



RENEWABLES & ENERGY EFFICIENCY IN BAHRAIN

Presentation by:

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Minister of Electricity & Water Affairs

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Sustainable Energy Unit
Kingdom of Bahrain

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The Start



May 2012

**Signed an agreement with an American Company
“Petra Solar” to install 5 MW pilot smart power solar in
Bahrain**



THE CABINET APPROVED IN December 2013

Centre for Renewables and Energy Efficiency with two main goals:

***1 Increase investment in and use
of renewables***

2 Improve the energy efficiency



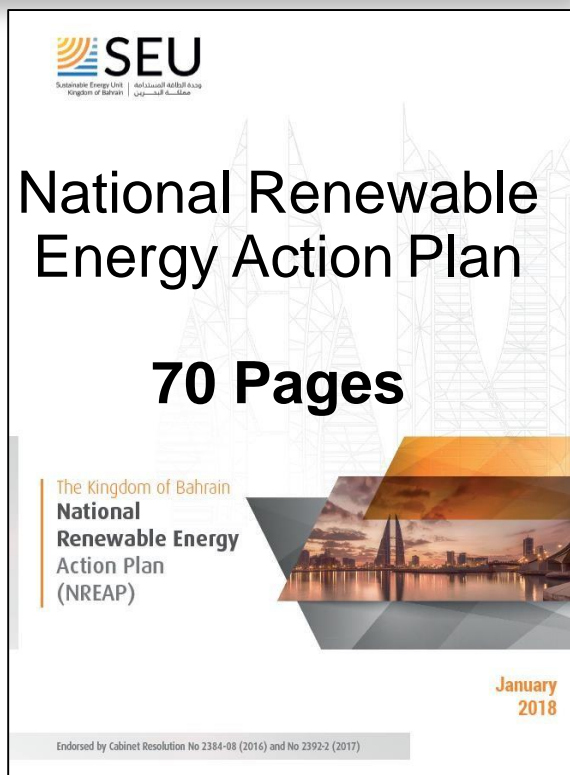
November 2014

**Partnered with UNDP to man the centre and called it SEU
(Sustainable Energy Unit)**

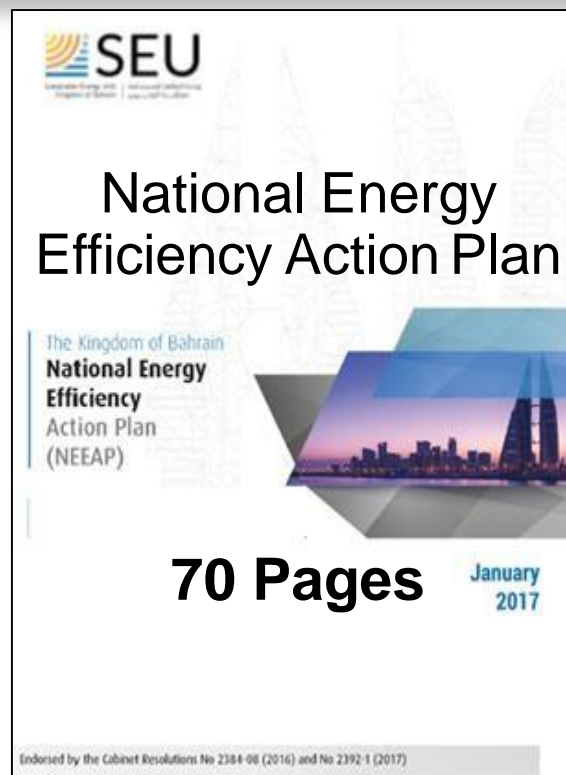


SEU Prepared Two National Plans

NREAP



NEEAP





NREAP INITIATIVES

National Target: **5% by 2025** increased to **10% by 2035**

Policies



Net metering:

Enable consumers to generate their own power from renewable for self consumption and feed the excess to the National Grid



Tender-based feed-in tariff:

Attract private investors to develop renewable energy projects through a competitive procurement process



Renewable Energy mandate for new buildings:

Require new buildings and real-estate developments to integrate renewable energy in the building design

Projects



Solar Systems for Government Buildings



Solar Systems for New Town Development & Housing Projects



Waste to Energy (biogas and others)



