Assurance of the Sustainability Reports from the Chemical Industry
Practices and trends

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This study was carried out to identify the most recent practices in the audit of the sustainability reports of the companies from the chemical industry, whether they are integrated or not. For this purpose, we analyzed the annual/sustainability reports list available on the GRI website under the name GRI Sustainability Disclosure Database. As the results of the study, we argue that, due to environmental and social hazards associated with chemical industries, a duty to report on Corporate Social Responsibility (CSR) and to audit these reports according to specified standards would need to be introduced.

Keywords: CSR, environmental and financial audit, integrated reporting, GRI, external assurance, accountability

Nowadays, all companies, regardless of size and whether they operate in public or private sector, prepare and use information to make important decisions and to inform stakeholders regarding their business. Chemical industry, more than other types of industries, is faced with pollution generated by accident or by technologies. Many times, chemical processes are potential sources of emissions and waste materials.

For these reasons, in all industries, but especially in chemical industry, it is necessary to promote sustainability and to adopt sustainable technologies and new regulatory strategies that promote sustainable products and processes.

Globally, the leading organization in the dissemination of sustainability reporting is Global Reporting Initiative (GRI). GRI is an international independent organization that shows the impact of the firms on critical sustainability issues. It has published standards since 2000 in order to form the framework of sustainability reports. The first version of GRI Guidelines named as G1 was published in 2000. In 2002, the second version G2 was published. In 2006, G3 Guidelines was launched. In May 2013, GRI established the fourth generation of Guidelines, G4. Latest revolution of these standards is GRI Sustainability Reporting Standards (or shortly GRI Standards). But a new generation of reports appeared because an increasing number of companies embedded many types of non-financial information (social, environmental, governance, corporate social responsibility) into their annual reports, generically named *integrated reports* - <IR>.

The paper is structured as follows. The next section discusses the state of the art in the area of external assurance of the annual reports published by the companies from the chemical industry. The third section explain the research method used in the paper. The results of our research are presented in the fourth section, and the paper ends with our conclusions.

Corporate reporting in the chemical industry – state of the art

The large-scale chemical accidents have vast implications on the natural environment and generate financial losses of the chemical sector. Some authors [1] suggest that the financial implications affect not only the company responsible, but also the financial performance of the overall chemical sector. Other relevant studies have demonstrated that the stock exchange value of the chemical industry can fall sharply for several trade days after large chemical accidents [2]. But economic crime can have a more far-reaching impact that is difficult to measure. Collateral damage can include damage to a company's brand or to its position with regulators and negative publicity. Staff morale may be impacted, with a resultant drop in productivity [3]. These implications explain the pro-active and re-active environmental policies of the international chemical industry [4]. In the USA, USEPA (United States Environmental Protection Agency) promoted and adopted specific environmental regulations and programs (e.g. the EPA 33/50 program) with the main goal to ensure that chemical companies will at least meet a minimum level of safety standards to prevent toxic releases [5].

To mitigate such hazards, the chemical industry today chooses from a variety of certain self-organized systems and programs of Environmental Management, such as ISO 14001, Eco-Management Audit Scheme (EMAS) and Responsible Care Program (RCP).

A study published by PricewaterhouseCoopers [3] sustain that chemicals companies view damage to the company's reputation as very serious (18% vs. 5% across all industries), and describe the impact on the company's business relations as seriously or very seriously impaired. In the same time, almost two-thirds of companies in the chemicals industry worldwide who detailed serious incidents of economic crime reported having suffered collateral damage from the same (63% vs. all industries:

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No.	Industries	DALY	Structure (%)
1	Lead - Acid Battery Recycling	2000000 - 4800000	27.0
2.	Mining and Ore Processing	450000 - 2600000	14.6
3.	Lead Smelting	1000000-2500000	14.1
4.	Tanneries	1200000 -2000000	11.3
5.	ASGM- Artisanal Small-Scale Gold Mining	600000 -1600000	9.0
6.	Industrial Dumpsites	370000 - 1200000	6.7
7.	Industrial Estates	370000 - 1200000	6.7
8.	Chemical Manufacturing	300000 - 750000	4.3
9.	Product Manufacturing	400000 - 700000	3.9
10.	Dye Industry	220000 - 430000	2.4
Summary		6910000 - 17780000	1000

Table 1
TOP TEN TOXIC INDUSTRIES LISTED BY DALY (DISABILITY ADJUSTED LIFE YEAR)

Note: DALY is the impact of pollution which captures the total number of life years lost from early death as well as any reduction in quality of life resulting from disease.
Source: Smiechowski, K. & Lament, M., Impact of Corporate Social Responsibility (CSR) reporting on pro-ecological actions of tanneries, Journal of Cleaner Production 161 (2017) p. 993 and Blacksmith Institute (2016).

