

Resourceful planet

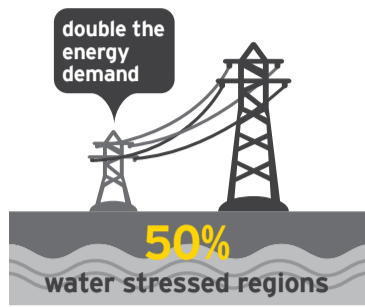
Could innovation make the planet resource rich, rather than resource scarce?



Demographics and climate disruption create natural resource constraints – our future must be ...

Resource efficient

2050 – 9.7b people; 50% in water stressed regions; double the energy demand¹



Carbon constrained

2015 hottest year recorded; by 2100, unchecked climate disruption could reduce global GDP by 23%



Resilient

250 million people are at risk of displacement from rising seas by 2100



We are at an inflection point in the resource transformation. Signposts include ...



Growing political will
COP21: 195 countries
Global warming <1.5C
Zero net carbon by 2100



Renewables fastest growing energy source
2/3 of all power generation investment through 2040: US\$8t.²
700% increase in installed capacity over the past 10 years.³



Shift to natural gas
Natural gas to displace coal as the #2 energy source by 2035.⁴



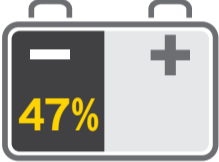
Corporate action
COP21 climate commitments by 5,000 global companies representing US\$38t in revenues.⁵



Power and water market reforms
Over 30 countries enabling resource efficiency and low carbon energy:



Economic energy storage will catalyze the next phase of the resources transformation



Price of lithium ion battery packs to fall 47% by 2021⁶
Empowering energy efficiency, renewables integration and energy trading



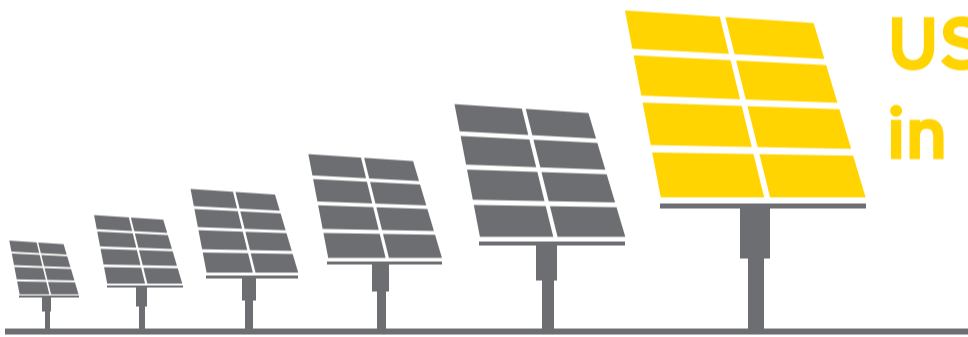
Electric vehicles: 35% of global new car sales by 2040⁷



The annual market for commercial building energy management systems by 2025.⁸

Global solar PV plus energy storage nanogrid adoption is expected to grow⁹

US\$1.2b in 2015



Convergence is creating the fourth industrial revolution in natural resources ...

Resources



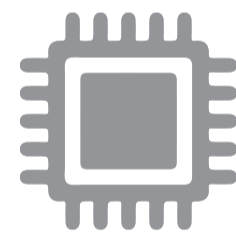
IoT



Batteries



Smart tech



With new upsides ...

