



Aten Ventures LLC, Strategy Internship

Report : Green and Environment Technology

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Abstract

We are living in an era of extreme pollution and global warming and there is no denying in the fact that the entire world is suffering from the consequences of these calamities in different forms. So making a transition to the green equivalents of every pollution causing resource is now more important than ever. And it is not only the fuel where the alternatives need to be adopted, as perceived by many according to whom green technology is all about electricity over petrol, diesel which definitely isn't the case as the scope of green technology is much more vast. And if moral and health are the only basis of choosing between green tech and the non-green then the ones in the favour of the former would be in much larger number as compared to the ones choosing the latter. But that isn't what the reality is, money has been the biggest driving force in any kind of technology revolution, so same applies to this case too. Transitions can't be made just on the basis of ethics, there has to be profit too and this is what that stops many investors, industrialists to take decisions in favour of sustainable investing because they aren't really aware of what the prospects are, what would be the returns on their investments because of lack of quality data available for the same. But the big picture is different from what it seems and many investors do know about it and that's why there has been a good amount of inflow in terms of funds in these sectors in past few years and as a result there has been a progress, there has been a growth in the green sectors. So it's just a matter of making the other fraction of investors aware about the prospects, how there has been an increase in the numbers in the green domain, basically educating them about the monetary benefits this sector can yield along with the very obvious moral satisfaction.

This report is all about how there has been a rise in the sustainable investing be it any form like green bonds, ETFs, hedge funds etc., sector wise dissection in terms of growth rates, revenue generated etc in the past few years in green technology.

1. ESG Investing

ESG Investing is a term that is often interchangeably used with sustainable investing, socially responsible investing or mission-related investing. ESG stands for environmental, social and corporate governance. This criteria

decides the sustainability and societal impact of an investment. Environmental criteria consider how a company performs in terms of nature. Social criteria examine how it manages relationships with employees, customers, and the communities where it operates. Governance deals with a company's leadership, internal controls, and shareholder rights.

Promises of green revolution have previously been made too but this time what's different is that the numbers suggest that the trend of ESG investing is here to stay be it any asset class, whether it is green bonds, ETFs(exchange traded funds), equities, hedge funds etc. There has been an increase in every form which is indicative of the fact that now investors have started showing inclination towards environmentally and socially responsible investments hence avoiding the risk of reputation. Basically they want their investments to target double bottom line benefits, doing good financially by doing well socially and environmentally.

The EU recently agreed to adopt an official definition for sustainable investments. There isn't any plan of implementation as such till 2021 but the new rules are aimed at curbing the practice of "greenwashing," basically the practice of governments and companies misrepresenting environmental benefits to attract ethical investors.

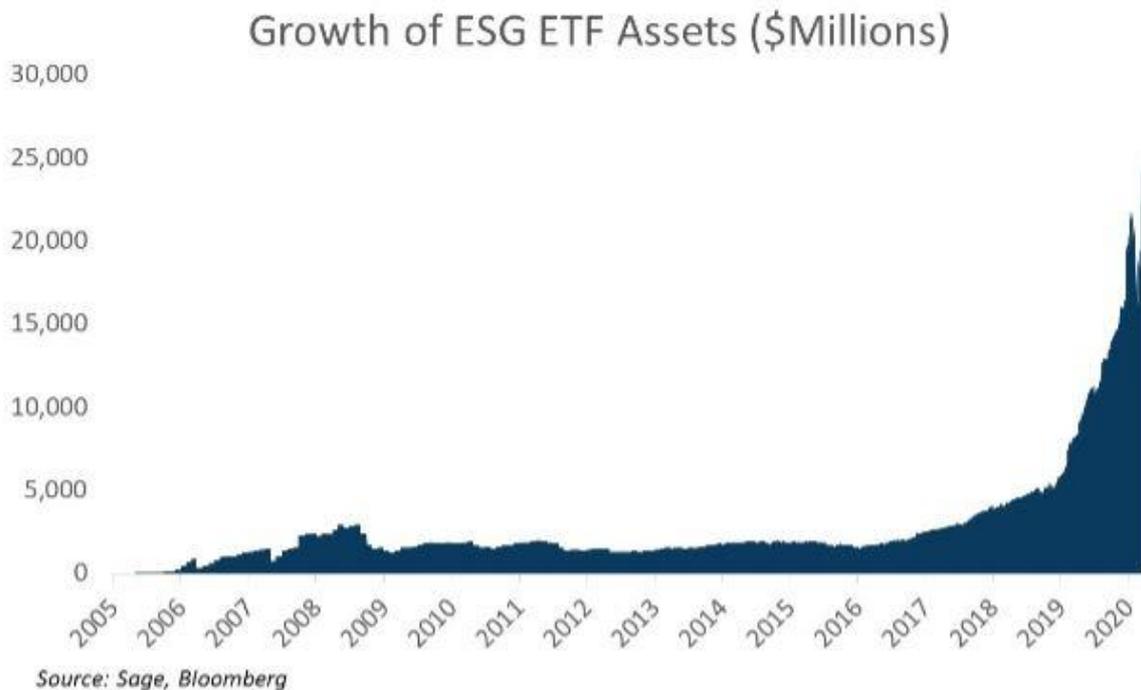
Given below are some facts related to sustainable investing in different asset classes:

