



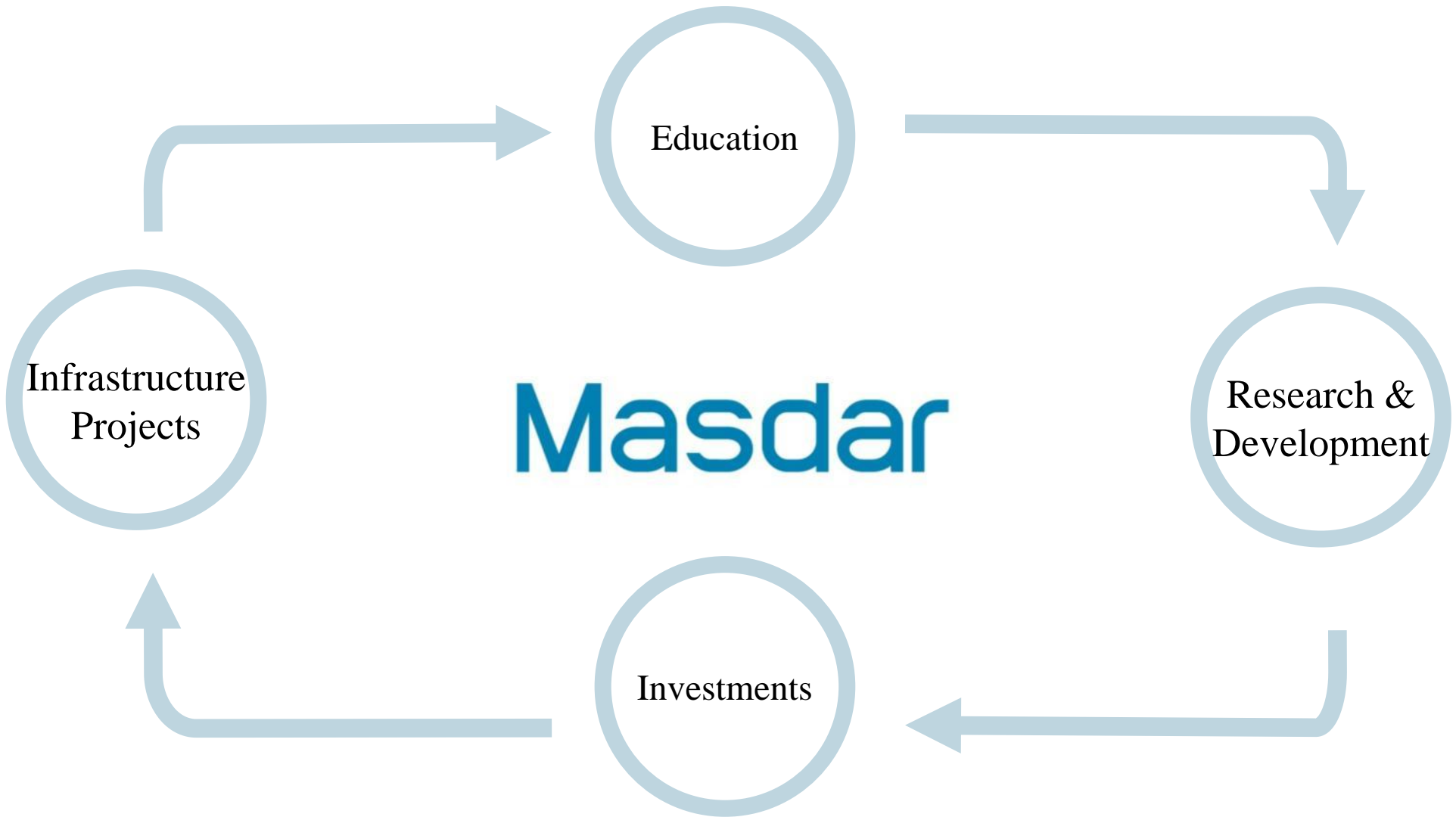
Masdar
A MUBADALA COMPANY



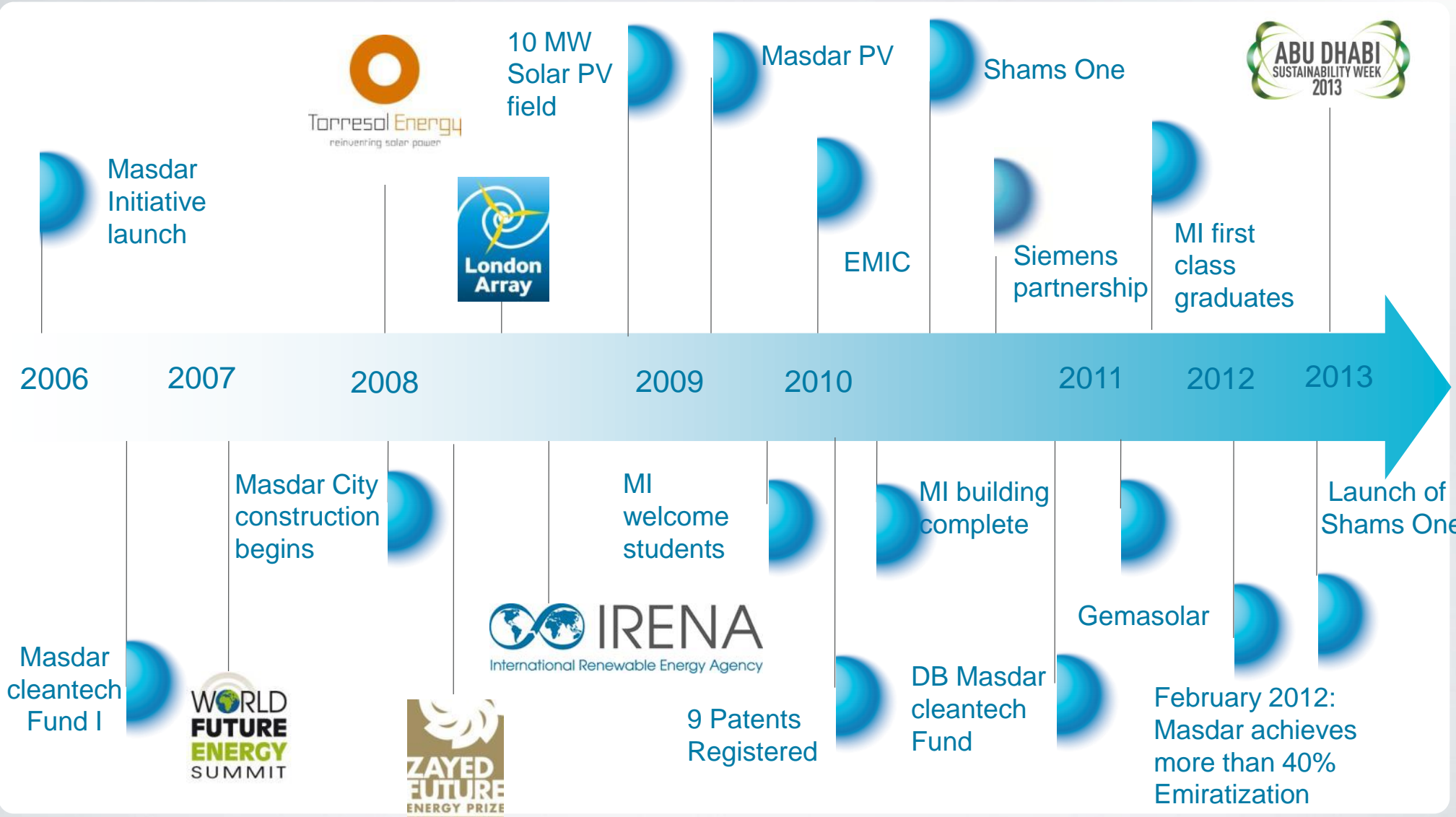
“We must not rely on oil alone as the main source of our national income. We have to diversify the sources of our revenue and construct economic projects that will ensure a free, stable and dignified life for the people.”

**The late Sheikh Zayed bin Sultan al Nahyan
Founder of the United Arab Emirates**





Masdar's Key Milestones Since Its Establishment in 2006



10 MW Solar PV field

Masdar PV

EMIC

Shams One

Siemens partnership

MI first class graduates



Masdar cleantech Fund I



9 Patents Registered

DB Masdar cleantech Fund

Gemasolar

