

Wind. It means the world to us.™

Trends about energy markets

“Il futuro della green economy nei nuovi equilibri mondiali «

Rainer Karan, Vice President - East Mediterranean, VESTAS

Rimini 8.Nov 2017

Vestas

1

RENEWABLES ARE
UNSTOPPABLE



The change is today

Germany got 85% of its electricity from renewable sources in April

Megan Treacy (@mretracy)
Energy / Renewable Energy
May 10, 2017

Share on Facebook



CC BY 2.0 Tony Webster



BRIEF

CAISO: Renewables served 42% of California demand on May 16, setting record

Portugal runs for four days straight on renewable energy alone

Zero emission milestone reached as country is powered by just wind, solar and hydro-generated electricity for 107 hours



Uruguay makes dramatic shift to nearly 95% electricity from clean energy

In less than 10 years the country has slashed its carbon footprint and lowered electricity costs, without government subsidies. Delegates at the Paris summit can learn much from its success

Read this article in Spanish



Renewables now provide 94.5% of Uruguay's electricity. Photograph: Mariana Greif Etchebehere/Bloomberg/Getty Images

Environment

Costa Rica's electricity was produced almost entirely from renewable sources in 2016

Around 15 per cent of US electricity supply was renewable

Peter Walker | @petejohn_walker | Monday 2 January 2017 13:44 GMT | 26 comments



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Denmark Just Ran Their Entire Country on 100% Wind Energy

IN BRIEF

- Thanks in part to the installation of a new offshore wind turbine installation, Denmark was recently able to power the entire country for a day with wind energy alone
- As many countries continue to incorporate renewable energy, successes like this show just how much is possible

SHARE

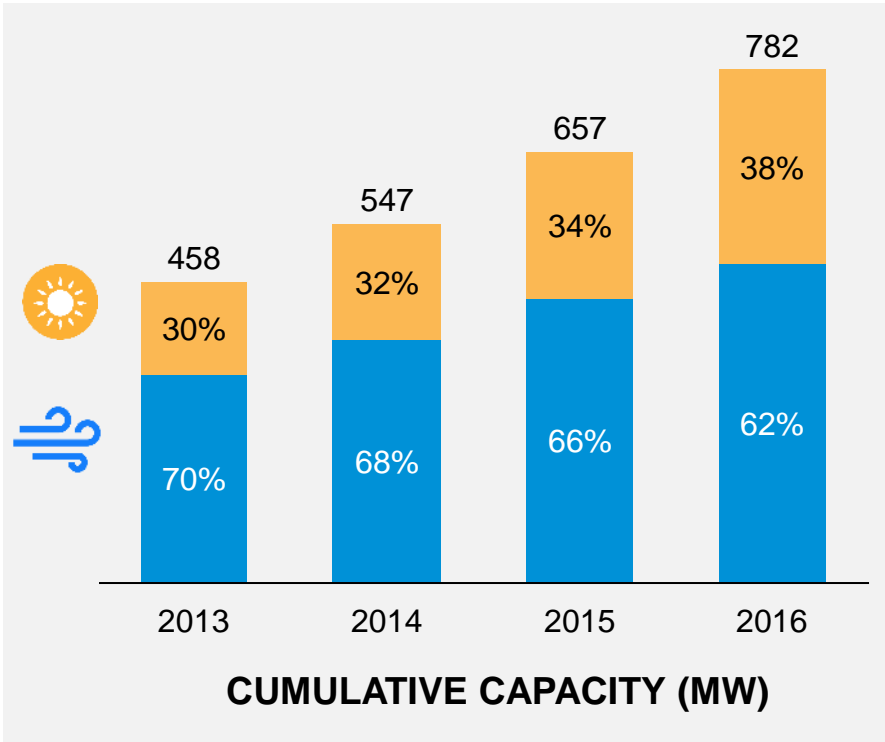


WRITTEN BY

Patrick Coaffill

March 3, 2017

The future will be renewable-based or there won't be a future



 **486 GW** of Wind

- ✓ **341,320** # of WTGs spinning
- ✓ **10.4%** of EU Consumption
- ✓ **x5** Spain
- ✓ **x2.5** Germany

