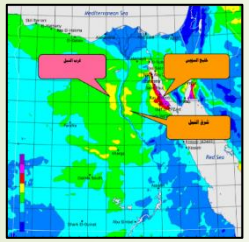
Ministry of Electricity & Renewable Energy

Arab Republic of Egypt

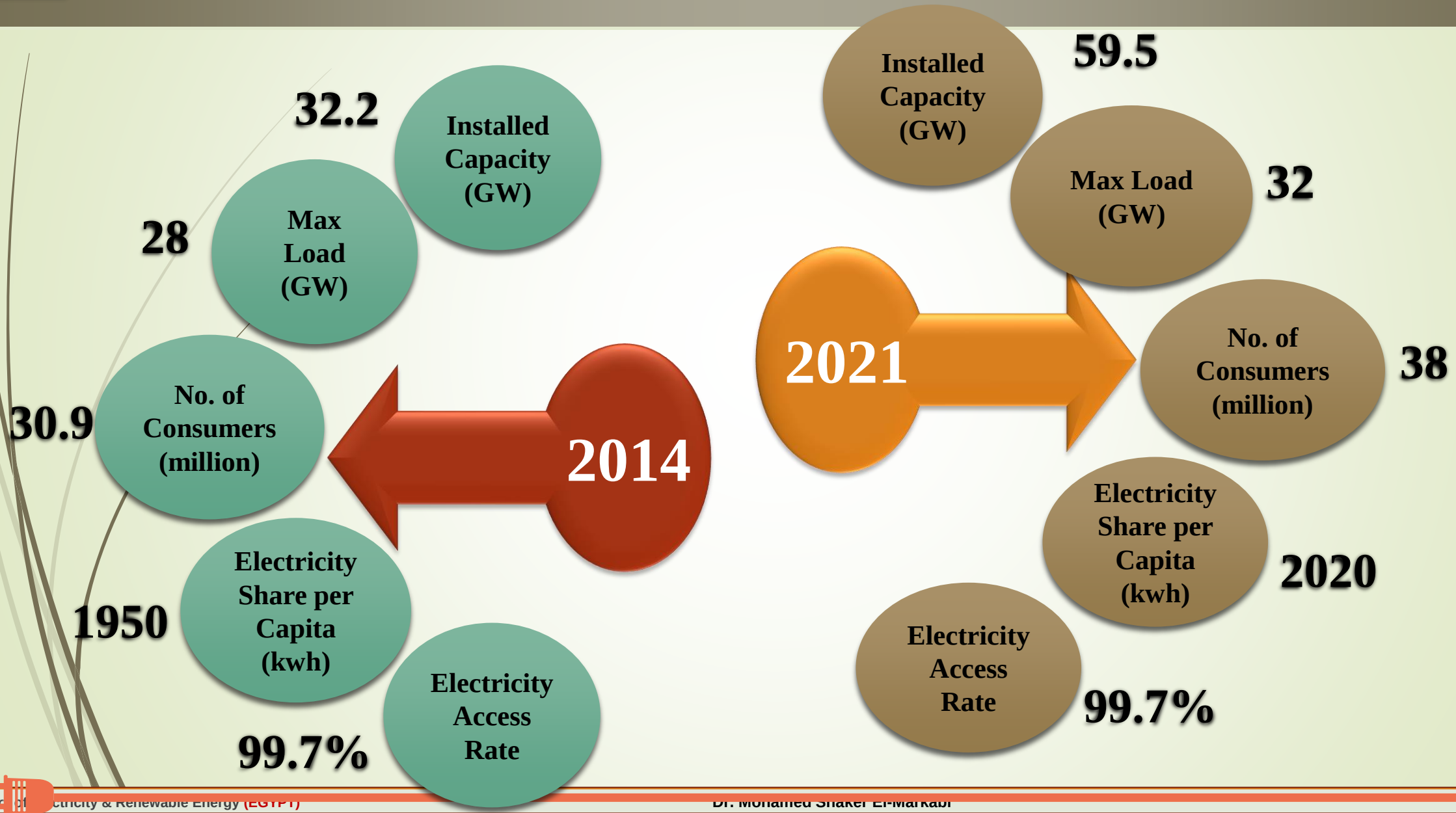
20/30 EGYPT VISION



Powering Egypt for Sustainable Growth

20/10/2021

Main Indicators 2014-2020



Egypt's Strategic vision

Egypt Vision 2030

Sustainable Development Goals

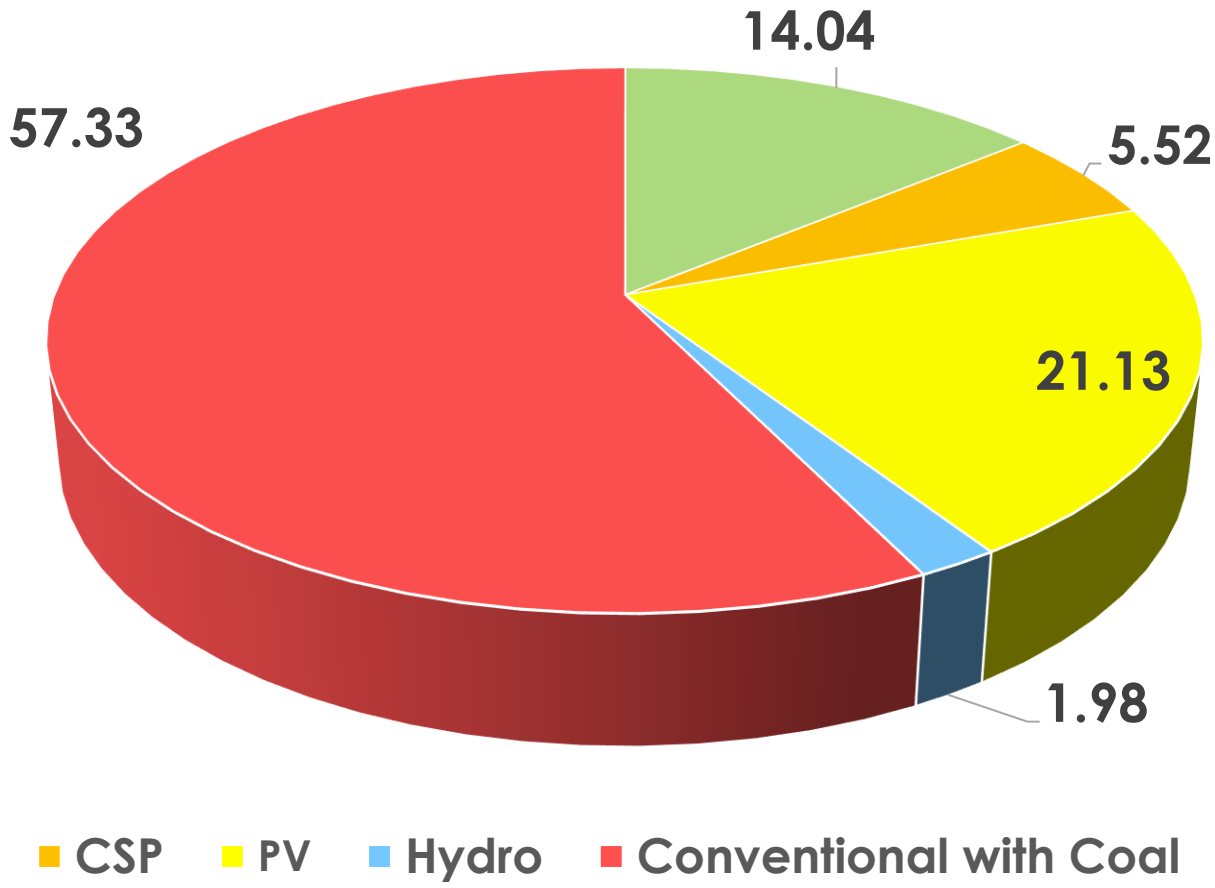
Energy Strategy 2035

"Maximize the efficient use of various Energy resources in a competitive, environment manner focusing on renewable energy".

There are a Coherence among the Egypt's energy vision 2035 & National SDGs 2030 & UN SDGs 2030.

