

07

# Industry Study: KSA Renewable Energy Sector







# Overview of the renewable energy sector in the Kingdom

## Introduction

Saudi Arabia is blessed with abundant natural resources of wind and solar irradiation, which offers the potential for incorporating renewable energy into the country's energy mix as well as contributing to the transition of its economy away from fossil fuel dependency. This reflects the global shift towards "Net Zero", where the amount of greenhouse gas produced is balanced or, ideally, exceeded by the amount removed from the atmosphere. This case study aims at offering an overview of the Renewable Energy sector in Saudi Arabia.

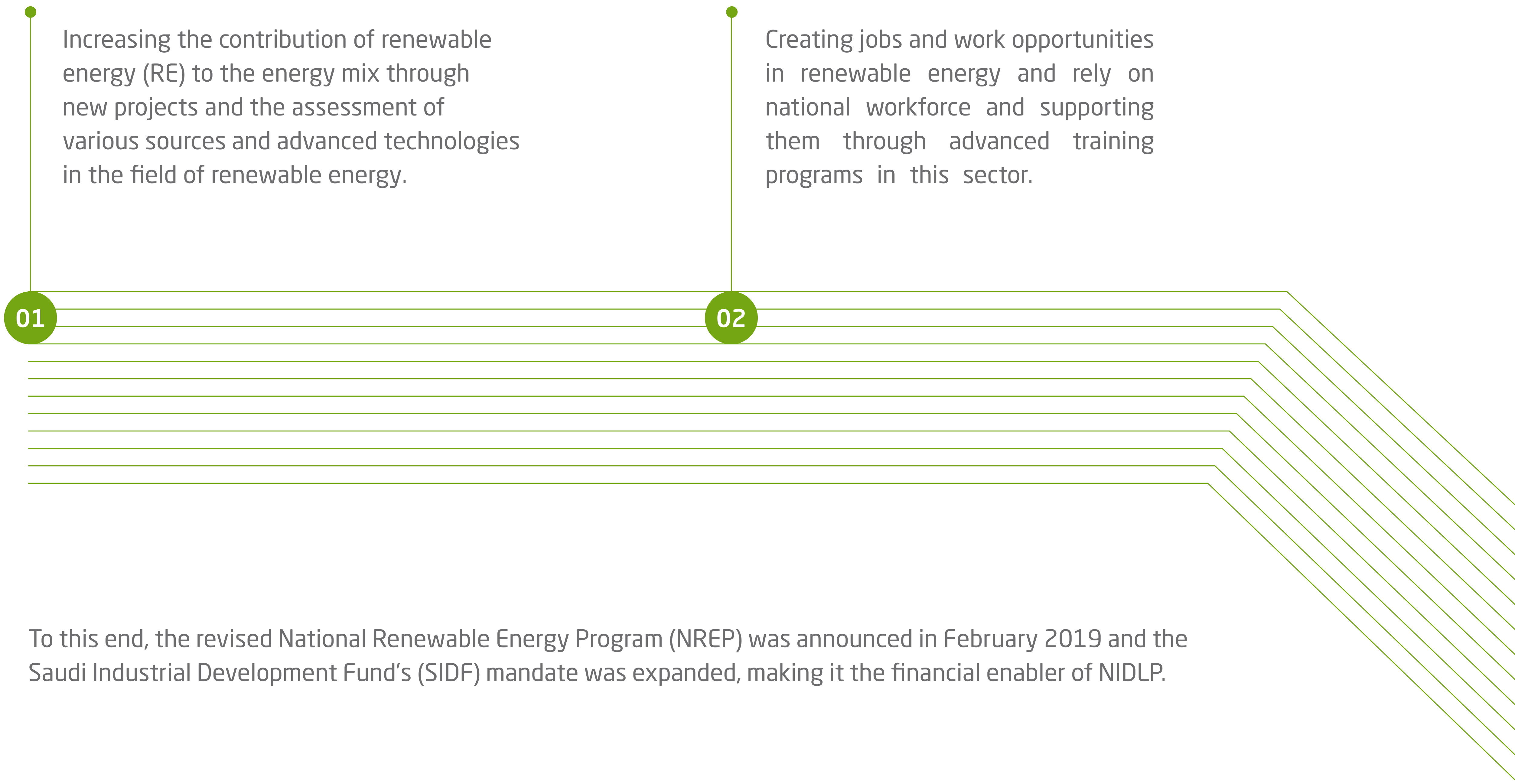






## The National Renewable Energy Program (NREP)

One of the enabling programs of Vision 2030 is the National Industrial Development & Logistics Program (NIDLP) whose strategy for the renewable energy (RE) sector aims at:



