



Wind Farms

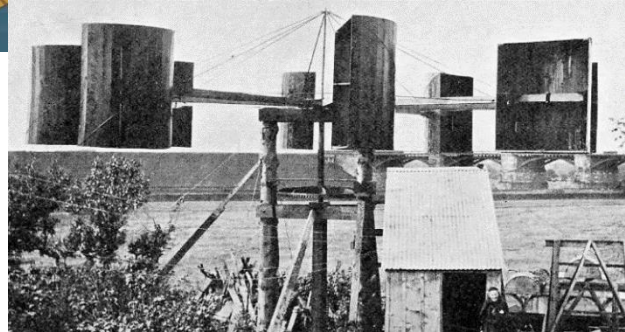
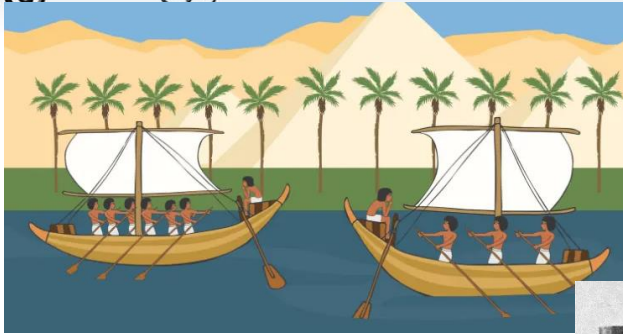
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History of Wind Power





Advantages vs Disadvantages

| Advantages | Disadvantages |
|--|---|
| Clean, sustainable, and inexhaustible form of energy | Noise pollution and visual impacts to the landscape |
| No greenhouse gas (GHG) emissions | May affect local wildlife for birds and bats |
| Water is not required to cool the system | Mechanical issues |
| Domestic source of energy | Not the most profitable use of private land |



Global Wind Share Market (2020)

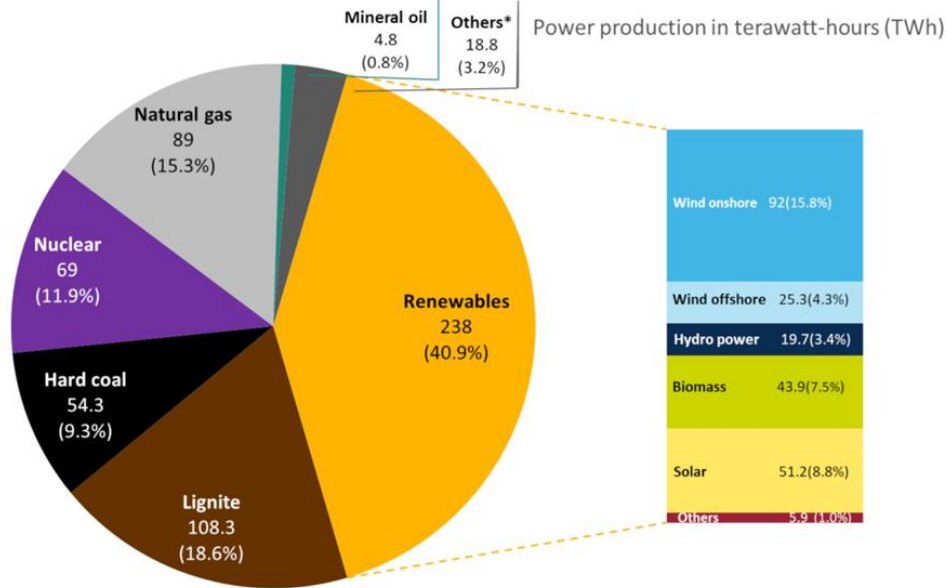
| Country | Share of total world wind electricity generation (2020) |
|----------------|---|
| China | 30% |
| United States | 21% |
| Germany | 8% |
| United Kingdom | 5% |
| India | 4% |



Wind Farming - Germany

Share of energy sources in gross German power production in 2021.

Data: BDEW 2021, preliminary.



*Without power generation from pumped storage

Note: Government renewables targets are in relation to total power consumption (561.8 TWh in 2021), not production. Renewables share in gross German power consumption 2021 (without pumped storage): 42.4%.



Wind Farming - Germany

- By 2030, Germany aims to have 80% of electricity come from renewable sources
- Germany aims to be net-zero by 2045
- 28,230 on-shore wind turbines (2021)
- 1,500 off-shore wind turbines (2022)
- On-shore Power Act
- Renewable Energy Act





Wind Farming – U.S.

| State | Output (MW) Updated June '21 |
|---------------|------------------------------|
| 1. Texas | 33,133 |
| 2. Iowa | 11,660 |
| 3. Oklahoma | 9,048 |
| 4. Kansas | 7,016 |
| 5. Illinois | 6,409 |
| 6. California | 5,922 |

*** Top 5 states produced 56% of the nation's wind generated electricity in 2021**



Wind Farming – U.S.

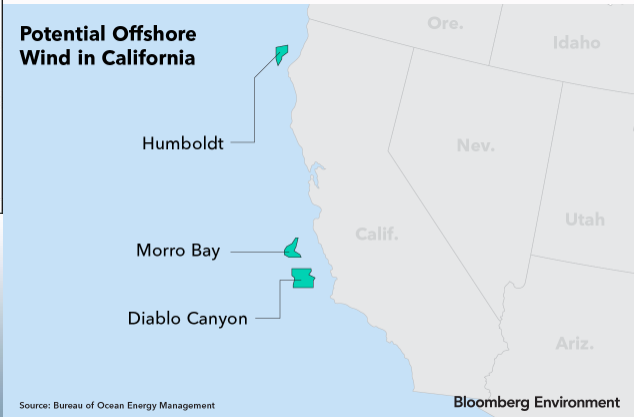


**VINEYARD
WIND**





Wind Farming – CA





Beverly Hills & Wind Farming

- Clean Power Alliance Membership
- CPA Renewable Energy Portfolio
 - 37% is wind energy
 - 300 MW in White Hills, AZ
 - 830,000 MWh/year





Conclusion

- Wind farming is growing globally.
- Growth and rapid expansion will depend on:
 - Public interest
 - Flexible regulations
 - Incentives



Discussion