Industrial Renewable Energy Initiatives



Onshore/Offshore Wind Farm



Large-scale Solar Farm on Available Land



Renewables in infrastructure projects (causeways & airport)



Solar Systems for Public Works

Key:



In Progress



Completed



The 22 NEEAP INITIATIVES



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National Target: 6% by 2025

Buildings	Building Energy Efficiency Code	Min. Energy Performance Standards & labeling: Lighting	Min. Energy Performance Standards & labeling: ACs	Min. Energy Performance Standards & labeling: Appliances
	Building Energy Libeling	Training for Market Actors	Green Building Initiative	District Cooling
Industry	Industry Program			
Government	Government Building Lighting	Street Lighting	Government Buildings Energy Management	Green Procurement
Transport	Vehicle Efficiency Standards & labeling	Transport Subsidy Reform		
Electricity Supply	Electricity Production Efficiency	Transmission & Distribution Efficiency	Power Factor Correction	Smart Metering
Cross Sectoral	Electricity Subsidy Reform	Awareness & Information	Institutional Infrastructure	

Key:



In Progress



Completed



Future Initiatives



Cabinet Approvals

- **Dec 2016**: Cabinet approved **NREAP & NEEAP**.
- **Jan 2017**: Cabinet approved **national targets**:
 - For Renewables: **5%** by **2025** and **10%** by **2035**
 - For Improving Efficiency: **6%** by **2025**
 - Cabinet also approved forming a **National Implementation and Follow up Committee (IFC)** with chairmanship of Minister of Electricity and Water Affairs and 14 members from concerned Ministries/Authorities to follow up the implementation of NREAP & NEEAP.
 - Cabinet also approved **Net Metering** policy concept.



AIR -CONDITIONING



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The image shows a semi-circular energy efficiency label for air conditioning. The label is divided into six segments, numbered 1 to 6 from right to left. Segment 1 is the highest efficiency (lowest energy consumption), and segment 6 is the lowest efficiency (highest energy consumption). The label also features a star rating system, with more stars indicating higher efficiency. Text on the label includes: "كلما زاد عدد النجوم قل استهلاك الطاقة الكهربائية" (The more stars, the lower the electricity consumption), "THE MORE STARS THE LOWER ENERGY CONSUMPTION", "بطاقة كفاءة الطاقة" (Energy Efficiency Label), and "ENERGY EFFICIENCY LABEL".