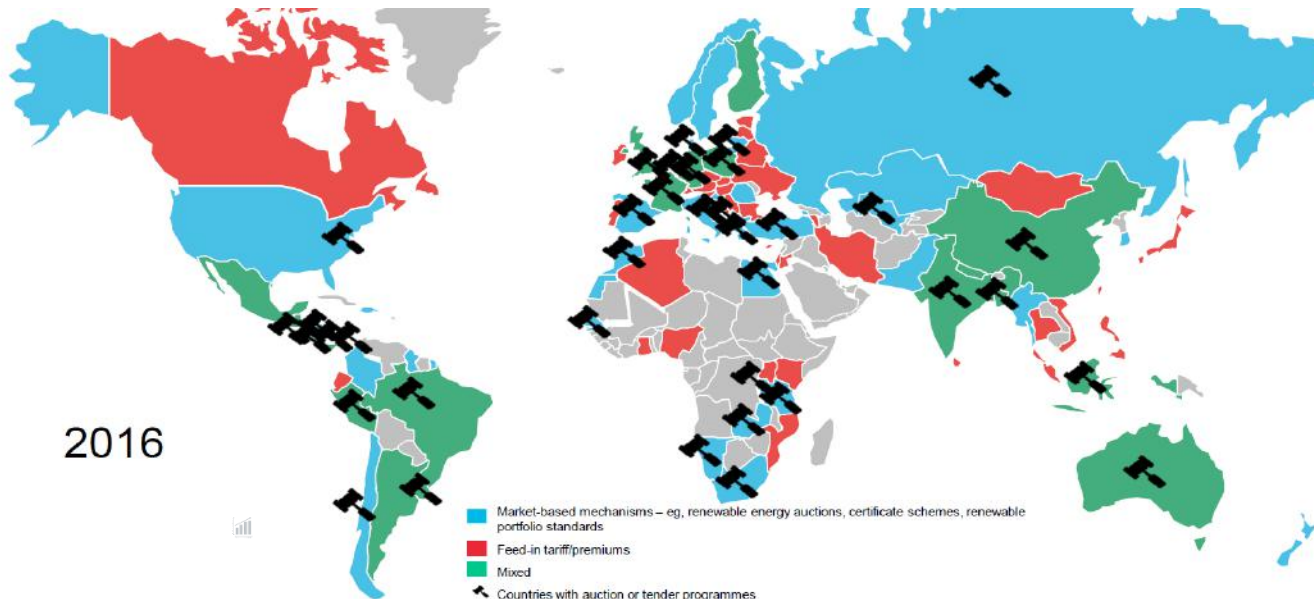
 **x2** Nuclear

2

**WIND IS
CHEAPER
THAN FOSSIL FUELS**

(IN SOME MARKETS)

By 2018, 100% of countries will have implemented auctions in some way or another



Some years ago, the market was **driven by Feed-in-Tariffs** and bilateral PPAs....



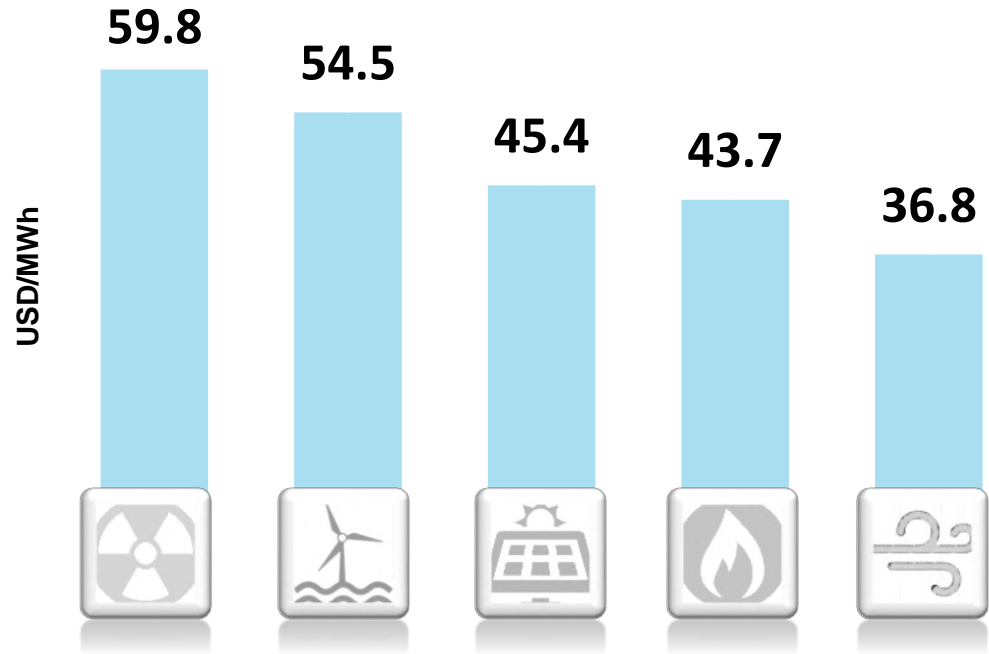
Today, **auctions and tender procurement systems** are the rule