1.1 ETFs

An ETF is an exchange traded fund, basically an investment fund traded on stock exchange just like stocks. A trade exchanged reserve (ETF) is a sort of security that includes an assortment of securities, for example, stocks—that frequently tracks a fundamental index, in spite of the fact that they can put resources into quite a few industry parts or utilize different methodologies. ETFs are from numerous points of view like mutual funds; nonetheless, they are recorded on trades and ETF shares exchange for the duration of the day simply like conventional stock.

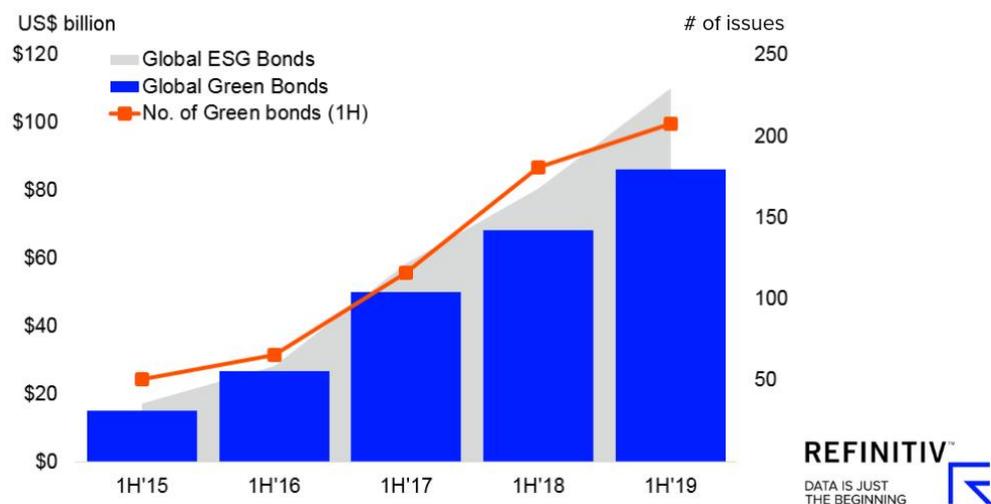
The word that can be used to describe the growth of ESG ETFs in the past few years is ETF explosion. Out of the \$6 trillion global assets under management (AUM) of the ETF market ESG ETFs represented 52 billion \$. In US the second quarter fund flows were almost equal to first quarter flows which resulted in a half yearly total just shy of the annual record set in 2019 which in turn was

equal to 4 times the previous annual record registered in 2018. So you see the growth is almost exponential and explosion seems the perfect word to describe the scenario.



1.2 Green Bonds

Green bonds gain momentum in H1



The bonds that are issued to finance projects that have a positive impact on the environment are basically called green bonds. There were a record number

of issuances for green bonds last year as in total 185 billion \$ were raised to fund environmentally sustainable projects, according to data from law firm Linklaters.