المكيفات تستهلك 60% تقريباً من فاتورة الكهرباء

Save to Sustain

Air Conditioners consume about 60% of your Electricity Bill

More Stars... ★★★★★★ عدد نجوم أكثر...
Means more savings يعني توفير أكثر



2017

**New specifications and labeling for
air-conditioning**



LED LIGHTING

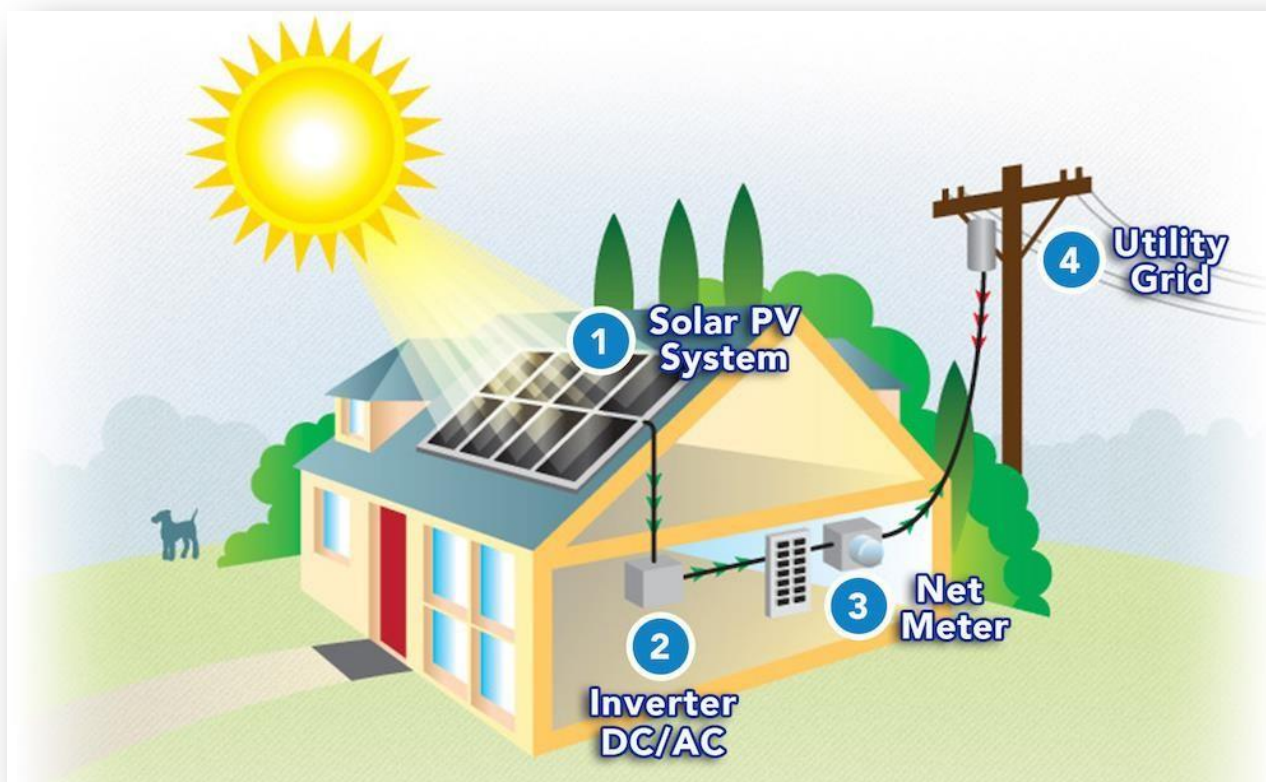


2017

All Government Buildings must use LED lighting



NET METERING



January 2018

The Net Metering policy became effective

**Enable consumers to generate their own power from renewables
for self consumption and feed the excess to the national grid**



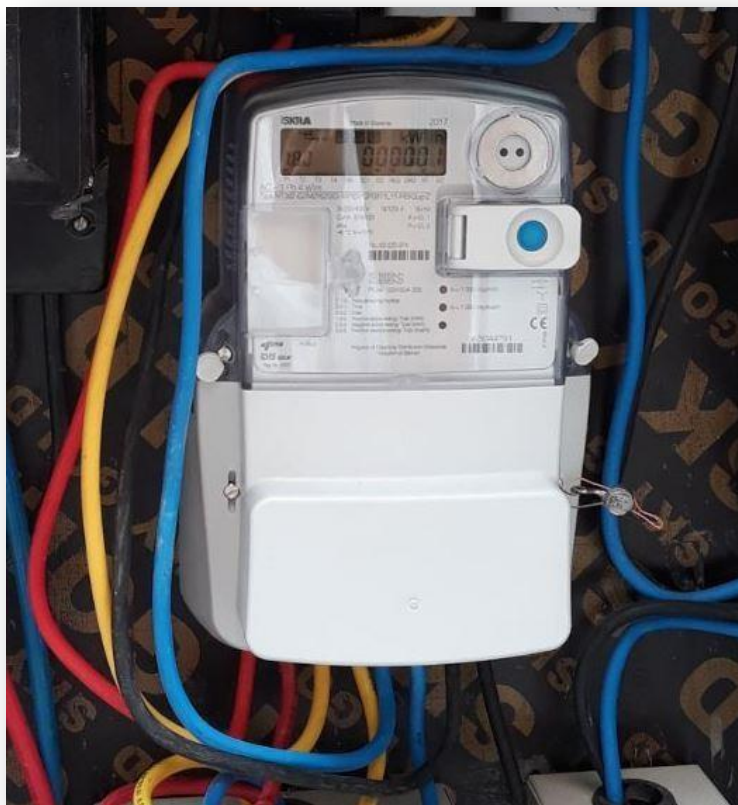
The 1996 E&W law was amended to repeal the mandated monopoly of the Government in production & sale of power

Law 1/1996 :