To this end, the revised National Renewable Energy Program (NREP) was announced in February 2019 and the Saudi Industrial Development Fund's (SIDF) mandate was expanded, making it the financial enabler of NIDLP.

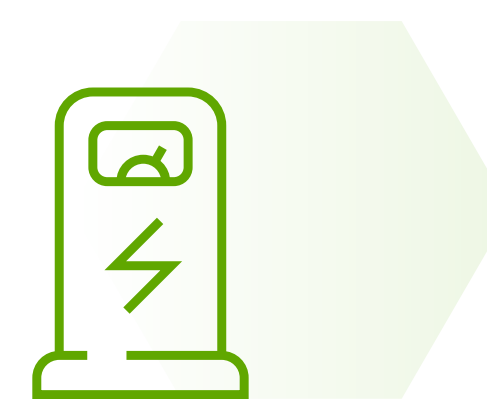
NREP has set a target of 58.7 GW of installed capacity by 2030, split as follows:



**40**  
GW solar photovoltaic (PV)



**16**  
GW onshore wind



**2.7**  
GW hybrid generation + storage



These projects have been split 30/70 between the Ministry of Energy (MoE) and the Public Investment Fund (PIF), respectively. As follows:

**1. MoE projects (30%):** are tendered and awarded based on the lowest Levelized Cost of Energy (LCOE), measured in c/kWh. The following are the tenders launched by MoE:

**2017**

Round 1 of the MoE pipeline (300 MW PV, 400 MW wind) was tendered in February 2017, with the Sakaka PV plant (winning bid 2.34 c/kWh) being commissioned in November 2019 and the Dumat-al-Jandal wind farm (winning bid 2.13 c/kWh) completed in 2021.

**2019**

Round 2 (1.8 GW PV) was tendered in June 2019 and awarded in April 2021. It is worth noting that the Faisaliah Phase 1 project (600 MW) received a world record low bid of 1.04 c/kWh.

**2020**

Round 3 (1.2 GW PV) was tendered in January 2020, just before COVID-19 hit, and the final shortlist was announced in October 2021.

**2022**

Round 4 is expected to be tendered in Q2 2022 and the tender should include the Kingdom's second wind project (Yanbu 800 MW) as well as a 300 MW hybrid storage project.

**2. PIF projects will be negotiated (70%):** They are intended to develop the local manufacturing industry, balanced by the need to generate economical electric power, currently has one PV project under active development - Sudair (2.2 GW), which will be implemented in two phases:

**2021**

Round 1 which (1.5 GW) was announced by HRH the Crown Prince in April 2021.

**2022**

Round 2, expected to be announced in Q2 2022, will comprise two PV projects: Shuaiba II (2.1 GW) and Rabigh II (300 MW).

All NREP projects sign a Power Purchase Agreement with the Saudi Power Procurement Company (SPPC) - the Kingdom's "Principal Buyer" - whereby 100% of the electricity produced will be purchased at a fixed price for 20 to 25 years.



## Other non-NREP utility-scale projects



The Kingdom's giga projects (NEOM, Red Sea Development, Amaala, and Qiddiya) are all planned to be powered by renewable energy, although precise details (capacity, technology, timeline) are yet to be known. A Joint Venture between NEOM, ACWA Power, and Air Products (USA) is currently developing a 1.2 Million ton/year-green hydrogen/ammonia plant powered by 4 GW of wind and solar PV.