Energy Strategy 2035

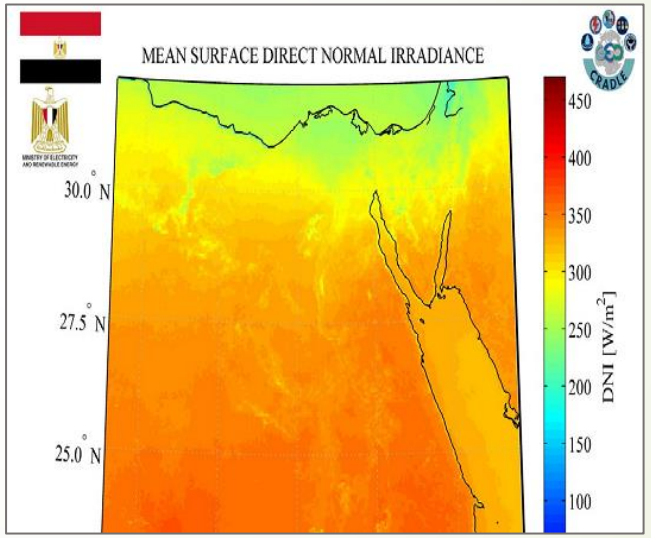
- **The Supreme Energy Council approved, "Integrated and Sustainable Energy Strategy till 2035".**
- **Targeting 42.7% RE as a share of generated electricity by year 2035.**
- **Now, we will achieve, one year ahead of the schedule, our first target by reaching renewable energy capacities to 20% from the expected maximum peak load.**
- **Currently, coal energy option has been excluded from energy mix to be replaced by renewable energy.**
- **Private sector investments will play critical role in achieving the target through a framework mechanisms .**