54%), and 14% described the intangible damage as significant.

A recent study [6] presents the most toxic industries in the world (table 1).

As many others companies from different industries, some of the companies from chemical industry can be criticized for adding to environmental problems such as climate change, depletion of natural resources, waste production, and lagging corporate environmental responsibility. In this context, we try to prove that efforts made by the chemical companies in pro-ecological and pro-social actions are well presented in their annual reports. But the absence of reporting is not necessarily evidence of lack of environmental or social actions. At least an enterprise associated with sustainable development and Corporate Social Responsibility (CSR) helps to limit risk and uncertainty and counteracts asymmetry of information.

In the last decades, there has been an emergent concern of social, environmental and ethical reporting along with financial reporting because corporate reporting was undergoing a change towards the concept of sustainable development. Especially, in the last decade, the practice of corporate sustainability disclosure has increased dramatically. Transparency has become a critical element in building trust, maintaining and improving reputation, and managing risks [7]. Nevertheless, proponents of social responsibility argue that social responsibility can improve the reputation of the firm and detractors argue that social responsibility expenditures are a poor use of shareholder money.

Global Reporting Initiative (GRI) is a promoter of a sustainable global economy, where organizations manage their economic, social, environmental, and governance performance and impacts responsibly. As a result changes in the companies reporting process in the last years, GRI identified several trends that indicate how the disclosure will evolve in the next decade [7]:

-Companies will be held accountable, more than even before.

-Business decision makers will be take sustainability issues into account more profoundly.

-Technology will enable companies and stake holders to access, collate, check, analyze and correlate data.

-Technology will enable companies to operate and report in a highly integrated way.

-Ethical values, reputation and risk management will guide decision makers.

-New indicators will emerge.

-Reports will results both from regulated and voluntary process.

-Sustainability data will be digital.

But, as any others companies, those from chemical industries may use sustainability accounting and reporting to maintain the status quo or pursue their own agenda. Anyway, CSR must be integrated into a company's core business [8].

According to a study published in 2010 [9], companies should produce IRs (Integrated Reports) because they play a key role in corporate social responsibility (CSR) commitments and because a true sustainability strategy requires a true commitment to transparent reporting.

Despite of the chemical accidents, the companies from the chemical industries has many roles in sustainability. It provides chemicals, materials, and technologies that improve the safe and efficient use of energy and natural resources and is responsible for delivering these in a way that protects human and environmental health.

Because of the importance of eco-economy and circular economy as recent developments of the sustainable economy and in order to ensure the credibility, quality and professionalism of public sector environmental auditing, the international organizations have developed essential standards and guiding elements specific to the environmental audit [10-20]: ISSAI 5110 - Guidance on Conducting Audit Activities with an Environmental Perspective, ISSAI 5120 - Environmental Audit and Regularity Auditing (EARA) and Eco-Management Audit Scheme (EMAS), which requires companies and other organizations to have their own programs, policies, management, verification and reporting (sub)systems relating to the environment, all of which are verified by a third party [21, 22]. But, maybe more than an institutional environmental audit at the country level, external assurance of individual reports of the companies from chemical industries helps to improve societal confidence in the credibility of the environmental information provided.

For all information (financial and non-financial, integrated or not) from the annual/sustainability reports of the companies from the chemical industries it is necessary to ensure credibility and trust. Companies can use a range of mechanisms to enhance both credibility and trust of their reports (especially if the reports are integrated), of which assurance is one [21, 22].

Assurance is a process undertaken by a competent and independent external practitioner, to acquire sufficient appropriate evidence and express a written conclusion that enhances the degree of confidence intended users can

place in the organization's integrated report [21]. Assurance with respect to integrated reporting is typically considered to be an independent conclusion on whether an organization's integrated report presents its strategy, governance, performance and prospects in accordance with the IIRF [23]. Considering all these aspects, IIRC initiated, in 2014, discussions about the assurance of Integrated Reports.