....and as a consequence this brings more **price pressure and competition** both to us and to our customers

Wind is increasingly the **cheapest** source for energy

LEVELIZED COST OF ELECTRICITY



Under continuous improvements



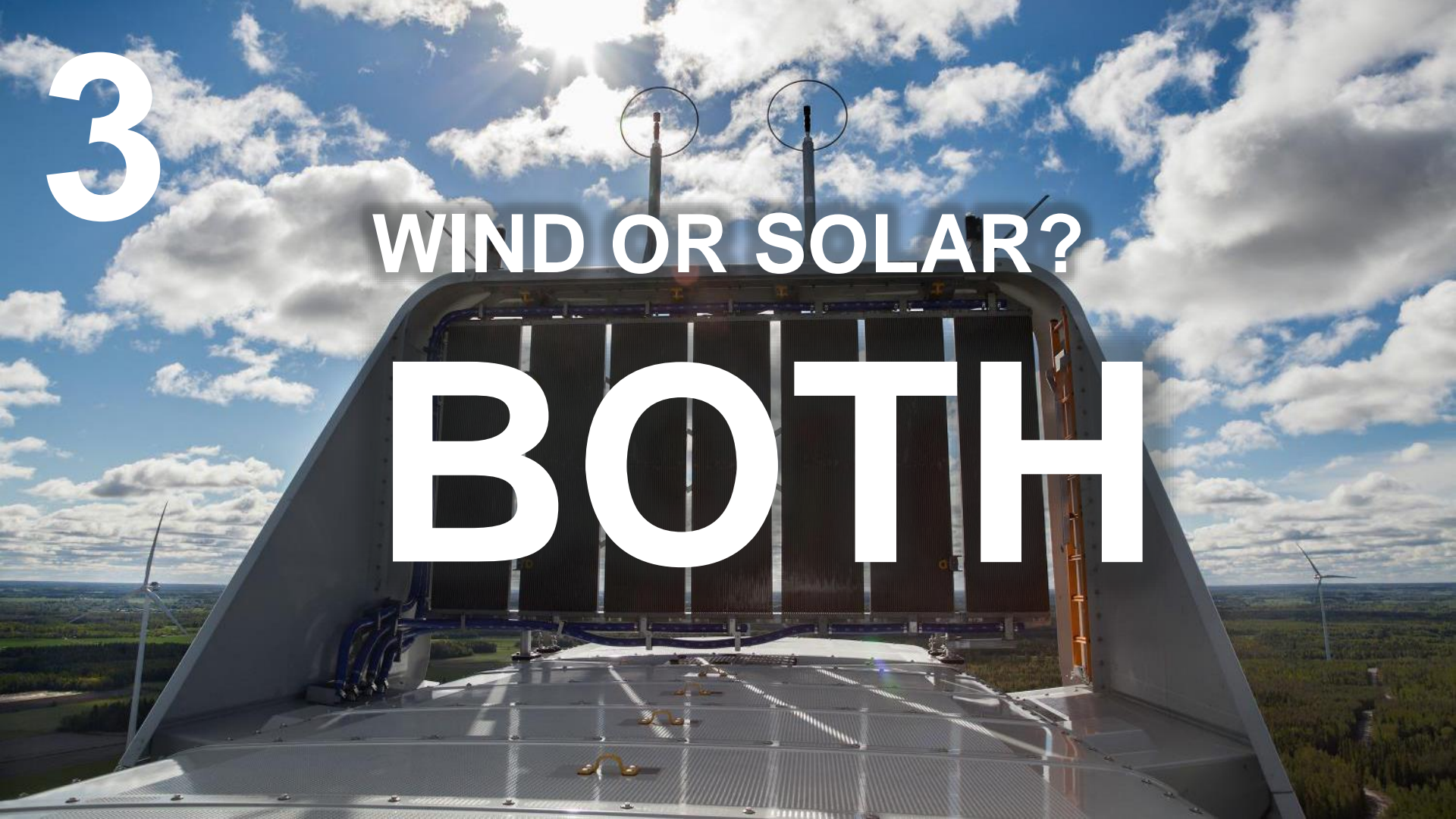
Where?