Resolving the constraints of law 1/1996 issued in 1996 to permit the Renewables - private generation source to safely connect to the national electricity network



SMART METERS



January 2018

Smart Meters being installed



2017

Private sectors such as factories, mosques, malls are working on installing solar systems



July 2018

**Solar system installed on roof of shopping mall
car park & other malls are working on it**



10 FIRST HOUSES



March 2018

10 first houses installed solar systems and connected their production to the national grid network



FIRST SOLAR PANELS FACTORY



January 2017

The first solar panels assembly factory was opened in Bahrain

محطة للطاقة الشمسية بقدرة ١٠٠ ميغاوات

رئيس الوزراء يوجه إلى تلبية احتياجات جدحفص من الخدمات



○ سمو رئيس الوزراء يرأس جلسة مجلس الوزراء بحضور سمو ولي العهد.

والمقر مجلس الوزراء على إنشاء محطة للطاقة الشمسية في مملكة البحرين لتوليد ١٠٠ ميغاوات من الكهرباء بواسطة الطاقة الشمسية، وسيتم طرح مناقصة تنفيذ المشروع في شهر فبراير عام ٢٠١٨، على أن يتم الانتهاء منه خلال عام ٢٠١٩، ويأتي ذلك في إطار حرص الحكومة على الاعتماد على مصادر الطاقة المتجددة ومنها الطاقة الشمسية، بما يتسجم مع الخطة الوطنية للطاقة المتجددة التي أقرها مجلس الوزراء، وتوصيات اللجنة التنفيذية.

جاء ذلك خلال ترؤس صاحب السمو الملكي الأمير خليفة بن سلمان آل خليفة رئيس الوزراء جلسة مجلس الوزراء أمس بحضور صاحب السمو الملكي الأمير سلمان بن حمد

آل خليفة ولي العهد نائب القائد الأعلى النائب الأول لرئيس مجلس الوزراء.

وقال الأمين العام لمجلس الوزراء الدكتور ياسر بن عيسى الناصر إن سمو رئيس الوزراء وجه إلى تلبية احتياجات جدحفص من الخدمات والمرافق التي تحقق متطلبات الأهالي فيها، وكلف سموه

وزراء الخدمات بمتابعة ما تحتاج إليه جدحفص في مجالات الخدمات البلدية والإسكان والصحة والتعليم وغيرها من الخدمات الأخرى. وأضاف أن صاحب السمو الملكي رئيس الوزراء كلف وزير الأشغال وشؤون البلديات والتخطيط العمراني بزيارة سوق النويدات والوقوف على

متطلبات واحتياجات الباعة في هذا السوق ومرتابيه، وتوفير كل ما يضمن استمرار هذا السوق في تقديم خدماته لأهالي النويدات، وتكليف الحملات التفتيشية لمنع البيع العشوائي خارج السوق، بما يضمن سلامة الأغذية والحفاظ على المفتر الحضاري للمنطقة. من جانب آخر كلف سمو

رئيس الوزراء وزارة الأشغال وشؤون البلديات والتخطيط العمراني بتوفير جميع الخدمات وتهيئة ما يلزم لضمان نظافة الشوارع والأماكن والساحات، وخاصة في تلك التي تقام فيها الفعاليات الدينية في ذكرى عاشوراء. (التفاصيل ص٢)

2017

The Cabinet approved 100MW solar farm project & allocated land for it on IPP basis