In total 479 bonds were issued in 2019, a 25% increase as compared to the previous year, and 2020 is set to be a “bumper” year for green bonds, driven by a new set of standards in Europe and Asia, according to Linklaters. All regions saw an ascent in the sum raised by green securities, with Asia Pacific up 30% year-on-year for a 22 percent piece of the pie. Europe's predominance of green bonds is driven by France, which represents 13.4 percent of the worldwide aggregate, making it the most dynamic backer country.

1.3 Hedge Funds

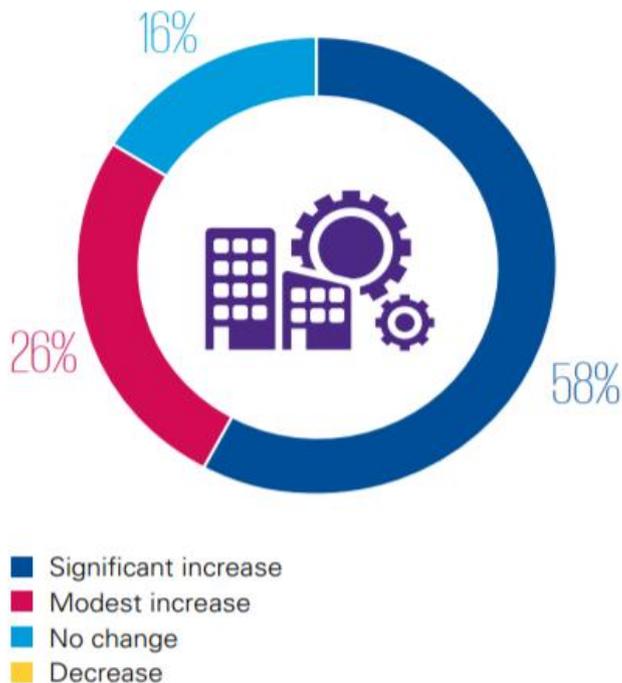
It is clear that there is growing interest in ESG-oriented strategies, products and funds across the hedge fund industry, according to a survey conducted by KPMG of hedge fund managers, 84 percent of them reported an increase in interest over the past few months, with more than half, 58 percent, citing it as a ‘significant increase’. The remaining 16 percent said that there was ‘no change’ in interest. Not even a single respondent reported a decrease interest when given the choice. The survey is indicative of the fact that sustainability is a credible phenomenon in the hedge fund industry. Further analysis revealed two key drivers to be at work:

- Growing investor demand
- Growing evidence of the materiality of ESG

An expanding number of institutional investors are necessitating that their hedge funds supervisors fuse ecological, social and administration (ESG) factors throughout their speculation exercises, with 72 percent of hedge funds administrators referring to developing enthusiasm among investors as the greatest driver for them to grasp ESG standards.

Institutional investors were at first hesitant to grasp the idea, contending that their guardian obligation was restricted to the expansion of investor esteems regardless of ecological or social effects, or more extensive administration issues, for example, defilement. Fantastically, such contentions are as yet

being made. Yet, as proof has indicated that ESG issues have monetary ramifications, the tide has moved.



How would you describe the change in interest or demand in your organization’s ESG capabilities or strategies over the last 12 months?

Speculative hedge fund managers are now taking note of a comparing uptick in customer demands with respect to ESG arrangements. This is a reminder and hedge fund managers should quit hitting the nap button. There is a prompt chance to utilize their deft and innovative structures to offer ESG to customers in manners that aloof and customary dynamic managers can't. In the hedge fund industry, ESG is now a must have rather than just a good to have entity.

1.4 Equities

Green Equity in a way can be defined as equity of the company, working to increase environmental sustainability and using raised capital for this cause.

“For the first time since WWII we sense a shift in which climate and the environment — not growth — will become the priority of governments and their citizens, as shortages of food, clean water and air become existential questions,” that’s what Steen Jakobsen, Saxo bank chief economist had to say

in his latest quarterly outlook report regarding the growth of ESG investments in equities.

Jakobsen predicted that increasing climate awareness and the growing shift in policy and behaviour, coupled with technological advancements lowering the cost of green technologies, makes green stocks increasingly attractive.