February 2012: Masdar achieves more than 40% Emiratization

Launch of Shams One

Masdar Institute

Masdar Institute Fast Facts

What is the Masdar Institute?

Graduate level education in advanced energy and sustainable technologies

Extensive collaboration with Massachusetts Institute of Technology (MIT)

Highly qualified international faculty

Elite student body

Scholarships

Research domains

Energy Systems

Water, Environment and Health

Microsystems & Advanced Materials

Research partnerships

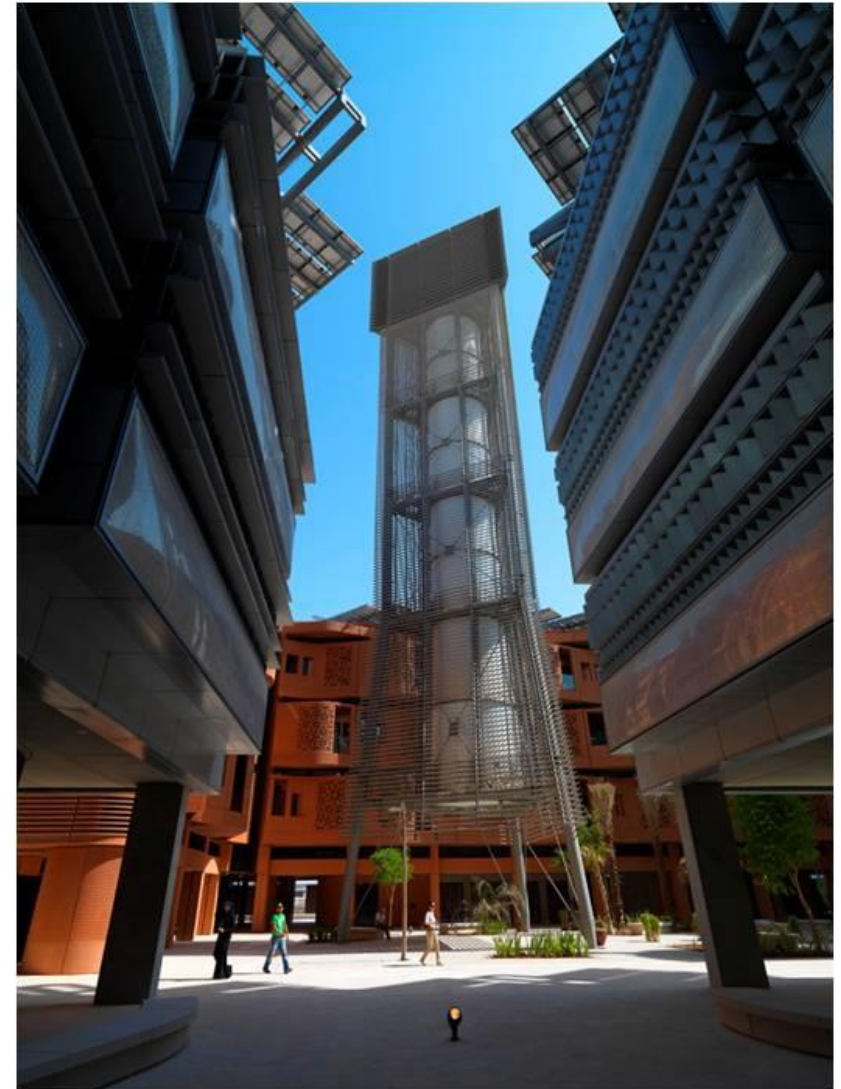
Boeing, UOP/Honeywell, Etihad Airways, Advanced Technology Investment Company, Siemens, Emirates Aluminium, Toyota

