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INTEGRATING THE COST OF THE CARBON FOOTPRINT WITHIN THE INCOME STATEMENT – TESTS ON SEVEN POLISH FIRMS

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Abstract

Purpose: Even if popular, carbon accounting is not yet compulsory for companies. However, it should be and certainly will be. From the state's point of view, this will be a prerequisite to respecting its international commitments. From the point of view of companies, it is also necessary because they use, in part for free, limited resources to create value-added […] and they generate externalities which are not yet fully measured and communicated. Our purpose is to propose a relatively new metric, which is quite simple and could be applied to all companies, especially small ones (turnover < EUR 10 million).

Design/methodology/approach: Our metric in this paper is linked to the income statement and measurement of the output of carbon used in the production process of goods and/or services. We compare the use of carbon by seven Polish companies in seven different sectors from 2014 to 2020. The metric is computed in the same way for the firms in our sample and is based on information which must be stated on the yearly income statement.

Findings: From our empirical tests, we observe that comparison can first be made between firms and sectors. As expected, the impact is far more important for industries than for service companies. In terms of volatility, we reach the same result. However, this volatility is not linked to the nature of the companies but more to the volatility of the carbon price. As a first step, this gives an interesting and rough measure of the cost of the carbon emission per company per year.

JEL classification: H25, H23, M41

Keywords: carbon accounting, income statement, carbon cost, carbon footprint

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Introduction

In November 2016 the Arc de Triomphe was illuminated with the words *the Paris agreement is done* to celebrate the first day of the applicability of the Paris climate accord. 196 countries agreed to the first global pact aimed at reducing greenhouse gas emissions. The target was to limit global warming to well below two degrees Celsius.

To do this, companies would have to reduce their emissions. Companies have already taken measures to do this, under pressure from investors. For instance, 225 investors with USD 26 trillion in assets under management, launched the Climate Action 100+ in December 2017. They define three goals for companies:

1) to "*implement a strong governance framework which clearly articulates the board's accountability and oversight of climate change risk*",

2) to "*take action to reduce greenhouse gas emissions across the value chain*", and

3) to "*provide enhanced corporate disclosure*"[2].

Companies have followed the trend voluntarily and/or due to being forced, because "*net-zero targets have become a meaningful issue for investors*" (Marsh, 2020). This is also a prerequisite for society as a whole: the target of limiting global warming to no more than 1.5 degrees Celsius above preindustrial levels could be attainable only if firms cut the greenhouse gases from operations.

In this article, we focus only on the last goal defined by Climate Action 100+, "*the corporate disclosure*". In his 2021 letter to CEOs, Larry Fink at BlackRock shows how a company is involved in the goal of net zero greenhouse gas emissions. Amid their key actions, we could note the important role of measurement. They plan the publication of a "*temperature alignment metric for [their] public equity and bond funds*" or a publication of "*the proportion of our assets under management that are currently aligned to net zero*" (Fink, 2020).

In terms of publication, it is worth mentioning two initiatives. The first one comes from the new instrument launched in 2019 by Enel, the Italian energy company, with the Sustainability Linked Bonds. The bond's coupon rate was linked to the achievement of Enel's sustainability targets.

Enel had indeed issued a five-year bond, the coupon of which had to increase by 25 basis points (0.25%) if Enel did not reach, within two years, a 55% renewable share of electricity production capacity. In 2020, Suzano, Novartis & Chanel (Michaelsen & Ramel, 2020) did the same.

The second example comes from Danone with the publication in February 2020 (Handley & Meredith, 2020) of net earnings per share[3] less the cost of its carbon footprint. The impact was significant because standard EPS had been reduced by 36%. This means that to generate EUR 1 in profit, Danone will generate a 36-cent carbon footprint throughout its value chain. The novelty here is that for the first time a global firm quoted on a stock exchange has estimated the financial impact of greenhouse gas emissions in its entire value chain. This is important because it is the first step to quantifying the negative impact of the carbon footprint and communicating it to the market.