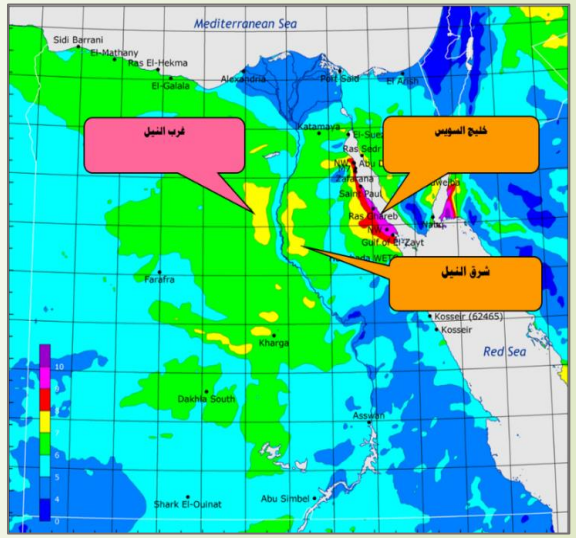
Potentials from Wind & Solar
Based on (Wind & Solar Atlas)

Areas			
Zone		Areas (km^2)	Capacity MW
Suez Gulf (wind)		1220	3550
East Nile	Wind	841	5800
	Solar	1290	34900
West Nile	Wind	3636	25350
	Solar	606	17400
Benban (Solar)		37	1800
Kom Ombo (Solar)		7	260
TOTAL		7637	≈90,000

Yellow shaded cells represent the available areas as a whole



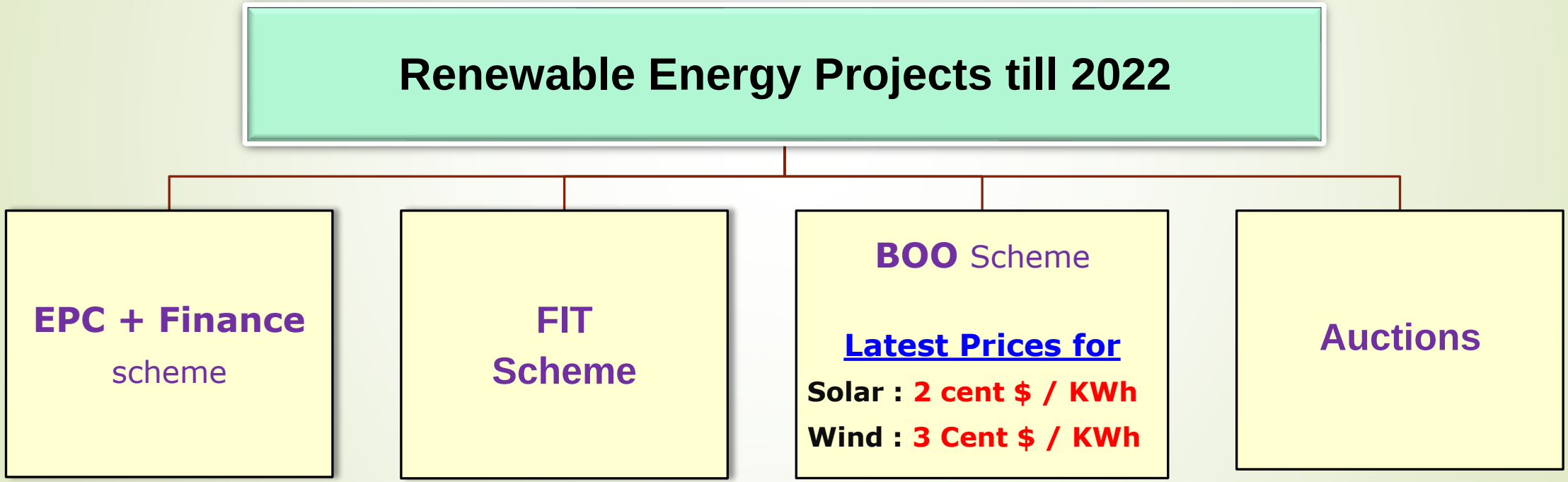
(Solar Atlas)



(Wind Atlas)

Framework for Renewable Energy Development Mechanisms

- **Private sector investments will play major role in achieving the target through a framework mechanisms .**



Incentives For Investments In Renewable Energy

- **Land has been allocated for renewable energy project: Solar and Wind has been allocated 7650 Km2**
- **Availability of information concerning Solar Atlas and Wind (was made available for all investors).**
- **Environmental Impact Assessment Studies.**
- **Custom duties for all imported materials and equipment do not exceed 2%.**
- **Sovereign Guarantees issued by Ministry of Finance.**
- **A bankable Power Purchase Agreement**

Wind Energy

Wind Total Installed Capacities :1375 MW

Zaafrana & Gabal Elziet (NREA) Projects With Total Capacities: 1125 MW

Ras Ghareb Project (250 MW) (Private Sector)

Benban Solar Park
The Largest in the world

BUSINESS

Egypt's Benban solar project wins best project prize worldwide: World Bank

Acting Head of the World Bank Kristalina Georgieva announced on Wednesday that the Benban Solar Project in Aswan won best project prize worldwide, an award that reflects the bank's support for the economic reform program in Egypt.

