

Jack Doran - Has the renewable sector seen sustainable growth?

Cop 26 has the aim of increasing climate ambition, build resilience and lower emissions. This aim as set forward by the UK, focuses on clean transport, energy, nature-based solutions, adaptation, resilience, and finance. I will focus on clean energy. The data that I have chosen is a chart showing global trends in renewable energy investment in 2018 published by the Un environment programme. This table shows the data for since 2004, this allows sustainability in renewable investment to be concluded. This also allows the sectors and regions that require investment the most to be identified. I will focus on who invests, where and how.

FIGURE 21. GLOBAL TRENDS IN RENEWABLE ENERGY INVESTMENT 2018 DATA TABLE, \$BN

Category	Year Unit	2004 \$bn	2005 \$bn	2006 \$bn	2007 \$bn	2008 \$bn	2009 \$bn	2010 \$bn	2011 \$bn	2012 \$bn	2013 \$bn	2014 \$bn	2015 \$bn	2016 \$bn	2017 \$bn	2018 \$bn	2017-18 Growth %	2004-18 CAGR %
1 Total Investment																		
1.1 New investment		45.2	70.0	104.2	147.7	177.4	168.3	238.7	296.6	252.2	232.9	287.8	318.4	294.2	326.0	288.3	-11%	14%
1.2 Total transactions		53.7	96.3	137.7	204.7	235.7	230.0	295.9	361.4	318.5	300.3	374.6	424.1	428.1	468.2	437.4	-7%	16%
2 New Investment by Value Chain																		
2.1 Technology development																		
2.1.1 Venture capital		0.4	0.6	1.2	2.1	3.3	1.6	2.6	2.6	2.4	0.8	1.0	1.4	0.8	0.7	0.2	-73%	-4%
2.1.2 Government R&D		1.9	2.0	2.2	2.7	2.8	5.4	4.9	4.8	4.7	5.2	4.5	4.4	5.1	5.1	5.5	8%	8%
2.1.3 Corporate R&D		1.9	1.9	2.2	2.3	3.3	3.3	3.8	4.3	4.1	4.0	4.3	4.1	4.3	6.8	7.6	12%	10%
2.2 Scale-up																		
2.2.1 Private equity expansion capital		0.3	1.0	2.9	3.5	6.7	3.0	5.3	2.4	1.6	1.3	1.7	1.8	1.7	0.7	1.8	140%	13%
2.2.2 Public markets		0.3	3.6	8.9	19.7	10.5	11.7	10.6	9.9	3.8	9.8	14.9	12.0	6.2	5.6	6.0	6%	25%
2.3 Projects																		
2.3.1 Asset finance																		
2.3.1.1 Of which re-invested equity		-0.1	-0.2	-2.2	-3.1	-4.4	-3.8	-1.8	-2.1	-2.9	-1.2	-3.6	-6.7	-4.4	-2.9	-5.7	-97%	33%
2.3.1.2 Small distributed capacity		8.0	10.1	9.0	13.9	22.2	34.7	60.9	75.1	70.0	40.4	37.1	32.7	33.1	42.9	36.8	-14%	11%
2.3.3 Gov't R&D, corporate R&D, small projects																		
Gov't R&D, corporate R&D, small projects		11.9	14.0	13.4	18.9	28.4	43.4	69.5	84.1	78.9	49.6	45.9	41.2	42.5	54.8	49.9	-9%	11%
Total New Investment		45.2	70.0	104.2	147.7	177.4	168.3	238.7	296.6	252.2	232.9	287.8	318.4	294.2	326.0	288.3	-11%	14%
3 M&A Transactions																		
3.1 Private equity buy-outs		0.8	3.7	1.8	3.3	5.1	1.9	1.9	2.9	3.0	0.5	4.1	3.6	3.2	10.6	12.5	18%	22%
3.2 Public markets investor exits		0.4	2.3	2.5	3.9	0.9	2.4	4.8	0.2	0.4	1.7	1.8	1.5	6.4	2.8	0.1	-97%	20%
3.3 Corporate M&A		2.2	7.6	10.1	19.8	16.5	22.4	18.7	29.6	9.3	16.2	11.2	17.2	30.2	13.3	15.7	18%	15%
3.4 Project acquisition & refinancing		5.1	12.6	18.9	30.0	35.7	35.2	31.8	42.1	53.6	49.0	70.0	83.4	94.1	116.4	120.8	4%	25%
4 New Investment by Sector																		
4.1 Wind		18.9	27.3	36.3	59.1	73.9	73.3	98.3	84.7	77.9	83.2	110.7	121.5	124.9	129.7	131.5	1%	15%
4.2 Solar		10.7	15.3	21.5	37.5	60.3	63.4	101.7	158.8	142.9	121.4	148.0	178.2	146.3	180.0	141.1	-22%	20%
4.3 Biofuels		3.9	9.8	26.2	26.4	17.6	9.4	10.1	10.4	7.7	5.1	5.5	3.6	2.1	3.2	3.0	-9%	-2%
4.4 Biomass & w-t-e		7.9	9.3	12.0	15.9	16.2	13.4	17.3	20.9	15.4	14.6	12.9	10.3	13.6	5.7	9.3	62%	1%
4.5 Small hydro		2.8	7.4	6.8	6.4	7.6	5.9	8.2	7.7	6.3	5.7	7.4	4.0	4.4	3.8	0.9	-70%	-7%
4.6 Geothermal		1.1	0.8	1.3	1.7	2.5	2.8	3.8	1.7	2.7	2.9	2.5	2.7	2.3	2.3	2.3	-2%	5%
4.7 Marine		0.0	0.1	0.1	0.7	0.2	0.3	0.3	0.3	0.3	0.2	0.4	0.2	0.2	0.2	0.2	9%	14%
Total		45.2	70.0	104.2	147.7	177.4	168.3	238.7	296.6	252.2	232.9	287.8	318.4	294.2	326.0	288.3	-11%	14%
5 New Investment by Geography																		
5.1 United States		6.0	11.4	28.6	30.5	34.7	23.0	34.6	50.0	39.7	35.8	37.9	47.0	45.2	48.5	46.5	-4%	16%
5.2 Brazil		0.7	2.4	4.1	9.9	11.1	6.9	7.2	10.2	7.6	3.9	7.7	6.4	5.7	6.2	3.4	-46%	12%
5.3 AMER (excl. US & Brazil)		1.7	3.7	3.5	4.8	5.6	5.0	12.0	11.7	10.2	12.9	14.9	11.5	6.5	13.2	10.2	-23%	14%
5.4 Europe		24.3	32.5	41.6	64.6	78.9	77.1	112.0	130.0	90.3	57.0	69.1	61.3	71.1	44.7	62.2	39%	7%
5.5 Middle East & Africa		0.6	0.8	1.2	1.8	2.2	1.5	4.0	3.1	9.7	8.8	8.0	11.6	7.5	10.1	16.1	60%	27%
5.6 China		2.4	8.5	10.5	17.2	25.8	36.6	42.5	45.5	56.5	63.3	89.4	121.7	105.2	147.2	93.2	-37%	30%
5.7 India		2.7	3.0	4.8	6.1	5.9	4.3	8.1	12.8	7.6	6.2	7.7	6.3	13.0	13.5	11.4	-16%	11%
5.8 ASOC (excl. China & India)		6.8	7.7	9.9	12.8	13.8	13.9	18.3	23.3	30.4	46.2	53.1	50.6	40.1	41.7	45.4	9%	15%
Total		45.2	70.0	104.2	147.7	177.4	168.3	238.7	296.6	252.2	232.9	287.8	318.4	294.2	326.0	288.3	-11%	14%