In terms of presentation, the International Accounting Standards Board (IASB) has decided to implement a new standard "*General Presentation and Disclosures*", intended to replace IAS 1 "*Presentation of Financial Statements*"[4]. There is no mention of the accounting effects of the energy transition in the accounts of companies. There was "*an interest in climate change*" (The Economist, 2021) on the part of regulators. "*The Securities and Exchange Commission (SEC) has created a task-force to examine environmental, social and governance (ESG) issues, appointed a climate tsar and said it will "enhance its focus" on climate-related disclosures for listed firms. It looks poised to introduce, among other things, rules forcing firms to reveal how climate change or efforts to fight it may affect their business. Since September regulators in Britain, New Zealand and Switzerland have said they plan to make such climate-related disclosures mandatory*".

We would like to contribute to this literature by proposing a quite simple accounting tool to make such information available on the financial statements of firms, especially on the income statement. We would like to propose an accounting tool which will be able to make available the cost of externalities that the company imposes on the community because of its activity and make possible comparisons between companies

[2] Ceres, a non-profit organization, https://www.ceres.org/initiatives/climate-action-100, accessed on 27.02.2021.

[3] Earnings per share (EPS) is the portion of a company's profit allocated to each outstanding share of common stock. It is calculated by dividing the net income by the average outstanding common shares.

[4] IASB, https://www.iasplus.com/en/news/2019/12/pfs accessed on 27.02.2021.

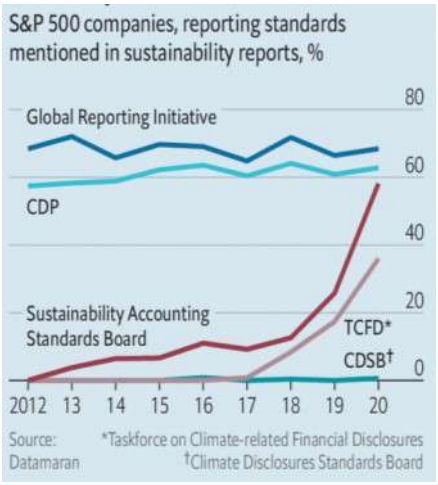
and sectors. The metric should be easy to compute and disclose as it should also be used by small firms that do not have the same financial capabilities as large companies.

We decided to do this by comparing standalone financial statements of seven Polish companies (Amica, CCC, CD Projekt, Delko, Grupa Azoty, Oponeo and Orlen) from 2014 to 2020. For each company, and each year, we calculated the cost of the Corporate Carbon Footprint (CCF) as a sum of costs generated in two subcategories, Energy (CCFE) and transport (CCFT). Our accounting indicator showed an impact on net sales by an average of 2,98% of that additional cost. The situation is contrasted between firms and sectors, from 7,44% for Grupa Azoty and the basic chemicals to 0,02% for Delko and consumer staples. The difference is obvious between industrial companies and services.

Carbon accounting, lessons from literature

As Miller (1994) stated, "*accounting could not and should not be studied as an organizational practice in isolation from the wider social and institutional context in which it operates*". Accounting should play a real constitutive role in social processes. This explains why Pellegrino and Lodhia (2012) state that a carbon report is a company policy that continues to be legitimate because it shows that companies operate according to social, legal and community norms. Figge and Hahn (2013) also reach this conclusion, saying "*the growing importance of sustainability issues for private companies calls for an integration of environmental aspects into corporate decision making*". This is illustrated in the figure below.

Figure 1: Greener postures



Source: The Economist, (2021). Regulators want firms to own up to climate risks. Business, March 13 2021 edition.

As previously mentioned, there is no current obligation to show on the yearly financial statements the cost of a firm's carbon footprint. This explains why management accounting literature has only adopted sustainability issues sparsely (Thomson, 2007). Research in accounting with an explicit focus on carbon accounting or carbon management is still limited, but there is "*an increasing interest towards this novel accounting area*" (Hartmann, Perego & Young, 2013). The difficulty lies in the fact that data on carbon activities and emissions are often not financial in nature, and the monetization of their impact of business entities is difficult (Schumacher, 1997).

