WHAT DO RENEWABLE ENERGIES AND SUSTAINABILITY IMPLY FOR THE FINANCIAL SECTOR?

SUSTAINABILITY

"CO2 is the exhaling breath of our civilization, literally. And now we mechanized that process. Changing that pattern requires a scope, a scale, a speed of change that is beyond what we have done in the past." AL GORE (GORE, 2008)

"Climate change knows no borders. It will not stop before the Pacific islands and the whole of the international community here has to shoulder a responsibility to bring about a sustainable development." ANGELA MERKEL (SAFI, 2014)

"Sustainable development is the pathway to the future we want for all. It offers a framework to generate economic growth, achieve social justice, exercise environmental stewardship and strengthen governance." BAN KI-MOON (KI-MOON, 2013)

"In the 21st century, I think the heroes will be the people who will improve the quality of life, fight poverty and introduce more sustainability." BERTRAND PICCARD (CNN, 2010)

Climate risks are intensifying, as the world experiences an increasing number of extreme weather events. Over the last six years, more than half of extreme weather events have been attributed to climate change. Climate shocks impact developed and developing countries alike, putting large communities at risk of displacement and causing severe damage to vital infrastructure (United Nations, 2019). On plus, resources depletion is a pressing problem affecting the today's economies with multiple implications on the economic activities and main economic indicators (Silviu, 2015). The Sustainable Development Goals and 2030 Agenda have redefined global ambitions: creating a better world for all is a collective responsibility. Challenges such as extreme poverty and climate change can only be solved by a global, collective response (Stacey, 2018).

In the context of renewable energies and sustainability, global megatrends have different relevance for the financial sector. In particular, the demanded transparency, advancing digitalization, new possibilities through trusted networking and blockchain, the ongoing population growth and the high degree of individualization are of importance.

Five concrete trends for the financial industry can be derived from these megatrends: **Impact Investing, Fintech, Bitcoin, Sustainable Growth and Crowdfunding.**

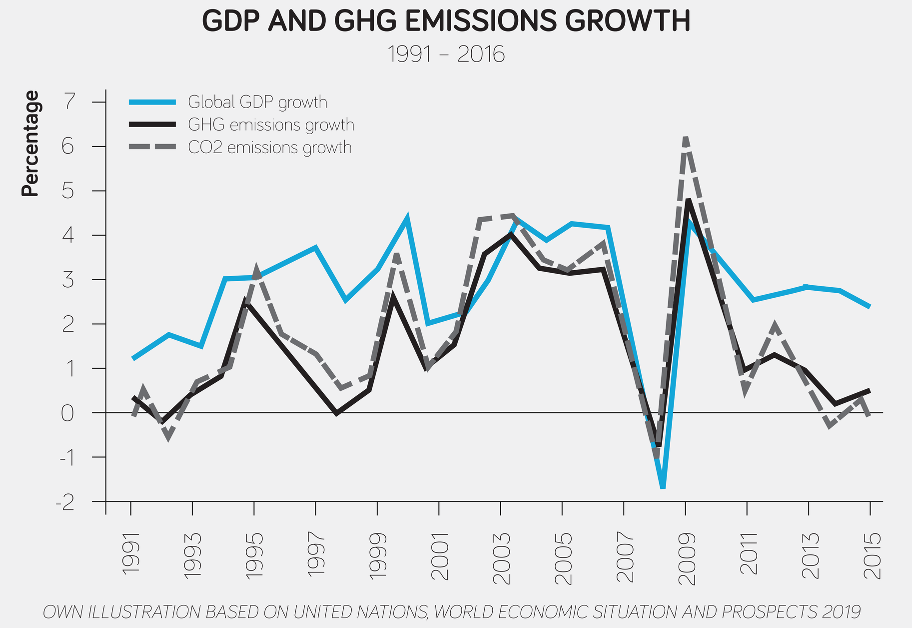
In the next decades there will be a **$30 trillion intergenerational wealthtransfer,** from baby-boomer parents to millennials (born 1981-1996) (Ruggie & Middleton, 2018). As millennials accumulate wealth, firms should shift strategies because **millennial investors are nearly twice as likely to invest in companies or funds that target specific social or environmental outcomes.** According to Greg Cobb "the industry is moving from a passive investor population, which is dependent on the income from defined benefit and pension plans to a population that is self-funding via their defined contribution plans. These millennials will demand more active involvement in their own investments as they wish to be more actively involved in controlling their own destiny." (EY, 2017). For increased engagement with millennial investors, firms could offer a platform that provides peer-to-peer portfolio comparison and socially responsible investment profiles that are tailored to an individual's preferences (Global Investor, 2016). And because investors have sharpened their interest in customizing investments to their own social and environmental priorities (Morgan Stanley, 2017) there is great opportunity for the rising number of crowdfunding platforms.