Campus

Sustainable architecture

State-of-the-art open Labs

High-tech Cleanroom



Masdar Capital

Currently two Investment funds with International Partners

Masdar Clean Tech Fund launched in 2006

- Masdar Clean Tech Fund (“Fund 1”) with partners Credit Suisse, Consensus Business Group and Siemens
- US\$250 million fund size
- US\$10-25 million investment ticket size in companies with promising technology and defensible IP
- The fund is fully invested, Current investments range from Solar Thin-Film to Waste-to-Energy and Water Purification

DB Masdar Clean Tech Fund launched in 2010

- DB Masdar Clean Tech Fund (“Fund 2”) Jointly managed with Deutsche Bank
- Established January 2010, raising US\$290 million
- The average investment ticket size is US\$25 million in companies in later stage private equity
- The fund has substantial money to invest. Current investments are global in nature with a focus on North America and Europe

Masdar Clean Energy

Masdar Clean Energy represents Masdar's core efforts in Utilities Management

Masdar Clean Energy Fast Facts

Mandate	To build a portfolio of large scale renewable energy power plants across the globe
Projects	Currently major projects include – Shams One (UAE), London Array (UK), Gemasolar (Spain) and the Seychelles, ESI
Technology	Break through technology in the field of solar PV, concentrated solar power, onshore and offshore wind farms
Partnerships include	DONG, e.ON, SENER, Total, Abengoa, ADNOC, ADWEA, Siemens, ADBIC, Total, Etihad



Shams One Fast Facts

The flagship project

One of the world's largest concentrated solar power (CSP) plants and largest in Middle East region

- 120km Southwest of Abu Dhabi City in the UAE
- Extends over an area of 2.5km² with a capacity of 100MW



Major International Projects

- **London Array** - Phase 1 is 630MW with 175 turbines. Set to become world's largest offshore farm
- **Gemasolar** – 20 MW First commercial CSP plant with solar tower tech and thermal storage, even after sun sets
- **Valle 1 & 2** - Two adjacent plants with parabolic trough tech and thermal storage with 50 MW capacity each



International Projects

- **Seychelles onshore wind farm** - The first phase of the project consists of 6MW wind farm with 8 turbines. It will constitute 11% installed capacity of electricity on the main Mahe island.
- **Sheikh Zayed Solar Power Plant in Mauritania**- 15MW solar power project in Nouakchott, the capital city of the Islamic Republic of Mauritania. The plant is the largest utility-scale PV plant in Africa and will deliver 10 per cent of electricity capacity in the country.



Masdar is pioneering large-scale Carbon Capture and Storage (CCS), helping deliver Enhanced Oil Recovery (EOR) in Abu Dhabi.

- Building a National Carbon Capture and Storage network
- Capturing carbon from power generation and industry
- Transporting to Abu Dhabi oil reservoirs
- Using CO₂ for Enhanced Oil Recovery instead of reinjecting natural gas

Key Collaborations



هيئة مياه وكهرباء أبوظبي
Abu Dhabi Water & Electricity Authority



Masdar City

Masdar City Fast Facts

Total site area	600 hectares 6 SqKm
Residential	52%
Commercial	38%
Retail	2%
Community	8%
Projected resident population	40,000
Projected commuters	50,000
Residential density	140 people / hectare

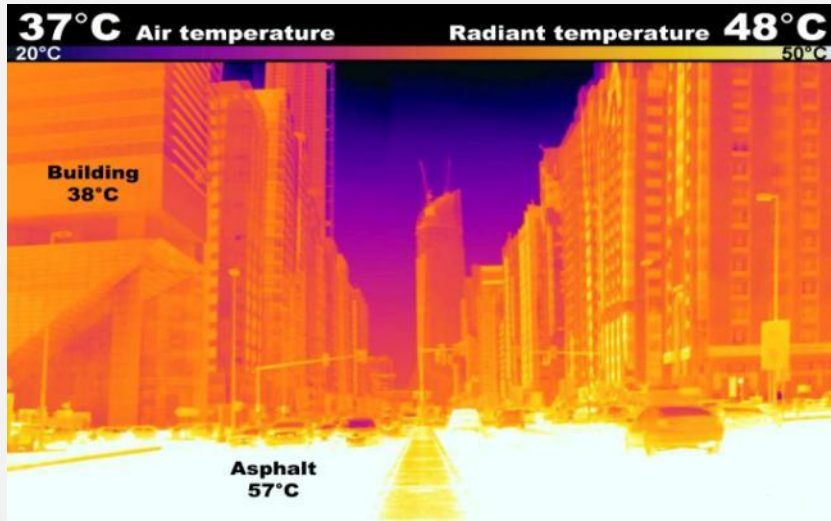


The Masdar City Master Plan plays a central role in enabling the city's success in achieving its sustainability goals. The main components of the city's master plan are:

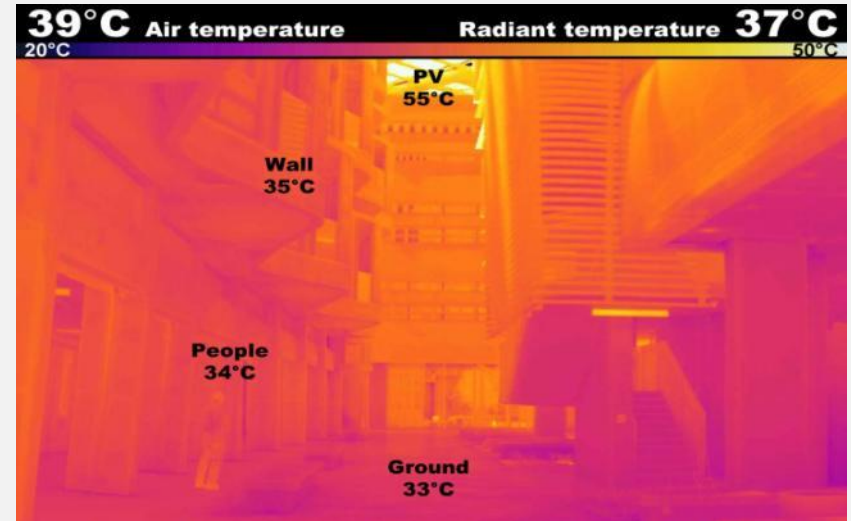
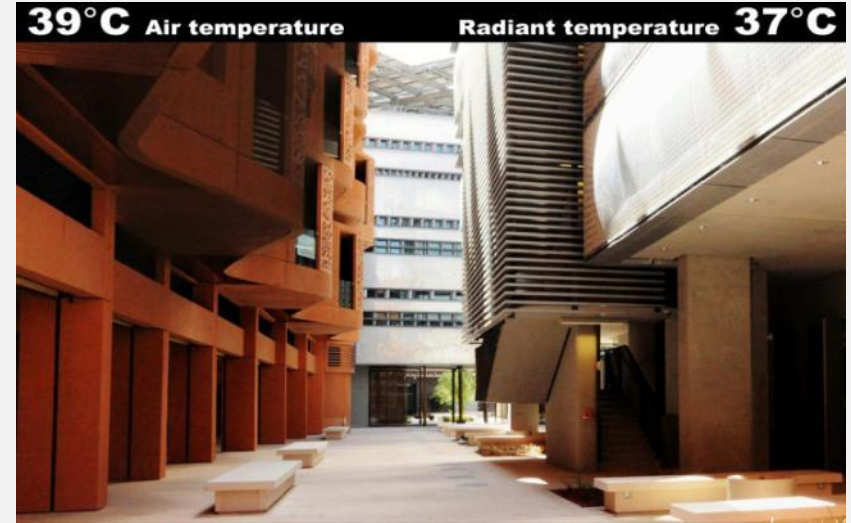
- ✿ **Orientation** – seeking the maximum efficiency gains at the lowest cost by optimally orienting the city grid and buildings to minimise solar heat gain on building walls and the street, while maximising cooling nighttime breezes.
- ✿ **Integration** – all aspects of city life are integrated so work, entertainment, recreation and home are all in close proximity, for convenience and to minimise use of transportation.
- ✿ **Low rise, high density** – most buildings are no more than five storeys.
- ✿ **Vibrant urban realm** – in the city, as much focus has been put on the public spaces between the buildings, as well on the buildings themselves. Thus, the streets and squares invite people to enjoy the outdoors, where they interact and engage with fellow students, residents, professionals and visitors.
- ✿ **Pedestrian focused** – this means narrow, shaded streets, and pleasant shaded walkways and other paths that encourage walking. The integrated nature of the city means it's not far to walk to many destinations, while convenient transportation also supports this pedestrian focus.
- ✿ **High quality of life** – the city is committed to offering the highest quality work and living experience with the lowest possible environmental footprint.

Masdar City – Proof of a sustainable cluster

Typical Abu Dhabi



Masdar City



Masdar City – Progress

Siemens ME HQ



Residential



MI Phase A



Courtyard



Residential



MI Phase B



Masdar IRENA HQ



Abu Dhabi Sustainability Week



- 🌀 Abu Dhabi Sustainability Week (ADWS) was launched in June 2012 during the Rio+20 Summit
- 🌀 ADSW addresses the fundamental issues of energy security and water scarcity, and the relationship between sustainable economic development and poverty eradication
- 🌀 ADSW is the largest gathering on sustainability in the history of the Middle East
- 🌀 ADSW is a testament to the commitment the United Arab Emirates has for sustainable development and the new energy economy.



4th IRENA General Assembly



7th World Future Energy Summit

INTERNATIONAL
WATER SUMMIT



2nd International Water Summit



6th Zayed Future Energy Prize Awards Ceremony

Special Projects

Who we are

- Center of excellence for end-to-end delivery of Renewable Energy (RE) projects required by governments, NGOs, non-profit organizations, aid programs, regional Armed Forces or private individuals
- Client representative and Project Management Company (PMC)
- Liaison between client's vision and end-user's needs

What we do

- Focal point for sight preparation/logistics (e.g. permits, grid connections if appropriate, transport / import permitting)
- Cost estimation and budget preparation
- RE solution scoping, designing and sourcing
- Best practice competitive tendering / contracting and contract management
- Best practice management of suppliers, materials and integrators
- RE systems integration expertise
- Stakeholder (client and end user) management
- Environmental impact feasibility assessments
- Resource confirmation / assessments

- End to end project lifecycle management
- Project lifecycle customizable for each project to cater to client and end-user requirements

Generic Project Stages



- Preliminary desktop project assessment
- Initial site visit to gather data
- Technology definition i.e. CSP/PV/Wind/Hydro/Hybrid
- Client, End user, Operator identification
- Permitting kick-off / Identify permits & NOC's
- Concept design including detailed cost estimation (incl. CAPEX, overheads, OPEX if required)
- Estimate ownership costs for end user visibility
- Issue interim client report including budgetary estimate and concept design

- Agree concept Scope with End User
- Grid connection study (if required)
- Finalize scope of work
- Procurement EPC/O&M tender exercise
- Detailed due diligence report /Final proposal preparation
- Final proposal submission to client for approval
- Budget approved by client and released
- Award build contract

- NTP issuance
- Construction phase
- Handover to end user
- Project report to client including finalized costs, design and initial performance results

O&M phase (if requested)

- Proposal tendering
- Framework agreements for O&M
- Annual cost plus reimbursable apply for extended periods (after year 2 of EPC)