In this situation, we know that the International Accounting Standards Board (IASB) has provided some hints in cases where no accounting standards apply. Paragraph 10 of IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors should be applied. This means that management should use its judgement and should apply an accounting policy which makes the information relevant and reliable, in consultation with the firm's auditors (when the firm is audited). Information is relevant when it is "*useful, that is to say "relevant" to the needs of those who have to take economic decisions and in particular, for the supposedly rational investor within the framework of economic*

theory". By *reliable*, it means "*above all be neutral, that is to say exempt from bias*" (Burlaud, 2013). Both conditions are observed in this article. Corporate carbon accounting is a new research area with some concrete consistencies, for instance the recognition of carbon trading permits on the balance sheet (MacKenzie, 2009).

Our starting point is that "*carbon accounting remains an area in which there is no consensus*" (Adıgüzel & Öker, 2017).

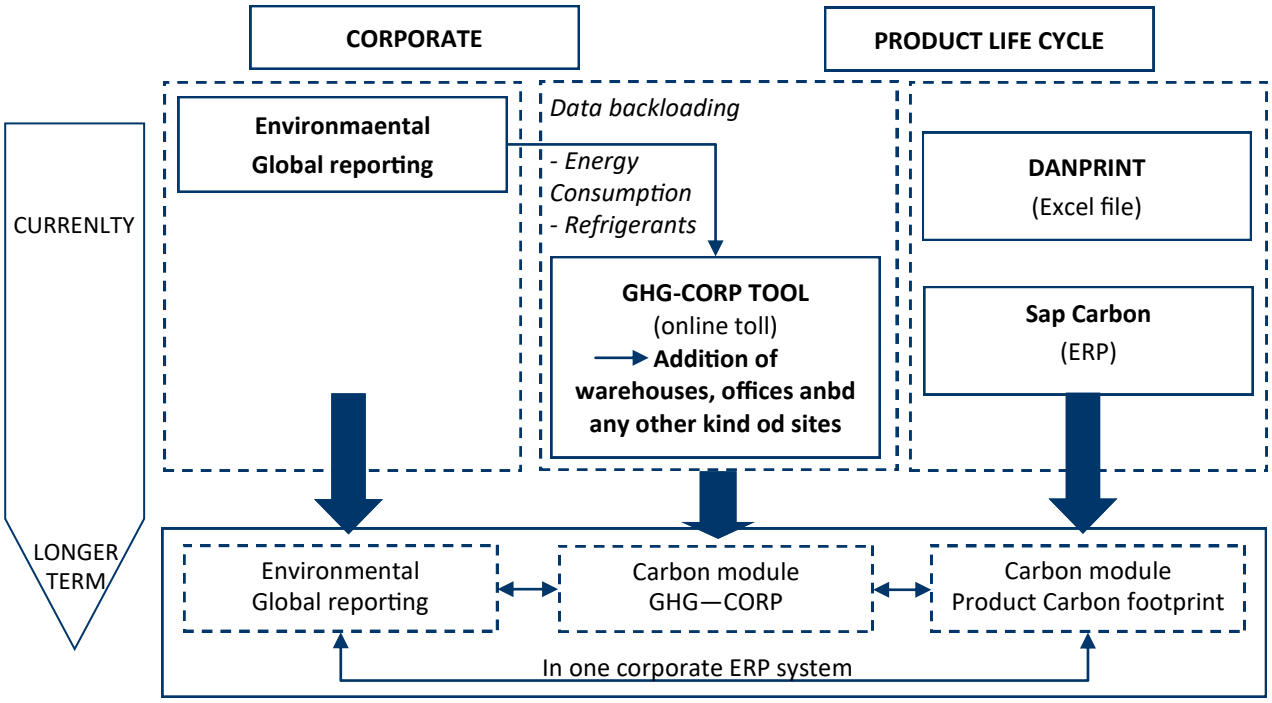
As stated by Zvezdov & Schaltegger (2015), carbon management accounting is an activity related to the goal of achieving efficient use of resources and effective carbon reduction. Carbon performance is both, the reduction of the absolute amount of discharges into the environment, and as the reduction of emissions per kilogram of product or functional unit (Schaltegger & Csutora, 2012). With carbon accounting, the target is to measure carbon emissions produced by an organization and report emissions to stakeholders in the aim of reducing them. The link with stakeholders is capital, because as shown by Melo (2012), companies that pay attention to the social values of stakeholders show good social performance. Figge & Hahn (2013) show that at the heart of managerial decision-making should be "*the efficiency of the use of environmental resources as well*". From now on, financial directors need to cope with rising investor demands for credible exposure to carbon levels (Price Waterhouse Coopers, 2012).

