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Environmental, social and corporate governance (ESG) – also an innovation driver?

Dierk-Oliver Kiehne (InTraCoM GmbH)

ESG – short description

ESG stands for “Environmental, Social and Governance”. These three central factors are used in order to measure the sustainability and ethical impact of an investment in a company¹.

The main drivers are concerns regarding the environmental situations like climate change, nuclear energy or the sustainability in general. But also social concerns like diversity, human right, consumer protection or animal welfare, corporate governance concerns lie the management structure, employment relations, compensation of staff and executive as well as questions of responsible investments are taken into account. In the financial world the ESG is leading to a score or rating, taking the above factors into account and represent the corporate’s general responsibility.

Description of the basic idea and method

Patents are the perfect instruments to uncover a corporate’s internal strategy, at least in terms of their R&D objectives. But also the innovative culture can be measured using patents. The main idea for this investigation is to utilize patents in order to figure out if “ESG” is indeed a trend and therefor an innovation driver by simply identifying those patents that are addressing

environmental issues. As there are only the environmental (in contrast to the social governance) aspects recognizable in patents, like the improvement of the carbon dioxide situation in general e.g. by suggestion alternative and sustainable methods of generating energy, it can be focused only on those environmental related topics. However, many other technologies are impacting environment-related question, e.g. by enabling a certain technology. Thereby a high efficient battery and controlling system enables the storage of (sustainably generated) electrical energy. Also those enabling technologies are taken into account for this study. Certainly not all patents that increase the efficiency of anything are naturally ESG related. In the study we identified 1,518 CPC classes (cooperative patent classification²) that more or less have sustainable effects or at least a sustainable influence or are important sustainable technology enablers. All alive patent families worldwide have been assigned to the CPC classification scheme and then filtered using the 1,518 classes mentioned above.

Using the IP-BI patent valuation database, for all those patent families (equivalents; simple patent family definition according to EPO DOCDB standard³) the total patent value was calculated and compared over the past 11 years. This offered a qualitative result as well as a monetary result with a surprising outcome.

¹ Georg Kell (United Nations Global Compact), "Five trends that show corporate responsibility is here to stay", The Guardian, 13 August 2014 (page visited on 28 January 2018).

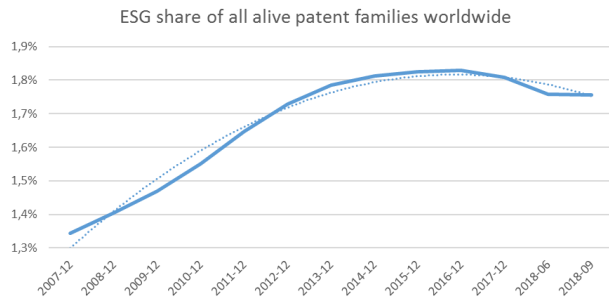
² <https://www.cooperativepatentclassification.org/cpcSchemeAndDefinitions.html>

³ <https://www.epo.org/searching-for-patents/helpful-resources/first-time-here/patent-families/docdb.html>



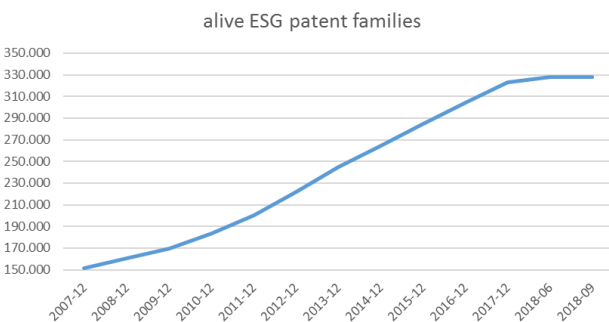
Results

The above mentioned 1,518 CPC classes are only a small excerpt of the total of 252,024 classes that are currently actively in use: it is just 0.6% of all classes. But looking at the share of patents in those specific classes, it becomes obvious that there are quite a lot more patents applied than the small share of classes would expect: in September 2018 (last available rating), the share of "ESG-patent-families" in relation to all worldwide alive patent families was 1,76%. But the trend for this ratio over the past 11 years also shows that there was a strong increase until 2016. Since then the trend is slightly negative (trend: dotted line).