Minister of Investment and International Cooperation

Advertisement

First time for Egypt to win such an award.

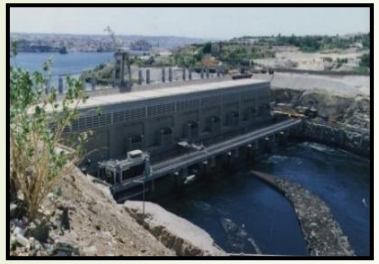
The Interim President of the WBG, Kristalina Georgieva announced that Benban Solar Project (1465 MW) in Aswan wins best project prize worldwide.

An award that reflects the bank's support for the economic reform program in Egypt and government plans to enhance the role played by the private sector in achieving comprehensive development

Hydropower Installed Capacities

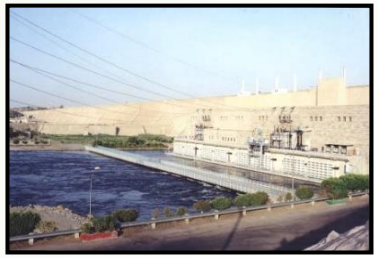
High Dam

2100 MW



Aswan Reservoir 1

280 MW



Aswan Reservoir 2

270 MW

Esna Barrage

86 MW

Naga Hamadi Barrage

64 MW

Assyiut Barrage

32 MW

Total Hydropower Installed Capacities

2832 MW

Renewable Energy BOO Projects

Recent BOO Projects Contracts

Company	Capacity (MW)	Technology	Price (cent $/K.w.h)
Masdar	200	Wind	3
Acwa Power	200	PV	2.47 (Auction)
* Nowais	500	PV	2
	500	Wind	3
ENGIE - Orascom-Toyota	500	Wind	3
Siemens – Gamesa	500	Wind	3
Total	2400		

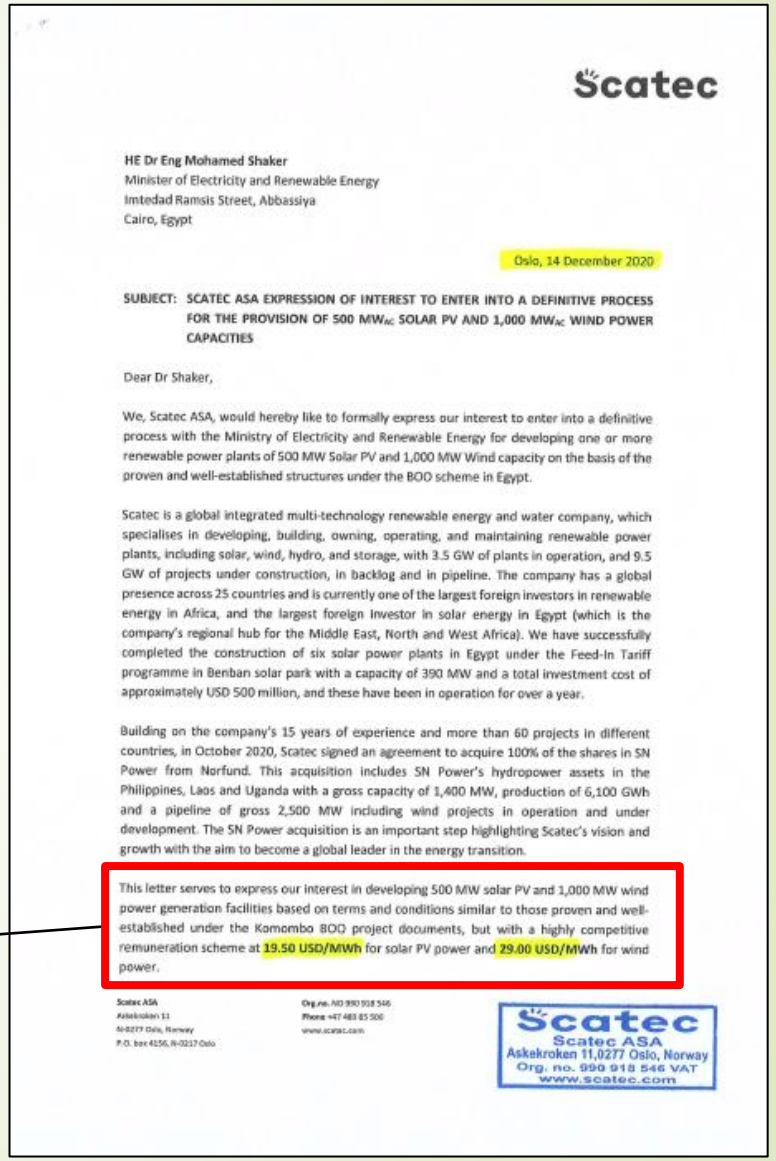
* Nowais Renewable Energy BOO projects of total 1000 MW has been replaced instead of Coal Project