If for the financial information this purpose can be reached by the traditional financial audit, the assurance can be difficult for non-financial information. In the same time, it is generally proved and accepted that big auditing firms provide higher quality audits. But the assurance of sustainability reports is a relatively new service offered by different providers such as accounting firms and consultants. The percentage of sustainability reports assured and the weight of the four largest accounting firms (Deloitte, EY, KPMG and PWC) in this new market are evolving in time [24]. This Big 4 audit firms offer audit, assurance, tax, consulting, advisory, actuarial, corporate finance, and legal services. There is supposed that the firms from Big4 can be providers of assurance for the sustainability reports - they are qualified for this service due to their professional standards and because they are required to follow ethical principles. In the last two decades, financial auditing market had to overcome important challenges, one of them concerning the assurance of annual reports that refers both to financial and non-financial information. Big4 and non-Big4 firms had to evaluate the opportunities and threats of conducting other types of assurance (e. g. the assurance of Sustainability Reports and Integrated Reports) [22-24].

Research method

In the GRI Sustainability Disclosure Database [25] are stored annual/sustainability reports and associated organizational data. Advanced search functionality allows filtering and sorting of reports and organizations by multiple criteria, revealing trends and patterns in reporting practice. For the purpose of our study, we sort the data from GRI database after the next criteria: sector, region, assurance provider, type of assurance provider, assurance scope, level of assurance and assurance standards. In the analyzed period (1999-2015), 34,124 annual reports from all sectors have been registered in the database and 1,247 from chemical industry. A possible explanation of this boom in the publication of annual reports (integrated or not) is that CSR, Sustainability Reporting and <IR> are considered as a worldwide movement even if these kinds of reporting are mostly voluntary for firms all over the world.

Our research is based on the structural analysis of the annual reports registered in the GRI database [25]. The first purpose of the research is to provide a geographical distribution of the chemical companies that published their annual reports in this database. We extracted from the database information regarding chemicals industry for the period 1999 – 2015, focusing on the number of reports in five geographical areas as they are defined by GRI. The information allowed us to show the trend in the publication of the corporate annual reports from the chemical industry worldwide and to compare this evolution with the general trend in the publication of annual reports in GRI database. Secondly, we analyzed the distribution of the annual reports from the point of view of the audit providers and to identify the characteristics of audits in the chemical industry [25].

The analysis has been intuitive, based on direct observation and the comparative analysis of the database content, which allowed us to describe and explain the identified trends. For data processing, we started from the previously mentioned database, which is in an Excel format, and we used the facilities provided by Microsoft Office – Excel Pivot Tables.

Results and discussions

The evolution over the times of the registered annual/ sustainability reports from the chemical industry compared with all registered reports in GRI database is presented in the table 2.

Year	Chemical industry	Globally
1999	1	12
2000	3	48
2001	3	131
2002	6	161
2003	6	182
2004	13	314
2005	20	436
2006	26	677
2007	32	982
2008	52	1,488
2009	67	1,955
2010	92	2,599
2011	141	3,878
2012	163	4,571
2013	180	5,135
2014	199	5,649
2015	243	5,906
Total	**1,247**	**34,124**

Table 2
REGISTERED REPORTS IN GRI DATABASE

Source: authors' compilation on the basis of GRI, Sustainability Disclosure Database

As you can see in figure 1, the number of annual/ sustainability reports registered in the GRI database was grown dramatically at the global level while the evolution was not very significant in the chemical industry.

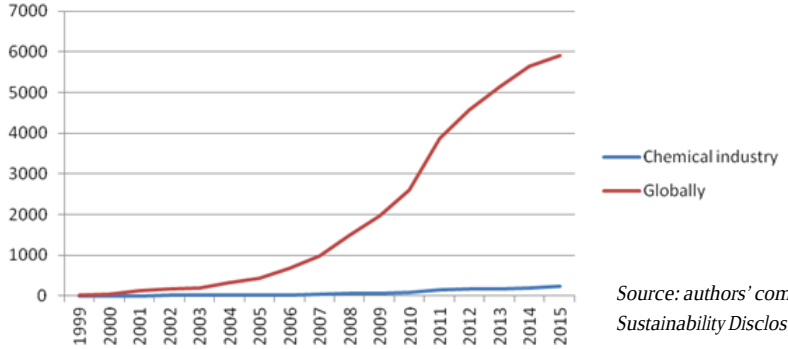

Fig. 1. The comparative evolution of annual/ sustainability reports registered in GRI database

Source: authors' compilation on the basis of GRI, Sustainability Disclosure Database