But not only millennials will shake the financial industry and require new services and products. Globally, there are **1.7 billion people without a bank account** and therefore without access to financial services. However, two thirds of them have a mobile phone (Demirgüc-Kunt, Klapper, Singer, Ansar & Hess, 2018), so a huge customer potential can be unlocked by providing digital services.

While digital services make the financial industry more accessible, the environmental sustainability of bitcoins, the most important digital currency, is a controversial question as the system has been built in a way almost like the mining of a natural resource: costs and efforts rise as the system reaches the ultimate resource limit (Giungato et al., 2017). Its excessive energy consumption means a limitation of the potential of this new technology.

Excessive energy consumption is also a problem in regard of economic growth. As the world economy continues to expand at a pace of 3 per cent in 2019 and 2020, greenhouse gases will rise as well (United Nations, 2019). For the future it is important to shift from fossil fuels to renewables. According to the **International Energy Agency renewables will have the fastest growth in the electricity sector, providing almost 30% of power demand in 2023,** up from 24% in 2017 (Birol, 2018).

TREND RADAR - 5 TRENDS FOR THE FINANCIAL SECTOR

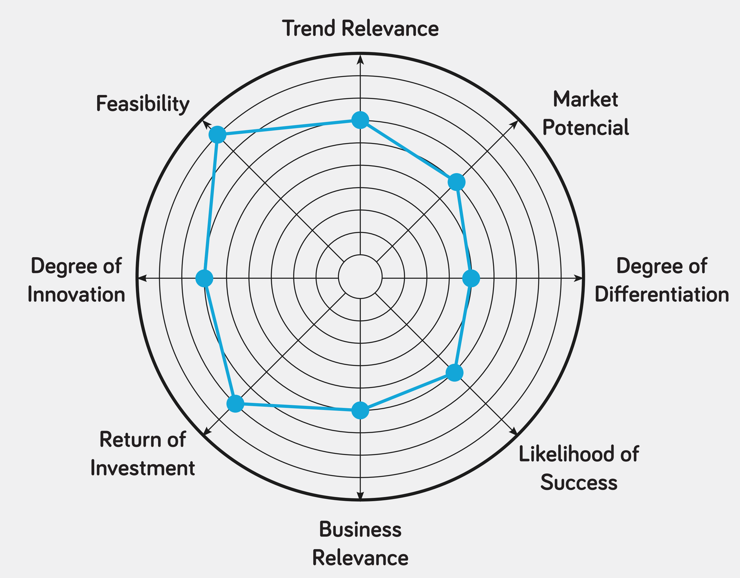


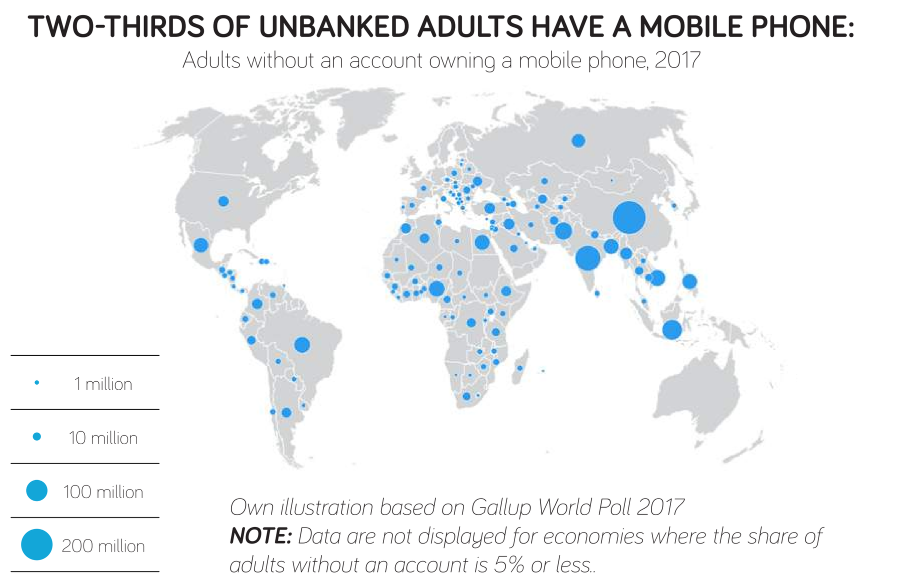
OWN ILLUSTRATION BASED ON UNITED NATIONS, WORLD ECONOMIC SITUATION AND PROSPECTS 2019

SUSTAINABLE GROWTH

FUTURE PROSPECTS
– Economic growth accelerated in more than half the world's economies in both 2017 and 2018. And the world economy is projected to expand at a steady pace of 3 per cent in 2019 and 2020 (United Nations, 2019a). At the same time continued global economic and population growth have driven the persistent, worrying rise in greenhouse gases (GHG) and other gases stemming from human activities (United Nations, 2019a). A growing body of empirical analyses (...) demonstrate a strong positive link between the functioning of the financial system and longrun economic growth (Levine, 2005). While private consumption continues to be a key driver of overall GDP growth for most regions, investment activity has strengthened in many developed and developing economies over the past two years (United Nations, 2019a). After remaining flat for three years, the IEA's first ever Global Energy and CO2 Status Report reported that global energy-related CO2 emissions increased once again in 2017, reaching an all-time high (International Energy Agency, 2018).

RECOMMENDATIONS FOR ACTION
– Increase investments in renewable energies so future economic growth is not powered by fossils and thereby break the correlation between GDP and GHG Emissions growth.
– Culture shift from growth to sustainability goals in investment strategies.



