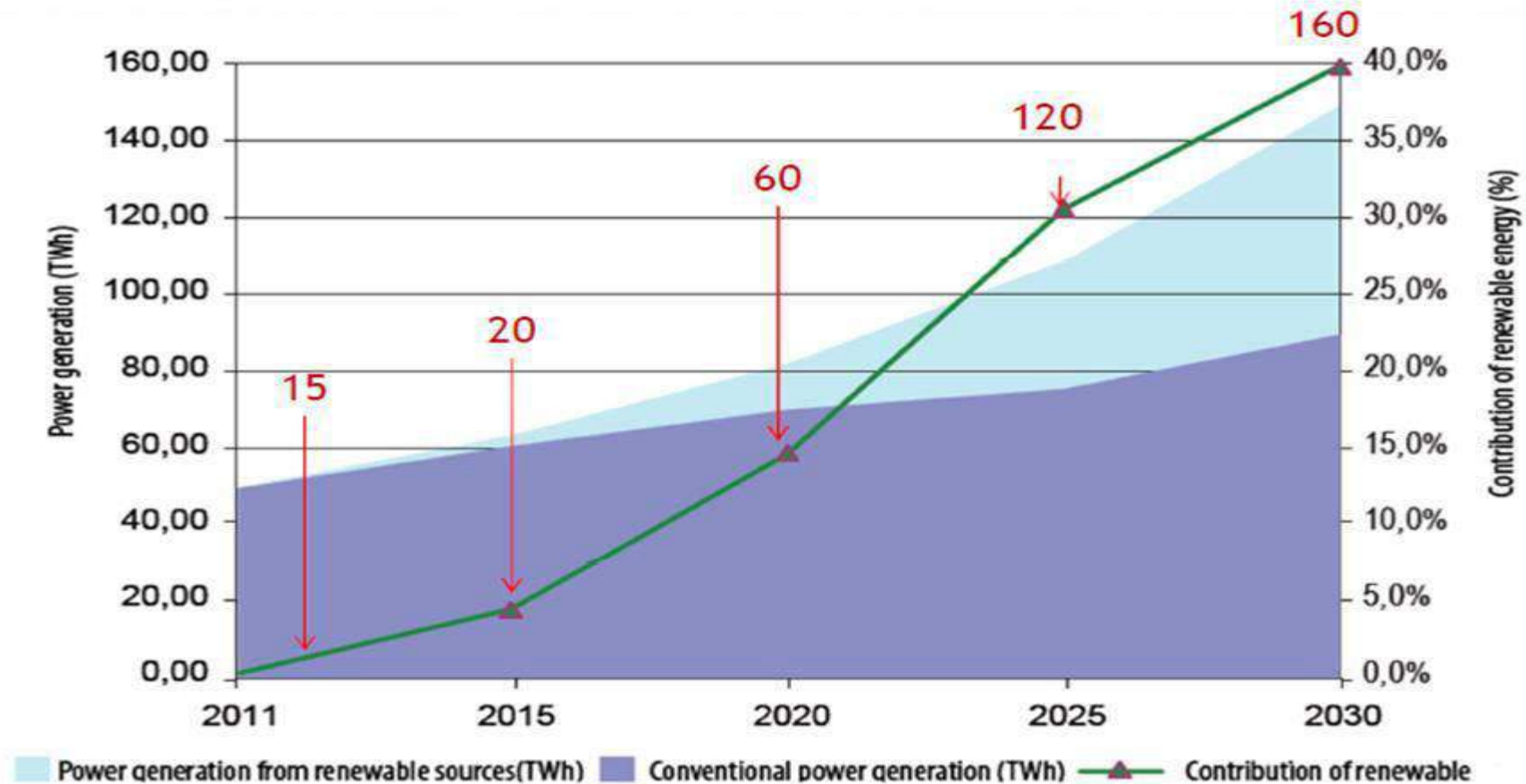


Key facts and figures

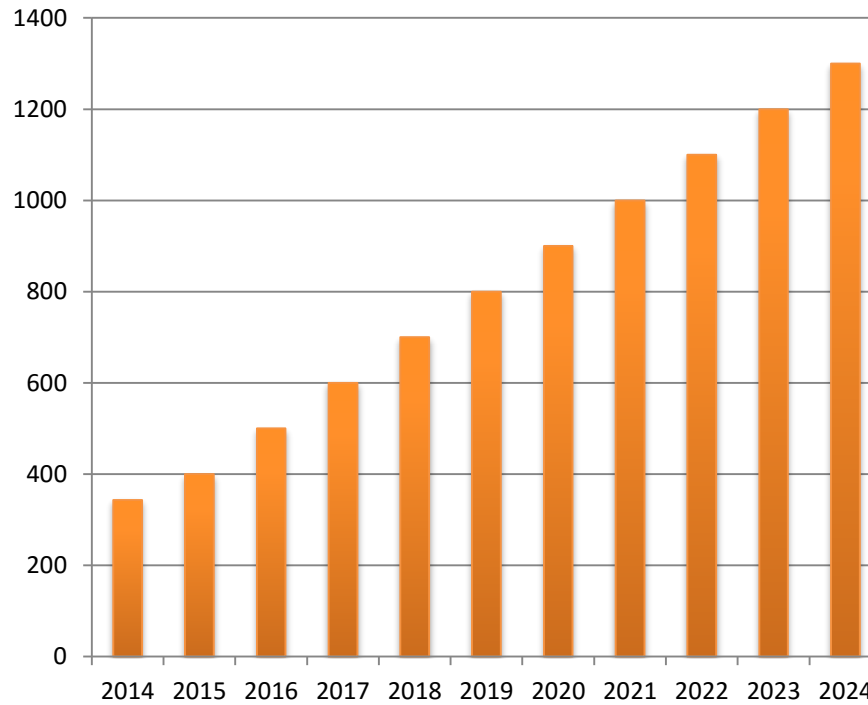
- **22,000** MW of renewable power generating capacity including **13,500** MW of solar PV
- **2030**: a programme that will take another **15** years to realise
- **20** year PPA and a FiT at around actually the equivalent of **\$0.15** Kwh
- The global cost of the renewable electricity program is expected to reach between **60-100 billion US dollars**
- Expected volume of natural gas saved, over the period of 2011 and 2030, from the renewable power plants in operation is **300 billion m³**



Expected contribution of renewable energy in domestic power generation



The deployment of the 13,500 MW of solar PV



Solar PV (MW)