2. Subsectors in Green Technology

Now that we have seen how different asset classes have been performing with respect to ESG investing it is also important to know what are the different subsectors of green technology because ultimately ESG investing is nothing but investing in these green sectors only.

So here they are:

2.1 Ocean Technology

Ocean technology is basically harnessing energy in the form of tidal energy or wave energy from oceans or extracting essential minerals or metals like iron ore, copper from the ocean bed.

Ocean-related industries like offshore wind energy, fishing and shipping comprise roughly 3.5% to 7% of global gross domestic product, a value expected to double by 2030, according to estimates from the WRI. But just like every other sector ocean tech has also been affected greatly by the corona pandemic in terms of jobs and output, and global warming, overfishing and water pollution are destroying the ocean's ability to sustain those sectors.

Some astonishing facts related to ocean technology are:

- Ocean technology is expected to contribute 3 trillion \$ to world's economy, double of what it was in 2010.
- Over the next 30 years, investing 2 to 3 trillion \$ globally in ocean tech could generate a net benefit of 8 to 22 trillion \$.
- The sector is likely to provide more than 40 million jobs by 2030

Some prominent companies and start-ups operating in this sector are:

- Ocean Power Technologies, USA

- Resolute Marine, USA
- National Institute of Ocean Technology, India
- Aquanet Power, Taiwan
- Bombora Wave Power, UK
- Dutch Pavillion, Netherlands

Start-ups:

- Closelink, Germany
- NOTPLA, UK
- Nautix Technologies, Denmark
- FuelSave, Germany
- EConcrete, USA
- Yuga Marine, India

2.2 Sustainable Food Industry

Sustainable food generally refers to the food that is produced using methods that don't have a negative impact on the environment and takes care of the welfare of people producing it.

Food production is significantly impacted by many environmental challenges and this in turn gives rise to a range of other issues. At the same time, there is a growing imbalance between food production and demand: we will need to raise food production by 70% over the coming decades. Additionally, poor-quality foods that lack nutrients can contribute to a rise in the incidence of obesity and obesity related conditions such as diabetes.

This highlights the need for quality food and sustainable production as a key focus for everyone across the food value chain, including food producers, packaging companies, transport firms, waste management companies, recycling firms and distributors. The issues they face are deep and diverse, ranging from reducing food and water wastage to tackling CO2 emissions and pollution and increasing food safety as well as the production of healthier foods.

Some facts related to sustainable food industry:

- The market has grown at a CAGR of 2% since last 5 years and currently stands at 873 billion dollars.
- US alone has a total market of 280 billion \$, highest in the world.
- The movement has gained some traction in recent years, swept along with the popularity of the local food and organic food movements, though perhaps lesser known.

Some prominent companies and start-ups operating in this sector are:

- Lundberg Family Farms
- Organic Valley
- Nature's Path
- Stonyfield
- New Belgium
- Pantagonia Provisions
- Preserve
- Barnana

Start-ups:

- iFarm
- Crisp
- AllPlants
- Meatable
- Noquo Foods
- Kitche
- Simple Feast
- Solar Foods

2.3 Green Energy

Every form of energy that can be classified under the label non-conventional is green energy. These forms of energy basically aren't produced using exhaustible sources of energy. Examples for the same are Solar Energy, Wind Energy, Geothermal Energy, Nuclear Energy etc.

The market is expected to grow at a CAGR of 6.1% between 2017 and 2025, expected total valuation being 1512 billion \$. Key players are adopting numerous strategies to stay competitive in the market like acquisition, collaboration, business expansion etc. For example Innergex acquired Alterra. The acquisition included two geothermal facilities in Iceland. This acquisition added 485 MW (gross 1,049 MW) of renewable energy assets, to its portfolio.

The environment anyway was extremely contaminated giving rise to numerous diseases caused due to pollution like asthma and other air borne diseases before this corona phase and now this pandemic has further emphasized the need for maintaining strong immunity and since these non-renewable sources of energy are the major cause of pollution and diseases caused by it, it is now more important than ever to stop propping up these pollution causing industries and accelerate the shift to clean and sustainable energy.