No	Project Name	Location	Client	End User	Description	Stage
1	Oman Water Wells	Bidiyah, Oman	CPC and related affiliates	Government of Oman	Solar water pumping for 20 water wells	Appraise
2	Tonga	Vavau Island, Kingdom of Tonga	Abu Dhabi Fund for Development	Government of Tonga	500kW on grid PV	Execute
3	Afghanistan SHS(600 houses)	Camp Robinson, Afghanistan	CPC and related affiliates	Afghanistan home owners	Solar home systems for 600 houses	Execute
4	Al Jarnain	Al Jarnain Island, UAE	CPC and related affiliates	Private	750kW island grid PV	Execute
5	Concentrated PV Pilot	Masdar City	Masdar and Government of Spain	ISFOC & Masdar City	600kW on grid CPV	Execute
6	Solar Roof top program	11 government buildings, Abu Dhabi	Abu Dhabi Government	Building owners	2MW rooftop PV on different buildings	Handover
7	Sheikh Zayed Solar Power Plant	Nouakchott, Mauritania	CPC and related affiliates	Government of Mauritania	15MW on grid PV	Handover
8	Um Al Zomul Desert farm	Um Al Zomul area, UAE	CPC and related affiliates	Farm owner	100kW off grid PV	Completed

No	Project Name	Location	Client	End User	Description	Stage
9	Murawah	Murawah Island, UAE	CPC and related affiliates	Private	500kW island grid PV	Completed
10	Al Wathba Stables	Al Wathba, UAE	CPC and related affiliates	Al Wathba stables owner	120kW on grid PV	Completed
11	Sea Palace	Sea Palace, Abu Dhabi	CPC and related affiliates	Private	200kW on grid PV	Completed



Mamoura Car Park



CPC



Abu Dhabi Municipality

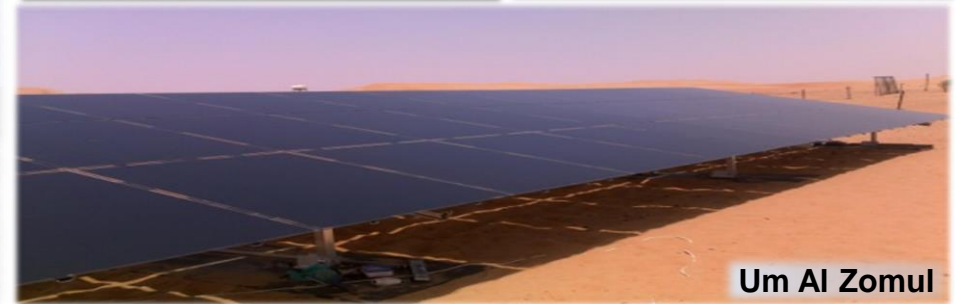


Mosque



Special Projects - Example Solutions

- Program management and development of pilot projects
- On-grid & off-grid solar PV & wind applications (e.g. rooftop, islands)
- Hydropower and geothermal applications
- Water management solutions (e.g. desalination, delivery)
- Concentrated PV



What makes special projects
“Special” ?