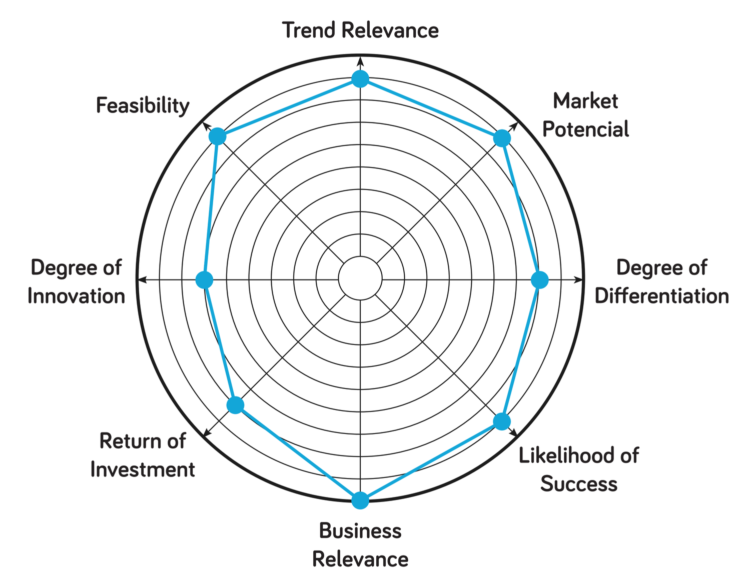


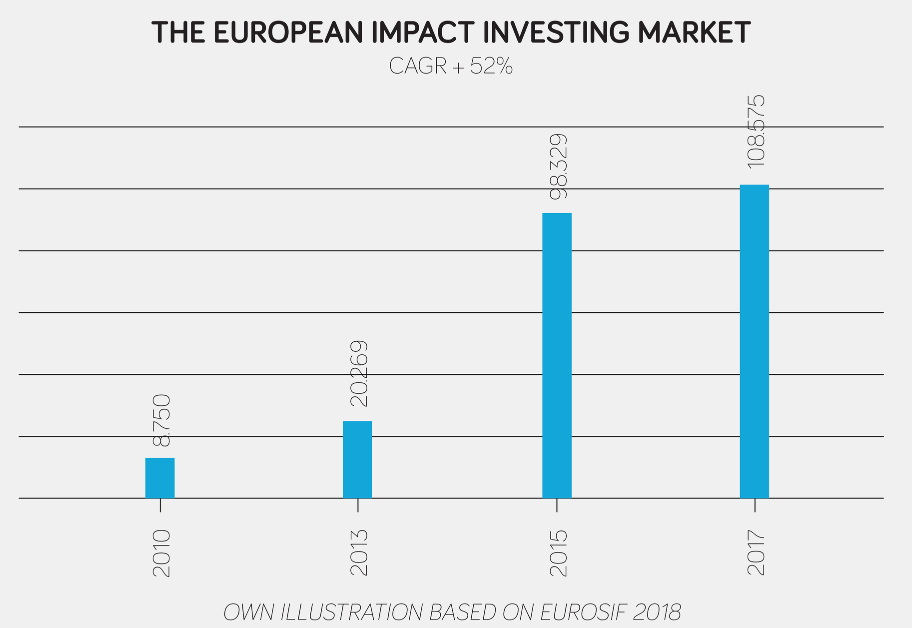
Own illustration based on Gallup World Poll 2017
NOTE: *Data are not displayed for economies where the share of adults without an account is 5% or less.*

FINTECH

FUTURE PROSPECTS
– New Global Findex data reveal that globally the share of adults owning an account is now 69 percent, an increase of seven percentage points since 2014. These numbers translate into 515 million adults who have gained access to financial tools. Globally, about 1.7 billion adults remain unbanked — without an account at a financial institution or through a mobile money provider. The power of financial technology to expand access to and use of accounts is demonstrated most persuasively in Sub-Saharan Africa, where 21 percent of adults now have a mobile money account—nearly twice the share in 2014 and easily the highest of any region in the world. Having a simple mobile phone can potentially open access to mobile money accounts and other financial services. Having access to the internet as well expands the range of possibilities. These technologies could help overcome barriers that unbanked adults say prevent them from accessing financial services (Demirgüc-Kunt, Klapper, Singer, Ansar & Hess, 2018).

RECOMMENDATIONS FOR ACTION
– Develop mobile first, digital banking products to open access to financial services for over a billion potential customers