Regulatory framework

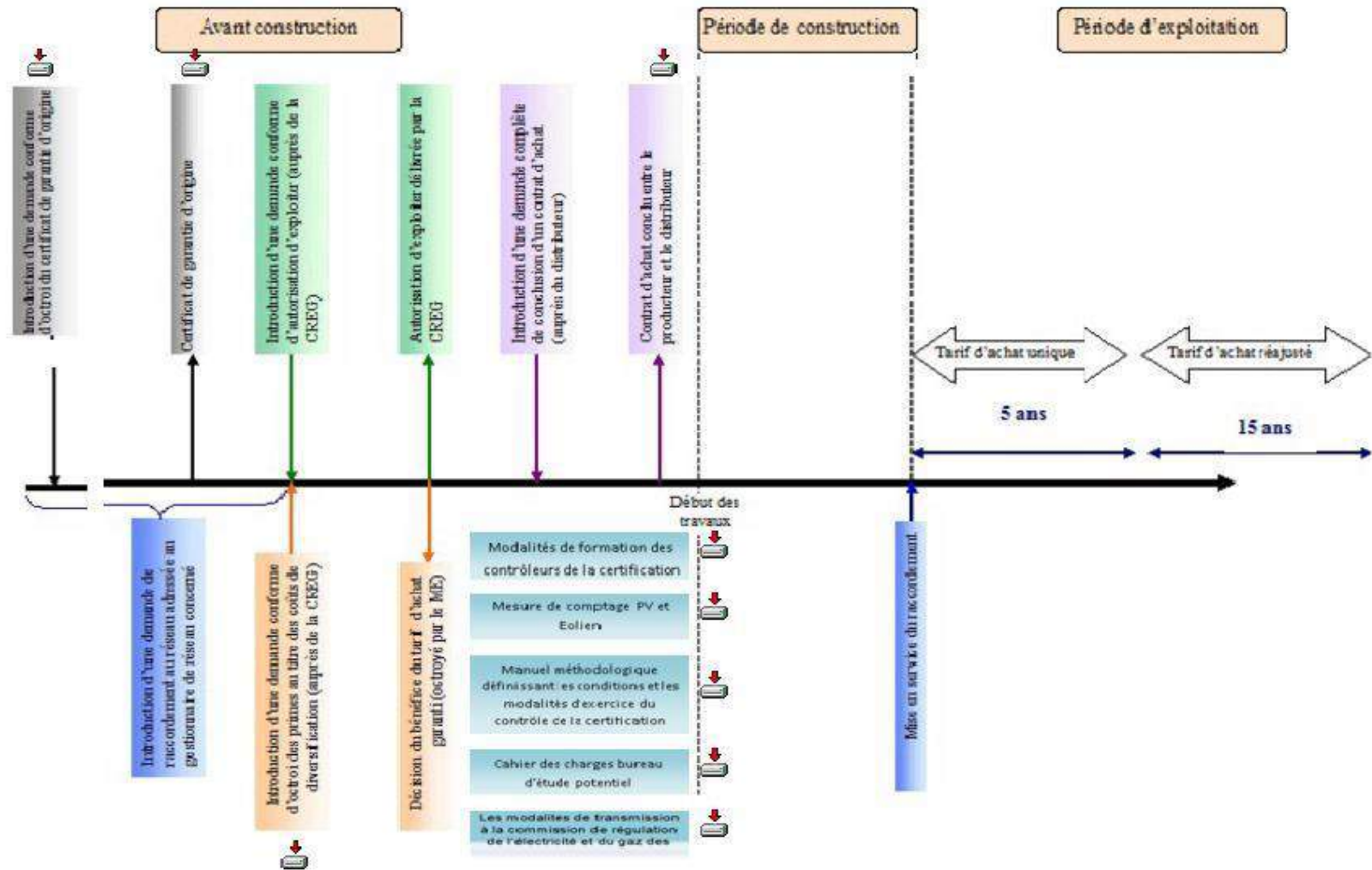


- **The law n°02-01 of 5 February 2002 regarding the electricity and the public distribution of gas**
- **The law n°04-09 of 14 August 2004 with regard to the promotion of renewable energy**
- **The Finance Act 2010 lead to the creation of National Fund for Renewable Energy (NFRE)**
- **Executive Decree no. 13-218 of 18 June 2013 relating to feed-in tariffs**
- **Ministerial order of 2 February 2014 fixing the tariffs for PV**
- **Executive Decree no. 15-69 of 11 February 2015 laying down the procedures for the certification of the origin of the renewable energy**
- **Decision D / 14-15 / CD of 17 May 2015 establishing the standard models of power purchase agreements for solar PV and wind and benefiting from the feed-in tariffs**



Regulatory process

Processus de traitement d'une demande d'octroi des primes au titre des coûts de diversification de la production de l'électricité



Solar PV feed-in-tariff

Adjustment limit	Number of hours in operation kWh/kW/Y	1 to 5 MW		> 5 MW	
		Phase I DA/kWh	Phase II DA/kWh	Phase I DA/kWh	Phase II DA/kWh
-15%	1275-1349	15,94	20,08	12,75	16,06
-10%	1350-1424	15,94	18,83	12,75	15,06
-5%	1425-1499	15,94	17,45	12,75	13,96
Reference output	1500-1574	15,94	15,94	12,75	12,75
+5%	1575-1649	15,94	14,43	12,75	11,54
+10%	1650-1724	15,94	13,06	12,75	10,44
+15%	≥1725	15,94	11,80	12,75	9,44