- ▼ Technology improvements
- ▼ Localized knowledge (comm +tech)
- ▼ Economies of scale
- ▼ Manufacturing improvements
- ▼ O&M
- ▼ Disruptive technologies
- ▼ Project Financing
- ▼ Target Earnings

3

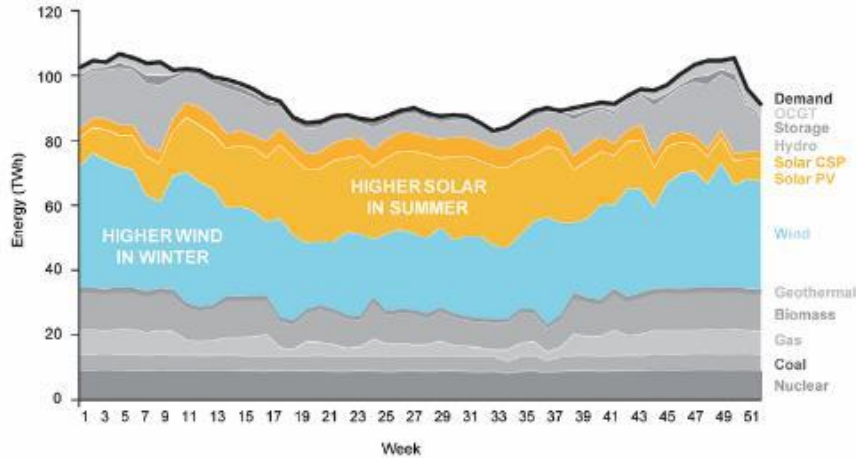
WIND OR SOLAR?

