A global analysis of multinational corporations' role in environmental conflicts

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1. Abstract

Multinational corporations are being confronted by activists and scholars over their increasing involvement in environmental conflicts and human rights violations. In response, many multinational corporations engage in human rights and ESG voluntary initiatives to bolster their public image. This relates to disputed economic theories which assert that foreign direct investment allows multinational companies to contribute to economic growth, human rights and environmental wellbeing in so-called developing countries. Here, I provide the largest statistical analysis on the role of multinational corporations in environmental conflicts based on data from the Global Atlas of Environmental Justice including more than 3000 environmental conflicts and 5000 companies. I show how multinational corporations, overwhelmingly domiciled in the Global North, are involved in environmental conflicts in the Global South. Environmental conflicts with the presence of foreign companies show more socioeconomic impacts and worse outcomes than cases without foreign companies, and disproportionately involve commodities with biophysical properties ideally suited to facilitate socio-ecological cost shifting. I conclude that multinational corporations are key actors driving ecologically unequal exchange through foreign direct investment. My results cast doubt on the validity of human rights benchmarks and ESG scores that marginalise the experiences of environmental defenders and legitimise corporate sustainability narratives, and call for scholars to centre the lived realities of those resisting corporate extractivism to evaluate the socio-ecological performance of firms.

Key words: Foreign Direct Investment, international trade, ecologically unequal exchange, environmental conflict, UN Global Compact, ESG

2. Introduction

Environmental justice organisations and scholars are increasingly scrutinising the role of large multinational corporations (MNCs) in exacerbating global inequalities and driving environmental degradation (Giuliani & Macchi, 2014; Anand, 2017; Chittor & He, 2023; Martínez-Alier, 2023a). The exponential globalisation of economic flows in the last centuries is linked with the expansion of ecologically unequal exchange, whereby energy and materials are concentrated in the Global North while the socio-ecological costs of extraction are shifted towards the Global South (Muradian & Martinez-Alier, 2001; Dorninger *et al.,* 2021; Hickel *et al.,* 2022). Available data shows that about 50% of US imports happen inside firms (Lakatos & Ohnsorge, 2017), supporting the view that MNCs are key actors and agents of cost-shifting and ecologically unequal exchange. MNCs, most of them domiciled in the Global North, cost-shift and drive ecologically unequal exchange when they establish their extractive operations in the jurisdictions with the highest natural resource value and the lowest labour and environmental standards, generally in the Global South.

This turns our attention to the phenomenon of Foreign Direct Investment (FDI), whereby firms seek investment in foreign countries looking for cheap labour to exploit and accessible natural resources to extract. In management and orthodox economic jargon, MNCs undergo FDI in the pursuit of "comparative advantages" (Buckley & Casson, 1976). Global Foreign Direct Investment (FDI) stood at $1.3 trillion in 2022, down from $1.8 trillion in 2007 (UNCTAD, 2008, 2023). Outward FDI flows are dominated by so-called developed countries with 69% of outflows in 2022, down from 87% in 2007. This decline is largely due to the increase of outflows from China (including Hong Kong) from $90 billion (5% of global) in 2007 to $250 billion (17%) in 2022. And while in 2007 net FDI inflows to developing countries accounted for 14% ($247 billion) of total inward FDI, in 2022 the figure had increased to 35% ($457 billion), also primarily driven by an increase of China's inward FDI. Extractive and manufacturing industries comprise 44% of greenfield FDI in 2022, down from 51% in 2013-14 (UNCTAD, 2015). At a local level, this means thousands of new mines, logging operations, oil wells, airports, harbours, roads, pipelines and factories with socio-ecological impacts on local environments and ways of life, mostly across the Global South.

In response, environmental conflicts unfold with environmental defenders organising and resisting against MNCs and calling for systemic socioeconomic change. Faced with increasing pressure on their public image and social licence to operate, MNCs are adopting discourses that display a concern for environmental and human rights and boast of corporate ethical practices (McPhail & Adams, 2016). In turn, international organisations are proposing ESG[1] standards, initiatives and protocols with the aim of mitigating socio-ecological impacts and curbing concerns on the human rights violations of MNCs (Tashman *et al.,* 2022). Generally, MNCs are joining voluntary initiatives with questionable enforcement arrangements (King *et al.,* 2011). Similarly to the critique of human rights and ESG benchmarks, voluntary initiatives are largely focused on self-reporting and transparency which systematically exclude the voices of communities affected by corporate operations (Maher, 2020). Such non-binding initiatives provide MNCs with positive communication opportunities in consumer societies while offering questionable socio-ecological improvement to extractive operations (Aragón-Correa *et al.*, 2020). A paradigmatic example is the UN Global Compact initiative (UNGC, Fussler *et al.,* 2017). Critics contend that while the UNGC "bluewashes" the image of MNCs, it does not lead to better outcomes in the lived experiences of those at the receiving end of human rights violations and environmental injustice (Berliner & Prakash, 2015). In this vein, voluntary initiatives serve the purpose of cementing the power of MNCs while further marginalising the realities of those living in the frontlines of corporate extractivism (Banerjee, 2008).

With this study, I seek to theoretically and empirically highlight the realities of environmental defenders in the study of corporate environmental and human rights performance at a global scale. An opportunity to close this knowledge gap arises from the Global Atlas of Environmental Justice database (EJAtlas), which so far has collected information on nearly 4,000 environmental conflicts and more than 5,000 individual companies globally (Temper *et al.,* 2015, 2018). The EJAtlas has collected such wealth of data from the "ground-up" through a distributed network of researchers, students, activists and journalists contributing knowledge on environmental conflicts worldwide in a systematised form (Temper *et al.,* 2015). Methodologically, I use a statistical political ecology approach that has recently opened new avenues of inquiry on global and regional trends over environmental conflicts (Scheidel *et al.,* 2020; 2023; Temper *et al.,* 2020; Tran & Hanacek, 2023; Bontempi *et al.,* 2023a).

Recent laudable examples of studies critically scrutinising corporate misbehaviour from the perspective of environmental defenders can be cited at the case study and regional level (Brock & Dunlap, 2018; Berenschot *et al.,* 2022). Yet, to the best of my knowledge, I conduct the largest empirical analysis of MNCs' conflictive projects to critically assess their contribution to global inequalities and socio-ecological degradation. This study continues the line of an incipient

[1] Environmental, Social and Governance

business ecological economics field in applying the principles of ecological economics, political ecology and environmental justice to the analysis and study of corporations (Boele *et al.,* 2001; Pellegrini *et al.,* 2020; Saes *et al.,* 2021; Bontempi *et al.,* 2023b; Llavero-Pasquina *et al.,* 2023; Del Bene *et al.,* this issue?). In particular I address three questions. First, are MNCs more conflictive than domestic corporations? Second, where are MNCs from and where are they involved in environmental conflict? Third, do environmental conflicts with MNCs lead to more impacts and worse outcomes than conflicts with only domestic corporations?