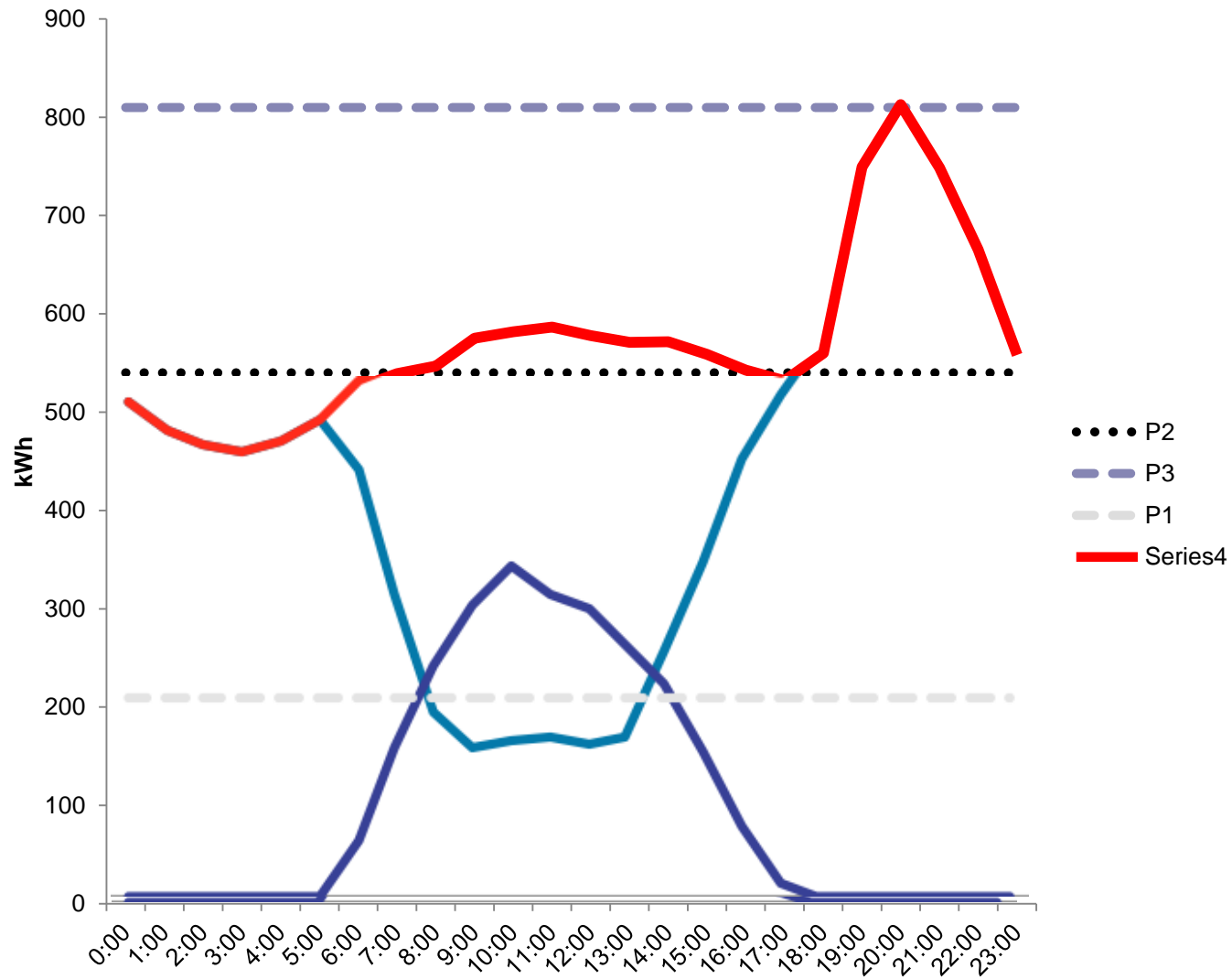
Tonga

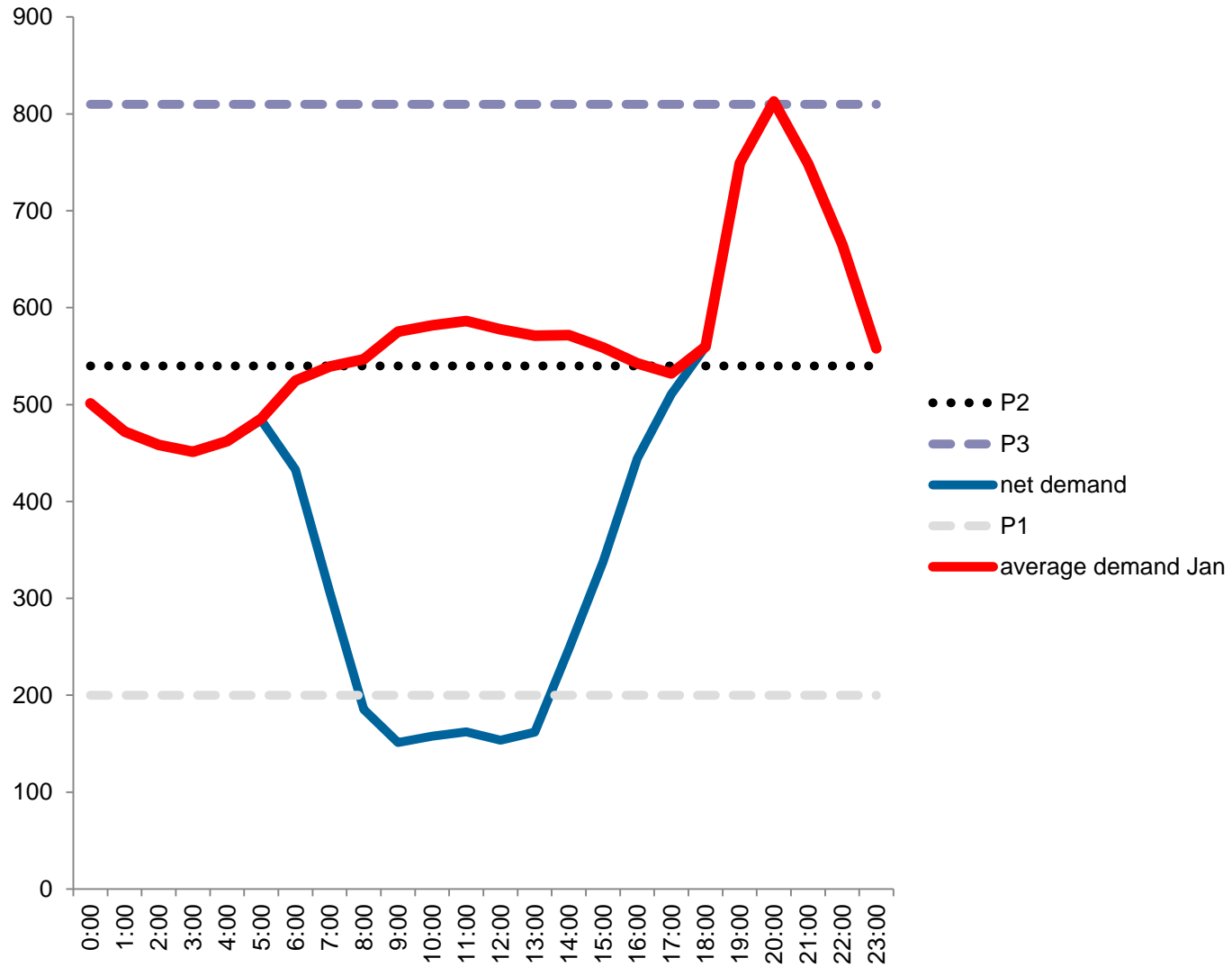
Tonga Solar Project Fast Facts

Grid Connected PV Plant

- 500 kW grid connected PV plant in the island of Vava'u;
- 180,000 L of diesel oil will be saved every year;
- 400 tonnes of Carbon Dioxide will be saved.
- 13 % of the demand in the island of Vava'u will be supplied;
- Project stage: Completed conceptual design.