نيوم NEOM





## Main Players in renewable energy sector in the Kingdom

### Government Stakeholders

#### 01

##### Ministry of Energy:

Responsible for the tendering 30% of NREP project pipeline and the localization of the energy sector in coordination with the Ministry of Investment and the National Industrial Cluster Program (NIDC).

وزارة الطاقة  
MINISTRY OF ENERGY



#### 02

##### Ministry of Industry and Mineral Resources:

Supports the development of the manufacturing sector through licensing, land allocation, and other supporting services.

وزارة الصناعة  
والثروة المعدنية  
Ministry of Industry and Mineral Resources



#### 03

##### Water & Electricity Regulatory Authority (WERA):

Develops and implements regulations for the connection of distributed generation projects to the Grid; issuer of Generation Licenses where required.

هيئة تنظيم المياه والكهرباء  
WATER & ELECTRICITY REGULATORY AUTHORITY



#### 04

##### Saudi Power Procurement Company (SPPC):

The off-taker (counterparty in the Power Purchase Agreements or PPA) for all electricity generation projects including Renewable Energy (RE).

المشتري الرئيسي  
PRINCIPAL BUYER  
طاقة للفسد





## Overview of Renewable Energy Local Projects



The local RE manufacturing sector is still in its infancy with the two completed utility-scale RE projects having been constructed using imported equipment. There are a number of manufacturers which have just recently started production or are under development and these are expected to supply MoE Round 4 onwards and the PIF project pipeline. A bright exception is the module mounting system used in the Sakaka PV plant where all the precision steel components were produced locally.



## SIDF's Role in Supporting the Sector

In September 2019, SIDF launched its Mutajadedda Program to finance the three pillars of the renewable energy ecosystem



### 01

#### Component Manufacturing.

for components identified as localization priorities by MoE:

- Wind turbine towers
- nacelles, blades
- solar PV module assembly
- solar inverter assembly
- PV mounting systems

### 02

#### NREP IPP Projects

### 03

#### Distributed Generation IPP Projects

On-grid and off-grid projects for the commercial and industrial sectors (mall rooftops, factory power plants, etc.)

Preferential terms include longer repayment periods (up to 12 years), grace periods (up to 36 months), and financing of up to 75% of project cost. To date, SIDF has approved loans for over SR 500 Million to the RE sector.





## SWOT Analysis

### Strengths

1. Ambitious government targets for RE share of the energy mix and commitment to diversifying the power sector away from oil in order to conserve feedstock for exports.
2. Largest economic market in the region with increasing energy demand.
3. Largest construction sector in the Middle East.
4. Low transmission and distribution losses due to sustained investment in the power grid infrastructure.
5. High levels of solar resource and low land prices enable cost-effective projects.
6. Government support through local content requirements.
7. Giga projects committed to green energy using locally manufactured products where possible.

S

### Weaknesses

1. Low-capacity manufacturing plants that do not benefit from economies of scale.
2. Delayed project tendering and no clear project pipeline.
3. Poor regulatory environment and lack of incentives not favorable for extensive penetration by distributed generation.
4. Limited local R&D capabilities, none at the industrial scale.
5. Limited experienced human resources at all levels.

W

O

### Opportunities

1. Short- and medium-term global demand for RE (electricity and equipment) has increased post-COP26.
2. Energy exports to the region.
3. Development of an R&D ecosystem.
4. Solar-powered water desalination should be an integral part of Saudi Arabia's long-term energy strategy.
5. Increased global demand for "green" hydrogen produced by RE as opposed to fossil fuels.
6. Huge potential for distributed generation on residential rooftops if regulatory environment improves.
7. If 2030 targets are to be met, the RE sector will be undersupplied across the board.

T

### Threats

1. Aggressive competition from Chinese imports.
2. Delays in the NREP project tendering process.
3. Overcapacity in the electricity market, combined with an ambitious nuclear program and a lack of electricity trading, could undermine the incentive for renewable energy development.
4. Subsidy cuts and tariff restructuring have been met with public opposition and weighed heavily on electricity consumption, boosting the risk of project cancellations due to lack of demand.