I find that only 96 "superconflictive" companies (2% of the sample), mostly MNCs, are involved in a third of conflicts analysed. Furthermore, conflictive MNCs in my analysis are disproportionately domiciled in the Global North, while their projects are mostly found in the Global South mirroring global trends of socio-ecological cost-shifting and ecologically unequal exchange. Despite the adoption of global standards on environmental and human rights such as the UNGC, the conflicts with foreign MNCs in the EJAtlas database have more environmental, health and socioeconomic impacts than those of domestic companies. Additionally, projects with foreign capital are disproportionately resisted by Indigenous Peoples and racially marginalised actors, hinting that FDI projects disproportionately impact Indigenous and racialized minorities. Finally, the analysed projects that involve foreign MNCs are more likely to lead to worse outcomes and perceived environmental injustice.

The rest of the article is structured as follows: first, I open with a theoretical analysis of the relationship between foreign direct investment, socio-ecological cost-shifting and ecologically unequal exchange. Next, I describe the data source, structure, limitations and the statistical methods used to analyse it. Then I review the results in the light of the three questions addressed by the study, and I close with a discussion and conclusion.

3. Foreign Direct Investment, cost shifting and ecologically unequal exchange

Early influential models by International Monetary Fund economists highlighted how foreign direct investment (FDI) from multinational corporations (MNCs) contributed to technological development and economic growth in "backward countries" (Borensztein *et al.,* 1998:1). In a quest to boost economic development, countries have uncritically transposed an agenda of FDI incentives to public policy in their jurisdictions. This involves liberalisation policies (Shah & Khan, 2016), fiscal and financial incentives, Free Trade Agreements (FTAs) (Medvedev, 2012), and Investor-State Dispute Settlement (ISDS) (Pellegrini *et al.,* 2020) that have contributed to the globalisation of economic flows. The modern origin of these policies can be found in the

post WWII global economic architecture, institutionalised in the creation of the World Bank (1944) and International Monetary Fund (1945), and most paradigmatically the Global Agreement on Trade and Tariffs (1947), predecessor of the World Trade Organisation (1995). These institutions cemented a neoliberal world order that suited well the interests of industrial nations allowing for the offshoring of socio-ecological impacts (Escobar, 2011; Ruggie, 2020).

However, after decades of intense research on the field, analysis on FDI continues staunchly focused on the GDP outputs of the host country and the comparative advantages from the perspective of MNCs and largely ignores the socio-metabolic aspects and socio-ecological impacts in the host countries and local communities (Dunning & Lundan, 2008; Paul & Feliciano-Cestero, 2021). Most studies on the environmental burdens of FDI are uncritical analyses that show mixed inconclusive results (Cole *et al.,* 2017, Aust *et al.,* 2020). These generally refute the *pollution haven hypothesis* suggesting that foreign companies are more environmentally respectful than domestic ones given their access to newer more efficient technologies, more capacity to develop R&D and staff training, higher adoption of environmental management practices and certifications such as ISO14001, and more stringent environmental regulations from home and market countries (Cole *et al.,* 2017).

However, all these are *ex ante, a priori* hypotheses that show disregard for the lived experiences of the people shouldering the burden of MNCs operations. This is a typical western-centric approach that is characterised by a neoclassical economic paradigm based on the three pillars of efficiency, quantification and standardisation (Cole *et al.,* 2017, Jahanger *et al.,* 2022), which I now address in turn. While environmental efficiency matters for governments and companies primarily focused on GDP growth and investment return, what matters for affected local communities are the absolute socio-ecological impacts perceived through disruptions on their landscape, health and ways of life. So even if FDI can contribute to the technological diffusion of environmental efficiency, it invariably leads to an increase of economic output inherently coupled with an increase in energy and material metabolism that leads to greater socio-ecological pressures and environmental conflicts (Caetano *et al.*, 2022; Martínez-Alier *et al.,* 2010) - a particular political ecology version of the Jevons paradox (Giampetro & Mayumi, 2018).

Next, the doctrine of quantification is grounded on a positivist western ontology that serves the interest of commodification and marketisation of ever more aspects of life: for only what can be counted can be marketed. This axiom also applies to environmental amenities and burdens, or so called “ecosystem services” (Kosoy & Corbera, 2010). Most studies on the FDI-environment nexus focus on calculating environmental burdens in terms of CO2 (Blanco *et al.,* 2013; Omri *et al.,* 2014; Zhang & Zhou, 2016, among many others) which has a basis on empiricism, but also is

connected with the marketisation of carbon and the establishment of conflictive offset markets with severe socio-ecological impacts and contested climate efficacy (Cavanagh & Benjaminsen, 2014; Dunlap & Fairhead, 2014; West *et al.,* 2020). In contrast, local communities facing the operations of MNCs are generally concerned with local socio-ecological impacts on landscape, health and ways of life expressed in plural values, in addition to the global grievances for the contribution to the climate crisis, as extensively and globally documented in the EJAtlas (Martínez-Alier, 2023b).

Finally, in recent decades there has been a burgeoning and expanding corporate adoption of all sorts of human rights and ESG voluntary standards, certifications and benchmarks, a trend especially pronounced in large MNCs (Berliner & Prakash, 2015; Maher, 2020). These voluntary schemes have been theorised to work as a preemptive mechanism to avoid government regulation and as a public relations exercise to counter legitimate environmental concerns (Sherman, 2020). I do not question that these voluntary initiatives have positive effects for companies' competitiveness (Kramer & Porter, 2011), but dispute that they have a positive material effect on the lived realities of the communities affected by MNCs operations. Voluntary standardisation is grounded on an orthodox focus on reporting and due diligence under the assumption that the optimisation of information flows will lead to a more efficient market and the internalisation of human rights and environmental impacts in trade decisions.

Chiefly among voluntary standards, is the UN Global Compact (UNGC)[2] with more than 23,000 companies signed up (Fussler *et al.,* 2017), including some of the worst environmental offenders as documented in the EJAtlas. The 10 UNGC principles partly transpose the UN Guiding Principles on Business and Human Rights (UNGPs; UN Human Rights Council, 2011), which were specifically produced in a protracted process in response to concerns over the human rights and socio-ecological impacts of MNCs operations in an increasingly globalised economy (Sherman, 2020)[3]. In line with previous criticisms of corporate “bluewashing” with the UN Global Compact (Berliner & Prakash, 2015; Seele, 2007; Macellari *et al.,* 2021), my empirical analysis criticises the framework offered by voluntary ESG and human rights standards to scrutinise the role of MNCs on environmental conflicts.