Sheikh Zayed Solar Power Plant in Mauritania



24th October 2012: MOU signing



Shk Zayed SPP Fast Facts

Grid Connected PV Plant

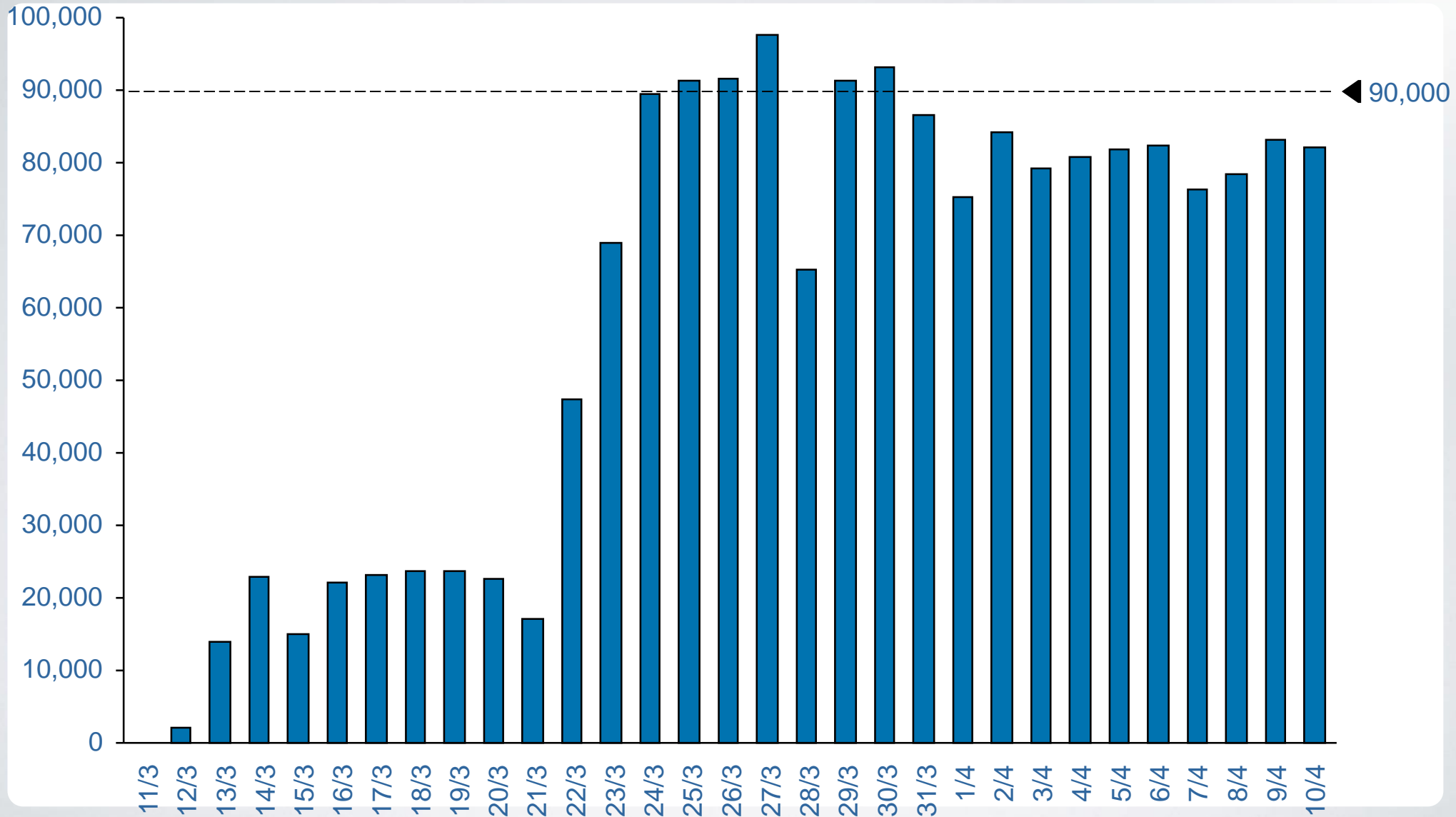
- 15 MW grid connected PV plant in Nouakchott;
- 838,497 L of diesel oil will be saved every year;
- 21,225 tonnes of Carbon Dioxide will be saved every year.
- 10 % of the capacity in Nouakchott;
- Project stage: Operational.

