Marcos Orellana

United Nations Special Rapporteur

Friday, 2 February 2024

## **Subject:** Call for Inputs - Pollution Information Portals

## **Dear Mr Marcos Orellana,**

I am writing to your call for Inputs - Pollution Information Portals and the right to know: Strengthening access to information on releases of hazardous substances published on by the United Nations Human Rights Council[[1]](#footnote-0).

My name is Szilárd Erhart, I work as a researcher on Pollutant Release and Transfer Registers in the European Commission Joint Research Centre in Italy, Ispra. I specialized on researching PRTRs, corporate chemical footprint calculation and impact assessment with the purpose to support the achievement of the European Green Deal goals by developing and improving sustainability reporting solutions for companies.You may find my related research work referred in this input.

I also contributed to the UN work on PRTRs managed by Mr Kristof Doucot and to the OECD PRTR working group.

I warmly welcome the opportunity to provide inputs to your work as detailed belws.

Kind regards:

Szilárd Erhart

Joint Research Centre, European Commission, Italy, Ispra

S3 Unit

Inputs

Power of PRTRS is hard to overestimate, they are one stop shops. Their advantage comes from their structure is more or less similar across countries and they are open source.

**Limits/opportunities:**

* Data quality - location, emission quantity
* Lack of identifiers
* GHG not integrated except EU
* Making sense - usetox
* Pollutant groups (hard to evaluate without precise knowledge)
* **Concrete examples of how to further advance access to information on releases of hazardous substances;**

Disclosure of weight of pollutant releases is important however insufficient. As we noted in our publications (see at the end of this input) chemical footprint estimation of pollutant releases could support the interpretation of the data for citizens and increase awareness. Weight <> Impact. The Usetox model, for example, could be used to make sense of information

* **Information on existing Pollution Information Portals and their significance and challenges for States, businesses, and other stakeholders, including, but not limited to groups that may find themselves in vulnerable situations, such as Indigenous Peoples, women, children, local communities, persons with disabilities, and others;**

In our study on Sweden we connected the E-PRTR database to population maps to better understand exposure.

* **Ways in which existing Pollution Information Portals models can be strengthened;**

It is of utmost importance to integrate and consolidate national PRTRs. This could help to make informed decisions globally.

Search by parent company name would be important.

Adding more economic/financial context could be useful, to see for example pollution over unit of economic activity (revenue, etc).

* **Challenges of integration of Pollution Information Portals and other platforms on environmental information; and,**
* Lack of unique identifiers: is a major issue. This is our KEY USABILITY COMMENT.
	+ Similar universal and unique identifiers were created for good in the public and private sector too (tax number, company number, personal identification numbers etc all used for organizing taxpayer information, banking information). They help to store and link data and make evidence based decisions. This is how financial company registers link taxpayer information to red lists of credit repayment, etc to calculate for example default risk scores. This is the way Tax Authorities worldwide recognize, aggregate different kind of incomes and calculate tax obligations for firms and individuals.
		- **GOOD EXAMPLES**:
			* US EPA - TRI - NR16 in basic files, PARENT CO DB NUM: Unique identification number assigned by Dun and Bradstreet to the parent company of the reporting facility, which could be used to connect environmental info to financial data and analyize for example who the GHG exposure impacts on credit quality, etc.
		- **BAD EXAMPLE**:
			* EU - PRTR: parentCompanyName, Short text, Parent company name. These identifiers are not unique and reported with lots of errors across a years. For example Tesla Inc could be reported as Tesla Incorporated, Tesla Inc, Tesla Inc., TESLA ….Although cleaning is possible, requiring the tax number from reporting entities could make identification way easier and could open new opportunities to connect the data.
			* US EPA - GHG Parent company name comes from another dataset in the Flight modul
* Connection of GHG and other pollutant data
	+ In many prtr/s pollutant releases are separately registered from GHG releases. A great challenge is, if facilities have different ghg and pollutant release facility identifiers
		- GOOD EXAMPLE: EU PRTR - point source GHG is integrated in the EPRTR
		- BAD EXAMPLE: US - GHG is a different dataset in flight and GHGRPID can not be perfectly matched with FRSID if facilities are not at the same place. Hence, for some companies FRSID is missing in the GHG

To increase the precision of the footprint calculations we draw distinctions between sub-compartments ( urban/rural air). For the distinction, areas where population density was below 150 inhabitants per km2 was classified as rural in our study, and above 150 inhabitants per km2 as urban instead of using legal concepts of cities. The UN and PRTR authorities could consider publishing population density figures along with the pollution information. For Europe, we published our calculations, for the US the EPA publishes datasets on population density, indigenous groups, minorities etc. around pollutant release sites.