Despite a booming adoption of voluntary standards, companies continue to be captured by the profit imperative and the physical logic of extractivism in the current global economic architecture - even if they subscribe to the thesis of the corporate stakeholder paradigm, widely adopted by MNCs (Freeman, 1984). All voluntary standards are thus trapped in an irreconcilable

[2] https://unglobalcompact.org/

[3] The OECD’s Guidelines for Multinational Enterprises (OECD, 2023), another widely reviewed initiative, is also partially based on the UNGPs.

tension between ambition and adoption. If a voluntary standard is stringent enough to provide significant mitigation to socio-ecological impacts and monitor against obligation shirking (Berliner & Prakash, 2015), it will likely hamper corporate profits (as it prevents cost-shifting), and thus companies will have a strong incentive not to adopt them (Tashman *et al.,* 2022). If voluntary initiatives prioritise the adoption of the standard by a large number of companies, stringency and/or enforcement are sacrificed. Thus, there are no real improvements on the lived experiences of communities in the frontline of MNCs operations when their interests clash with the profit imperative. As long as the corporate profit imperative is not challenged, no amount of voluntary standards, government regulation, and technological environmental efficiency will take human and environmental rights out of their ancillary business consideration. In sum, the adoption of voluntary initiatives hinges on the neoclassical assumption that environmental and social impacts are market-failures (externalities) that nonetheless can be self-regulated by companies and internalised by a combination of quantification, transparent reporting and market mechanisms.

In contrast to a neoclassical approach that treats the economy as a narrowly defined closed system, ecological economics observes that the economy is a subsystem of social and natural systems, and it is ultimately governed by sociopolitical dynamics and the laws of nature (Daly & Farley, 2011). And so what neoclassical economists define as "externalities" and "market failures", ecological economists define as integral components of a world economy which operates as a cost-shifting system that exports socio-ecological impacts from economic cores to the world peripheries (Kapp, 1950; Martinez-Alier, 2012; Hopkins and Wallerstein, 1994; Hornborg, 1998). In this vein, cost-shifting is defined by asymmetric power relationships between world regions as MNCs from the Global North encroach on the countries of the Global South with lower geopolitical power to oppose their socio-ecologically burdening activities. The liberalisation of global trade to incentivise FDI increases the capacity of MNCs to exploit ever more socio-ecological cost-shifting opportunities (Muradian & Martínez-Alier, 2001). When aggregating cost-shifts globally, a picture of ecologically unequal exchange appears where there is a net export of energy, materials, embodied land and labour from the Global South to the Global North, while impacts such as land degradation, water and air pollution, health deterioration, etc are left in the Global South (Dorninger, 2021; Hickel *et al.*, 2022). Empirically, a study on FDI exceptionally grounded on ecological economics principles has found evidence of a direct correlation between FDI and ecologically unequal exchange (Doytch, 2020). Doytch shows how FDI increases production-based ecological footprints in middle and low income countries (*pollution haven hypothesis*), while FDI increases consumption-based ecological footprints in high income countries. It similarly shows how FDI in high income countries reduces the production ecological footprint (*ecological halo/spillover hypothesis*), while in middle income countries FDI increases the ecological footprint of their exports. Doytch findings

corroborate earlier hypotheses on the effects of free trade on ecologically unequal exchange (Muradian & Martínez-Alier, 2001).

The adoption of free trade agreements (FTAs) and other FDI incentives has allowed the continued expansion and diversification of the material basis of core economies through ecologically unequal exchange while delaying and geographically displacing the effects of the second contradiction of capitalism (O'Connor, 1988, 1991; Muradian & Martínez-Alier, 2001; Bieler & Morton, 2016). Environmental justice organisations and defenders, chiefly from the Global South, consequently diagnose that FTAs are a condition of possibility for the accelerated exploitation of their territories and ways of life. The global environmental justice movement thus challenges FTAs, ISDS and other trade liberalisation policies as they "entrench the power of multinational corporations and enable the expansion of an uneven, extractive, capitalist economy that is ecologically destructive and produces drastic inequalities in wealth alongside poverty and precarity" (Dehm, 2022: 102; Pellegrini *et al.,* 2020; Yasin, 2023). At a local level, the negative impacts of extraction are politically resisted by local environmental justice groups leading to environmental conflicts. This heterogeneous assemblage of international and local resistances is what constitutes the global fight for an alternative economic architecture, away from the universalising developmental paradigm and towards a local-based, life-centred pluriversal degrowth paradigm (Martinez-Alier *et al.,* 2016, Akbulut *et al.,* 2019; Demaria *et al.,* 2023).

At an empirical level, I contend that the vast majority of scholarship on FDI has failed to properly account for the socio-ecological impacts of MNCs operations due to an ontologically and methodologically flawed approach. Existing methodologies applied to FDI are largely based on top-down assessments that take the perspective of MNCs and governments, and assume developmentalist postulates that so-called under-developed countries ("backward countries" in the words of Borensztein *et al.* (1998:1)) need to catch up and adopt the path of self-called developed countries (Mathews, 2006). This uncritical line of argumentation supports the ongoing encroachment of the western utilitarian ontology on *othered* epistemic systems around the world (Escobar, 2007). This universalising ontological project is part and parcel of the expansion of commodity extraction and waste disposal frontiers throughout the Global South and is resisted by Indigenous Peoples, local communities and environmental justice movements as a direct threat to their ways of life. In this sense struggles for environmental justice are inherently "ontological struggles" (Escobar, 2019).

I propose an alternative approach to the study of corporate socio-ecological performance grounded in the principles of environmental justice, post-development, degrowth and the pluriverse (Demaria *et al.,* 2023). Therefore, with this study I counterfactually dispute the

benefits of FDI by MNCs claimed by most of the existing literature. In contrast to neoclassical economic paradigms, I ground my analysis on ecological economics. Against a focus on economic growth and competitive advantage, I centre the lived experiences of those resisting MNCs operations and its impacts on their territories, bodies and ways of life. And as opposed to top-down, western-centric, empirical approaches I adopt a bottom-up approach learning from the knowledge contained in the EJAtlas and much other work on political ecology from those resisting socio-ecological abuses (Temper *et al.,* 2015, 2018).

4. Methodology

4.1. Data source and limitations

All data analysed for this study has been retrieved from the Global Atlas of Environmental Justice (EJAtlas) on the 10th of February of 2023. The EJAtlas represents the largest database of environmental conflicts available worldwide with 3769 entries at the time of data collection. A global network of collaborators composed of researchers, students and activists enters data to the EJAtlas using a data form combining free text descriptions, quantitative variables and coded categorical variables. This network of collaborators allows the EJAtlas to better reflect the local experiences of communities involved in environmental justice conflicts. All data contained in the EJAtlas is based on secondary research and all significant claims are duly referenced to their original source. A central team of moderators ensures all published conflicts fulfil standards of quality and have a coherent research approach (Temper *et al.,* 2015, 2018). The EJAtlas unit of analysis, data collection and documentation has been described in great detail in recent works (Scheidel *et al.,* 2020, 2023).