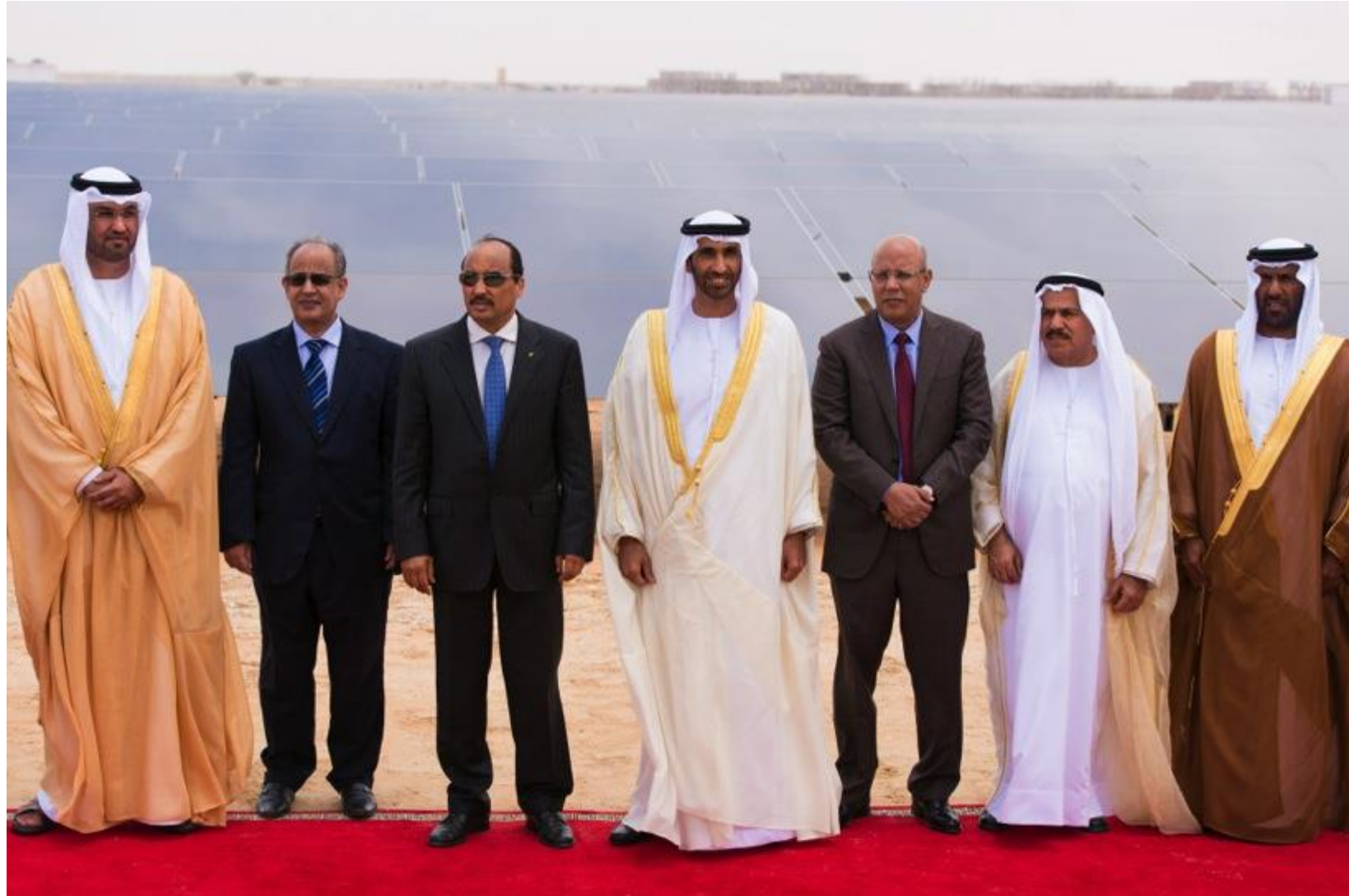






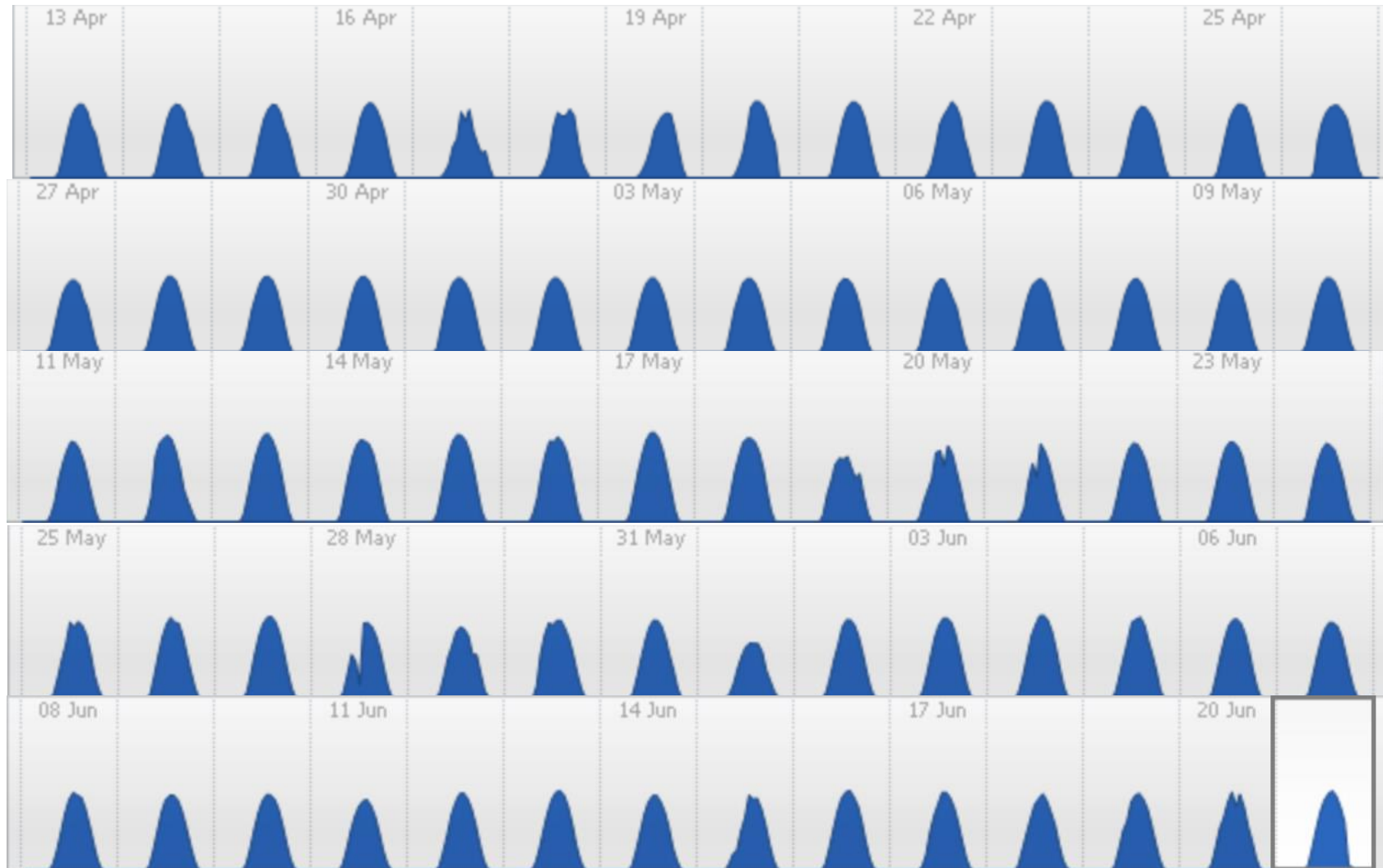
6th of March : First kWh of electricity







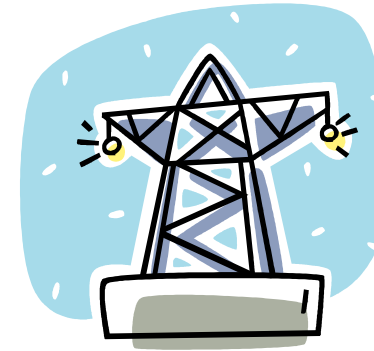
Generation of the plant since then



Until today ..

Sheikh Zayed Solar Power Plant has generated:

7.5 GWh



Feeding the annual consumption of:

2506



Saving the emission of:

8.8 million tons of



Great Presentation...

So why are you here ?

Thank you



[Video](#)