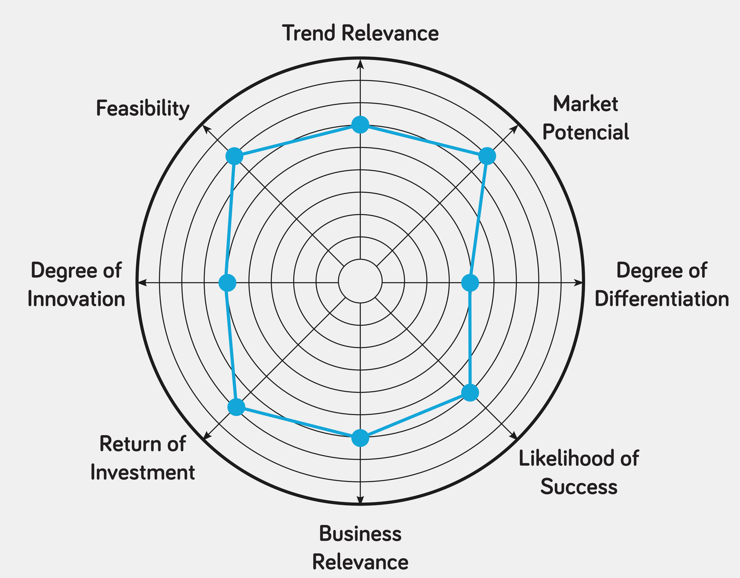


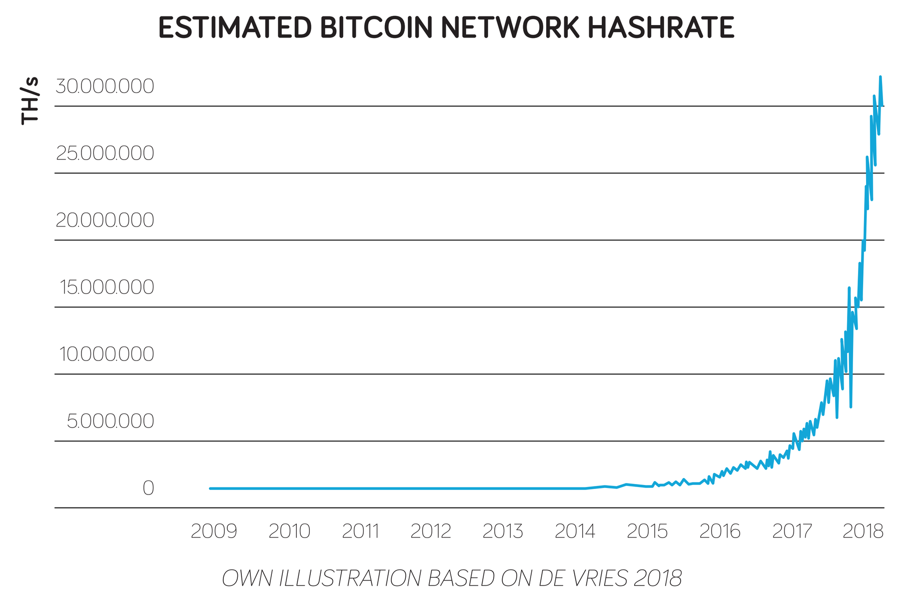
OWN ILLUSTRATION BASED ON EUROSIF 2018

IMPACT INVESTING

FUTURE PROSPECTS
– There are a wide range of investment strategies used by portfolio managers, with different impacts and levels of sustainability, under the heading of "sustainable investments". (United Nations, 2019b). Harvard Professor Michael Chu explains impact investing as an investment strategy that seeks to provide a measurable response to a targeted social or environmental problem, while at the same time delivering a commercial return. It is this aspect that distinguishes impact investing from philanthropy, for example (Cunti, 2017). Grown by 440% in Europe in the past five years from €20 billion in assets in 2013 to €108 billion in 2018, this investment strategy has shown to deliver beyond initial expectations and in view of its ability to deliver on financial and sustainability impacts. It seems fair to conclude that we have not yet seen its full potential yet (Eurosif, 2018).

RECOMMENDATIONS FOR ACTION
– Offer more vehicles for impact investment
– Clear definition and communication of impact
– Target millennials with impact investment products





OWN ILLUSTRATION BASED ON DE VRIES 2018

BITCOIN

FUTURE PROSPECTS
– Bitcoin is a digital currency based on a peer-to-peer network using proof-of-work to record a public history of transactions (Nakamoto, 2008). The electricity that is expended in the process of mining Bitcoin has become a topic of heavy debate over the past few years. It is a process that makes Bitcoin extremely energy-hungry by design, as the currency requires a huge amount of hash calculations for its ultimate goal of processing financial transactions without intermediaries (de Vries, 2018). In 2014, the power used for Bitcoin mining is comparable to Ireland's electricity consumption (Malone & O'Dwyer, 2014). It emerges that the transition of the whole monetary system in the new cryptocurrency will result in an unacceptable amount of energy consumed to mine new bitcoins and to maintain the entire virtual monetary system, and probably bitcoin will remain a niche currency (Giungato et al., 2017).