The strengths brought by the EJAtlas methodology come with some limitations. These should be taken in consideration and mitigated to the extent possible before undertaking any large-scale analysis of the dataset. A full disclosure of limitations and mitigation measures is explained in Supplementary Methods. Most saliently, the data should be analysed considering the EJAtlas is a convenience sample of a universe of environmental conflicts. The absence of an entry does not necessarily mean the absence of conflict. Mostly due to research interests, organisational networks, language barriers, and restrictions on political and media rights, the EJAtlas global coverage is biassed towards some specific world regions, and to some extent to some conflict categories. Additionally, the EJAtlas database should be analysed as an archive, the conflicts represent static pictures of conflicts, which are essentially a sequence of historical events. These limitations would apply to many other existing datasets, so acknowledging them is a transparent effort to find mitigation measures and contextualise the analysis. Understanding the limitations allows for the rigorous use of the largest and most comprehensive data repository on environmental justice conflicts to date.

Most specifically for this study, the EJAtlas does not systematically document the level of involvement of a company in a conflict. There is no distinction between a contractor and a majority stakeholder. In a similar way, the EJAtlas does not systematically attribute specific impacts or outcomes to specific companies. However, any company listed in an EJAtlas entry has played a significant role in that conflict, so one can consider it has had some level of leverage. And if it has not had any leverage, it still freely chose to get and remain involved in a given project despite its risks. According to UNGP 19, companies should use their leverage to mitigate adverse impacts and face the consequences of their involvement (UNGPs, 2011). Finally, the EJAtlas company's database includes several redundancies that need to be dealt with before being able to extract a consolidated dataset. In the original dataset, some companies have duplicated entries with slightly different spelling. Additionally, some entries corresponding to subsidiaries are not duly linked to their parent companies. And, since EJAtlas conflicts represent a static image of a conflict, company name changes, mergers and acquisitions result in duplicated entries for a single extant company. All these redundancies have been dealt with using a data curation methodology explained in the next subsection.

4.2. Data curation

The data has been handled with R version 4.2.3 and RStudio version 2023.03.0+386. The scripts are duly documented and provided in the Data Availability section. I designed a code to assist in the manual consolidation of company duplicates, name changes, mergers, acquisitions and subsidiaries in a single company entry. The method was designed with the priority of reducing false positives to nearly zero, i.e. the consolidation of two distinct companies. For a detailed description of the consolidation method, see Supplementary Methods. An initial sample with 6723 company entries was consolidated into a dataset of 5892 entries (12.4% reduction). All company duplicates, name changes, subsidiaries, mergers and acquisitions identified in the former database were now unified in a single entry. Each consolidated company entry had one or more corresponding original entries (including holding company, duplicates, subsidiaries, etc). The original entry involved in most conflicts gave the name to the consolidated entry. And the consolidated country of origin was assigned as the country of origin originally reported in most of the conflicts for each consolidated company. Company entries that had no original country domiciliation data were removed (819).

The conflicts data table was also filtered to ensure consistency. First, given the object of this study is the involvement of MNCs in environmental conflicts all conflicts without any company documented were removed (563 conflicts). Second, all conflicts started prior to 1947 were removed (46 conflicts). It was considered that these conflicts were not relevant to the current

research question given that in 1947 the Global Agreement on Trade and tariffs was agreed, marking an event that institutionalised a globalised economic model based on free trade ideals. Finally, all conflicts with the only involvement of companies without country of origin assigned were also removed (119), leaving a final sample of 3041 conflicts (19.3% reduction).

4.3. Data categorisation

Based on the consolidated company data table, an income group, a sectoral category and a total number of conflicts was assigned to each firm. The income group was assigned based on the country of origin according to the World Bank classification[4], merging the lower-middle and low income groups into "low income", renaming the upper-middle income to "middle income", and giving a unique category to China. The sectoral category was assigned to each company based on the 10 existing, mutually exclusive EJAtlas categories (Mining, Fossil Fuels and Energy, Biomass and Land, Water Management, Infrastructures, Industrial and Utilities, Waste Management, Tourism Recreation, Nuclear, and Biodiversity Conservation). If a company was involved in several conflicts classified across different sectors, the category in which most of the conflicts were reported was used to categorise the company. Next, companies were categorised as "multinational" if any of the conflicts in which they were reported to be involved was located in a country different from their own country of origin (n = 1732, 34% of the sample). These companies are labelled as MNCs from here onwards. Finally, companies were classified in 5 categories depending on the number of conflicts they were involved in (1, 2 to 4, 5 to 7, 8 to 30 and more than 30). All companies involved in more than 7 conflicts (n = 96) were labelled "superconflictive" and are listed in Table S1. Each superconflictive company was searched in the UN Global Compact online repository[5] to determine whether it had advanced or active status in its latest reporting period, it had been delisted, or it had never participated in the initiative.

4.4. Data analysis

The EJAtlas systematically documents certain information in the form of codes. These are grouped in a range of categories including impacts, actors mobilised, outcomes, commodities, project status and success for environmental justice from the perspective of environmental defenders. A set of definitions of these codes can be accessed in the EJAtlas website.[6] The frequency of different EJAtlas coded categories was compared using Pearson Chi-squared tests of Independence with significance level of 0.05 between conflicts with or without foreign

[4] https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups
[5] https://unglobalcompact.org/what-is-gc/participants
[6] https://ejatlas.org/backoffice/cms/en/definitions/

companies involved. The null hypothesis was that the observed distribution of codes was equal to an expected ratio equivalent to the overall ratio between conflicts with and without MNCs. The result of the Chi-squared tests was plotted as a colour-coded distribution for each specific category contrasted with a line showing the expected ratio. The total number of reports for each category are clearly indicated for each statistical test. The original plots and tables including p-values for each test are provided in the repository associated to this study[7].

5. Results

5.1. Less than hundred companies concentrate a third of conflicts analysed

Only the 96 companies with the most reports in the EJAtlas, most of them MNCs, are involved in a third (34%) of all conflicts analysed (Figure 1a). I label these as "superconflictive companies". They represent 1.9% of all company registries and are involved in at least 7 conflicts each (see full list in Table S1). The 987 (19.5%) companies involved in more than one conflict are linked to two thirds (64%) of the conflicts. The remaining third of conflicts only has the involvement of companies linked to a single case (4086, 80.5%). Only 28% of companies involved in a single conflict are MNCs, while 92% of the superconflictive companies are MNCs. Two-thirds (64/96) of the superconflictive companies participate in the UN Global Compact (Figure 1b; Table S1). The majority (39) have an advanced reporting status, while another 25 have an active status. Out of the 32 companies that do not currently participate, 6 had previously done so, but have since been delisted. Finally, superconflicitve companies are dominated by companies in the fossil fuels and power (39), mining (21), and hydroelectric sectors (19) (Table S1).