Building an indicator demands the respect of several points. As defined by Levin & Espeland (2002), this requires "*the transformation of qualitative relations into quantities on a common metric*". Eventually we should have "*a quantity of gas measured at one place and at one time sufficiently similar to the same quantity measured at a different place and time*" (MacKenzie, 2009). This must be credible, which means comparable and verifiable (Ertimur, Gonzales & Schipper, 2010). The efficacy of the metric depends mainly on the issue of comparability between firms, sector and time. The problem is that "*converging different carbon management accounting approaches requires specific knowledge and information systems that are not always readily available in the organizations today*".

To implement its metric, Danone has adjusted its current organization and ERP system to be able to collect carbon footprint information for all products and proposes its metric and strategic program on this basis. As a reminder, Danone planned and achieved - 30% carbon emissions reduction between 2008 and 2012.

As shown below, this could not be easily implemented in all companies, especially small ones.

Figure 2: ERP system in Danone



Source: Gibassier, D., Schaltegger, S. (2015). Carbon Management Accounting and Reporting in Practice. Sustainability Accounting, Management and Policy Journal, 6(3), 340-365. https://doi.org/10.1108/SAMPJ-02-2015-0014.

The example of Danone shows that carbon accounting for physical emissions is technically complex.

In our case, we start by proposing a quite simple metric to open the way for such an easy comparable metric. Our metric must be easy to be implemented by all companies, especially small ones (turnover < EUR 10 million) where there are limited human resources. To my knowledge, this is the first case study in which this metric was proposed and applied to concrete cases.

Database and methodology

According to Luo et al., (2013), carbon accounting can be used to determine carbon assets and liabilities as well as to evaluate carbon performance and disclosure. We focus on the latter in this article, which means on the impact of carbon emissions on the statement of income. Evaluating carbon performance and disclosure means keeping track of carbon inventories and emission footprints (Tang & Luo, 2014) and measuring their additional costs. We focus only on carbon outputs. The carbon usage of a company depends on the industry it operates in, its position in the value chain, and company-specific factors (equipment, location, etc…). Regarding output, the Greenhouse Gas Protocol Initiative[5] developed a classification scheme. This approach is sufficient for analysis of output of corporate carbon usage. We propose a relatively simple accounting metric to measure direct carbon emissions based on the production processes of the firm and the direct combustion of fossil fuels.

Our method is as follows: looking at the statement of income, we compute the cost of the corporate carbon footprint (CCF) as a sum of two subcategories, Carbon Footprint Energy (CFE) expressed in kilowatt hour (kWh) and Carbon Footprint Transport (CFT) expressed in liters of Petrol used.

$$CCF = CFE\ (kWh) + CFT\ (Petrol\ in\ liter)$$

CFE = We compute the Carbon Footprint Energy based on the carbon used during the year. To obtain this quantity, we take the amount of materials and energy expenses given on the statement of income, stated in Polish Zloty (PLN), the national currency used in Poland. To assess the amount of energy used, we divide this quantity by the average price of energy costs in PLN/MWh. The prices are taken from the public website of the Polish Energy Regulatory Office[6]. Once we have the yearly amount of energy used in PLN/MWh, we convert this quantity into carbon used, expressed in kg CO2 equivalent. This is done using the conversion factor recommended by the National Energy Foundation in the United Kingdom[7]. Having the yearly amount of kgCO2 equivalent, we monetarized it by taking the cost of carbon[8] (EUR/t) at the end of each year and converting it into PLN/kg according to the most recent exchange rate for each year published by the National Bank of Poland.

