



Increasing Renewable Energy Uptake through Auctions

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OUR APPROACH

- The world needs to produce more energy with fewer greenhouse gas emissions if global society is to meet its development and environmental goals.
- Achieving these goals will require significant shifts in the way the world produces and uses energy over the course of this century.
- Shell's long-term success relies on our ability to provide much-needed energy and related products in a way that is commercially competitive as well as socially and environmentally responsible.



AN INTRODUCTION TO SHELL NEW ENERGIES



New Fuels



Power Gen



Shell Ventures



Digital Business



Nature Based Solutions



Connected Energy

SHELL & THE INTEGRATED POWER SYSTEM

Electricity currently makes up 20% of final energy consumption and that figure could increase to as much as 50% by 2060.

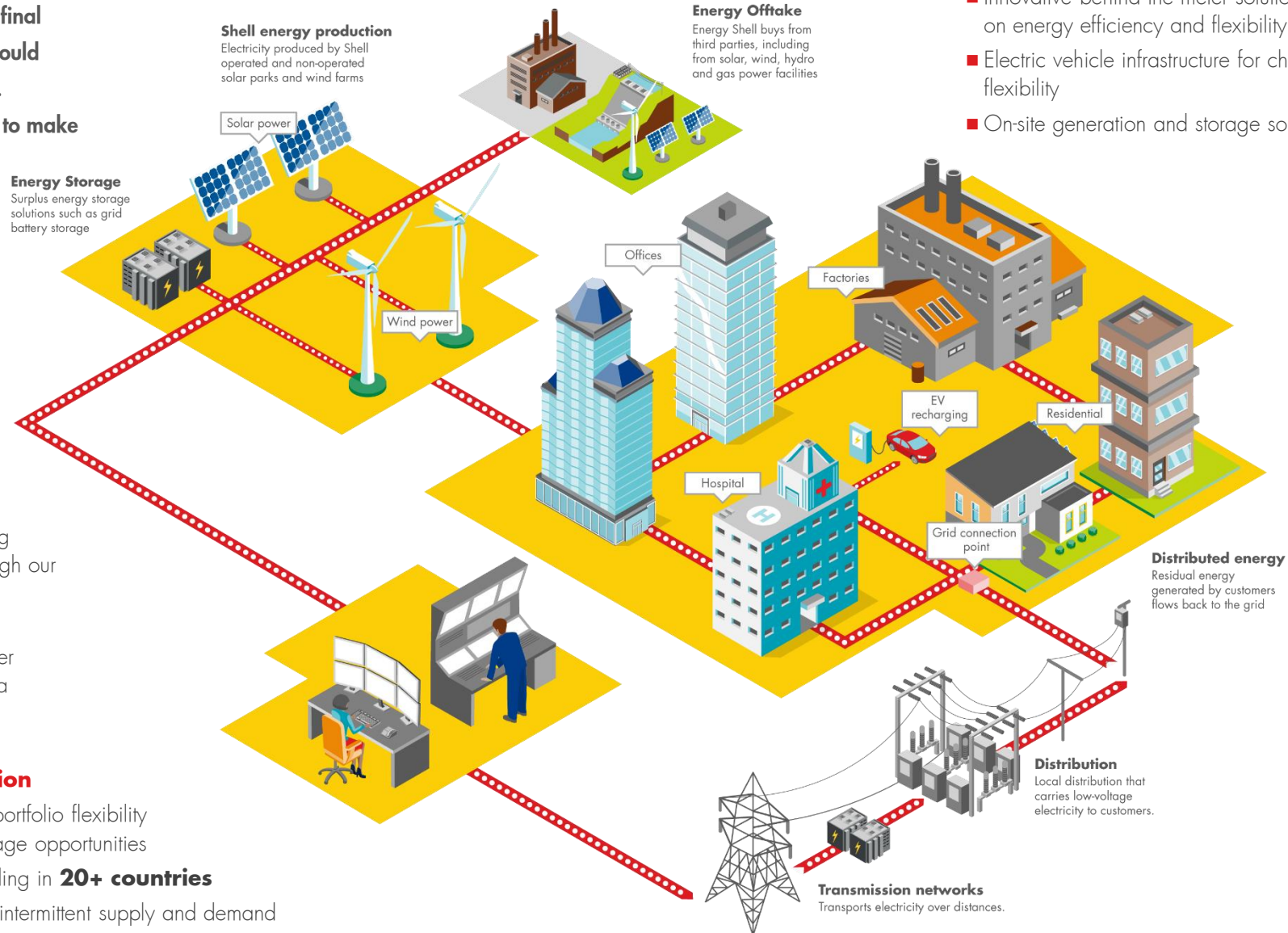
To help meet this demand, Shell aims to make electricity a significant business.

Supply and generation

- Wind, solar, and selected gas and storage assets
- Third-party offtake agreements to buy power
- **15+** years of experience in wind power
- Interests in wind farms with potential to generate over **5GW** once fully built
- Solar generation capacity – operating and signed – of over **1.6GW** through our Silicon Ranch and Cleantech Solar platforms
- **10K+** megawatts of managed power generation capacity in North America with **1/3+** from renewables

Optimisation

- Leverage portfolio flexibility and arbitrage opportunities
- Power trading in **20+ countries**
- Analysing intermittent supply and demand



Shell's primary focus areas

AUCTIONS ARE SEEN AS A PATHWAY TO CHEAPER SUSTAINABLE ENERGY

- A large number of countries are turning to auctions for introducing renewables to their energy mix
- Whilst traditionally generation capacity has been auctioned, there are some pathfinder nations auctioning for storage solutions as well
- This push for more renewables comes as a consequence of countries wanting to benefit from the declining cost of renewables
- Some of the critical factors that contribute towards a good auction design include:
 - Transparency of process
 - Clarity of participation rules and RES legislation
 - Barriers of entry for non-serious players and reward for serious developers
 - Capacity targets
 - PPA terms
 - It helps to have a multilateral institution back the auctions
- However, auctions alone do not guarantee a successful renewable energy programme

ORGANIZING SUCCESSFUL AUCTIONS IS JUST ONE PART OF THE SOLUTION

Risk factor	Kazakhstan	Brazil	Morocco	South Africa	UAE
Payment	1	3	4	3	5
PPA terms	0	4	4	4	4
PPA duration (>15y)	2 (15y)	4 (20y)	5 (25y)	4 (20y)	5 (25y)
Take-or-pay offtake?	1	4	4	4	4
Currency Indexation	1	3	4	2	5
Long term Finance	1	3	4	4	5
Commitment to RE	2	4	5	3	5
History of RE / IPPs	1	4	4	4	5
Site and connection	2	3	5	3	5

5 = Highly attractive

1 = Unattractive / high risk