100 Mw Solar Power Plant Proposed Location

Solar Farm 2 million m²





AMAZON REGIONAL HEAD OFFICE IN BAHRAIN



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amazon

2017



January 2018

5 MW TATWEER PETROLEUM Project

Increase 1 MW to 5 MW

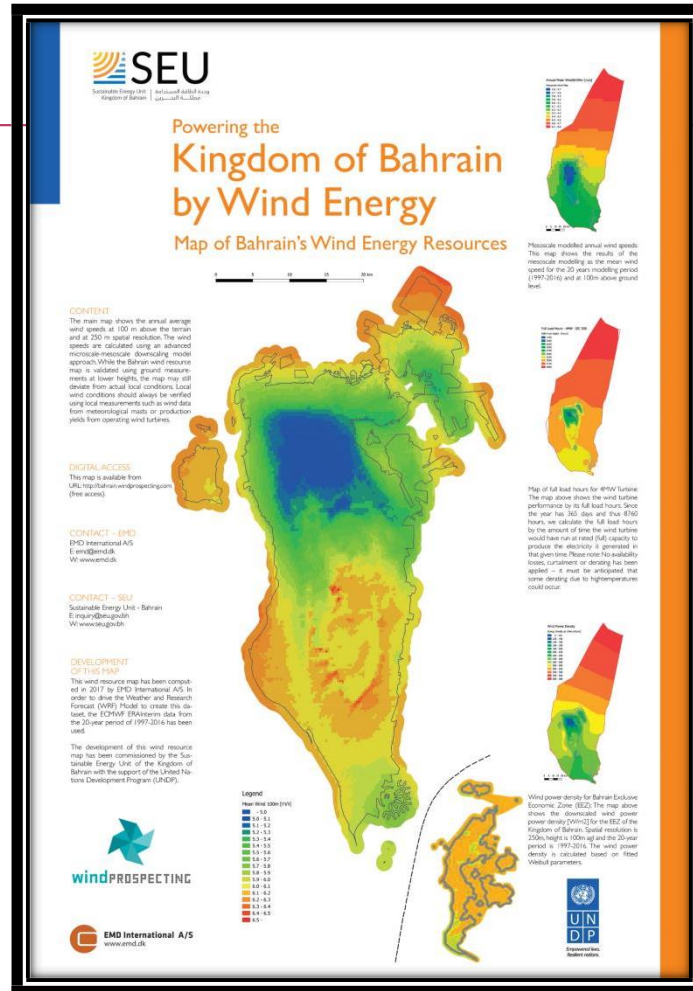


WASTE - TO - ENERGY



July 2018

**Waste – to – energy project is being awarded by
Ministry of Works for Tubli bay**



April 2018

The first official Wind Atlas was launched



WIND POWER



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2018

**5 MW solar / wind EWA project nears completion
(2 MW wind/ 3 MW solar).**



FIRST TRAINING SESSION



January 2018

The **first training and certification for solar installments consultants and contractors was carried out**

53 Participants: Consultants, Contractors, EWA Staff
Success Rate: 83%



SECOND TRAINING SESSION



June 2018

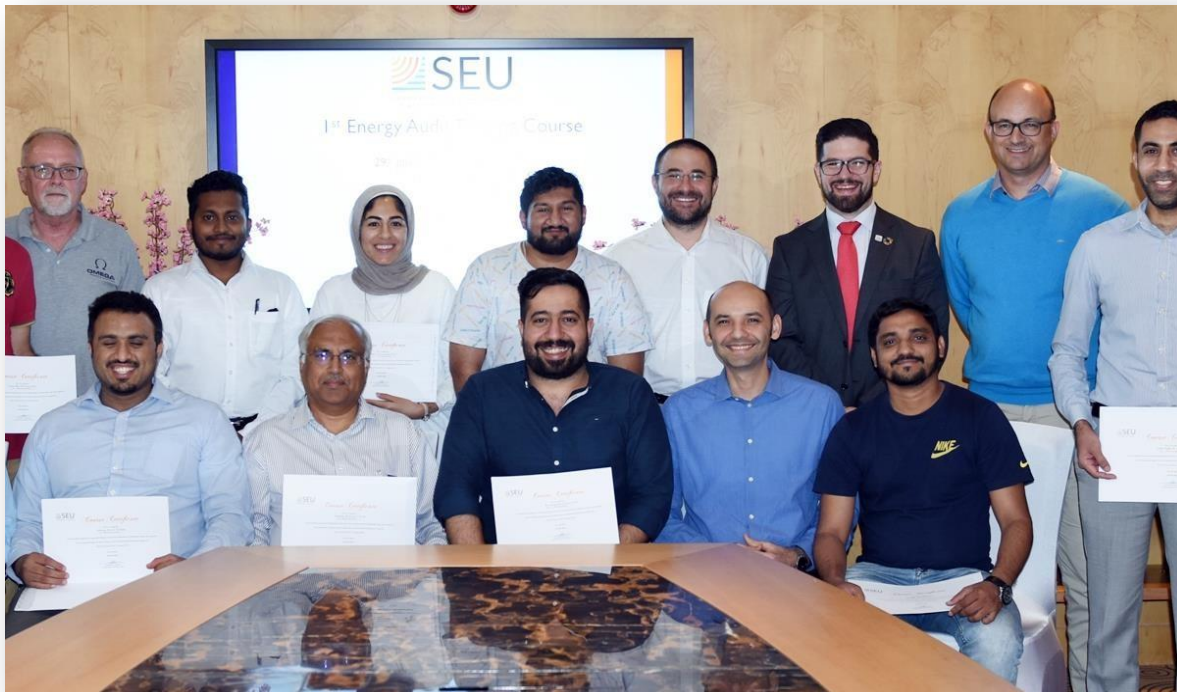
The **Second training and certification for solar installments consultants and contractors was carried out**