CFT = The same method is applied to get the yearly amount of the carbon footprint transport. Only the initial element is different. We do not take the amount of materials and energy expenses on the statement of income but the transport expenses given (including business travel expenses) or computed from the gross value of means of transport at the end of the year. After that, we convert such cost into liters of petrol used (PLN/liter). To do that, we divide the amount of expenses by the average retail price of Eurosuper 95 gasoline, Diesel and Auto gas per year expressed in (PLN/liter). Once we have the yearly amount of energy used in PLN/liter, we convert this quantity into carbon used, expressed in kg CO2 equivalent. This is done using the conversion factor recommended by the National Energy Foundation in the United Kingdom[9]. Having the yearly amount of kgCO2 equivalent, we monetarized it by taking the cost of carbon[10] (EUR/t) at the end of each year and converting it into PLN/kg according to the most recent exchange rate for each year published by the National Bank of Poland.

This methodology is applied to seven Polish companies in seven sectors based on their yearly standalone financial statements from 2014 to 2020:

[5] https://ghgprotocol.org/about-wri-wbcsd accessed on 07.03.2021.

[6] Polish Energy Regulatory Office, https://www.ure.gov.pl.

[7] National Energy Foundation, http://www.carbon-calculator.org.uk/.

[8] The amount is taken from the website cire.pl which publishes the right price of carbon emission https://handel-emisjami-co2.cire.pl/st,34,514,me,0,0,0,0,0,ceny-uprawnien-do-emisji-co2.html?startDay=16&startMonth=12&startYear=2014&koniecDay=31&koniecMonth=12&koniecYear=2014&button=poka%BF accessed on 10.02.2021.

[9] National Energy Foundation, http://www.carbon-calculator.org.uk/.

[10] The amount is taken from the webstide cire.pl which publishes the right price of carbon emission https://handel-emisjami-co2.cire.pl/st,34,514,me,0,0,0,0,0,ceny-uprawnien-do-emisji-co2.html?startDay=16&startMonth=12&startYear=2014&koniecDay=31&koniecMonth=12&koniecYear=2014&button=poka%BF accessed on 10.02.2021.

Table 1: Firms and sectors in our sample

AMICA	Electrical & electronic equipment
CCC	Clothes & footwear
CD_PROJEKT	Game development
DELKO	Consumer staples
GRUPA AZOTY	Basic chemicals
OPONEO	E-trade
ORLEN	Oil & gas exploration and production

Source: Prepared by the author.

Empirical observations from the Polish experience (2014-2020)

We applied the methodology explained previously to those seven firms from 2014 to 2020. We expect the result to be considerably different, even if the method is the same.

We take the average additional cost generated by the total carbon footprint over the 7 years and we see the impact of it on different indicators: net earnings per share (EPS[11]), energy expenses, net sales.

[5] Earnings per share (EPS) is a company's net profit divided by the number of common shares it has outstanding.

We start with assessing such impact on the earnings per share (EPS). To do that, we compute the new net result after considering CCF's cost and we compare the new net earnings per share obtained to the previous one. For instance, from 2014 to 2020, the average earnings per share (net result/number of shares) for Orlen is 5,25 PLN for one share (2 247 571 KPLN of net result for an average of 427 709 061 shares). We then calculate the average CCF's cost over the 7 years which amounts to 4 539 959 KPLN, 4 433 773 KPLN for CFE and 106 186 KPLN for CFT. We reduce the average net result by such additional cost (2 247 571 KPLN – 4 539 959 KPLN, which is – 2 292 388 KPLN) and then we measure the impact on the earning per share (-5,36 PLN per share, which represents a decrease of -202%).

Table 2: Classification of firms according to the impact on net earnings per share over the 7 years in KPLN

	KPLN	ORLEN	GRUPA AZOTY	AMICA	CCC	OPONEO	DELKO	CD_ PROJEKT
a.	Carbon footprint Energie (CFE)	4 433 773	160 889	100 237	2 887	389	26	245
b.	Carbon footprint Transport (CFT)	106 186	3 789	1 493	2 374	434	56	389
c.	Total Carbon footprint (a+b) (CCF)	4 539 959	164 678	101 729	5 261	824	82	634
	Average net result without CCF	2 247 571	114 799	110 217	(-28 155)	15 029	8 392	312 253
	Average net result with CCF	(-2 292 388)	(-49 878)	8 488	(-33 416)	14 206	8 309	311 619
	EPS without CCF	5,25	1,34	14,18	(-0,70)	1,08	1,40	3,26
	EPS with CCF	(-5,36)	(-0,58)	1,09	(-0,83)	1,02	1,39	3,25
	Impact on earnings per share (average)	-202%	-143%	-92%	-19%	-5%	-1,0%	-0,2%

Source: Own elaboration.