Renewable Energy BOO Projects

Furthermore , An Additional offers has been Received require creating new project with reduction in price by :

- **1.9 cent $ /kwh** for **PV Projects**
- **2.9 cent $ /kwh** for **Wind Projects**

This letter serves to express our interest in developing 500 MW solar PV and 1,000 MW wind power generation facilities based on terms and conditions similar to those proven and well-established under the Komombo BOO project documents, but with a highly competitive remuneration scheme at 19.50 USD/MWh for solar PV power and 29.00 USD/MWh for wind power.



Scatec

HE Dr Eng Mohamed Shaker
Minister of Electricity and Renewable Energy
Imtedad Ramsis Street, Abbassiya
Cairo, Egypt

Oslo, 14 December 2020

SUBJECT: SCATEC ASA EXPRESSION OF INTEREST TO ENTER INTO A DEFINITIVE PROCESS FOR THE PROVISION OF 500 MW_{AC} SOLAR PV AND 1,000 MW_{AC} WIND POWER CAPACITIES

Dear Dr Shaker,

We, Scatec ASA, would hereby like to formally express our interest to enter into a definitive process with the Ministry of Electricity and Renewable Energy for developing one or more renewable power plants of 500 MW Solar PV and 1,000 MW Wind capacity on the basis of the proven and well-established structures under the BOO scheme in Egypt.

Scatec is a global integrated multi-technology renewable energy and water company, which specialises in developing, building, owning, operating, and maintaining renewable power plants, including solar, wind, hydro, and storage, with 3.5 GW of plants in operation, and 9.5 GW of projects under construction, in backlog and in pipeline. The company has a global presence across 25 countries and is currently one of the largest foreign investors in renewable energy in Africa, and the largest foreign investor in solar energy in Egypt (which is the company's regional hub for the Middle East, North and West Africa). We have successfully completed the construction of six solar power plants in Egypt under the Feed-In Tariff programme in Benban solar park with a capacity of 390 MW and a total investment cost of approximately USD 500 million, and these have been in operation for over a year.

Building on the company's 15 years of experience and more than 60 projects in different countries, in October 2020, Scatec signed an agreement to acquire 100% of the shares in SN Power from Norfund. This acquisition includes SN Power's hydropower assets in the Philippines, Laos and Uganda with a gross capacity of 1,400 MW, production of 6,100 GWh and a pipeline of gross 2,500 MW including wind projects in operation and under development. The SN Power acquisition is an important step highlighting Scatec's vision and growth with the aim to become a global leader in the energy transition.

This letter serves to express our interest in developing 500 MW solar PV and 1,000 MW wind power generation facilities based on terms and conditions similar to those proven and well-established under the Komombo BOO project documents, but with a highly competitive remuneration scheme at 19.50 USD/MWh for solar PV power and 29.00 USD/MWh for wind power.

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Renewable Energy Current Situation

Renewable Energy	Total Installed Capacity by location
Wind Farms In cooperation with (Denmark , Germany , Japan, EU , Spain)	**545 MW** Zaafarana
	580 MW Gulf Suez
Consortium **(Engie-Toyota-Orascom)**	**250 MW** Gulf Suez
Total	**1375 MW**
Concentrated Solar Power CSP	**140 MW Kurymat P.P** (**20 MW Solar** + 120 MW Thermal)
PV	**40 MW** Remote areas not connected to Grid **140 MW** (Net Metering – Roof top) **1465 MW** in Benban solar park
Total	**1665 MW**
Hydro Power	**2832 MW**
Total Renewable Energy Installed 5872 MW	