- Global energy use is predicted to fall 6% over the course of 2020.
- According to Wood Mackenzie estimates, 2020 global solar and energy storage installations are expected to drop nearly 20% compared to pre-COVID-19 projections.
- Wind turbine installations are expected to decline by 4.9 gigawatts (GW), a 6% decrease.
- Bloomberg New Energy Finance (BNEF) estimated last year that between now and 2050, 77% of investments in new power generation will be in renewables.

Some prominent companies and start-ups operating in this sector are:

- Suzlon Energy Limited, India, Wind Energy
- Enercon India, India, Wind Energy
- Jinko Solar, China, Solar Energy
- TEPCO, Japan, Nuclear
- Calpine, USA, Geothermal Energy

Start-ups:

- ReNew Power, India, Wind Energy
- Delfos, Brazil, Wind Energy
- Sunnova, USA, Solar Energy
- AES Solar, USA, Solar Energy
- General Fusion, Canada, Nuclear Energy
- Waytinyoo, France, Geothermal Energy

2.4 Green Transport

The logic that was used to justify green energy over non-renewable energy can also be extended to green transport as well but it still is a different sector indeed, different players, different technology etc so it becomes important to discuss it separately too. Electric transport sector if you see, is itself not completely electric. The electricity that is used to drive these vehicles is mostly produced using coal, one of the most prominent pollution generating resource. Hence we have a trade-off here more the electric vehicles on road more is the electricity required, more the coal needs to be burned and ultimately the pollution remains all the same!! So how does it even make any difference. Well of course it does, that is why now almost every government has started taking initiatives towards this transition. The thing is, many studies have found that the amount of pollution caused in both the cases is not the same and in case of electric vehicles it is far less but still many countries are working to get rid of even this small amount by making quality investments into power sector i.e. in technologies that produce electricity using sustainable methods. Electrification is in progress be it any mode of transport, public or private, many countries are on the verge of complete electrification for example In March 2014, Norway became the first country where over one in every 100 registered passenger cars is plug-in electric, out of a fleet of over 2.52 million passenger cars., Shenzhen, a city in China in 2017 became the first city to completely electrify it's public transport i.e. the buses and many more instances like that. Some stats related to the sector:

- The global electric vehicle market was valued at \$162.34 billion in 2019, and is projected to reach \$802.81 billion by 2027, registering a CAGR of 22.6%.

- Asia-Pacific was the highest revenue contributor, accounting for \$84.84 billion in 2019, and is estimated to reach \$357.81 billion by 2027, with a CAGR of 20.1%.
- Europe is expected to witness a CAGR of 25.3% during the forecast period.

Some prominent companies and start-ups operating in this sector are:

- Tesla, USA
- BYD, China
- Chevrolet, USA
- BMW, USA
- Cherry, China
- Mitsubishi, Japan
- Kia, South Korea

Start-ups:

- Ather Energy, India
- Rivian, USA
- Spark Horizon, France
- BeNomad, France
- TankTwo, Finnish-American
- TuSimple, USA

3. Challenges to ESG investing



Source: KPMG-CAIA-AIMA-CREATE Survey 2020

Amongst all the challenges faced two of them are noteworthy:

1. Lack of Quality ESG data: There isn't enough reliable ESG data to clearly identify risk. Because of lack of precedence investors are hesitant to make investments because they don't have any data to compare with, so basically not a proper estimate what the returns would be on investments.
2. Shortage of ESG expertise: Indeed, there were several other challenges like fiduciary concerns, confusion over terminology, political uncertainty etc. that emerged from the survey but they could all be traced back to education and/or awareness problems.

4. Conclusion

Now we have a broader and a clearer picture in front of us with regards to ESG investing. How rosy the scenario is, what the challenges are, how the green tech market is segmented, key players and start-ups involved and challenges lying ahead. But given the state of the environment today, global warming and all and now the covid pandemic health is gradually becoming a key driver in

making business related decisions. People have started showing inclination towards the products that have words like “green”, “sustainable” in their names, the reason being simple, the health is now of primary importance. So clearly if there is demand there would be supply too and that might just be the beginning of a new era in investing, the era of sustainable aka ESG investing.

After all that being said, it won't be wrong to say that in spite of all the challenges and constraints the future for green technology ahead is bright or rather green.