Renewable energy projects



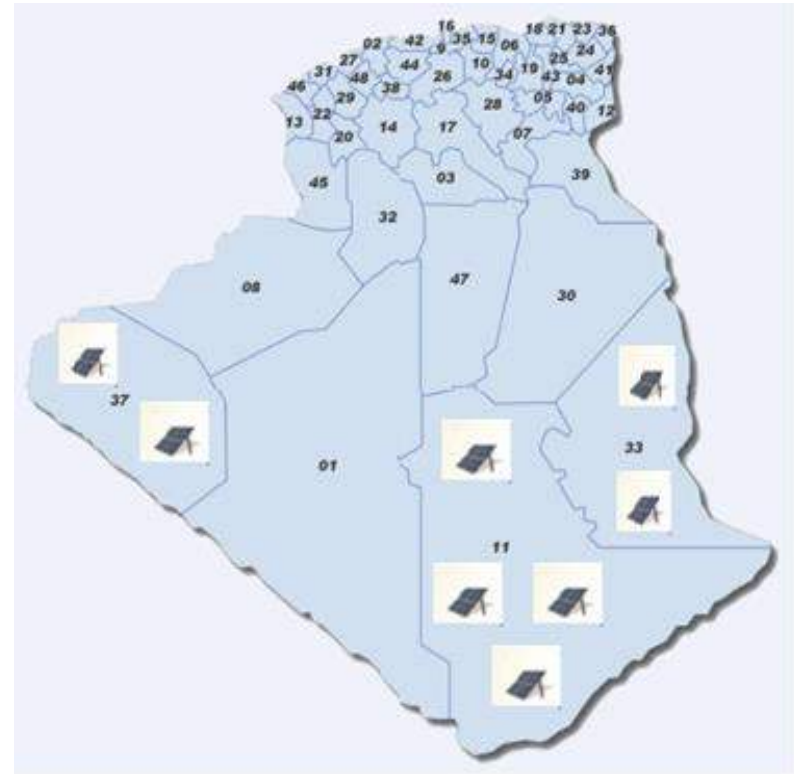
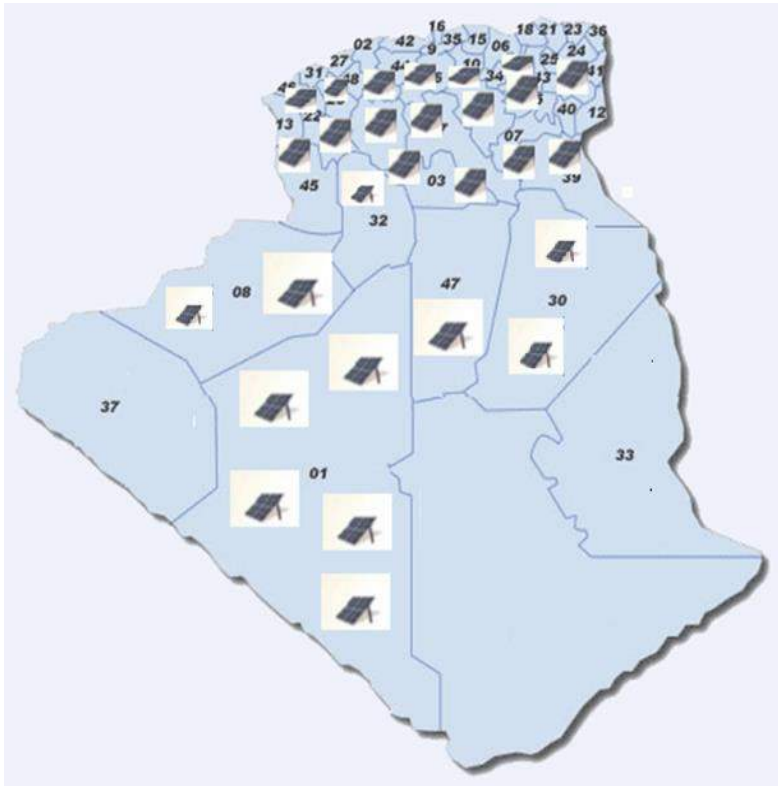
Completed Projects

- **A 1.1 MW solar PV plant in Ghardaïa testing four different technologies (monocrystallin, polycrystallin, amorpheus and thin film) commissioned on the 10th of July 2014**