To better understand recurrent economic activities of MNCs in foreign countries, I compare the commodities assigned to each conflict depending on whether foreign MNCs are involved. I observe that commodities overrepresented in conflicts with foreign MNCs involvement can be generally categorised in three groups: industrial plantation agriculture (corn, rice and soy), copper and mining preciosities (diamonds, gold, silver, rare metals), and oil and gas (Figure 1c). I can also see that commodities that cannot be transported (land, tourism services, and biological resources[8]) and waste have significantly less involvement of foreign MNCs. Unlike solid waste,

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[7] https://github.com/llavero-pasquina/A-global-analysis-of-multinational-corporations-role-in-environmental-conflicts

[8] Biological resources is a rather general code that is selected in an heterogeneous sample of conflicts and should be analysed with caution. In some cases it indicates that biological resources used for place-based livelihoods and traditions are being impacted by urban, industrial or extractive developments. In other cases it involves conservation projects about a particular species or ecosystem, which also has a strong place attachment. A few

carbon offsets - understood as waste disposal linked to fossil fuel combustion - are traded in an intangible financial market and are overrepresented in conflicts with foreign companies. This may also be linked to the involvement of multinational fossil fuel companies which are frequent participants in voluntary carbon markets. Interestingly, coal is mostly present in conflicts without foreign MNCs (Figure 1d).

Figure 1. General characteristics of multinational companies in the EJAtlas and the environmental conflicts they are involved in. a) *Distribution of companies by number of conflicts reported coloured by whether they have conflicts overseas (yellow) or not (blue). The number of companies in each category is given in brackets. Total n = 5073. For each category, the contiguous bar represents the number of unique conflicts with involvement from companies in the given category or higher.* ***b)*** *Representation of 96 superconflictive companies involved in more than 7 conflicts each, coloured by their adoption level of UN Global Compact and shadowed according to their sector* ***c)*** *Bar charts comparing conflicts with (yellow) or without (blue) foreign MNCs for different commodity codes. The vertical lines indicate the expected ratio*

other cases involve genetic resources, such as cases of biopiracy, GMO or seed conflicts, which would not have a particular place attachment.

of conflicts with foreign MNCs (1642/3041). Only (and all) commodities with significant differences are shown (Chi-squared test with Yates continuity correction, confidence value 0.05).

5.2. MNCs from the Global North and China are involved in nearly half of the conflicts studied in the Global South

Next, I was interested to see whether there was a regional distribution of companies and conflicts between high, middle and low income countries and China. I plotted a Sankey diagram to visualise all EJAtlas company involvements in environmental conflicts according to the income levels of the company country of origin and the conflict country of occurrence (Figure 2). In general terms, 32% of the companies involved in EJAtlas conflicts come from a country in another income group (bold colour in Figure 2). Conflicts across income groups generally involve companies from high income countries (76%) and China (15%) having conflicts in middle (37%) and low (59%) income countries. High income and chinese MNCs represented 39% of companies involved in conflicts in middle and low income countries.

I found that companies from high income countries and China were more frequently involved in conflicts in middle and low income countries than in countries in their own group. In contrast, most of the companies from middle (88%) and low (98%) income countries were involved in conflicts in countries of their own income group (88% of them within their own country). Inverting the analysis, I found that only 4% of MNCs involved in conflicts in high income countries were from countries in other income groups. The figure was 10% for China, and climbed to 38% and 45% for Middle and Low income countries respectively. Interestingly, there was little involvement of companies from high-income countries in conflicts occuring in China, and vice versa.

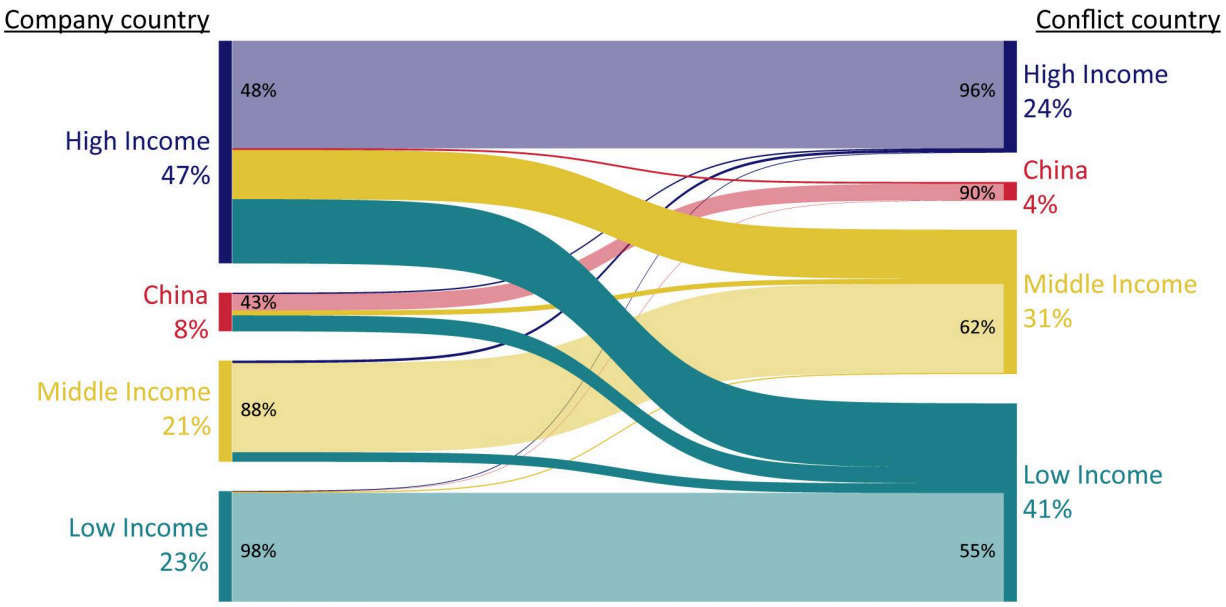

Figure 2. Distribution of companies' involvement in environmental conflict by home and host country income group. *Sankey diagram linking the income groups of companies' countries with the income groups where their environmental conflicts occur. The large percentages indicate the ratio of company involvements by home (left) and host (right) income group (total n = 7672). The small percentages indicate the ratio of involvements respectively to (left) and from (right) the same income group. The same data broken down by geographic region can be found in Figure S1. The values behind this plot can be consulted in Table S2.*

5.3. Conflicts with foreign MNCs lead to more impacts and worse outcomes than conflicts without foreign companies

The next question I addressed is whether conflicts with foreign MNC involvement have more and worse impacts than those without. I did a first overall assessment by adding up and comparing the total counts of visible environmental, health and socioeconomic impacts reported for conflicts with or without foreign companies (Figure 3a). I observed that those conflicts with foreign MNC involvement reported more environmental, health and socioeconomic impacts, with the greatest difference in socioeconomic impacts. Each particular socioeconomic impact apart from "loss of landscape" and "land disposession" is significantly more reported when foreign MNCs are involved. Most starkly, gendered and violent impacts are more prevalent in conflicts with foreign MNCs. A bit less markedly but still significantly, projects by foreign MNCs impact more frequently on livelihoods. Finally, I also observed that conflicts with foreign MNCs have reported more frequent loss of traditional knowledge, cultures and traditions.

This last finding opened the question of whether foreign companies had worse impacts on Indigenous and traditional peoples in particular, and vulnerable and marginalised groups in general. The EJAtlas does not directly document whether a particular group has been impacted, but it records which groups have mobilised against a project. I therefore take the mobilisation of a group as a proxy of a perceived negative impact on their lives, communities, ways of life and territory. I find that Indigenous groups and traditional communities and racially discriminated groups are significantly overrepresented in EJAtlas conflicts with foreign MNC involvement (Figure 3b). I also see an overrepresentation of trade unions and international EJOS in conflicts with the presence of foreign MNCs.