BOTH

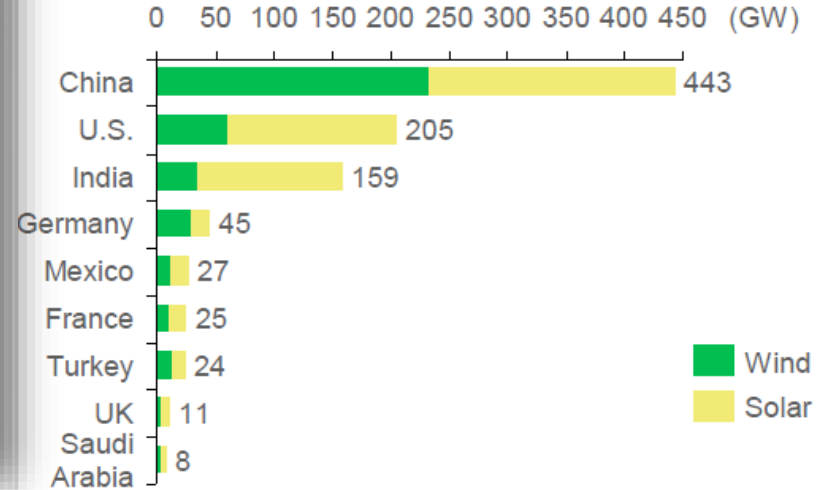


There is enough market for both of us

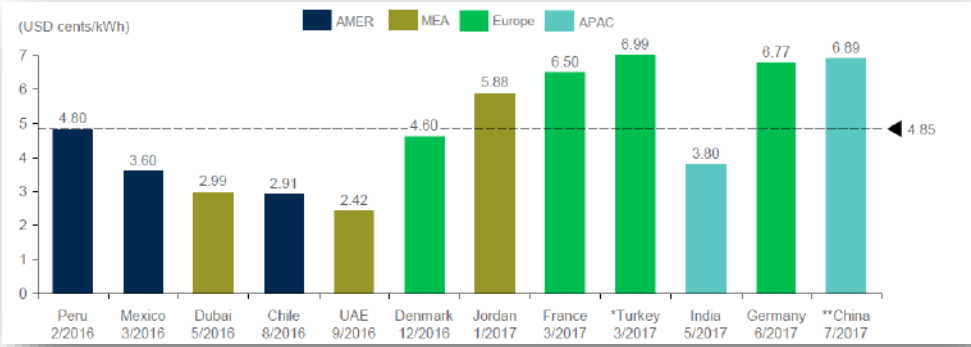
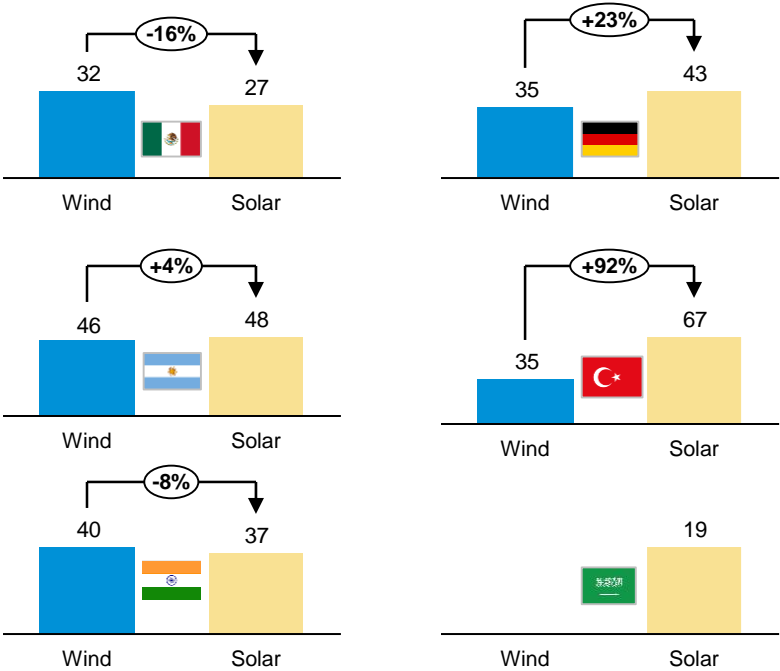
Overview of yearly energy balance, 80% RES pathway (TWh per week)



Selected key markets will install 946GW of additional wind and solar through 2026



In most cases, the technologies are quite complimentary



Minimum price registered for wind and solar
(USD / MWh except Germany EUR)