By end of 2021 → **6378 MW**

Represents about 20% from the expected peak load

which exceeds the strategy Target of Renewable Energy share in 2022

Technology & Innovation

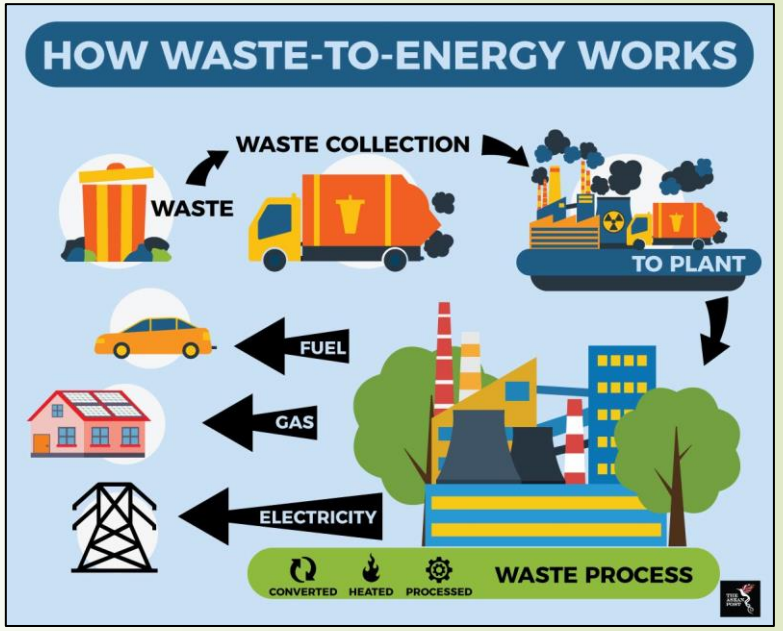
Future Projects

Waste to Energy

in Cooperation with Ministry of Environment

Waste to Energy

- **Energy-from-Waste is the process of generating energy in the form of electricity and/or heat.**
- **According to the Ministry of Environment: 20% of the total collected of Municipal Solid Waste (MSW) will be forwarded to the technologies of W2E (about 4.2 milliom tons of MSW to W2E)**
- **Private sector is invited to participate in electricity generation form waste.**



Waste to Energy

- A compensation tariff for purchasing electricity produced from solid waste to be 1.4 EGP per K.w.h

- Expected Electricity that could be Generated from Waste according to the cabinet Decree (300 MW for the coming 5 years)

قرار مجلس الوزراء
رقم ٤١ لسنة ٢٠١٩

مجلس الوزراء

بعد الاطلاع على الدستور ؛

وعلى القانون رقم ٢١ لسنة ١٩٥٨ بشأن تنظيم الصناعة وتشجيعها؛

وعلى القانون رقم ٣٨ لسنة ١٩٦٧ في شأن النظافة العامة؛

وعلى قانون نظام الإدارة المحلية الصادر بالقانون رقم ٤٣ لسنة ١٩٧٩ ولائحته التنفيذية؛

وعلى القانون رقم ٢٠٣ لسنة ١٩٨٦ بإنشاء هيئة تنمية واستخدام الطاقة الجديدة والمتجددة؛

وعلى قانون البيئة الصادر بالقانون رقم ٤ لسنة ١٩٩٤ ولائحته التنفيذية؛

وعلى القانون رقم ٢٠٣ لسنة ٢٠١٤ بشأن تحفيز إنتاج الكهرباء من مصادر الطاقة المتجددة؛

وعلى قانون الكهرباء الصادر بالقانون رقم ٨٧ لسنة ٢٠١٥؛

وعلى قانون الاستثمار الصادر بالقانون رقم ٧٢ لسنة ٢٠١٧ ولائحته التنفيذية؛

وعلى قانون تنظيم التعاقدات التي تبرمها الجهات العامة الصادر بالقانون رقم ١٨٢ لسنة ٢٠١٨؛

وعلى قرار رئيس مجلس الوزراء رقم ٣٠٠٥ لسنة ٢٠١٥ بإنشاء جهاز تنظيم إدارة المخلفات؛

وعلى ما عرضته وزيرة البيئة؛

وبعد موافقة مجلس الوزراء.

قـــرر

(المادة الأولى)

تحدد أسعار شراء الطاقة الكهربائية الموردة لشركات توزيع الكهرباء من محطات انتاج الكهرباء المستخدمة للمخلفات البلدية الصلبة أو من الغاز الحيوي المستخرج من المدافن الصحية الآمنة والتي سيتم التعاقد معها بنظام تعريفة التغذية المقررة بسعر ١,٤ جنيه لكل كيلو وات ساعة، وتحدد التعريفة بسعر ١,٠٣ جنيه لكل كيلو وات ساعة في حالة إنتاج الطاقة الكهربائية من الحمأة الناتجة من محطات معالجة الصرف الصحي.

(المادة الثانية)

يكون سعر شراء الطاقة الكهربائية المحدد بالمادة الأولى من هذا القرار بالجنيه المصري وذلك طبقاً لمعادلة سعرية موضحة بالبيان المرفق.

ويكون التعاقد لشراء الطاقة الكهربائية من المخلفات لمدة خمسة وعشرين عاماً.

(المادة التاسعة)

تشكل لجنة مشتركة برئاسة وزير البيئة وعضوية كل من :-

أولاً :- ممثل عن كل من الوزارات والجهات الآتية :-

- وزارة الكهرباء والطاقة المتجددة.
- وزارة الاستثمار والتعاون الدولي.
- وزارة البترول والثروة المعدنية.
- وزارة المالية.
- وزارة التنمية المحلية.
- وزارة الإسكان والمرافق والمجتمعات العمرانية.
- المحافظة المختصة.
- جهاز تنظيم إدارة المخلفات.

