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EDITORIAL

Environmental conflicts and the making of world movements for environmental justice

Joan Martinez-Alier[1]

This article is a revised version of my Balzan Prize lecture in Mlan in September 2022 when I explained my approach to the study of environmental conflicts from two angles, that of ecological economics and that of political ecology. I started by remembering that the industrial economy is not circular, it is entropic, therefore requiring new supplies of energy and materials extracted from the "commodity frontiers" and producing polluting waste. Therefore, ecological distribution conflicts arise. The Global Atlas of Environmental Justice is an online inventory of such conflicts based on scholarly and activist knowledge. It has reached 3900 entries by July 2023 (ejtlas.org) allowing research in the field of comparative, statistical political ecology. The EJAtlas is used for research but also for university teaching in the environmental social sciences and in business economics and management. It is an instrument co-produced with and supporting environmental movements. One can do comparative analyses on the social actors involved in the conflicts and their forms of mobilization, and also on the behaviour of private or public companies. Research may focus on countries or regions (Gobby et al., 2021 on Canada; Teran, 2018 on Venezuela; Neyra on Peru, 2021; Pérez-Rincón et al. 2019 on Andean countries) but also on specific commodities such as iron ores (Saes & Bisht, 2020), gold and copper mining, cobalt, nickel and lithium; sand mining for building materials or for metals (Bisht, 2021); dams for hydropower (Del Bene et al., 2018); on eucalyptus or oil palm plantations; incinerators and other methods of waste disposal; coal fired power plants, oil extraction and transport; gas fracking, nuclear reactors, wind-mills (Avila, 2018), CAFOs. Analyses can be done also on the cross- cultural expressions and iconography (slogans, banners, documentaries, murals) of the conflicts gathered in the EJAtlas (Sanz and Rodriguez-Labajos, 2021). The wealth of research coming from the EJAtlas gives a tentative affirmative answer to the question: Is there a global environmental justice movement? Making old or emergent conflicts more visible contributes to plac-

✉ Joan Martinez-Alier
joanmartinezalier@gmail.com

[1] ICTA-Universitat Autònoma de Barcelona, Catalonia, Spain

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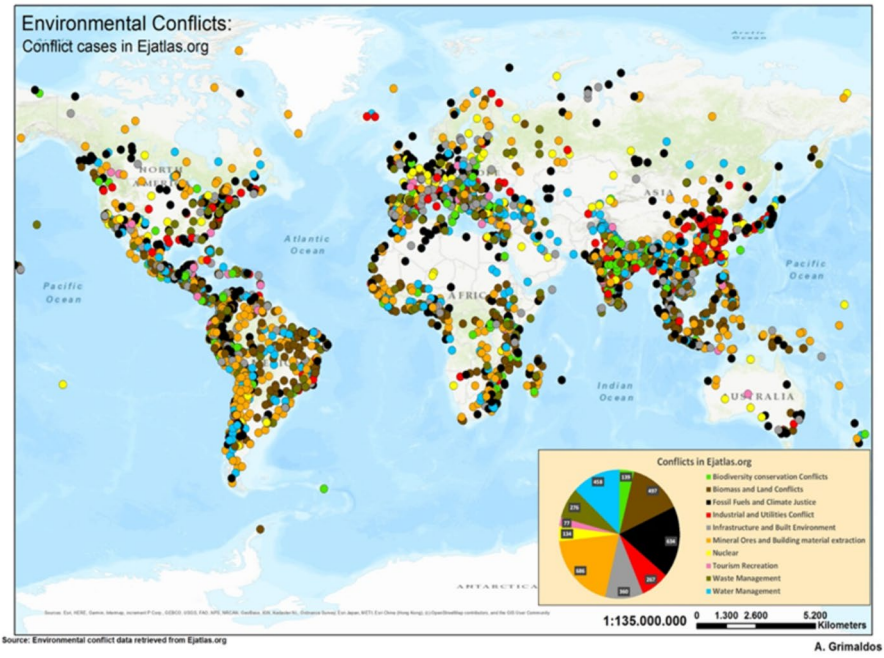
ing political ecology at the centre of politics (Charbonnier, 2020), and helps the world movements for environmental justice.

The reasons to start the EJAtlas in 2012 went back many years to the criticism that Ramachandra Guha and J. Martinez-Alier (1997) made of Ronald Inglehart's attempt to explain environmentalism as a product of a cultural shift to so called "post-materialist" values, with the economic prosperity of the 1960 in the West. "Postmaterialism" came to mean in sociology and political science the transformation of old materialist, physical and economic individual values to new values of autonomy and self-expression. In *The Silent Revolution* (1977), Ronald Inglehart found out that some members of the younger generations took their material security for granted and instead placed greater importance on "non-material" goals such as self-expression, autonomy, freedom of speech, gender equality and environmentalism. Such views were put forward repeatedly by Inglehart himself (1995) and many political scientists and sociologists.

Against these views, we made two points. First, Western environmentalists of the 1970 and 1980 s were worried about very material issues, such as nuclear energy and its dangers, and also chemicals such as DDT. So, "post-materialism" was a misnomer if applied to them. Further, the excessive emissions of carbon dioxide and the loss of biodiversity had very material causes and consequences becoming relevant internationally in the early 1990s. Moreover, our own research on India and Latin America showed that poor people were often at the forefront of the defence of the environment against the extractive industries. They were even killed for this, as Chico Mendes had been killed in Acre, Brazil in 1988, and Ken Saro-Wiwa and his companions in 1995 in Nigeria. This was the "environmentalism of the poor" (Martinez-Alier, 1991, 1992, 2002). The EJatlas collects hundreds of instances of such environmentalism of the poor and the indigenous born from "ecological distribution conflicts" (Martinez-Alier & O'Connor, 2002).