Logically, we could see that the impact of the sector was important. The industrial sector has a much greater impact than services, due to the share of energy expenses given in the statement of income. Let's measure such share of energy expenses.

Table 3: Classification of firms according to the shares of energy expenses towards net sales over the 7 years in

	KPLN	ORLEN	GRUPA AZOTY	AMICA	CCC	OPONEO	DELKO	CD_ PROJEKT
	Carbon footprint Energie (CFE)	4 433 773	160 889	100 237	2 887	389	26	245
a.	Average net sales	70 849 286	2 213 541	1 576 863	1 897 584	669 365	388 594	572 475
b.	Average of consumption of materials and energy	(-30 806 857)	(-1 355 986)	(-673 569)	(-20 501)	(-2 237)	(-208)	(-1 479)
	Share towards net sales (b. / a.)	43%	61%	43%	1%	0%	0,5%	0,3%

Source: Own elaboration.

As expected, the Energy expenses in the P&L is far more important for the industrial sector. All else being equal, the impact of CFE is stronger.

With regard to the net sales, the comparison shows a lower difference between those firms, but still is more important for industries. It is important to note that for non-industrial companies, the share of energy/ materials expenses is almost the same as the transport share.

Finally, the variation of the impact on the net result is also highly volatile for industrial firms.

Table 4: Classification of firms according to the impact on the average net sales over the 7 years in KPLN

	KPLN	ORLEN	GRUPA AZOTY	AMICA	CCC	OPONEO	DELKO	CD_ PROJEKT
a.	Carbon footprint Energie (CFE)	4 433 773	160 889	100 237	2 887	389	26	245
b.	Carbon footprint Transport (CFT)	106 186	3 789	1 493	2 374	434	56	389
c.	Total Carbon footprint (a+b) (CCF)	4 539 959	164 678	101 729	5 261	824	82	634
a. /c.	Carbon footprint Energie (CFE) - % of CFF	97,7%	97,7%	98,5%	54,9%	47,3%	32,1%	38,6%
b. /c.	Carbon footprint Transport (CFT) - % of CFF	2,3%	2,3%	1,5%	45,1%	52,7%	67,9%	61,4%
d.	Average net sales	70 849 286	2 213 541	1 576 863	1 897 584	669 365	388 594	572 475
c./ d.	Share to net sales (average)	6,41%	7,44%	6,45%	0,28%	0,12%	0,02%	0,11%

Source: Own elaboration.

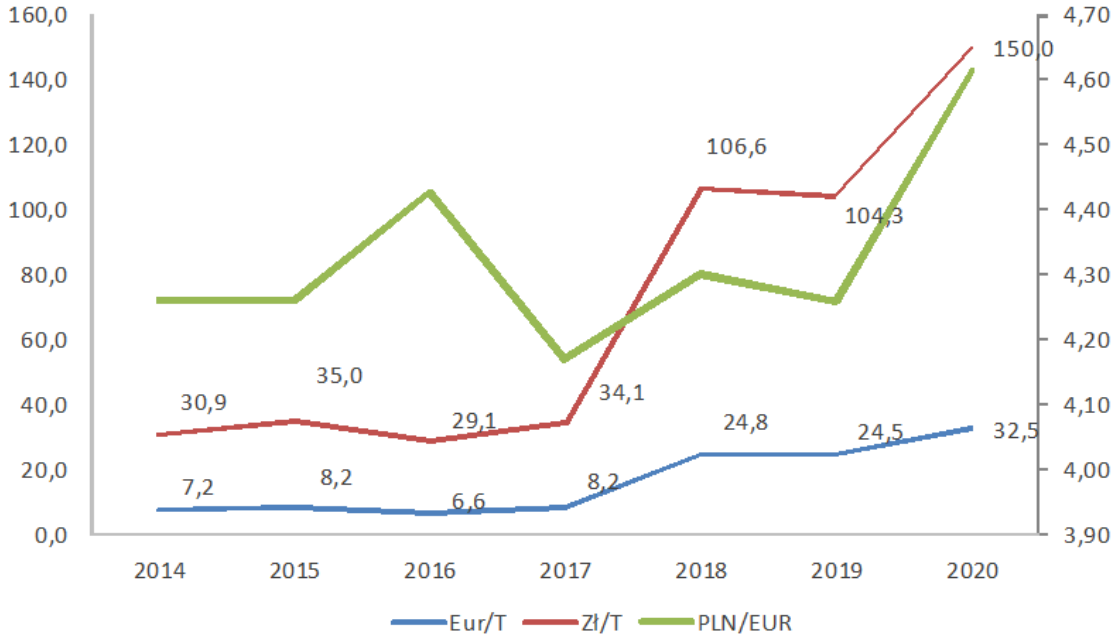
Table 5: Classification of firms according to volatility of the impact on net earnings per share over the 7 years in KPLN