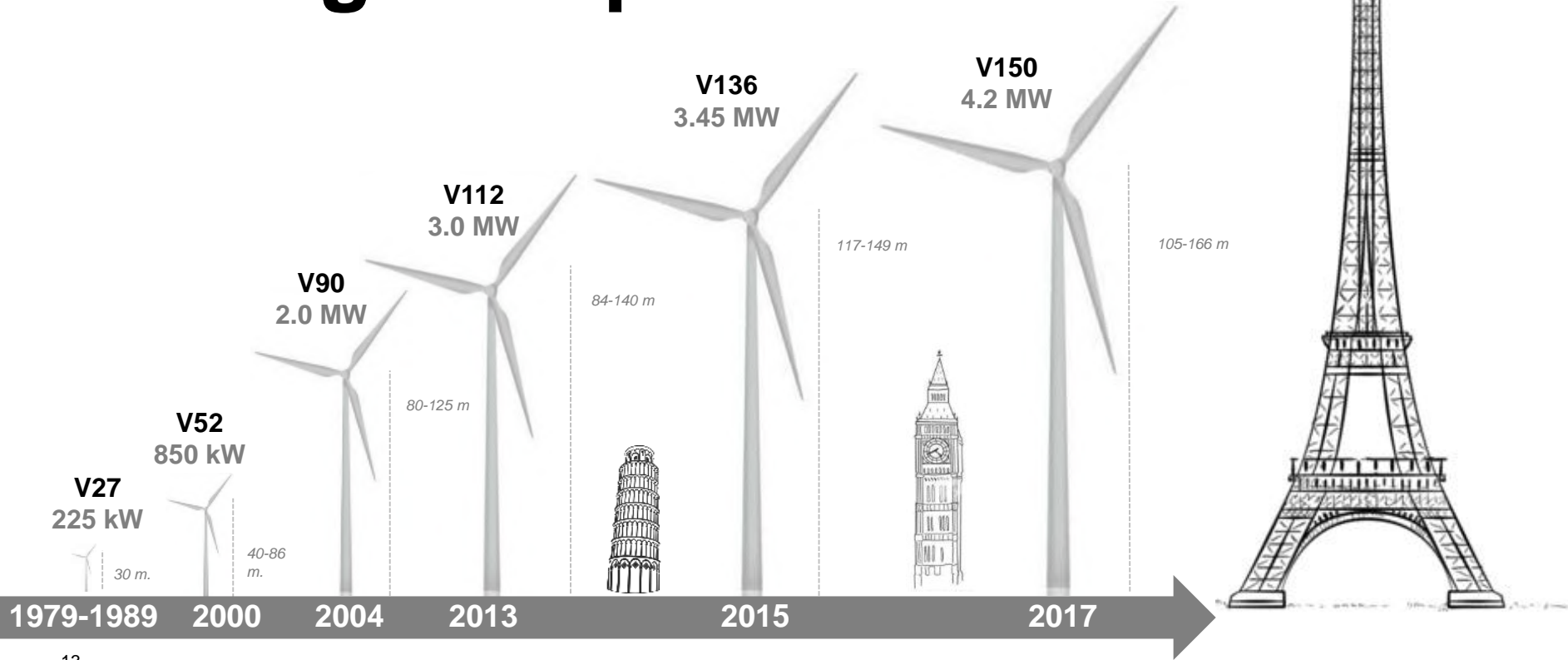
Source: MAKE

A black and white photograph of a large industrial facility, possibly a water treatment plant. The image shows a long, narrow channel with a curved bottom, likely for water filtration. Several workers in white protective suits are visible in the distance, operating machinery. The scene is illuminated by overhead lights, creating a sense of depth and scale.

4

FRONTIERS OF INNOVATION

Higher rotors and higher hub heights allowing to capture more wind



Innovative solutions

HOME > ENERGY STORAGE > VESTAS REVEALS STORAGE PLANS

Vestas reveals storage plans

Danes eyeing three to six pilots for combined wind and solar projects



5

CARING ABOUT THE
ENVIRONMENT
IS PROFITABLE



Corporate PPAs will only increase



Ikea-owned wind farm in Sweden orders 90MW from Vestas

Vestas has secured a 90MW turbine supply deal for the Glötesvålen wind farm in Sweden.



Honda Brazil plant 'to use Vestas'

Vestas will supply the turbines for a 27MW wind farm being built by Honda in Brazil, the Japanese automotive giant told Recharge.



Google to buy Lake Turkana wind stake from Vestas

Web giant Google will take a stake in Africa's largest wind farm project, the 310MW Lake Turkana in Kenya, by acquiring the 12.5% stake currently held by turbine supplier Vestas.



Beyond oil: the shift to renewables

June 2017

Thirteen industry leaders and associations have launched today "Make Power Clean," a joint initiative to promote a European electricity market designed to deliver cleaner energy for all



July 2017

Shell plans to spend as much as \$1 billion a year on its New Energies division by 2020 as the transition toward renewable power and electric cars accelerates

Shell creates green energy division to invest in wind power



Shell Pushes Further Into Power, Renewables With Bid to Acquire MP2 Energy

The deal will give MP2 additional resources to further develop and enhance its portfolio of products and services, including distributed solar and demand response.

September 2017

Creation of the Gas, Renewables and Power segment. Group will produce and sell power from renewable sources. Group acquires 23% in EREN and accelerates its growth in the production of power from RE



Total Partners With EREN Renewable Energy to Expand Its Renewable Business

Total presents proposed new organization to achieve its ambition to become the responsible energy major

October 2017

BP is targeting smaller and wider-ranging investments in renewable energy to avoid large losses in the sector like those it suffered earlier in the decade. BP recognized the need to reduce carbon emissions in the fight against global warming, but investments in renewables remains tiny compared to oil and gas

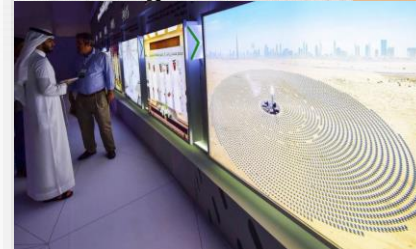
BP eyes smaller renewable investments to avoid repeating losses



October 2017

The shift toward renewables by the six member states of the Gulf Cooperation Council would also help diversify their economies. By the end of 2020, the Middle East and North Africa are forecast to have 24.1 gigawatts of wind and solar capacity

Why Oil-Rich Gulf Arab Countries Are Turning to Renewables



Corporate Social Responsibility is a business requirement



FUTURE?





08 novembre 2017

STATI GENERALI della GREEN ECONOMY

**EUROPA, CINA E USA:
IL FUTURO DELLA GREEN ECONOMY
NEI NUOVI EQUILIBRI MONDIALI**

ore 09.30 • 12.30

**Promossi dal Consiglio Nazionale della Green Economy
in collaborazione con**