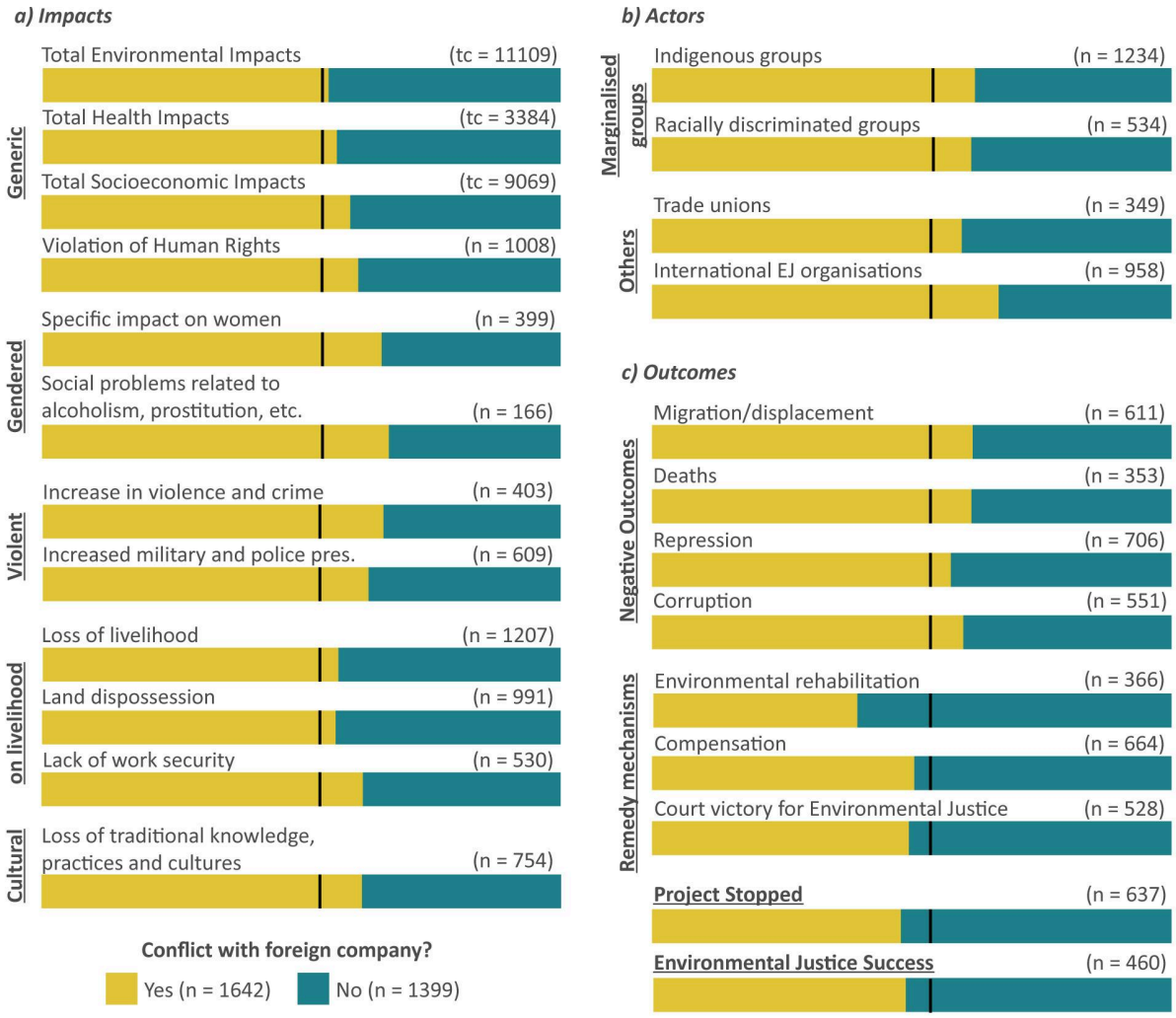

Figure 3. Comparative of impact categories (a), actors mobilised (b), and conflict outcomes (c) between conflicts with (yellow) and without (blue) foreign companies involved. *The comparison of conflicts with and without foreign companies is shown as bar plots showing the observed ratio of reports for each code compared to an overlaid black line with the expected ratio based on the relative abundance of conflicts with foreign MNCs (1642/3041). The total*

count of impacts or actors across all conflicts are given as (tc), and the total number of reports for a given code is given as (n) above each bar. All codes in the figure show significant differences between conflicts with and without foreign companies (Pearson Chi-square test with 0.05 confidence level). All socioeconomic impact codes comparison can be seen in Figure S3, all codes tested can be accessed in the publication associated repository.

Finally, I ask whether the involvement of foreign companies is associated, from the perspective of affected communities, to better or worse outcomes in environmental conflicts recorded in the EJAtlas. I find that overall, negative outcomes such as displacement, environmental defender assassinations, repression and corruption are significantly overrepresented in conflicts with the involvement of foreign companies (Figure 5a). In contrast, outcomes such as compensation, environmental rehabilitation, or a court victory for environmental justice which are regarded as remedy actions by the UNGPs (UNGPs, 2011: 27) are significantly underrepresented in conflicts with the involvement of foreign companies. In general, conflictive projects with foreign company involvement are significantly less likely to be stopped (p-value 0.0005) and less frequently lead to the perception of environmental justice (p-value 0.01).

6. Discussion

Thirty-seven percent (37%) of the 3041 conflicts with company information recorded in the EJAtlas only involve companies associated with a single conflict (4086 companies, 80.5% of all companies studied). This shows it is a plethora of organisations that drive extractive projects around the world, supporting the idea that it is a widely adopted corporate culture selected by a particular model of economic organisation that drives global environmental injustice. Companies operate under the economic growth paradigm, and are bound by the profit imperative. Consistently, they adopt an instrumental valuation of ecological relations where natural resource exploitation needs to be maximised to meet the demand of the growing social metabolism. The corporations in my sample can be privately owned, state-owned or mixed, and I have not tested differences in their behaviour. So while the globalised neoliberal economic order certainly plays a central role, it is the deeper seated growth fixation that drives environmental injustice through increases in social metabolism (Martínez-Alier, 2012).

Additionally, the initial EJAtlas dataset contained 728 cases that did not include company information and were discarded for the current analysis. The lack of data on companies for a significant size of the sample reminds us that many environmental conflicts do not necessarily involve the participation of companies, and extractive operations can be promoted by states, criminal groups, and even NGOs. In some cases it also highlights a lack of research attention or transparency on which are the corporate actors promoting an extractive project. Together, this leads to the conclusion that despite a focus on corporate activity as a leading driver of

environmental conflict, a more holistic approach to the pursuit of environmental justice needs to be adopted. A strong civil society counterpower to corporate abuse, governmental regulation, or even the abolition of private enterprise will not bring an end to environmental injustice. Alongside the particular behaviour of corporations, a growth-oriented extractive socioeconomic system supported by a particularly western, purely transactional and instrumental natural ontology propels environmental conflicts and social inequalities globally (Escobar, 2019).