* **Good practices and lessons learned on preventing toxic pollution that can result from establishing, enhancing, or integrating Pollution Information Portals.**

Our three studies on (i) the toxicity impacts in Sweden, (ii) on the impact calculations in the European Union, (iii) on biodiversity risk assessment based on the combined locations of plants and natural protected areas, (iv) on the integration of PRTRs (AU, CA, EU, US) could be useful inputs.

**Power of PRTRs**

* They are One stop shops!
* Similarly structured worldwide (in some sense “softly” standardized), but there are still differences (see OECD, list of pollutants, sectors, thresholds….)
* As the OECD showed at the country level, PRTRS can be connected to Environmental Footprint models and calculate impacts, sectoral scores (to select best in class and worst and generate positive peer-group pressure)
* Can be used for scaling-up environmental footrpint assessmen AT THE COMPANY LEVEL OR at REGIONSt!
* PRTR is open source in most jurisdictions (Right to access…), which help the public and private actors to build decisions and services on
* Available at the coordinate level - very important to make sense (house and land buyers, insurers etc.)
* GHG and PRTR could be linked - environment is not only climate
* **Reports, academic studies, and other types of background materials can be attached as an annex to the input.**

**Environmental ranking of European industrial facilities by toxicity and global warming potentials**

We present a methodology to develop the integrated toxicity and climate change risk assessment of Europe based facilities, industries and regions. There is an increasingly important need for large scale sustainability measurement solutions for company reporting with high granularity. In this paper we measure key aspects of Sustainable Development Goals in terms of human, cancer and non-cancer toxicity, ecotoxicity together with global warming impact potentials from point source pollutant releases of more than 10,000 companies and their 33,000 facilities in Europe from 2001 to 2017, by using the European Pollutant Release and Transfer Register. For our assessment, we deploy a scientific consensus model, USEtox for characterizing human and ecotoxicological impacts of chemicals and the global warming potential values from the Intergovernmental Panel on Climate Change. We discuss water and air emissions of dozens of pollutants in urban, rural, coastal and inland areas. Companies in the electricity production sector are estimated to have the largest human toxicity impact potential (46% of total) and the largest global warming impact potential (50%), while companies in the sewerage sector have the largest ecotoxicity impact potential (50%). In the overall economy, the correlation between facilities’ global warming and toxicity impact potentials is positive, however, not very strong. Therefore, we argue that carbon footprint of industrial organizations can be only used as a climate change risk indicator, but not as an overall environmental performance indicator. We confirm impact potentials of major pollutants in previous research papers (Hg accounting for 76% of the total human toxicity and Zn accounting for 68% of total ecotoxicity), although we draw the attention to the limitations of USEtox in case of metals. From 2001 to 2017 total human toxicity dropped by 28%, although the downward trend reversed in 2016. Ecotoxicity and global warming impact potentials remained unchanged in the same period. Finally, we show that the European pollutant release monitoring data quality could be further improved, as only three quarters of the toxic releases are measured in the Member States of the European Union, and a high share of toxic pollutant releases are only estimated in some countries. Of the measured or calculated toxic releases, only one third is reported according to the most robust CEN/ISO standards and about one fifth according to the least preferred other methods, like engineering judgements.

<https://www.nature.com/articles/s41598-022-25750-w>

**Application of North European characterisation factors, population density and distance-to-coast grid data for refreshing the Swedish human toxicity and ecotoxicity footprint analysis**

<https://www.sciencedirect.com/science/article/pii/S0195925521001360>

Here, we develop further the national [chemical footprint](https://www.sciencedirect.com/topics/engineering/chemical-footprint) assessment methods using Sweden as an example to enhance the precision of calculations. First, we integrate grid data on population density and distance-to-seacoast into the analytical framework to better match the European Pollutant Release and Transfer Register on the sub-compartment level with USEtox toxicity characterisation factors. Second, we use the latest USEtox 2.12 model version and its more punctual North European characterisation factors. Third, we conduct trend and geographic analysis and rank Swedish facilities in terms of toxicity potential. We show that total [human toxicity potential](https://www.sciencedirect.com/topics/engineering/human-toxicity-potential) in Sweden was smaller than previously estimated when using the North European USEtox landscape settings and sloped downwards over time. We confirm toxicity potential of major pollutants in previous research papers (Zn, Hg, Pb, Ni) and find that Hg’s relative human toxicity potential in a longer period can be larger than previously estimated on shorter periods. Human toxicity is estimated to be mostly non-cancer type in Sweden. Results are largely invariant to the choice of air sub-compartments. Companies in the metals [manufacturing sector](https://www.sciencedirect.com/topics/social-sciences/manufacturing-sector) are estimated to have the largest human toxicity potential in Sweden in the period between 2001 and 2017 and companies in the paper [manufacturing industry](https://www.sciencedirect.com/topics/social-sciences/manufacturing-industry) have the largest [ecotoxicity](https://www.sciencedirect.com/topics/engineering/ecotoxicity-potential)