The first area I am looking at will be the investment by sector as this should initially evaluate the most financially sustainable method of clean energy production from 2004 to 2018. The data shows firstly that per year since 2004 to 2018 investment compound annual growth rate in clean energy sources is 14%. This shows that climate investment has been sustainable as a whole with investments between 2004 and 2018 growing, with investments increasing per year. This shows the story that climate change and the high emissions from coal, gas and oil are being realised and that there is appetite to change and also that the clean energy sector is growing. The chart also shows the most financially sustainable sources with positive growth which shows the viability of the source as energy. Looking at this purely from a CAGR point of view would be solar however solar saw a 22% negative growth in 2017-18, however looking at growth 2017 and 2018 and CAGR marine energy is the most sustainable because it has the smallest difference between CAGR and 2017-2018 growth. This shows that firstly solar though it has a high CAGR has been profitable and successful for investors, however the 2017-2018 statistic shows us that Solar power probably has reached peak efficiency. However marine energy has though been profitable and successful is continuing to grow this shows that marine energy has not yet become fully efficient. This shows however that growth has been sustained but the relatively high profits show that it has been successful and is operable at the moment, this identifies marine energy as the most likely to be successful.

The second area to look at is geographic region. Looking at the data by growth and CAGR, shows the higher the CAGR the lower the investment by the country is. This shows that the greatest returns

and growth on the investments are on the lower investments. So the regions that have the highest growth are the middle east and Africa at 27% CAGR and China at 30%. This shows that the greatest increase in investment is required in these areas. This is partly for reasons of geography firstly the middle east and Africa are where there are large oil deposits and China coal deposits. This means that it is more expensive to develop new solutions than use existing systems. The investment decline is however not due to income of the country, as the UK COP26 aim which wants to help finance projects in MEDC's, but however on the proximity to other sources. The USA is an example with 16% CAGR which is over two times the 7% CAGR of Europe which has similar levels of income. So the areas that need the most investment are the largest non renewable fuel owners. This is because of a strong power the owners have in countries government like the USA oil Lobby, but also the cheaper cost of using the current sources. This reduces sustainability due to alternate energy only be introduced after expending current resources, this could cause recession and economic problems due to quick energy system change. COP 26 should then be used to encourage implementation to being earlier rather than later.

The final area to look at will be who and how. This will look at technology development and scale up because this is current stage which the majority of projects are at. Firstly technology development is increasingly being done by existing projects and companies as seen by venture capital having a -73% growth between 2017 and 2018. This shows that clean energy development is past the start up stage, this shows sustainability because businesses are able to grow and move out of the start up stage. The as of 2018 corporate research and development has overtaken government research development, with corporate supplying 7.6 billion dollars. This again is a sign of sustainability, corporations are driven by profit and for government research which is heavily subsidised to be replaced shows economic incentives for clean energy. This is important because by corporations being involved sustainability is achievable and likely with the large sums of money being placed in it which shows corporate confidence in the clean energy capabilities. However the scale up method shows confidence still. The public market is at 6.0 billion dollars compared to private at 1.8. This shows two positive factors in relation to sustainability. Firstly clean energy companies have grown large enough to enter the public market and enter the stock market. This shows that energy companies are succeeding in developing. This shows that companies of clean energy can keep sustainable growth. The private investment figure also shows that there are high amounts of projects which have left r and d and have moved into being functional companies.

In conclusion I believe that clean energy will develop through investment and become a viable alternative to gas, oil and coal. I believe that though investment is high and companies are sustainable. I believe that the clean energy economy is sustainable and can grow and function as a competitive market. financial aid, through COP26, will be needed for the implementation of projects. This shows COP 26 should become a forum for ideas about project implementation.

Bibliography

The Report 'the global trends in renewable investment 2019' published in 2019. Authored by Bloomberg NEF, the Frankfurt school and the UN environmental programme collaborating centre.