+ Autonomous EVs
Renewable energy
Ridesharing
up to 94% less vehicle GHG emissions¹⁰



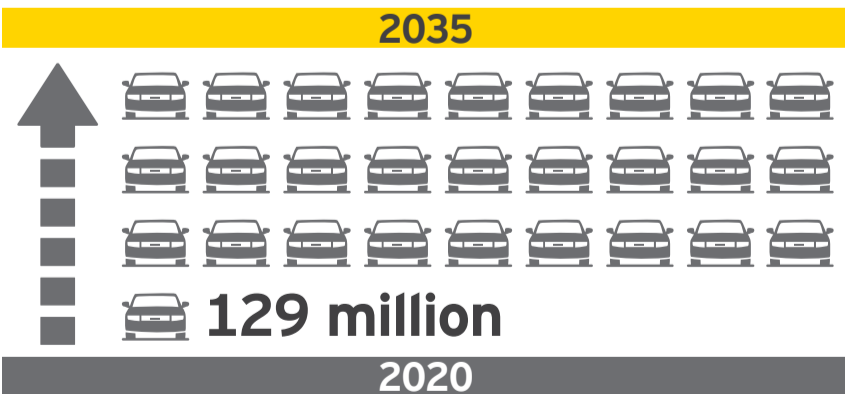
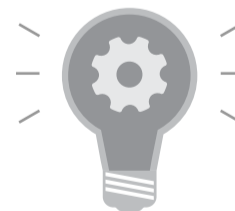
+ Residential solar
Energy storage
EV charging
Demand response
empowered customers and US\$93b market by 2025¹¹



+ Urban water
IoT
Analytics
30% energy savings,
15% water savings,¹²
US\$18b market by 2020¹³

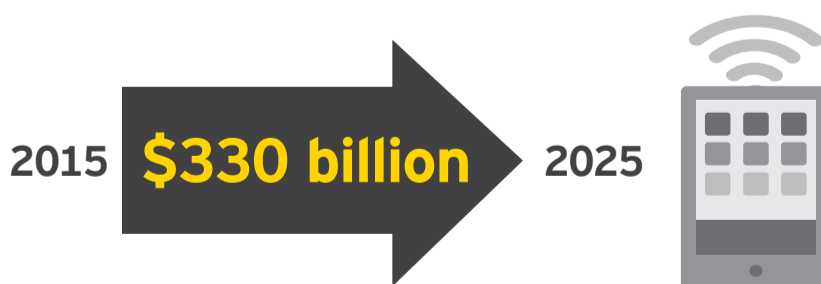


+ Distributed energy
IoT
Intelligent control
microgrids provide affordable electricity for off-grid communities, US\$196b market by 2024¹⁴



129 million autonomous-capable vehicles to be sold from 2020-2035¹⁵

Residential IoT device market¹⁶



1. <http://news.mit.edu/2014/predicting-the-future-of-global-water-stress>, accessed 1 April 16.

2. Bloomberg New Energy Finance.

3. Bloomberg New Energy Finance.

4. BP Energy Outlook: 2016 Edition, BP, p. 15.

5. <http://www.environmentalleader.com/2015/12/15/cop21-climate-deal-whats-next-for-business/#ixzz44obOS1DZ>, accessed 4 April 16.

6. Market Data: Advanced Batteries for Utility-Scale Energy Storage, Navigant Research, 1Q 2016, p. 12.

7. Bloomberg New Energy Finance.

8. Navigant Research.

9. Navigant Research.

10. http://www.nature.com/articles/nclimate2685.epdf?referrer_access_token=3hSNyD6aveKmcqR0PSIUadRgN0AJiWel9jnR3ZoTv0OgWH88gW1xBh-ptYSEqpmrDtpqP4OzfAkkuSL_A7ejXWt2ofVne6Ko4odPOi8CCQuYu_Giby3EJNH_TkQWpKOTzHT6wL55wBvFRG-vwsSrK4wG4AmU7k_pjvWZpXbzcvIEEhO2Oe5PECS, accessed 4 April 16.

11. Navigant Research.

12. <http://www.waterworld.com/articles/print/volume-29/issue-12/water-utility-management/smart-water-a-key-building-block-of-the-smart-city-of-the-future.html>, accessed 4 April 16.

13. <http://www.prnewswire.com/news-releases/global-smart-water-management-market-2015-2020-ibm-general-electric-abb-itrion-elster-group-schneider-electric-sensus-and-takadur-dominates-the-18-billion-market-300096194.html>, accessed 4 April 16.

14. Navigant Research.

15. Navigant Research.

16. Navigant Research.