**Developing indicators to measure biodiversity risk exposure of Natura2000 parks to industrial pollution forthcoming**

(Attached) Presented at JRC susfin summer school, Drezden Sustainable Chemistry Elsevier Conference, Ljubljana University

While every protected natural park can be exposed to pollution, some may suffer more. We develop methods to analyze their biodiversity risks from industrial sites around Europe. This study is novel as it is the first attempt at linking the European Pollutant Release and Transfer database to the geographic data of Natura 2000 parks. Furthermore, we applied the improved characterization factors in the Environmental Footprint database published by the European Commission. The proximity of largest industrial facilities to Natura 2000 parks, which is the largest network of protected areas in the world, can affect biodiversity risks in Europe and globally. We quantify hazards in the recent past and at the Natura 2000 park level. We find that natural parks in Benelux states, Ruhr area of Germany, in Northern Italy and in countries in Central and Eastern Europe have been strongly exposed to eutrophication and biodiversity risks and about 2\% of facilities are located in Natura 200 parks and 4\% less than 100 meters away. All this calls for improved monitoring and respective prevention measures in some key regions of Europe along with international biodiversity loss mitigation efforts.



## [International Review of Financial Analysis](https://www.sciencedirect.com/journal/international-review-of-financial-analysis)

[Volume 83](https://www.sciencedirect.com/journal/international-review-of-financial-analysis/vol/83/suppl/C), October 2022, 102308

# Take it with a pinch of salt—ESG rating of stocks and stock indices[☆](https://www.sciencedirect.com/science/article/pii/S1057521922002629#aep-article-footnote-id1)

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Szilárd Erhart 1

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## Highlights

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Low correlation of E, S and G scores is a barrier to ESG investments.
* •
Uncertainty of ESG ratings is related primarily to the choice of ESG rating provider.
* •
Best-in-class investment rules could be built on ESG scores of Sustainalytics and Refinitiv.
* •
Exchanges in the European Union provide good ESG investment opportunities in international comparison.

## Abstract

This paper investigates the environmental, social, and governance (ESG) ratings of 20 leading stock exchange indices by analyzing and aggregating ratings of underlying stocks. ESG ratings are increasingly important inputs to sustainable investments in the European Union and United States with the phasing-in disclosure regulations. We find that ratings from two different rating providers (Sustainalytics and Refinitiv) for the same listed stocks are only weakly correlated, even if the scaling differences of the ratings are adjusted. [Monte Carlo simulations](https://www.sciencedirect.com/topics/economics-econometrics-and-finance/monte-carlo-simulation) are conducted to estimate how the choice of major ESG rating inputs (i) aggregation formula, (ii) weighting scheme and (iii) data provider influence the uncertainty of ratings and thus indirectly the sustainable investment process. The simulations reveal that the uncertainty is primarily related to choice of the ESG rating provider. We found that the popular best-in-class portfolio selection could be built on ESG scores. In lower segments of the ESG asset universe, investment selection becomes more challenging due to the increasing uncertainty of ratings. Finally, the paper shows that exchanges in the European Union provide relatively good ESG investment opportunities in international comparison.

**Climate Change Transition and Physical Risks of Industrial Companies in Australia, Canada, the European Union and the United States
Szila ́rd Erhart**1,\***, Sa ́ndor Szabo ́**2**, and Korne ́l Erhart**3

forthcoming

1Joint Research Centre, European Commission, Ispra, https://orcid.org/0000-0002-0550-895X 2Joint Research Centre, European Commission, Ispra
3Independent IT software engineer
\*szilard.erhart@ec.europa.eu

**ABSTRACT**

We present a methodology to develop the integrated climate change transition and physical risk assessment of industrial plants in Europe, Northern America and Australia. There is an increasingly important need for effective large scale climate change risk assessment solutions with more governments aligning their company reporting regulations with the Task Force on Climate-related Financial Disclosures recommendations. In this paper we measure key aspects of climate change risks of industrial firms on the globe and vice-versa. The study provides valuable insights into climate risk exposure for companies, investors, and consumers, offering a pioneering approach by integrating data from major international registers. We analyse data from 70,000 plants, which report to fragmented Pollutant Release and Transfer Registers and Greenhouse Gas Reporting Programs. For our assessment, transition risks are measured in terms of reported greenhouse gas emissions, while physical risks calculated for all company plant locations in terms of historical cooling energy needs, flood exposure and photovoltaic power potential. We show that climate change transition and physical risks are not correlated, therefore there are no winners and losers of climate change in general. The research contributes to the evolving landscape of climate risk management and highlights the need for standardized methodologies in the face of impending regulatory changes.

1. <https://www.ohchr.org/en/calls-for-input/2024/call-inputs-pollution-information-portals-and-right-know-strengthening-access> [↑](#footnote-ref-0)