The term "environmental justice" (in sociology or social history, not in moral philosophy) had been introduced in the early 1980s in the United States. Environmental justice was a movement against "environmental racism", and it still is. It was certainly not a "post-materialist" movement, because it was concerned with pollution. It was observed that communities of "people of color" suffered disproportionate high levels of environmental damage in comparison to other social groups in society. Growing concern over unequal environmental burdens and mounting evidence of their overlap with both racial and economic injustices led to the emergence of grassroots civil rights campaigns for environmental justice for "minority" groups (Bullard, 1990, 1993). The EJAtlas collects instead conflicts around the world in which often majority populations are involved, belonging to BIPOC and relatively poor communities comprising most of the respective countries' population. (Map 1).

The human economy is a system embedded in the environment, open to the entry of energy and materials and the exit of waste. Authors working on 'socio-metabolic' configurations look at the economy in terms of flows of materials and energy (Fischer-Kowalski & Haberl, 2015). There is common ground between social and contemporary history, economic history and environmental history, between ecological economics and political ecology, between sustainability science and environmental sociology. It lies in the three-tier relation between the increasing and changing



Map 1 The EJAtlas, 3,700 conflict cases by July 2022, coded into ten main categories

metabolism of human societies, the ecological distribution conflicts among human groups (as registered in the EJAtlas), and the plural valuation languages deployed by such groups when they reaffirm their rights to use the environmental services and products in dispute. (Martinez-Alier, 2002).

Our work on environmental justice arises not only from the empirical observation of so many complaints around the world but also from a critique of the incapacity of economic reasoning to take into account the damages to the environment. Macroeconomic focus on GDP is alien to the accounts of social metabolism in terms of energy and materials (also to unpaid domestic work), while microeconomics hides environmental damages under the word "externalities". This would bring us back to the "socialist calculation debate" in the 1920 and 1930 on incommensurability of values, when market liberals such as Ludwig von Mises and Hayek said that market mechanisms could convincingly establish social priorities, when challenged by Otto Neurath (and Karl Polanyi) (O'Neill, & Uebel, 2015). Neurath referred explicitly to ecological reasons for his distrust of the market and his praise for physical accounting (Martinez-Alier, 1987, 1990). Taking this forward, Kapp (1950) said that "externalities are not market failures but cost-shifting successes" thereby systematically improving the results in the private firms' loss-and-profit accounts.

1 Environmental justice as degrowth in practice

Mainstream economics provides the main arguments in politics (often disguised as an apolitical technocracy), in terms of policies to increase GDP. But mainstream economics is losing its appeal. Perhaps this will be in favour of geopolitical "reasoning" in a new Age of Empires based on force. Or, more optimistically, macroeconomic logic will be substituted by environmental policies which go together with social justice. In this regard, the study and the support for environmental conflicts is relevant.

Economic growth is mismeasured. "Accumulation" of capital meant and means to a large extent dissipation of energy and materials, increased emissions of carbon dioxide and loss of biodiversity. The environmental damages are not and cannot be counted in money terms and have been still insufficiently counted in physical terms. In the late 1960 and 1970 s, proto-ecological economists such as Kenneth Boulding, Georgescu-Roegen (1971), Ayres and Kneese (1969), and Herman Daly (1977) challenged the conventional view of economic growth, while the *Limits to Growth* report authored by Dennis and Donella Meadows (1972) concluded that continued trends in resource use and waste production would lead to socio-economic collapse.

In the steps of these authors, Degrowth or Post-growth or prosperity without growth (Hickel & Kallis, 2019) is a growing movement of activists and intellectuals in Europe with a new vision for an alternative to capitalist socio-ecological relations. (Jackson, 2009; Kallis, 2018, 2019). As a current of thought and a social movement, it is meant to offer a strategy against collapse through a voluntary downscaling of material production, consumption and waste, a socially equitable and globally just simplicity which defines human well-being in terms of a non-acquisitive life meaning. But in my view this relatively small Degrowth movement (Martinez-Alier et al., 2010; Demaria et al., 2013) is still rather solipsistic despite its inspiration from global thinkers and its interest in the "pluriverse" realities such as Sumak Kawsay, Ubuntu, ecological Swaraj and others in Asia, Africa, Latin America (Kothari et al., 2019). It still ignores the real geography of socio-environmental resistance, it does not offer a global political ecology. Its examples of a future without economic growth are usually drawn from the North. It is not much concerned with the myriad struggles for environmental justice around the world and their hundreds of victims and also of successes. It is obsessed in rich countries by local neo-rural experiences, barter groups, time banks, urban squatting and similar courageous examples of trying to live a life without economic growth as agents of our own destiny.

However, in Giorgos Kallis' words, the small movement for degrowth in Europe finds "natural allies in movements against extraction and for environmental justice in the Global South (movements that confront in practice, rather than in theory, the growth of the insatiable metabolism that supports the imperial mode of living) as well as among indigenous groups who profess values of sharing, sufficiency and common ownership, in their own language and with their own significations" (Kallis, 2018, 179–180). In other words, the world movements that stop or try to stop the extractive industries and waste dumping are obvious allies of the small post-growth or degrowth movement in Europe (Martinez-Alier, 2012; Akbulut et al., 2019). There is a collective alternative vision emerging from the billions of people involved in such environmental conflicts worldwide, and they are promoters and practitioners of

less unsustainable economies (Gerber et al., 2021) even when they dislike the word "degrowth" (Rodriguez-Labajos et al., 2019).