However, one third (33%) of the conflicts analysed involve one of the 96 superconflictive companies in the EJAtlas dataset (see list in Table S1). The most conflictive eleven companies are involved in 10% of the studied conflicts. Further research will determine whether this concentration is due to firm size, their activity sector, a particular disregard for local communities and the environment, a fixation by environmental justice advocates, or a combination of these. Yet, these results reveal a patron of superconflictive corporations that concentrate a large number of environmental conflicts and thus are very significant drivers of environmental injustice globally. A policy and activism focus on these superconflictive firms is duly placed and can make strides in the consecution of environmental justice.

Ninety two percent (92%) of superconflictive corporations are MNCs. This correlation justifies a focus on MNCs by activists and the focus of the present article. To better characterise the drivers of environmental injustice in conflicts with MNCs I looked at the commodities traded. EJAtlas conflicts with foreign MNCs concern commodities that either have a high monetary value and are scarce (mining preciosities and copper), that are highly energetically dense (oil and gas), or that have large land and water footprints attached (industrial agriculture grains; Figure 1d). In contrast, geographically fixed assets (land, tourism services, biological resources), coal and waste are underrepresented in conflicts with foreign companies involved. The former group of commodities is better suited to maximise cost-shifting and ecologically unequal exchange as they embody large densities of energy, monetary value, land and water in suitable transportable goods (Hickel *et al.,* 2022). More precisely, the geographic distribution analysis of companies' countries of origin and location of conflicts reflects a general pattern of MNCs from the Global North and China being involved in conflicts occurring in the Global South (Figure 2). This trend largely parallels the ecologically unequal exchange flows between country income groups (Dorninger *et al.,* 2021). Taking into account that a significant proportion of global trade is likely to happen within vertically integrated companies (Lakatos & Ohnsorge, 2017), this evidence supports my claim that MNCs are the key actors of ecologically unequal exchange. In this vein, MNCs would be important players in the configuration of a World System with energy and material extraction concentrated in peripheral regions, and consumption concentrated in core regions (Wallerstein, 1974).

The relative lower presence of Chinese companies in the EJAtlas compared with companies from High Income countries, despite their similar population sizes, would in theory hint to a relatively lower contribution towards environmental injustice than corporations from the Global North. However, one should refrain from jumping to conclusions given the regional sampling bias of the EJAtlas, as already discussed in the methodology section. In this vein, it is also noteworthy to contrast the significantly higher amounts of cases in High Income countries compared to China (Figure 2). If anything, the ratio between company involvement and cases is approximately 2:1 for both High Income countries and China. Taken with the very similar percentages of companies involved in overseas conflicts for both groups, this evidence statistically supports the conclusion that China operates as an economic core with very similar dynamics to High Income countries in relation to global environmental injustice relations. A notable difference is that Chinese companies are disproportionately more involved in conflicts in the Low Income country group. This difference may attest to a Chinese geostrategic focus for Low Income countries in their foreign development and primary resource supply policies. Another interesting observation is the relative lack of presence of High Income companies in China, and Chinese companies in High Income countries. This may point to a mutually isolated bipolar economic order where Chinese and Western companies compete for resources in the Global South while keeping their respective home economies largely closed to each others' companies.

Next, I looked at the correlation between the presence of foreign MNCs and different impacts and outcomes in environmental conflicts. Importantly, this analysis does not causatively link the impacts or outcomes of a conflict to the foreign company. Additionally, it is worth stating that given the strong intercorrelations, the conclusions drawn in the current analysis of MNCs would be similar if analysing the conflicts of superconflictive corporations, or if comparing conflicts occuring in the Global North versus the Global South (data not shown). The results show how conflicts with the presence of a foreign company have more environmental, health and socioeconomic impacts. Environmental impacts is the category with the least overrepresentation, and the codes overrepresented in the presence of foreign companies (Biodiversity loss, Oil Spills, Deforestation, Food insecurity, Mine tailing spills) largely correlate with an overrepresentation of MNCs in conflicts with related commodities (Figure S2; Figure 1c). Other environmental impact codes do not show a significant difference when foreign companies are involved. The most significant differences are in the socioeconomic impact category where all codes except for loss of landscape and land dispossession are overrepresented in the presence of foreign companies (Figure 3a, Figure S3). All in all, despite a western bias towards environmental concerns, specifically climate change and biodiversity loss, socioeconomic impacts are more overrepresented than environmental ones in EJAtlas conflicts involving MNCs,

mostly in the Global South. A possible interpretation is that western onlookers have a preoccupation for what they perceive as shared environmental threats to humanity, but lack empathy towards the livelihood and socioeconomic conditions of fellow humans, the exploitation of which allows for high living standards in privileged economies. This evidence is also testament to the reality of the environmentalism of the poor (Martínez-Alier, 2003), mostly from the Global South, that does not defend nature merely for its intrinsic value, nor does it defend it to attain a transactional gain, it rather defends nature as an essential component of traditional cultural, social and economic systems (Whiteman, 2009).

Two thirds of the superconflictive companies in the EJAtlas take part in the UN Global Compact initiative. The UN voluntary programme seeks to engage companies to "meet fundamental responsibilities in the areas of human rights, labour, environment and anti-corruption"[9] (Rasche *et al.,* 2013). In the area of human rights, it encourages participant companies to comply with the UNGPs[10]. In turn, the UNGPs mandate companies to pay "due regard to the different risks that may be faced by women and men" and give "special attention to both gender-based and sexual violence" in conflict-affected areas (UNGPs, 2011:20,9). Additionally, the UNGPs demand special consideration of "groups or populations that may be at heightened risk of vulnerability or marginalization" (UNGPs, 2011: pgs 1, 20, 23 and 30) with specific regard for "Indigenous Peoples, women, national or ethnic minorities" (UNGPs, 2011: pg 5-6). However, I find that EJAtlas conflicts with foreign MNCs are more violent, and have worse gendered impacts and impacts on livelihood and traditional culture than those without foreign companies (Figure 3a). This correlates well with an increased presence of Indigenous Peoples and racially discriminated groups mobilised against conflicts with MNCs. Trade unions are also overrepresented in EJAtlas conflicts with foreign companies. This probably reflects that MNCs corporate and labour arrangements facilitate the mobilisation of trade unions, whereas domestic companies are more likely to have small structures and local political dynamics that are not as prone to unionised resistance. Trade unionist's concerns are generally related to pay and safety conditions, with grievances generally focusing on environmental health concerns (Navas *et al.,* 2022).