KPLN	ORLEN	GRUPA AZOTY	AMICA	CCC	OPONEO	DELKO	CD_ PROJEKT
Impact on earnings per share (average)	-202,0%	-143,4%	-92,3%	-18,7%	-5,5%	-1,0%	-0,2%
Standard deviation of the impact	117%	99%	61%	5%	3%	0,5%	0,6%

Source: Own elaboration.

Such volatility is mainly explained by the evolution of the price of the Permit Allowing Emissions of 1 Metric Ton of CO2 Equivalent. The PLN-EUR exchange rate end of the year adds more volatility to the analysis.

Figure 3: Evolution of price of Permit Allowing Emissions of 1 Metric Ton of CO2 Equivalent



Source: Prepared by the author.

We have used the same methodology for those seven firms but, the impact of the additional costs computed for carbon emissions estimated in the production process is not the same. Logically, it is far higher for industries. Its variability is linked to the volatility of the price of the Permit Allowing Emissions of 1 Metric Ton of CO2 Equivalent. As the weight of the energy and material expenses is important for industries, the volatility of the market price of carbon has a stronger impact. As for Danone, the impact of additional costs linked to the carbon emissions is not neutral and using this indicator should be compulsory.

Management & Social implications

For the moment, the inclusion of the cost of a company's Carbon Footprint is not compulsory. This is surprising because we know that each company imposes on the community externalities. Such externalities have a cost and should be measured and communicated. The economy is just an activity which consists in transforming energy.

Each company must know the level of the carbon footprint it generates through its activity. It is a cost

which until now was acceptable. By *acceptable*, we mean that with petrol reserves still abundant, it was not a central topic. Now, with more limited reserves[12] and the global awareness of global warming, this cost will become more and more important and will become a real target for all companies to follow. As it is also a need expressed by society as a whole, it will become a stronger and stronger pressure on the management which cannot be ignored. The last example of BlackRock illustrates that. It is also important for the state if it wants to respect its international commitments. For sure, it will put pressure on firms inside its borders to be able to respect its engagements.

Limitations and further study

In that article, we tried to quantify this cost using a simple metric. By *simple*, we mean a method of calculation based on data already presented on each financial statement by small, medium, or large Polish companies. We are aware that this metric needs to be precise and redefined. This is a step and a contribution towards compulsory computation and communication of this impact.

As shown in this article we should start with the statement of income and the compulsory inclusion of the cost of a company's Carbon Footprint. It should be easy to compute, as small companies must comply with this obligation, knowing that they do not have the financial resources and the human resources to do as Danone did. The next step will be to compute provisions for additional carbon risks and also to include the metric in the statement of financial position. The way is still open for further studies on this important new topic.

[12] Shafiee, S., Topal, E., (2009). "*When will fossil fuel reserves be diminished*?". Energy Policy, Volume 37, Issue 1, 2009, Pages 181-189, ISSN 0301-4215, https://doi.org/10.1016/j.enpol.2008.08.016.