Sometimes authors who live in the North place such alternative visions and actions at the "margins". But these peripheral regions are not marginal, they are central in terms of the provision of materials and energy to the world economy. They are the hottest commodity extraction frontiers for natural gas, uranium, oil, iron ores, coal, copper, nickel, cobalt, lithium, rare metals and production of wood, meat, soybeans. Also, the "marginal" oceans are the top carbon sinks, and they are getting acidified and overfished. They are central to the world economy, as also are the Arctic and the Amazon. (Hanaček et al., 2021). The physical trade balances of the metropolitan economic regions (physical imports larger than exports) tell part of this story of the centres depending on the peripheries (Infante-Amate et al., 2022), complemented by the disproportionate use of unpaid ecosystem functions. "If growthism seeks to organize the economy around the interests of capital (exchange-value) through accumulation (of profits), enclosure, and commodification, degrowth calls for the economy to be organized instead around provisioning for human needs (use-value) through de-accumulation, de-enclosure and de-commodification. Degrowth also rejects the cheapening of labour and resources, and the racist ideologies that are deployed toward that end. In all of these ways, degrowth is about decolonization". (Hickel, 2021). The global South's anger expressed by Hickel (also, Hickel, 2022) is potentially much more powerful than the local experiences of Degrowth in NATO countries. It must be made visible as we try to do with the EJAtlas, a very empirical collection of conflict cases about "degrowth in practice" and their links to the world movements for environmental justice (Martinez-Alier, 2012).

To synthetize: degrowth militants in the North talk more about degrowth than what they do, while environmental militants in the South talk more about justice and do more about degrowth in practice. Hundreds of activists for environmental justice (women and men) are victimized mostly in the world "peripheries". The protagonists of environmental justice movements around the world, mostly in the global South (Table 1), are rural and urban poor, the indigenous peoples (Scheidel et al., 2020), peasants, fisherfolk (Ertör, 2021), pastoralists, neighbors and citizens, sometimes also local and international environmental groups, industrial workers (Navas et al., 2022), scientists and professionals, local government officials, and members of religious groups. This is an environmentalism of the people. Most of them are unlikely to have heard of Degrowth but they exercise "degrowth in practice". Most of them are poor but poverty is "multidimensional": if you get some extra money by getting a paid job but lose access to land, water and clean air because an extractive industry grabs your place and pollutes your family, you are poorer in some dimensions than before. Your autonomy, freedom and capabilities have been further curtailed. These poor people experience in their own real worlds, at the frontiers of commodity extraction and waste disposal, the clash between economic growth and the environment. These are "ecological distribution conflicts" that involve incommensurable valuation languages. They cannot be expressed merely as "externalities" in money terms. In reaction, an environmentalism of the subaltern and the downtrodden arises.

There is also some resistance in the global North as in the Ende Gelände movement in Germany, and by *zadistes* in France against the airport in Nantes and also against

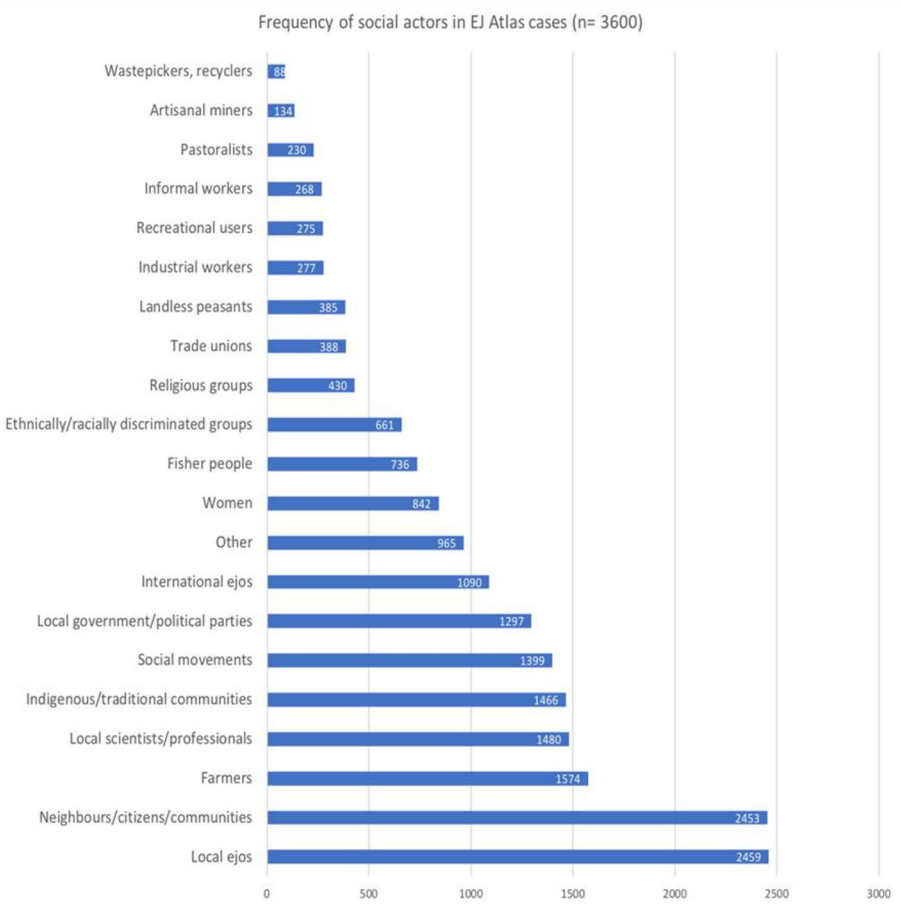


Table 1 Frequency of participant groups in the conflicts registered in the EJAtlas by January 2022 (3,600 entries). Several groups can be active in the same conflict

other useless projects elsewhere. There was much resistance to nuclear power in Western countries since the 1970s, and also to some extent in Soviet states (Hanaček and Martinez-Alier, 2021) sometimes overlapping with the peace movements.