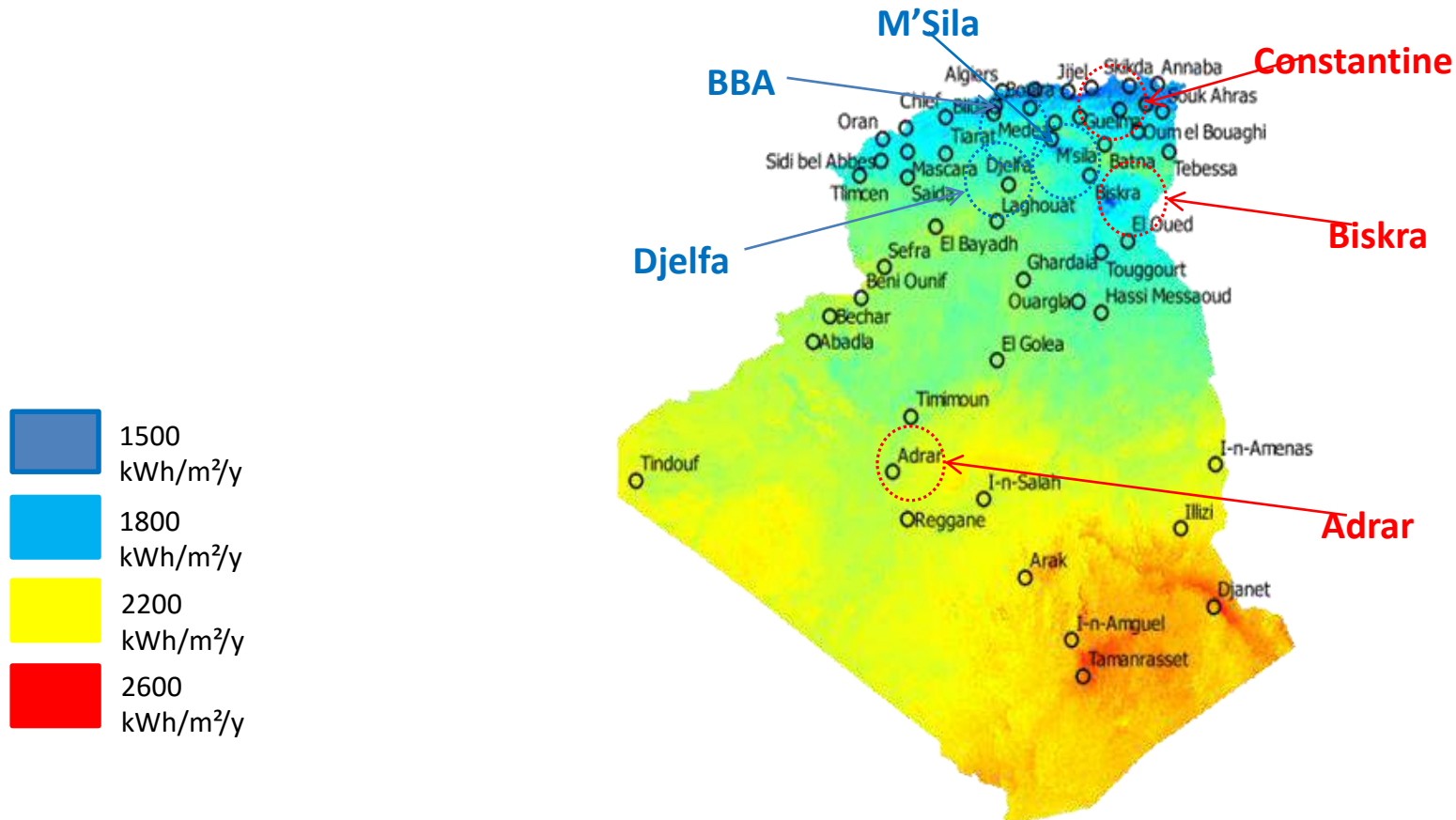
Projects in progress

- 258 MW solar PV plants awarded to YINGLI SOLAR
- 85 MW solar PV plants allotted to BELECTRIC