52 Participants: Consultants, Contractors, EWA Staff

Success Rate: 92%



FIRST ENERGY EFFICIENCY TRAINING WORKSHOP



July 2018

**The first energy efficiency training workshop was
conducted**

15 Participants from eligible energy efficiency specialized companies



ENERGY AUDITING



2018

Energy Auditing companies appointed



GREEN BUILDING CODE



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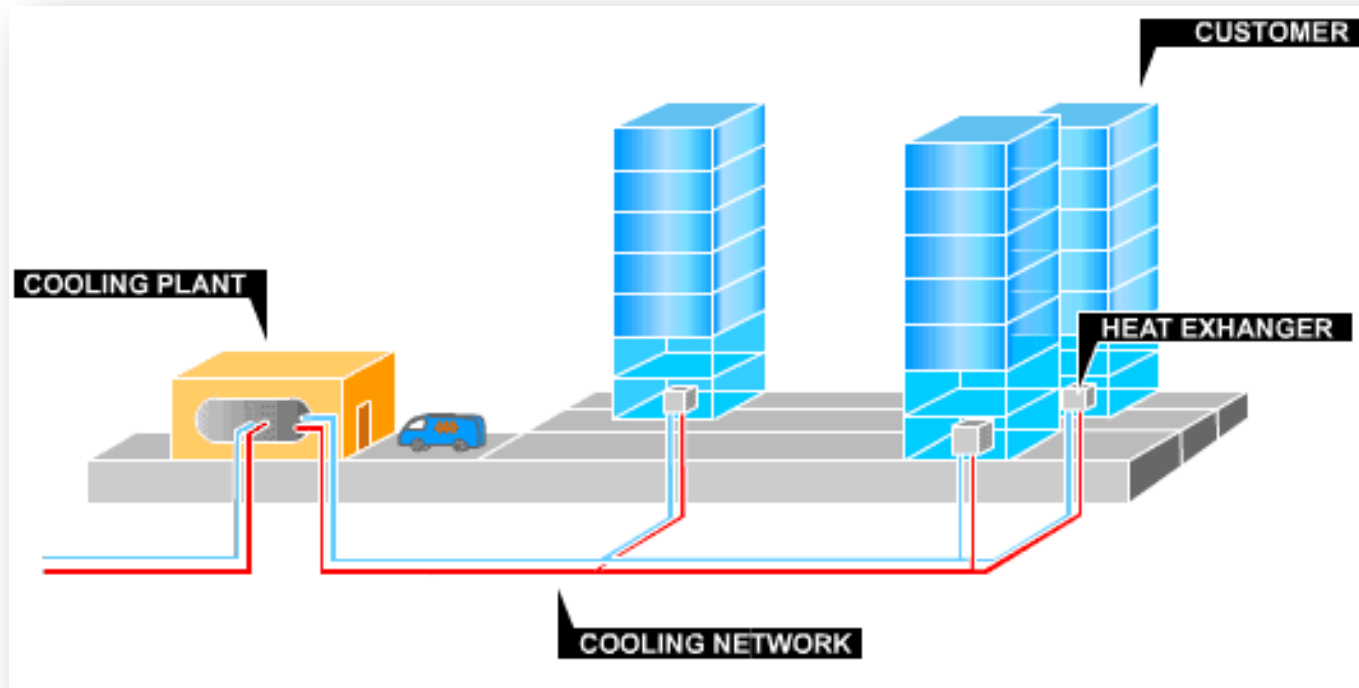


2018

Green Building Code to be launched by last quarter 2018



DISTRICT COOLING



2018

District cooling regulations making progress



GREEN PROCUREMENTS



2018

Work progressing on Green procurements initiatives. (All futures Government procurements have to be green).