2 The protagonists and the material causes of environmental conflicts

Is there an environmentalism of the poor and the indigenous? This is the main issue in our research program. Our main hypothesis is that there is a world movement (or perhaps, movements) for environmental justice, born in reaction to the growth and changes in the social metabolism, i.e. the flows of energy and materials into the economy, and the search for these inputs at the commodity extraction frontiers. It is a movement also against the disproportionate incidence of pollution. It is a coun-

ter-movement in Karl Polanyi's sense. The people involved in these conflicts are the promoters and practitioners of more sustainable economies, even when they act motivated by purely local reasons. Such movements for environmental justice have participants of various kinds (local environmental justice organization together with neighbours and citizens, peasants, Indigenous groups…) (Table 1). They engage in diverse actions of protest according to their repertoires of contention. They display their iconography in the form of slogans, banners, songs, leaflets, audiovisual materials and documentaries with many commonalities but also cultural differences. We build up maps and collect the vocabulary of the movements for environmental justice following the example of activists since the 1980s such as those of OCMAL, the WRM, Oilwatch, ASUD, Fiocruz.

Why are there so many environmental conflicts? Some political scientists would point out to defective governance, perhaps lack of participatory institutions of decision-making where extractivist companies, the state administration, and the local stakeholders could come to mutually beneficial agreements. Economists would perhaps tend to say that mechanisms of monetary compensation for the potential negative externalities are lacking, and therefore the local populations are reluctant to accept the investments projects. Our own perspective is more ecological and physical, based on the large "metabolic gap" or "circularity rift" of any industrial economy, and on the ecologically unequal trade. Indeed, the degree of circularity of the industrial economy is very low. Hence the search for new materials and sources of energy at the extraction frontiers, which will increase with further economic growth.

This gives rise for example to conflicts on sand and gravel mining (for the cement industry) and on the extraction, transport and burning of coal, oil and gas, as also on the excessive production of carbon dioxide. It also gives rise to conflicts on the provisioning of biomass (in the form of land grabbing) and the mining of metals including those for an "electrical transition". Energy from the photosynthesis of the distant past, fossil fuels, is burned and dissipated. Even without further economic growth, the industrial economy would need new supplies of energy and materials extracted from the "commodity frontiers", producing also more waste (including excessive amounts of greenhouse gases, and many other types of waste including for instance radioactive waste from the nuclear energy industry). Therefore, new ecological distribution conflicts (EDC) arise all the time. Such EDCs are often "valuation contests" displaying incommensurable plural values. The changing configurations in the social metabolism and the increasing number of conflicts at the frontiers of commodity extraction and waste disposal, are two faces of the same problem.

The Environmental Justice Atlas began its public journey in 2014 with 920 EDCs. Many people (paid and voluntary) have contributed datasheets. The current 3,700 entries represent a fairly large sample of tens of thousands of socio-environmental conflicts around the world. The Ejatlas classifies conflicts into ten main categories: nuclear energy, fossil fuels and climate change, mineral ores and building materials extraction, waste management, biomass and land conflicts, water management, infrastructure and built environment, tourism recreation, biodiversity conservation conflicts, industries and utilities. There are numerous subcategories. For each conflict registered in the EJatlas we also note the main commodities in dispute. Over the years we have come to include new materials such as ilmenite (as a titanium ore),

rutile or zircon. The files are in open access and each one has five or six pages with a description of the conflict, the sources of information and various coded variables (the visible or potential impacts of the controversial project, the social actors, their forms of mobilization, the results of the conflict and photos and videos). Publications based on the EJAtlas and describing how it can be used are Temper et al., 2015, 2018; Temper, 2019a, b, Martinez-Alier 2016, 2021a, Scheidel et al., 2018, 2020, Navas et al., 2018, 2022.

We can see in the EJAtlas cases the local oppositions to extraction and to waste disposal across countries and materials. This includes information on alliances of urban waste-pickers around the world (Schindler & Demaria, 2020). We can also discern the overlaps between environmental movements and other social movements such as feminism (Tran, 2021, 2022), anti-colonialism and anti-racism, agrarianism, defence of Indigenous populations (Scheidel et al. 2020), human rights, peace movements, working class movements (Navas et al., 2022). The claims for environmental justice do not come from a minority; they come from a majority of humankind but their grievances are often not visible socially. The EJAtlas is an inventory of "shadow places" (Plumwood, 2008) where environmental justice means "an injunction to cherish and care for your places, but without in the process destroying or degrading any other places, where 'other places' includes other human places, but also other species' places". To research on environmental justice is to practice a "sociology of absences" (B. de Sousa Santos' term, 2001) revealing the origin of anonymous commodities and the names of unknown indigenous damaged peoples, a sociology of violent suppression and also of emergent alternatives.

These movements sometimes achieve success in stopping projects, but more often they fail to do so. We list the outcomes of each conflict with the information sources. We are archivists of contemporary social history. The filter function in the EJAtlas allows any reader to find out the main statistical regularities. For instance, we verify (in 3,600 cases) that in 450 the death of one or more environmental defenders is reported (13% of the cases). 570 cases are reported as successful, usually meaning that the project was canceled. If there weren't some successes, we couldn't talk about a global environmental justice movement.

3 Is there a global environmental justice movement?

The Ejatlas is used in environmental activism and also in journalism, academic research and university teaching of political ecology and other socio-environmental sciences, such as ecological economics, environmental history, environmental sociology, industrial ecology, human geography, critical cartography, international relations. And it can also be used in business economics (Saes et al. 2021; Bontempi et al. 2021).

The analysis of the EJAtlas requires knowledge of Social Movement Theory. (Della Porta & Diani, 2020). We use here "social movement" in the same sense as one could speak of the labor movement in Europe until 1914, or of the pacifist movements in the world such as the student movement in the United States against the Vietnam War in the 1960s; or the peasant or agrarian movements in Latin America

since Emiliano Zapata in 1910 in Mexico; or the triumphant anti-colonial movement after 1945, particularly in Africa; or the civil rights movement in the U.S. of Martin Luther King and others. And, of course, the growing and successful feminist movement of the last 100 years around the world (Delap, 2020).