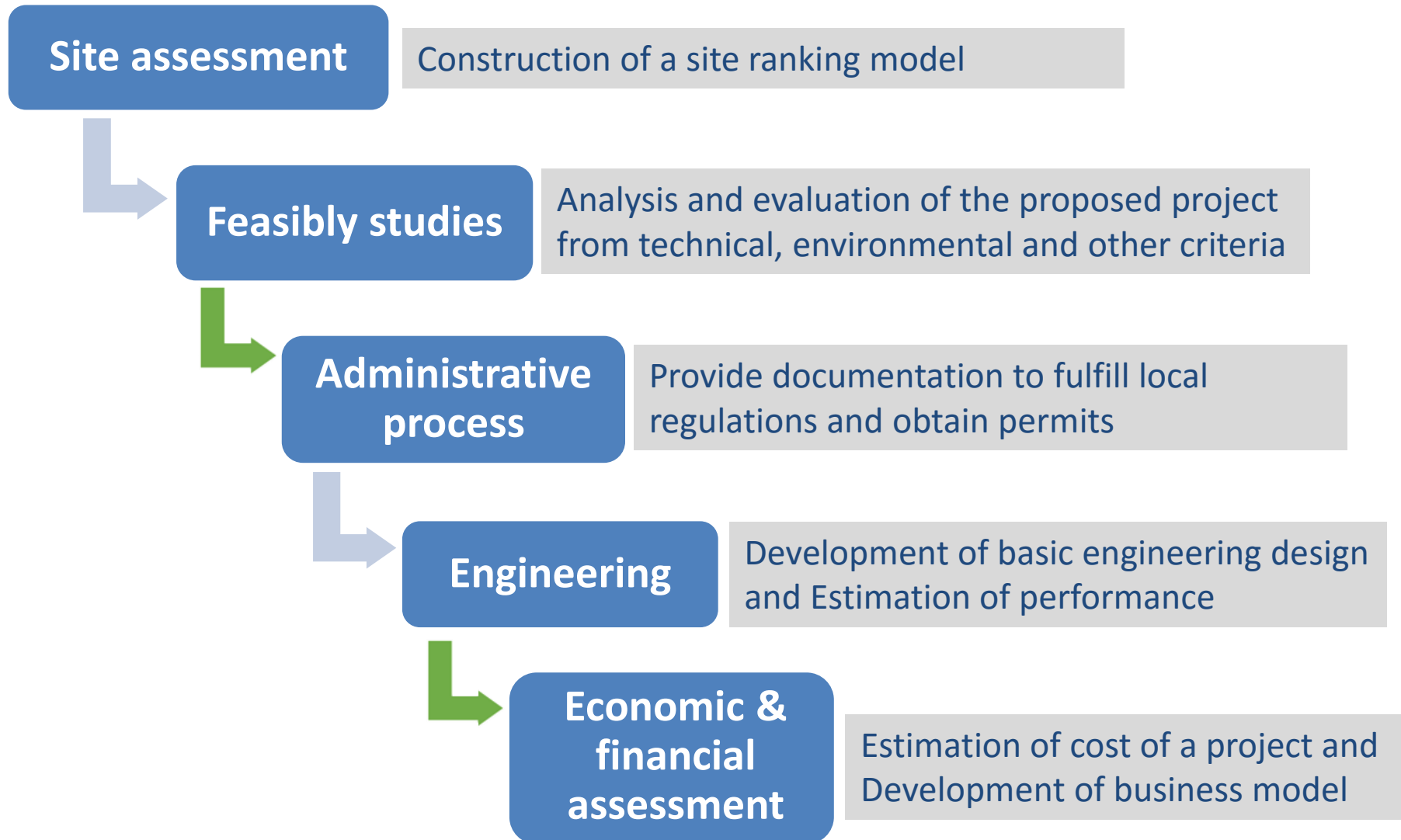


Project mapping

- <5 MWs solar PV plant in Bordj Bou Arreridj (BBA) (see next slide) with a local industrial partner
- c.30 MWs solar PV plant in M'Sila with a local industrial partner
- ≤5 MWs solar PV plant with a local financial partner
- c.50 MWs solar PV plant in Djelfa with a foreign partner
- c.45 MWs solar PV plant in Guelma on our own
- Securing further sites in Constantine, Biskra and Adrar