BANNING FOSSIL FUEL



Britain and France announced ban on sale of new cars that consume fossil fuels by the year 2040.

Denmark, Austria and Norway announced that they will ban the use of fossil fuels in their countries by the year 2050



GCC Countries renewable energy targets

2030: **15%** of generation
CPS 5.7 GW. PV
4.6 GW. Wind 0.7 GW

↑ **5%** generation efficiency
↓ **10%** energy cons. In buildings

2023: **9.56 GW**
2040: **54 GW** 41GW solar.
9GW wind. 3GW W2E.
1GW Geo

2020: Energy intensity = G7
2021: ↓ **14%** peak demand
↓ **8%** electricity
consumption

Kuwait

Bahrain

Qatar

UAE

Saudi Arabia

Oman

2025: **5%**
2035: **10%**
2025: **6%**

2020: **16%** of Capacity
(1800 MW)
2030: **10 GW**
2017: ↓ **20%** in per capita
electricity cons. And
↓ **35%** in per capita
water cont. over 2011

2021:(UAE) **27%** clean energy
2050:(UAE) **44%** clean energy
2020: (Abu Dhabi) **7%** of capacity
2030: (Dubai) **5 GW** solar PV **25%**
2050: **75%**

2030: (Dubai) ↓ **20%**
power cons. By **30%**
vs business as usual

2025: **10%**
2015: ↓ **5%** in average gas
per kWh of generation

Renewable Energy Targets
Energy Efficiency Targets

at September 2017



Latest Solar PV prices for Utility-scale Projects

I) Egypt:

- 20-50 MW: 14.3 US cents/kWh (1 phase feed-in tariff) (53 fils/kWh)
- 20-50 MW: 8.4 US cents/kWh (2 phase feed-in tariff) (31 fils/kWh)

II) Jordan:

- 50 MW: 7.67 US cents/kWh (29 fils/kWh)
- 50 MW: 6.91 US cents/kWh (26 fils/kWh)
- 50 MW: 6.49 US cents/kWh (25 fils/kWh)
- 50 MW: 6.13 US cents/kWh (23 fils/kWh)

III) Morocco:

- 170 MW: 4.8 US cents/kWh (18 fils/kWh)

IV) UAE:

- 300 MW: 5.8 US cents/kWh (22 fils/kWh)
- 800 MW: 2.99 US cents/kWh (11 fils/kWh)
- Abu Dhabi 350 MW: 2.42 US cents/kWh (9 fils/kWh)

V) KSA (two lowest bid offered)

- 300 MW: 2.34 US cents/kWh (9 fils/kWh)
- 300 MW: 1.79 US cents/kWh (7 fils/kWh)





TENDER BASED FEED-IN-TARIFF



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Progress made on Tender Based feed-in-Tariff

**535 Government buildings identified for this purpose –
Schools & Hospitals**

The first 40 buildings will tendered in Dec 2018



ACHIEVING THE RENEWABLE ENERGY TARGET

The National Renewable Energy target to increase the share of renewable energy sources in the national energy mix to 5% by 2025, which translate to a capacity of 250 MW. The current projects pipeline to achieve the target include:

**Total of 131 MW
Which translate to
52% achievement
of the target in 1
year so far
(the remaining 48%
can be achieved
over the coming 7
years)**

Large Scale Solar Farm - capacity of 100MW

**Electricity & Water Authority Project -
capacity of 5 MW**

**Tatweer Petroleum Project - capacity
of 5 MW**

Awali Project - capacity of 5 MW

Tubli Bay Project - capacity of 5 MW

**Developers and Constructors Projects - capacity of 11 MW
(being 30% in progress projects out of 36.5MW in pipeline)**

*Thank you
for your attention ..*

Further Information:

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