These social movements do not usually generate a single organization. The chronology goes from the grievances to the presentation of claims, and from there to concrete episodes or events, and eventually to the formation of movements and organizations. First, access to the land was claimed in different places and times, then came collective slogans such as "the land to the tiller" and "land and freedom" which traveled the world in different languages, and all that happened long before the Via Campesina was founded at the end of the 20th century. As regards the working-class movement, the scattered workers' collectives went on strikes and boycotts, lashing out at strikebreakers and scabs, before those words spread in many languages and unions were formed in different countries. The same is true of the environmental movement: slogans are spread, such as in Latin America "water is worth more than gold"; they are put on murals, t-shirts or banners in demonstrations (Fig. 1), water is worth more than gold certainly not in dollars per kg but in other valuation standards (Walter & Wagner, 2021).

In the conflicts of the EJatlas different valuation languages are deployed. Participants express a variety of values (ecological values, sacredness, livelihood values, economic values) which are not commensurate. The language of monetary compensation for damages is only one of the possible languages and it is not applied in practice to the enormous damages considered in famous court-cases such as Chev-

Fig. 1 In Cajamarca, Peru. "Conga no va". "Water is worth more than gold"

ron-Texaco in Ecuador or Shell in the Niger Delta. To understand socio-environmental conflicts, we must adopt a multi-criteria perspective and ask ourselves who has the power to impose or exclude certain valuation languages. In the EJAtlas we are collecting not only datasheets cards with descriptions of conflicts but also cultural expressions in different languages. Think of slogans like "Without corn there is no country" (in Mexico) or "Let's stop fumigating" (in Argentina), or "Tree plantations are not forests" or "Green deserts" - as used against eucalyptus plantations in Brazil. Or the name Ríos Vivos in Colombia for a network against hydroelectric plants (similar to the Movement of People Affected by Dams (MAB) in Brazil or the Mexican Movement of People Affected by Dams and in Defense of Rivers (Mapder). Just look at how the expression "sacrifice zone" has spread across the continent in particular in Chile, probably taken from Steve Lerner's book (2010) in the US. Or the expression in China that translates into English as "Cancer Village", with resonances of the "Cancer Alley" in Louisiana.

Listen for example to the "Poramboke Song" by T.M. Krishna, a song born in Ennore Creek, north of Chennai, in India. In a few verses, it summarizes the conflict over the destruction of mangroves and fishing in an estuary due to the terrible pollution produced by coal-fired power plants. It states that land and water were common goods, they were a Poramboke. The word in Tamil today is misused, as if meaning "no man's land", "wasteland". Not so, sings T.M. Krishna: Poramboke are the commons. In the EJatlas, we have collected hundreds of photos of banners, songs, documentaries, murals from all over the world. By doing network analysis, we try to show that there are not only shared slogans but also, sometimes, connections between social protagonists of many of these conflicts.

In socio-environmental conflicts, first the awareness of grievances is born and there are claims, then there are demonstrations, banners, roadblocks, criminalization of activists (Navas et al., 2018; Tran et al., 2020), etc. After the movement, one or more organizations with names and acronyms may appear. But for a movement to exist, you don't need an organization. For instance, in China movements against widespread pneumoconiosis (black lung) have arisen after grassroots complaints, and with help from environmental journalists (Liu, 2021). As Charles Tilly wrote, a social movement is not so much a group of organized people as a "cluster of performances", of events and episodes. (Tilly, 1993-94). It is wrong to seek the presence of the global environmental justice movement in the changing names of organizations (some permanent, such as Censat Agua Viva in Colombia, Acción Ecológica in Ecuador or Justiça Ambiental in Mozambique and others, ephemeral), rather than in local actions with their diverse cultural expressions but similar objectives.

We take a materialistic approach. We look for the causes of conflicts on mining, dams, extraction of biomass and fossil fuels, waste disposal etc., in their material causes, namely growth and changes in social metabolism. Economic growth goes together with the increase in social metabolism (the flows of energy and materials). We conclude that the world industrial economy is not circular but increasingly entropic (Georgescu-Roegen, 1971). Of all the materials entering the economy (including the energy carriers) less than ten per cent are recycled. (Haas et al., 2015, 2020). There is a huge "circularity gap" between the "fresh" material input and the recycled material input into the economy. At the world level, the first is about 92 Gt per year

and the second about 8 Gt. Let us assume that the world economy grows slowly and merely doubles the material input requirement in 70 years. Of the material input of 200 Gt let us assume that 100 Gt are recycled. An enormous improvement in the recycling rate from 8 to 50%, and however still a small increase (from 92 Gt to 100 Gt) in the "fresh" material input required every year. If less than 10% of materials (including the energy carriers) are recycled, where do the other 90% come from? Our answer is: from the new commodity extraction frontiers and also to some extent from customary sources. Thus, aluminium may come to some extent from recycling, it may come from bauxite from old mines which are used more intensively, or it may very likely come from new bauxite mines.

The transition of the South Asian and African economies to the dominance of fossil fuels that began in Europe 250 years ago is slowly nearing completion. The industrial economy uses fossil fuels, burns them as sources of energy that dissipates and also produces waste such as carbon dioxide in excessive quantities increasing the greenhouse effect. The Keeling curve measures the concentration of carbon dioxide in the atmosphere and continues its unflappable march from 320 parts per million (ppm) in the 1950s to almost 420 ppm now, 450 ppm by 2050 and probably 500 ppm by 2100. By then, the decline of the human population, the Blockadia and LFFU's movements (Klein, 2014, Temper et al. 2020, Martinez-Alier 2021b), and technological changes may reverse the trend.