ثانياً :- عدد ٣ خبراء في مجال المخلفات والطاقة يختارهم وزير البيئة

وتتولى اللجنة المشتركة وضع الضوابط الفنية والمالية اللازمة للتعاقد بشأن محطات إنتاج الطاقة الكهربائية من المخلفات، وإجراء التقييم الفني للعروض المقدمة في هذا المجال.

(المادة العاشرة)

ينشر هذا القرار في الجريدة الرسمية ويعمل به من اليوم التالي لتاريخ نشره.

رئيس مجلس الوزراء

(دكتور/مصطفى كمال مدبولي)

صدر برئاسة مجلس الوزراء في ٥ ربيع الآخر سنة ١٤٤١هـ

الموافق ٢ ديسمبر سنة ٢٠١٩م

صورة مرسلة إلى السيد /

وزير الكهرباء والطاقة المتجددة

رئيس

هيئة مستشاري مجلس الوزراء

(المستشار/ شريف الشاذلي)

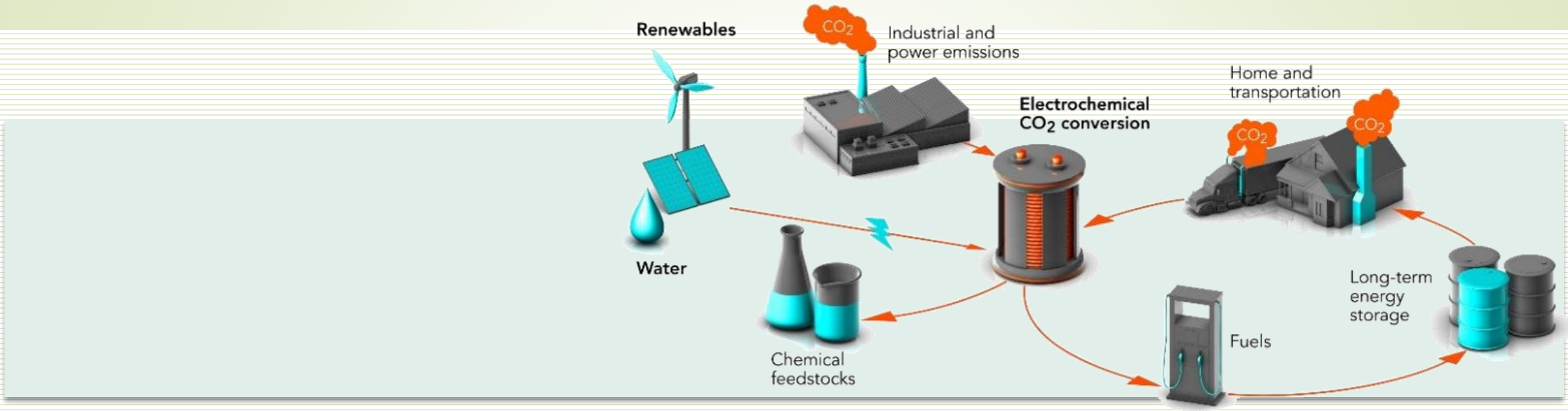
Electric Vehicles

Government Support to Invest in Electrical infrastructure of Electric Vehicles

- **An incentive tariff has been proposed for EV charging and it is currently in the process of approval (by the Egyptian Cabinet) .**
- **In addition The government has also provide a package of Incentives to encourage the investment in this field including : Charging Tariff , Customs Exemption ……**
- **The Production Capacity of EV for the Local Manufacturer (Nasr Company) = 25000 Electric Vehicle / Annually**
- **There are a national committee from different ministries headed by the Egyptian Ministry of Military Production for the localization of the electric vehicle industry in Egypt.**