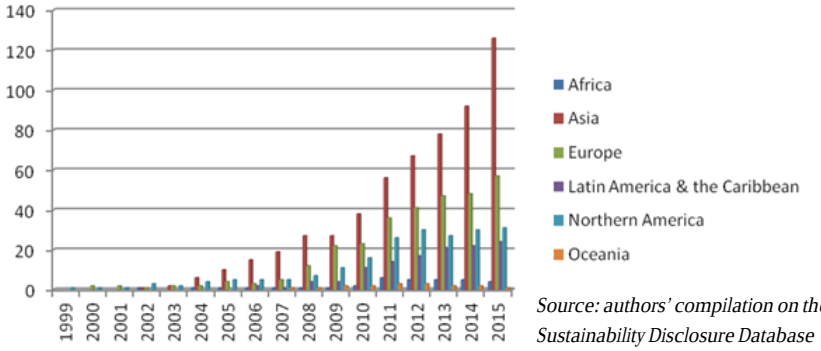

Fig. 2. The number of annual/sustainability reports from the chemical industry, by geographical areas

Source: authors' compilation on the basis of GRI, Sustainability Disclosure Database

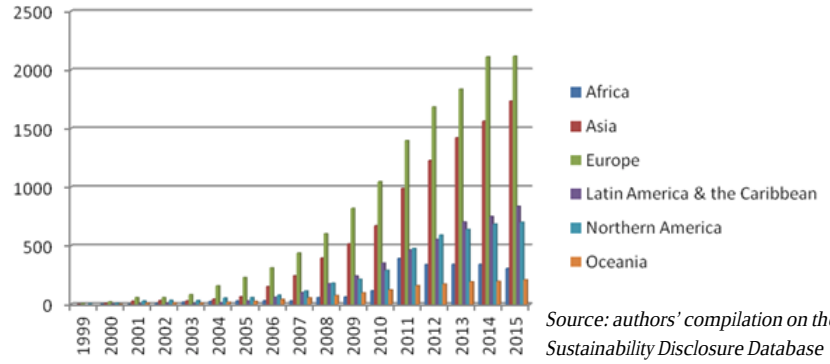

Fig. 3. The number of annual/sustainability reports from the GRI database, by geographical areas

Source: authors' compilation on the basis of GRI, Sustainability Disclosure Database

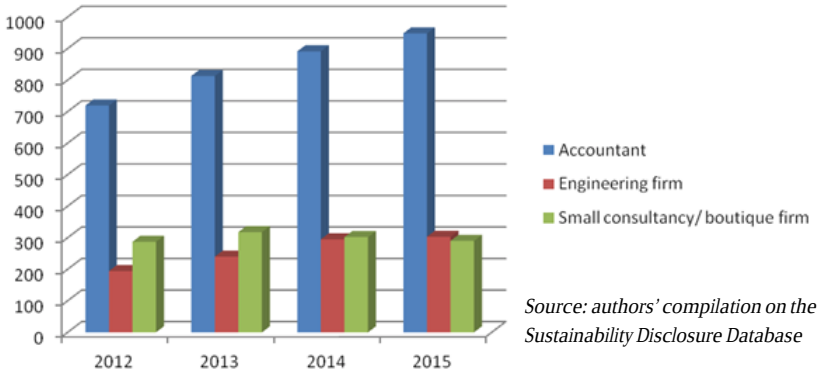

Fig. 4. The distribution of assurance providers for the audited reports registered in the GRI database

Source: authors' compilation on the basis of GRI, Sustainability Disclosure Database

CSR, Sustainability Reports and <IR> are perceived as a response to a growing interest and requests from stakeholders regarding social and environmental matters [26]. Despite of this trend, many environmental indicators are showing a decline in the natural environment condition [27-29].

In the GRI database, organizations are classified in 37 sectors, 6 geographical areas, after the type of organization and according to many others criteria.

In the figure 2 you can see the geographical distribution of the chemical companies that published their annual/ sustainability reports in the GRI database [25].

Asia is the big promoter of corporate sustainability reporting in the chemical industry taking into consideration the number of annual/sustainability reports published in GRI database, followed by Europe and Northern America [25].

But if we analyze the number of published reports around the world, the results are different (fig. 3).

Globally, the highest number of reports was registered in Europe (along the 1999-2015 period), followed by Asia and Latin America & the Caribbean. The growing trend in the number of published reports can be observed at the global level as in the chemical industry, for all regions.