The economy not only consumes fossil fuels, it also depletes the "funds" that in principle are permanent: fisheries and soil fertility, large forests and biodiversity, the natural water cycle etc. The industrial economy has a voracious appetite for new supplies of materials and energy that come from the frontiers of extraction including the rare metals for the electrical transition. And it deposits waste in the atmosphere, oceans, rivers and rural or urban soils. Even an industrial economy without growth would need fresh supplies of materials and energy, because energy is dissipated and materials are recycled only in small part.

As should be the rule in the study of any social movement, we pay more attention to what the environmental justice movements do than to the names of their organizations. We look at their grievances, their claims and the events or episodes of complaints. The environmental justice movement has many organizations, most of them ephemeral. The social and political forces contrary to environmental justice, often despise local complaints calling them "Nimby" (not in my backyard) occurrences but environmentalists often reply that they are "Niaby" (not in anyone's backyard). There are terms in different languages expressing this idea –for instance, *ne qui ne altrove* in Italian. Horizontal networking is more common in the environmental justice movement than hierarchical organization. Thus, network analysis in the EJAtlas allows to research the relations (if any) between international EJOs and local EJOs, platforms or committees. The lack of central, permanent organizations probably does not detract from effectiveness of the movements.

4 Conclusion

With the EJAtlas we take a materialistic approach to issues of environmental justice. We delve beneath the surface manifestations of socio-ecological conflicts related to unsustainable uses of mineral ores, hydroelectric dams, public infrastructures, biomass or fossil fuels extraction, and also waste disposal, to uncover their root causes in the growth and changes in the social metabolism. Activists, journalists, students and researchers of environmental justice use the EJAtlas as one more tool for research and also for teaching and communication on environmental conflicts, contributing new entries.

Political theory did not take environmental issues as crucial concerns. It looked at economic growth and concluded that capitalism (private property of means of production+the generalized market system) was compatible with democracy. Perhaps with restricted democracy (as that in the United Sates with slavery and without white women's voting rights, and with dispossessed Indigenous populations). But a growing democracy nonetheless, resting on economic growth and social opportunities. Freedom of the markets and political freedoms went together. Economic growth would stabilize democracies, as it would do again in Europe and Japan after 1945. The relation of economic growth to democracy continues to be problematic, as we see for instance in India and in several oil-exporting countries (not only in the Gulf, also in Equatorial Guinea). India's economic growth is largely based (as China has been) in a transition to coal (Roy & Schaffartzik, 2021). But an optimistic interpretation prevailed in Western doctrines of "modernization" and "development", poverty reduction and democracy would go together.

However, political theorists and economists did not emphasize (Charbonnier, 2020) between the 18th and 20th centuries that economic growth was destroying the conditions of livelihood for many populations at the commodity extractions frontiers, and it was also destroying wild biodiversity and starting to change the climate because of excessive emissions of carbon dioxide from the fossil fuels. Early warnings from scientists on the increased greenhouse effect since the 1890s were disregarded. With delay, nowadays the new environmental social sciences (including ecological economics, industrial ecology, political ecology, environmental history, agroecology) emphasize instead that the ecological distribution conflicts in our own generation, the needs of future generations, and other species' right to life should become the centre of politics. This means not only policy changes at state and international levels, not only changes in technology and a (welcome) slight decline in the human population, but also greater strength of (and less criminalization against) the environmental justice movements.

References

Akbulut, B. F., Demaria, J. F., Gerber, J., & Martínez-Alier (2019). Who promotes sustainability? Five theses on the relationships between the degrowth and the environmental justice movements. *Ecol Economics*, 106418. https://doi.org/10.1016/j.ecolecon.2019.106418.

Avila, S. (2018). Environmental Justice and the expanding geography of wind power conflicts. *Sustainability Science*, *13*(3), 599–616. https://doi.org/10.1007/s11625-018-0547-4.