Lastly, the involvement of international EJOS stands out as the most overrepresented of the mobilised actors categories. This is not unexpected and responds to the need for international organisations that span the geographies where the conflicts occur and the corporate decisions are taken to organise a global resistance to prevent environmental and human rights violations by MNCs. This evidence indicates how one of the ways in which the global environmental justice movement weaves itself is through institutional links that follow MNCs international operations. In this sense, the globalisation of economic flows and liberalisation of trade has been a driver

[9] https://unglobalcompact.org/what-is-gc/mission/principles
[10] https://unglobalcompact.org/what-is-gc/mission/principles/principle-1

for the internationalisation of the environmental justice movement (Faber, 2005). The presence of international environmental justice movements is specially relevant in those conflictive MNCs operations in Global South countries with limited political freedoms where a repressive State facilitates extractive projects at the expense of the local population. In such cases, international alliances are critical to leverage pressure points in the jurisdictions where MNCs are domiciled, which generally are in Global North countries with relatively more political freedom to confront MNCs. Examples of such dynamics can be found in the court cases against Shell operations in Nigeria in Dutch courts (Enneking, 2019; Ngwakwe, 2021), the case filed against TotalEnergies in France for its EACOP project in Uganda and Tanzania (Llavero-Pasquina *et al.,* 2024?), or the lawsuit brought against BHP by 720,000 Brazilians for the Fundão (Samarco) iron ores tailing dam failure in the UK (Safari *et al.,* 2020).

Finally, in the outcome category, I see a general overrepresentation of negative outcomes including displacement, deaths as a result of conflict, repression and corruption in conflicts with foreign MNCs. Again, I highlight that the UN Global Compact Principles, which two thirds of superconflictive companies subscribe, demands that companies "make sure that they are not complicit in human rights abuses" and that "Businesses should work against corruption in all its forms, including extortion and bribery."[11] In contrast, the three EJAtlas outcome categories that are more clearly associated with remedy mechanisms contemplated under the UNGP third pillar are significantly underrepresented in the presence of foreign companies. Distinctively, the underrepresentation of environmental rehabilitation is much more marked than compensation, and court victory for environmental justice, potentially suggesting that MNCs have little interest to maintain local ecological conditions compared with domestic companies and that compensation seems to be cheaper and/or more convenient than environmental rehabilitation for MNCs. Finally, conflicts with foreign MNCs are significantly less likely to lead to a halt of the extractive project, or to a perceived sense of environmental justice by the contributor of the case to the EJAtlas.

7. Conclusions

This article contributes to the growing field of statistical political ecology focusing on the involvement of MNCs in environmental conflicts with the EJAtlas database. It complements previous work focusing on Indigenous participants (Scheidel *et al.,* 2020, 2023), women (Tran and Hanacek, 2023), and working class groups (Navas *et al.,* 2022). This article advances knowledge in three key areas:

[11] https://unglobalcompact.org/what-is-gc/mission/principles

First, it provides evidence to conclude that MNCs are key actors in ecological unequal exchange and socio-ecological cost shifting from the Global North towards the Global South. Interpreting the evidence from the EJAtlas, the liberalisation of globalised trade and the promotion of FDI facilitate the operations of extractive MNCs from the Global North in the Global South leading to more frequent socioeconomic impacts, worse outcomes and less remedial action in environmental conflicts. This would disprove the *environmental halo* hypothesis in favour of the *pollution haven* hypothesis (Cole *et al.,* 2017; Doytch, 2020). And thus it justifies and supports environmental justice campaigns around the world that challenge the institutions upholding the globalised free trade system. Free Trade Agreements, ISDS, WTO rules and IMF conditional debt relief packages are targeted by environmental justice activists, mostly from the Global South, because they perceive trade liberalisation and export-oriented policy as a threat of exacerbated socio-ecological cost-shifting (Hickel *et al.,* 2022). Partly, the environmental justice movement is connected globally through shared struggles against these institutions and a general resistance against a global trade architecture that enables ecologically unequal exchange.

Second, the analysis of the EJAtlas sample suggests that the drivers of environmental injustice around the world should be partially found in the extraordinary conflictive behaviour of a select number of corporations, mostly MNCs. However, many conflicts in the EJAtlas database do not have company information, and over a thousand only have the involvement of companies with a single conflict. This dispersion likely reflects a widespread extractive corporate behaviour, which supports the theory that it is the deeper seated constant increase in social metabolism that drives environmental conflicts (Martínez-Alier, 2012; Akbulut *et al.,* 2019). In practice, my results support that campaigns against superconflictive companies are indeed important to serve environmental justice in the large number of conflicts they are involved in. Yet, it is equally important for the advancement of environmental justice to challenge imperant economic models oriented towards compound growth and an endless increase in social metabolism.

Third, my results call into question the effectiveness of the UN Global Compact and other similar voluntary initiatives. A large proportion of the superconflictive MNCs studied participate in the UN programme, and yet they are involved in conflicts that report more impacts and worse outcomes than conflicts with only domestic companies involved. This finding supports calls for binding rules and accountability to replace voluntary pledges and certifications (Martín-Ortega, 2014). Additionally this study challenges the validity of a myriad of human rights benchmarks[12] and ESG ratings[13] that highly rank some of the superconflictive companies

[12] See the Corporate Human Rights Benchmark https://www.worldbenchmarkingalliance.org/publication/chrb/rankings/

[13] See the S&P Global ESG score where superconflictive companies systematically get high scores https://www.spglobal.com/esg/scores/

exposed in this study. These indexes are primarily based on self-reporting and systematically marginalise the perspective of those resisting the encroachment of extractive corporations on their lives and territories (Maher, 2019). Further research will have to address the chasm between the image of good corporate citizens painted by mainstream ESG ratings and the serious grievances expressed by environmental defenders facing the impacts of corporate extractivism.

Most generally, this study has shown that the perspective from which one addresses the question of corporate ESG performance can diametrically change the answer. Most studies into FDI, most voluntary human rights and environmental corporate initiatives, and most ESG score methodologies systematically take the perspective of the company and investor, while marginalising those at the receiving end of environmental injustice. Such approaches primarily draw its data from corporate reporting, and are generally oriented towards maximising economic growth, investment returns and corporate profit. Its conclusions generally align with corporate sustainability narratives and cement corporate power to perpetuate the exploitation of ecosystems and communities for private gain. To challenge this approach, this study has deliberately centred the experiences of the communities resisting corporate operations in selecting the EJAtlas database as a source. The conclusions I reach challenge longstanding assumptions in the development economics and management studies fields, and show that the EJAtlas has the potential to be used as a powerful bottom-up data counterbalance to hegemonic ESG and CSR narratives. There is power in the collection of data and the election of data sources. Engaged academic studies can contribute towards environmental justice by evaluating corporate socio-ecological performance based on the lived experiences and testimony of those physically confronting its extractive operations.

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Data Availability

The R code, chi-squared tables and plots to produce all figures of this study can be found in the associated GitHub repository:
https://github.com/llavero-pasquina/A-global-analysis-of-multinational-corporations-role-in-environmental-conflicts

The raw conflicts and company datasets can be requested from the EJAtlas:
https://ejatlas.org/backoffice/cms/en/data-use-policy/

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There are no conflicts of interest to declare.