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Annex

Table 9: Classification of firms according to the impact on the net sales pear year in KPLN

AMICA								
KPLN	2020	2019	2018	2017	2016	2015	2014	Average
Net sales	1 726 100	1 609 709	1 516 984	1 583 334	1 608 636	1 518 059	1 475 220	1 576 863
Carbon footprint Energie (CFE)	240 782	145 344	151 312	48 552	39 892	43 740	32 034	100 237
Carbon footprint Transport (CFT)	3 080	1 727	2 509	880	813	883	555	1 493
Total Carbon footprint (a+b) (CCF)	243 863	147 071	153 820	49 432	40 705	44 623	32 590	101 729
Share to net sales	14%	9%	10%	3%	3%	3%	2%	6%

CCC								
KPLN	2020	2019	2018	2017	2016	2015	2014	Average
Net sales	1 682 585	2 270 000	2 135 600	2 086 600	1 738 500	1 673 900	1 695 900	1 897 584
Carbon footprint Energie (CFE)	5 655	4 109	5 316	1 296	1 046	1 243	1 545	2 887
Carbon footprint Transport (CFT)	6 843	1 408	334	1 401	1 485	2 351	2 796	2 374
Total Carbon footprint (a+b) (CCF)	12 498	5 517	5 650	2 697	2 531	3 594	4 341	5 261
Share to net sales	0,74%	0,24%	0,26%	0,13%	0,15%	0,21%	0,26%	0,28%

CD_PROJEKT								
KPLN	2020	2019	2018	2017	2016	2015	2014	Average
Net sales	1 883 645	361 381	225 232	328 235	476 152	698 225	34 455	572 475
Carbon footprint Energie (CFE)	835	344	220	64	51	126	75	245
Carbon footprint Transport (CFT)	731	759	653	183	129	149	118	389
Total Carbon footprint (a+b) (CCF)	1 566	1 103	873	247	180	276	193	634
Share to net sales	0%	0%	0%	0%	0%	0%	1%	0%

DELKO								
KPLN	2020	2019	2018	2017	2016	2015	2014	Average
Net sales	421 981	379 480	395 805	397 492	387 626	375 431	362 345	388 594
Carbon footprint Energie (CFE)	43	45	40	11	12	11	22	26
Carbon footprint Transport (CFT)	145	88	79	27	16	20	16	56
Total Carbon footprint (a+b) (CCF)	188	133	119	38	27	32	39	82
Share to net sales	0%	0%	0%	0%	0%	0%	0%	0%

GRUPA_AZOTY								
KPLN	2020	2019	2018	2017	2016	2015	2014	Average
Net sales	1 613 109	1 987 039	1 825 771	2 585 370	2 385 094	2 721 640	2 376 763	2 213 541
Carbon footprint Energie (CFE)	243 764	207 878	242 185	120 573	97 599	125 644	88 580	160 889
Carbon footprint Transport (CFT)	8 696	5 760	6 450	1 478	1 259	1 839	1 039	3 789
Total Carbon footprint (a+b) (CCF)	252 459	213 638	248 634	122 051	98 858	127 483	89 619	164 678
Share to net sales	16%	11%	14%	5%	4%	5%	4%	7%

OPONEO								
KPLN	2020	2019	2018	2017	2016	2015	2014	Average
Net sales	981 323	918 005	811 599	695 478	544 333	414 245	320 574	669 365
Carbon footprint Energie (CFE)	1 002	596	726	179	91	74	57	389
Carbon footprint Transport (CFT)	1 309	806	540	189	84	64	48	434
Total Carbon footprint (a+b) (CCF)	2 311	1 403	1 265	368	175	139	105	824
Share to net sales	0,24%	0,15%	0,16%	0,05%	0,03%	0,03%	0,03%	0,12%

ORLEN								
KPLN	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**	**Average**
Net sales	58 816 000	89 049 000	86 997 000	70 012 000	53 633 000	60 466 000	76 972 000	70 849 286
Carbon footprint Energie (CFE)	7 958 310	7 495 189	8 186 244	1 953 067	1 351 011	2 039 128	2 053 464	4 433 773
Carbon footprint Transport (CFT)	288 198	154 842	139 744	43 441	40 091	44 863	32 123	106 186
Total Carbon footprint (a+b) (CCF)	8 246 508	7 650 031	8 325 989	1 996 508	1 391 102	2 083 991	2 085 586	4 539 959
Share to net sales	14%	9%	10%	3%	3%	3%	3%	6%

Source: Author's elaboration.