Graph 1: Ratio of alive ESG patent families per total amount of alive patent families. The dotted line shows the trend of the filings ratio in annual comparison

This may be misleading: it does not mean that the amount of ESG patent applications is also decreasing – the opposite is true, still there is growth of alive patent families.

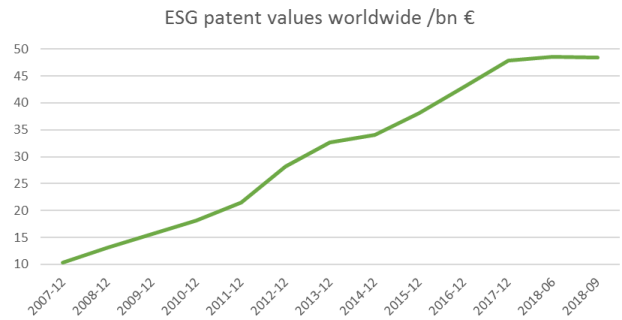


Graph 2: total amount of alive ESG patent families worldwide in annual comparison

But the dynamic compared to the other patent applications is less: here the growth is even

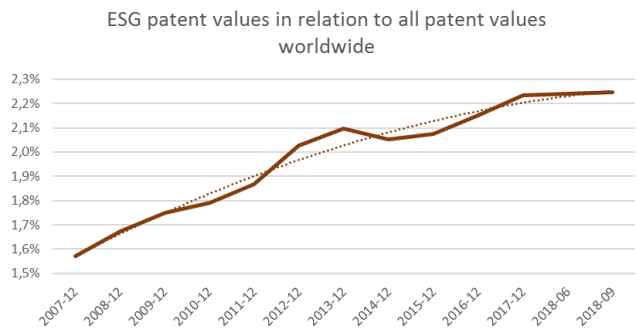
bigger. However, this shows that ESG related technologies seem to be over their "hype".

More surprisingly are the results taking the patent values into account: here not the quantity of patents are counted (representing the cost side of patents) but their asset contribution – their monetary value.



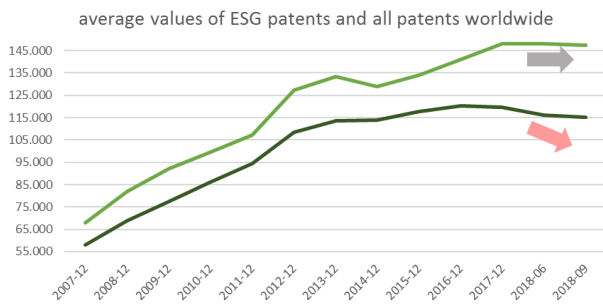
Graph 3: total values of ESG patent families in annual comparison

Here, the trend seems to be fully "sustainable" positive. Comparing the ESG values with the total patent values of all patents worldwide, the graph looks a bit different compared to the qualitative analysis: it has a small peak in 2013 but the trend is finally positive (dotted line) in contrast to the total filing ratio.



Graph 4: Ratio of all ESG patent family values per total value of all patent families worldwide in annual comparison

How can this be explained that the filings ratio is following a negative but the value ratio a positive trend? The answer is the average value of patent families: the ESG patent are obviously getting more and more precious. This effect is even stronger when it is compared to the average value of all patents worldwide.



Graph 5: average values of patent families in comparison. The upper, light green line shows the ESG patents. The lower, dark green line shows the averages of all patents worldwide.

For the ESG patents the trend is growing and stable within the past years. For the total average this trend is negative since 2016.

Summary

Generally, patents can be used in order to read the innovative footprints of a company. This can be also done for sustainable technologies. But in all cases when it comes to the statistical use of patents, it is important not only to have a look at the cost side: most macro-analysis is done by counting patent filings or amount on granted patents globally. The asset side of patents comes to completely different conclusions thus it is important always to take the values into account. In this example it shows that patents can be even useful for the analysis on how deep a company is investing into sustainable technologies. That means they can be used to improve the environmental score inside the "ESG factor" by measuring the ratio of "ESG patent"-values by the total amount of the patent portfolio value.

Outlook

In one of our following investigations we will measure the "ESG patent factor" for different sectors of stock-exchange listed companies in certain regions.