From one year to the next, we found that the information in the GRI database became more and more complete. Starting with 2012, information on auditing annual/ sustainability reports has been added to the GRI database. This kind of information (type and the name of assurance provider, assurance scope, level of assurance and the assurance standards) allow us to compare and to analyze the situation in the process of auditing annual reports from the chemical industry with the global situation [25].

The current state in the external assurance of the annual/ sustainability reports registered in the GRI database indicates that the general trend is followed by the chemicals companies (table 3) and in all four years of the analyzed period, the percentages are close to each other.

The standards used in the assurance missions of the annual/sustainability reports are: Assurance Standard: AA1000 AS (Accountability 1000 Assurance Standard), ISAE 3000 (Assurance Engagements other than Audits or Reviews of Historical Financial Information), other National

Table 3

STATE IN THE EXTERNAL ASSURANCE OF ANNUAL/SUSTAINABILITY REPORTS

	External Assurance			
	Globally		Chemical industry	
	Yes	No	Yes	No
2012	26.45%	69.83%	25.15%	68.71%
2013	26.70%	73.30%	26.11%	73.89%
2014	26.36%	73.64%	27.64%	72.36%
2015	26.09%	73.91%	27.16%	72.84%

Source: authors' compilation on the basis of GRI, Sustainability Disclosure Database

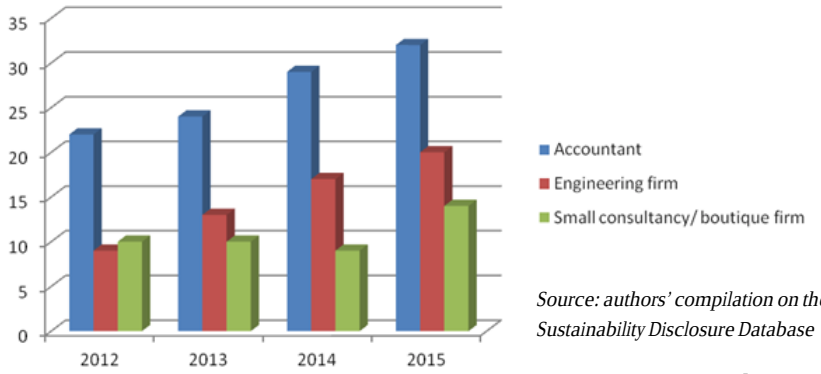

Fig. 5. The distribution of assurance provides for the audited reports from chemical industry

Source: authors' compilation on the basis of GRI, Sustainability Disclosure Database

Assurance Standards and other Sustainability Assurance Standards [25].

Analyzing the type of assurance provider for annual/ sustainability reports, we identified some difference between the chemical industry and the global situation (fig. 4 and fig. 5). The providers of assurance are: accountants, engineering firms and small consultancy/ boutique firms.

Globally, every year between 2012 and 2015, around 60% of the assurers of the annual/sustainability reports have been accountants, followed by small consultancy/boutique firms and engineering firms, the last two with closed percentages (around 20%).

For the chemical industry, the state is different, even if the first providers of assurance are also the accountants (especially Big Four companies), but with only 50%. They are followed by engineering firms (around 30%) and small consultancy/boutique firms (20%).

This result is convergent with the ones of the previous studies [28-36].

As recent was expressed in the literature [29-36], our findings show that the ISAE 3000 [28] is used by a large number of assurance services providers in the accountancy firms, while the other assurers display a preference for the AA1000AS. We previously noticed that only a quarter of annual/sustainability reports from GRI database are audited [25].

Conclusions

CSR reporting fails to have direct impact on pro-ecological activities of chemical companies, mainly because it is not obligatory. Introduction of obligatory Corporate Social Responsibility (CSR) reporting may sound reasonable, but proposing a solution alternative to CSR reporting could be a major step forward, e.g. a certification system for chemical companies that would be financed with resources of environment protection authorities. An existing organization would need to be authorized, or a new organization established, to record environment-friendly actions, audit and advice on solving environmental issues. Due to environmental and social hazards associated with chemical industries, a duty to report on CSR according to specified standards would need to be introduced or chemical industries would need to be subject to a formalized system of environmental monitoring.

In the same time, contradictory societal and institutional pressures, in essence, require organizations to engage in hypocrisy and develop façades, thereby severely limiting the prospects that sustainability reports will ever evolve into substantive disclosures.

Traditional auditing practices and professional competencies must be reoriented to suit the audit objectives in new fields. New standards should be promoted because till now no one existing standard has yet been accepted as a reference by the majority of assurers.

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