Ayres, R. U., & Kneese, A. (1969). Production, consumption, and Externalities. *The American Economic Review*, *59*(3), 282–297.
Bisht, A. (2021). Conceptualizing sand extractivism: Deconstructing an emerging resource frontier. Extractive Industries and Society. 8 (2).
Bontempi, A., Del Bene, D., & De Felice, L. J. (2021). Counter-reporting sustainability from the bottom-up: the case of a dam builder. Journal of Business Ethics. https://link.springer.com/article/10.1007/s10551-021-04946-6.
Bullard, R. (1990). *Dumping in Dixie: Race, Class, and Environmental Quality" Colorado*. Boulder, Westview Press.
Bullard, R. (1993). *Confronting environmental racism. Voices from the grassroots*. Boston: South End Press.
Charbonnier, P. (2020). *Abondance et Liberté. Une histoire environnementale des idées politiques*. Paris: La Découverte.
Daly, H. E. (1991). *[1977]. Steady-state Economics* (2nd ed.). Washington, DC: Island Press.
Del Bene, D., Scheidel, A., & Temper, L. (2018). More dams, more violence? A global analysis on resistances and repression around conflictive dams through co-produced knowledge. *Sustainability Science*, *13*(3), https://doi.org/10.1007/s11625-018-0558-1.
Delap, L. (2020). Feminisms: A Global History, Pelican, London.
Della Porta, D., & Diani, M. (2020). *Social movements. An introduction*. Wiley Blackwell.
Demaria, F., Schneider, F., Sekulova, F., & Martinez-Alier, J. (2013). What is Degrowth? From an activist slogan to a Social Movement. *Environmental Values*, *22*(2), 191–215.
Ertör, I. (2021). We are the oceans, we are the people!': Fisher people's struggles for blue justice. *Journal of Peasant Studies*. https://doi.org/10.1080/03066150.2021.1999932.
Fischer-Kowalski, M., & Haberl, H. (2015). Social metabolism: A metric for biophysical growth and degrowth. In J. Martinez-Alier, & R. Muradian (Eds.), *Handbook of Ecological Economics*. Cheltenham, UK and Northampton MA, USA: Edward Elgar.
Georgescu-Roegen, N. (1971). *The entropy law and the economic process*. Cambridge, MA: Harvard Univ. Press.
Gerber, J., Akbulut, F., Demaria, B., & Martinez-Alier, F., J (2021). Degrowth and environmental justice. An alliance between two movements? In B. *Coolsaet ed Environmental Justice* (pp. 94–106). London and New York: Key Issues, Earthscan, Routledge.
Gobby, J., Temper, L., Burke, M., & von Ellenrieder, N. (2021). Resistance as Governance: Transformative Strategies forged on the Frontlines of Extractivism in Canada. Extractive Industries and Society. https://www.sciencedirect.com/science/article/abs/pii/S2214790X21000794?via%3Dihub.
Guha, R., & Martinez-Alier, J. (1997). *Varieties of environmentalism*. London: Essays North and South Earthscan.
Haas, W., Krausmann, F., Wiedenhofer, D., & Heinz, M. (2015). How circular is the Global Economy?: An Assessment of Material flows, Waste Production, and recycling in the European Union and the World in 2005. *J of Industrial Ecology*. https://doi.org/10.1111/jiec.12244.
Haas, W., Krausmann, F., Wiedenhofer, D., Lauk, C., & Mayer, A. (2020). Spaceship earth's odyssey to a circular economy- a century long perspective. *Resources Conservation and Recycling*, *163*, 105076.
Hanaček, K., & Martinez-Alier, J. (2021). Nuclear supply chain and environmental justice struggles in Soviet and post-soviet countries. Post-Communist Economies. https://doi.org/10.1080/14631377.2021.1943917.
Hanaček, K., Kröger, M., Scheidel, A., Rojas, F., & Martinez-Alier, J. (2021). Thin ice. The Arctic commodity extraction frontier and environmental conflicts. *Ecological Economics*. https://doi.org/10.1016/j.ecolecon.2021.107247.
Hickel, J. (2021). The anti-colonial politics of degrowth. *Political Geography*. https://eprints.lse.ac.uk/110918/.
Hickel, J. (2022). The Global South has the power to force radical climate action. Al Jazeera. June 29, 2022.
Hickel, J., & Kallis, G. (2019). Is green growth possible? *New Political Economy*, *25*(4), 469–486.
Infante-Amate, J., Urrego, A., Piñero, P., & Tello., E. (2022). The Open Veins of Latin America: Long-Term Physical Trade Flows (1900–2016). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4029470.
Inglehart., R. (1995). Public support for Environmental Protection: Objective problems and subjective values in 43 Societies. *Political Science and Politics*, *28*(1), 57–72.
Inglehart Ronald. (1977). *The Silent Revolution: Changing values and political styles among western publics*. Princeton University Press.

Jackson, T. (2009). *Prosperity without growth: Economics for a finite planet*. London: Earthscan.
Kallis, G. (2018). *Degrowth*. Agenda Publishing. Newscatle upon Tyne.
Kallis, G. (2019). *Limits: Why Malthus was wrong and why environmentalists should care*. Stanford: Stanford University Press.
Kapp, K. W. (1963/1978). *The social costs of Business Enterprise (revised and enlarged edition of the social costs of private enterprise, 1950)*. Nottingham: Spokesman.
Klein, N. (2014). This Changes Everything: Capitalism vs. The Climate. New York: Simon & Schuster, 2014.
Kothari, A., Salleh, A., Escobar, A., Demaria, F., & Acosta, A. (2019). *Pluriverse. A post-development dictionary*. New Delhi: Tulika Books.
Lerner, S. (2010). Sacrifice zones. *The Front lines of toxic Chemical exposure in the United States (preface by Phil Brown)*. MIT Press.
Liu, J. (2021). In N. Räthzel, & D. Stevis, D, Uzzell (Eds.), *Environment, Labour and Health: The ecological-social debts of China's Economic Development*. Palgrave Handbook of Environmental Labour Studies.
Martinez-Alier, J. (1991). Ecology and the poor: A neglected dimension of latin american history. *Journal of Latin American Studies*, *23*(1), 621–639.
Martinez-Alier, J. (2002). *The Environmentalism of the poor. A study of ecological conflicts and valuation*. Cheltenham: Edward Elgar.
Martinez-Alier, J. (2012). Environmental Justice and Economic Degrowth: An Alliance between two movements. *Capitalism Nature Socialism*, *23*(1), 51–73.
Martinez-Alier, J. (2021a). Mapping ecological distribution conflicts: The EJAtlas. *Extractive industries and Society*, *8*(4), https://doi.org/10.1016/j.exis.2021.02.003.
Martinez-Alier, J., (2021b). Circularity, entropy, ecological conflcts and LFFU. *Local Environment*. 27(10-11).
Martinez-Alier, J., & Hershberg, E. (1992). Environmentalism and the poor: The ecology of survival. *Items (Social Science Research Council)*, *46*(1), 1–5.
Martinez-Alier, J., & O'Connor, M. (2002). Distributional Issues: An Overview. In Handbook of Environmental and Resource Economics, edited by J. van den Bergh, 380–392. Cheltenham: E. Elgar.
Martinez-Alier, J., & Schlüpmann, K. (1987). (1990). Ecological economics: energy, environment and society. Oxford: Blackwell.
Martinez-Alier, J., Pascual, U., Vivien, F., & Zaccai, E. (2010). Sustainable de-growth: Mapping the Context, Criticisms and future prospects of an Emergent paradigm. *Ecological Economics*, *69*(9), 1741–1747.
Martinez-Alier, J., Temper, L., & Bene, D. D., A Scheidel (2016). Is there a Global Movement for Environmental Justice. *Journal of Peasant Studies*, *43*(3), 731–755.
Meadows, D. H., Meadows, D. L., Randers, J., Behrens, W., & Club of Rome. (1972). *The limits to growth: A report for the Club of Rome's project on the predicament of mankind*. New York: Universe Books.
Navas, G., Mingorria, S., & Aguilar, B. (2018). Violence in environmental conflicts: The need for a multidimensional approach. *Sustain Science*, *13*(3), https://doi.org/10.1007/s11625-018-0551-8.
Navas, G., D'Alisa, G., & Martinez-Alier, J. (2022). The role of working-class communities and the slow violence of toxic pollution in environmental health conflicts: A global perspective. *Global Environmental Change*. https://doi.org/10.1016/j.gloenvcha.2022.102474.
Neyra, R. (2021). *Conflictos socio-ambientales en Perú. Violencia y extractivismo*. Quito: Abya-Yala.
O'Neill, J., & Uebel, T. (2015). Analytical philosophy and ecological economics. In J. Martinez-Alier (Ed.), R. *Muradian. Handbook of Ecological Economics* (pp. 48–74). Edward Elgar Publishing.
Pérez-Rincon, M. J., Vargas, J., & Martinez-Alier (2019). Mapping and analyzing ecological distribution conflicts in Andean Countries. *Ecological Economics*, *157*, 80–91.
Plumwood, V. (2008). Shadow Places and the Politics of Dwelling. *Australian Humanities Review* 44.
Rodriguez-Labajos, B. I., Yánez, P., Bond, L., Greyl, S., Munguti, G., Ojo, & Overbeek, W. (2019). Not so Natural an Alliance? Degrowth and Environmental Justice Movements in the Global South. *Ecological Economics*, *157*, 175–184.
Roy, B. A., & Schaffartzik (2021). Talk renewables, walk coal: The paradox of India's energy transition. *Ecological Economics*, *180*, 180: 106871.
Saes, B. M., & Bisht, A. (2020). Iron ore peripheries in the extractive boom: A comparison between mining conflicts in India and Brazil. *Extractive Industries and Society*, *7*(4), 1567–1578.