RECOMMENDATIONS FOR ACTION
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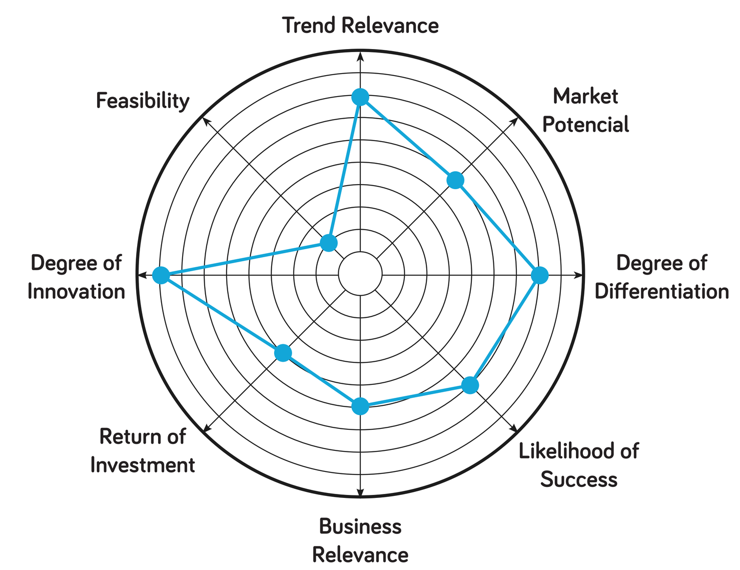

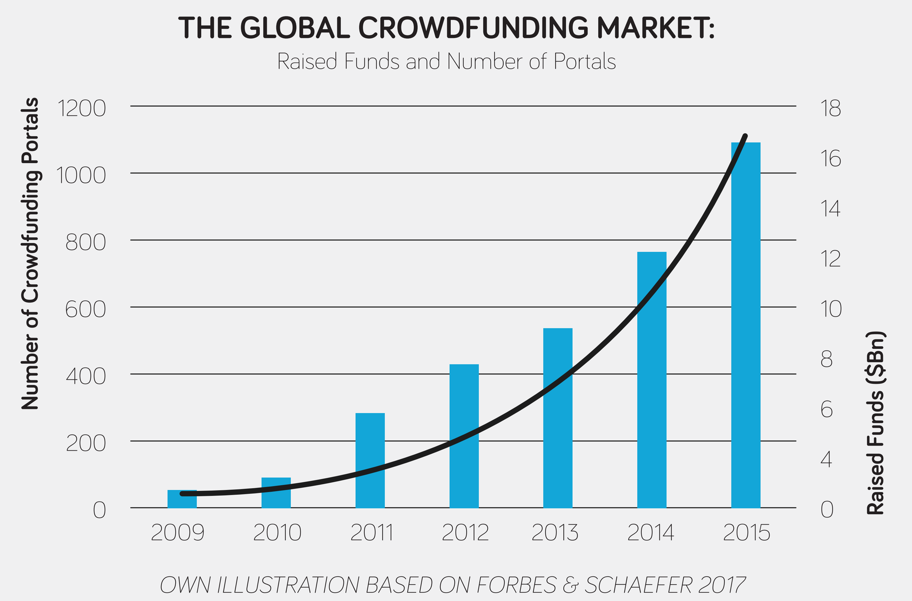

OWN ILLUSTRATION BASED ON FORBES & SCHAEFER 2017

CROWDFUNDING

FUTURE PROSPECTS
With crowdfunding, an entrepreneur raises external financing from a large audience (the "crowd"), in which each individual provides a very small amount, instead of soliciting a small group of sophisticated investors (Belleflamme, Lambert & Schwienbacher, 2014). In his 2012 remarks upon signing the JOBS Act to legalize equity crowdfunding, President Obama stated that "for start-ups and small businesses, this bill is a potential game changer." (Mollick, 2014). Unlike many other forms of venture financing, projects engaging in "crowdfunding" have a wide variety of goals. Many crowdfunded projects seek to raise small amounts of capital, often under $1000, to initiate a particular one-time project (an event, for example) (Mollick, 2014). Regardless of its new-found popularity, however, statistics show that the vast majority of crowdfunding campaigns dramatically fail with 81% of failed campaigns reaching less than 20% of their funding goal (Forbes & Schaefer, 2017).

RECOMMENDATIONS FOR ACTION
–The market for crowdfunding is young and growing. A platform with high success rates of projects could be the game changer.