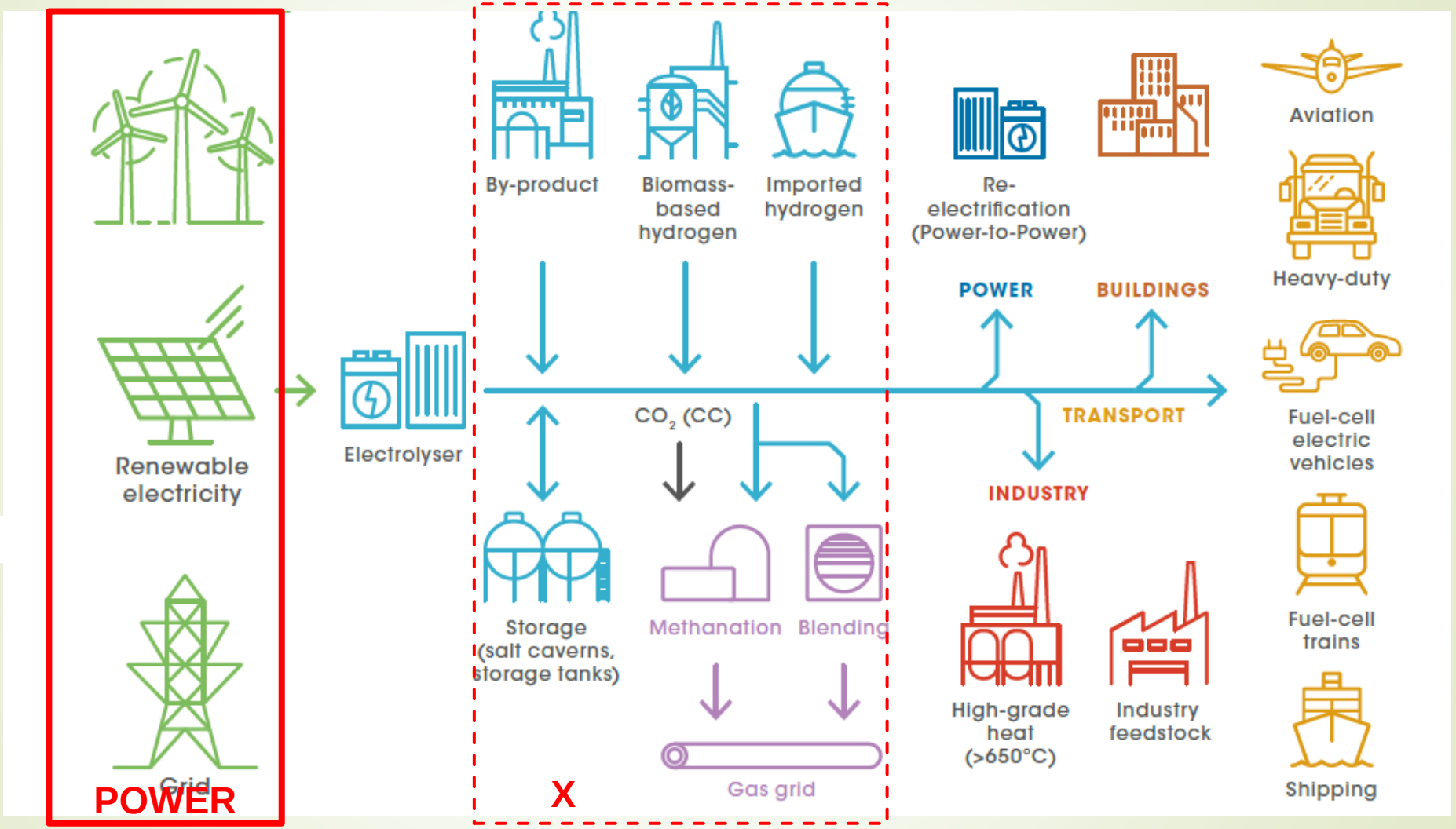
Hydrogen

Power-to-X technology



The generation of electricity by renewable sources such as wind and sun is naturally subject to great fluctuations. While on windy, sunny days, surpluses are produced that can not be directly consumed or taken from the power grid, One of the storage solution is using hydrogen. That is called **Power-to-X technology** : as it is a transformation of surplus electricity into another forms of energy

Power-to-X technology



Source: - GET (Power to X)

- IRENA

The term **"power" stands for electrical energy** and **"X" for the form of energy** into which the current is converted

EGYPT CURRENT SITUATION OF HYDROGEN:

Several measures have been taken to develop hydrogen in Egypt such as:

- A prime minister decree has been issued for forming a high – level working group from various ministries to set a road map for future steps for using hydrogen.
- The road map includes preparing a national strategy for hydrogen production in accordance to the requirements of the concerned sectors, developing an action plan to implement the strategy, studying the opportunities for localizing the hydrogen industry in Egypt, and cooperate with any of developed countries in the field of hydrogen to benefit from their experiences and implement pilot projects.

Partnership in the field of green hydrogen Production

- On 14 January 2021, The Egyptian Electricity and Renewable Energy sector, signed an agreement of intentions with the German company Siemens, to start discussions and studies to implement a pilot project for the production of green hydrogen in Egypt, as a first step towards expanding in this field to the possibility of exporting.
- On 24 August 2021, Siemens Energy has signed a memorandum of understanding with the Egyptian Electricity Holding Company to jointly develop hydrogen-based industry in Egypt with export capability. MoU will pursue the development of a pilot project, comprising 100 to 200 MW of electrolyzer capacity.

Partnership in the field of green hydrogen Production

- On 4/3/2021 an agreement of intent signed between Egyptian Electricity and Renewable Energy sector and consortium of Belgium companies (Deme –Fluxys –Antwerp port) for establishment of the first integrated industrial complex “multi – purpose” for producing green hydrogen in Egypt.
- On 8/7/2021 an agreement signed between the Egyptian Electricity Holding Company (EEHC) and the Egyptian Natural Gas Holding Company (EGAS) and Eni Company to assess the technical and commercial feasibility of projects for the production of hydrogen in the country.

Thank You