Saes, B. M., Bene, D. D., Neyra, R., Wagner, L., & Martínez-Alier, J. (2021). Environmental justice and corporate social irresponsibility: the case of the mining company Vale S.A. Ambiente e Sociedade, vol. 24.

Santos, B. S. (2001). Nuestra America: Reinventing a Subaltern paradigm of Recognition and Redistribution. *Theory Culture & Society*, *18*(2–3), 185–217.

Sanz, T., & Rodr¡guez-Labajos, B. (2021). Does artistic activism change anything? Strategic and transformative effects of arts in anti-coal struggles in Oakland, CA. *Geoforum*, *122*, 41–54.

Scheidel, A., Temper, L., Demaria, F., & Martínez-Alier, J. (2018). Ecological distribution conflicts as forces for sustainability: An overview and conceptual framework. *Sustainability science*, *13*(3), 585–598.

Scheidel, A., Bene, D. D., Liu, J., Navas, G., Mingorría, S., Demaria, F., Avila, S., Roy, B., Ertör, I., & Temper, L., J.Martínez-Alier 2020. Environmental conflicts and defenders: A global overview. *Global Environmental Change*, 63. 102104.

Schindler, S., & Demaria, F. (2020). Garbage is Gold": Waste-based commodity. Frontiers, modes of valorization and ecological distribution conflicts. *Capitalism Nature Socialism*, *31*(4), 52–59.

Temper, L. (2019a). Blocking pipelines, unsettling environmental justice: From rights of nature to responsibility to territory. *Local Environment*, *24*(2), 94–112.

Temper, L. (2019b). From boomerangs to minefields and catapults: Dynamics of trans-local resistance to land-grabs. *J of Peasant Studies*, *46*(1), 188–216.

Temper, L., Bene, D. D., & Martinez-Alier, J. (2015). Mapping the frontiers and front lines of global environmental justice. *Journal of Political Ecology*, *22*(1), 255–278.

Temper, L., Demaria, F., Scheidel, A., Bene, D. D., & Martinez-Alier, J. (2018). The Global Environmental Justice Atlas (EJAtlas): ecological distribution conflicts as forces for sustainability. 2018. Sustainability Science 13 (3), 573–584.

Temper, L., Avila, S., Del Bene, D., Gobby, J., Kosoy, N., Le Billon, P., Martinez-Alier, J., Perkins, P., Roy, B., Scheidel, A., & Walter, M. (2020). Movements shaping climate futures: A systematic mapping of protests against fossil fuel and low-carbon energy projects. *Environmental Research Letters*, *15*(2), 123004.

Teran, E. (2018). Inside and beyond the Petro-State frontiers: Geography of environmental conflicts in Venezuela's Bolivarian Revolution. *Sustainability Science* 13(3).

Tilly, C. (1993). -94. Social movements as historically specific clusters of political Performances. *Berkeley Journal of Sociology*, *38*, 1–30.

Tran, D. (2021). A comparative study of women environmental defenders' anti-violent success strategies. *Geoforum*, *126*, https://doi.org/10.1016/j.geoforum.2021.07.024.

Tran, D. (2022). Realities beyond reporting: Women environmental defenders in South Africa. Feminist Media Studies. https://doi.org/10.1080/14680777.2022.2045335.

Tran, D., Martinez-Alier, J., Navas, G., & Mingorria, S. (2020). Gendered geographies of violence: A multiple case study analysis of murdered women environmental defenders. *J of Political Ecology*, *27*(1), 1189–1212.

Walter, M., & Wagner, L. (2021). Mining struggles in Argentina. The keys to a successful story of mobilisation, Extractive Industries and Society. DOI:https://doi.org/10.1016/J.EXIS.2021.100940.