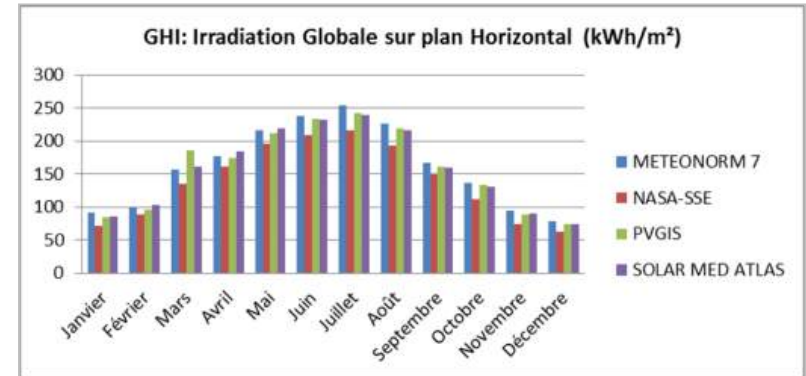
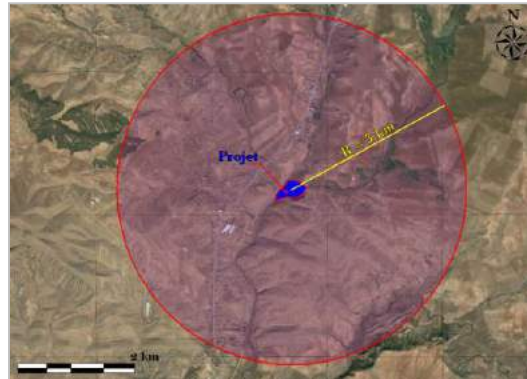


Project development steps

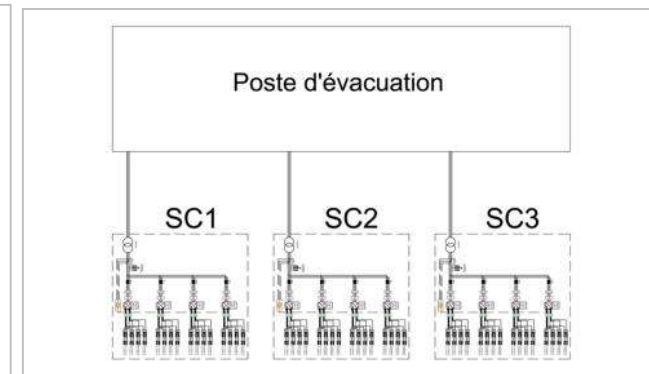
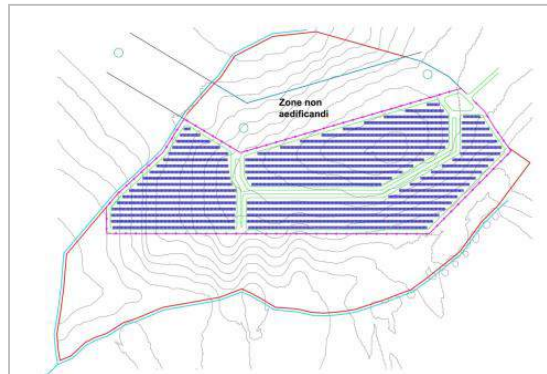


Development steps of the first private IPP PV project in Algeria

Site assessment



Design of PV power plant + site integration



Economic assessment

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Salaires	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382
RTS Electricité	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Costs	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382	891 382
Operating Profit	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382	-891 382
Net Present Value	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545	1 800 545

Conclusion

- RnE has been in Algeria since 2013 and has a strong presence on the ground
- RnE has an experienced team in renewable energy, project development, project management, engineering, technology, legal and finance
- RnE specializes in delivering "Turn-key" project developments of solar PV farms on behalf of local and international investors
- RnE is your "One stop shop" to accompany you from inception until the ready to build stage





Thank you for your attention

- 18 rue d'Auzia
Hydra
16035 Algiers
Algeria
- 1st Floor
2 Woodberry Grove
London N12 0DR
UK

www.rnepartner.com

contact@rnepartner.com

