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Which Role Can Technology Play In Terms Of Global Climate Justice?

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1. Introduction

The earth is currently experiencing a dramatic shift in its physical environment and living organisms. These changes are unlike anything seen in the past and have far-reaching consequences for all life on the planet (Küpers, 2020). These changes can lead to natural disasters (Banholzer et al., 2014), the extinction of complete species (Urban, 2015), greater poverty (Skoufias et al., 2011), geopolitical implications (Dalby, 2013) and ultimately even perhaps lead to the extinction of humanity (Carrington, 2022). Therefore climate change, as one of the greatest embodiments of this change, can be seen as one of the most pressing issues facing our planet today.

Because of it's international causes and effects it's a global problem that requires a planetary response. But it's to mention, that the impacts of climate change are not felt equally by all people (Pottier et al., 2017). In fact, it is often the marginalized and most vulnerable communities, or exploited countries, that bear the brunt of the effects of a warming planet (Harlan et. al., 2015). Not least because a large part of the emissions and environmental damage can be traced back to non-marginalized parties, such as industrialized countries or wealthy individuals, which oftentimes even exploit these marginalized parties in the first place (Brand & Wissen, 2017). It is therefore absolutely necessary to talk about climate change and to find out why there are parties that are completely excluded from the discussion and ultimately, of course, what can be done about it to make these groups more inclusive to the topic of climate change. Thats why this paper focuses on the matter of global climate justice with the aim to investigate which role technology can play in this regard.

2. Global Climate Justice

Lets start with the general concept of global climate justice. It is the idea that those who are most affected by climate change should have a greater say in the decisions that shape our response to the crisis and that the efforts made in terms of global climate justice benefit all citizens. Global Climate Justice is therefore about ensuring that the voices of the poor, the vulnerable, and the marginalized are heard, and that their rights and needs are protected, as climate change imposes a deadly threat to a lot of these people. It is about creating a more just and equitable world for all, where everyone has an equal opportunity to thrive and prosper, regardless of their background or circumstances. (Benevolenza & DeRigne, 2019; Pottier et al., 2017; Levy & Patz, 2015)

In general, there are 4 different forms of justice, which can naturally also be found in the case of global climate justice. There is distributive justice (1), procedural justice (2), retributive justice (3) and restorative justice (4). Whereby distributive justice concerns the fair distribution of resources and benefits. Procedural justice focuses on ensuring fair treatment and decision-making processes. Retributive justice centers on punishment for wrongdoing, and restorative justice aims to repair harm and restore relationships to a state of balance. (Miller, 2021)

However, the organizations currently involved in climate change and environmental protection, such as the UN and it's sub-organisaztions, are primarily concerned with restorative justice. The outcomes of the COP27 that took place in Egypt (2022) show that such organizations are currently only concerned with repairing the damage that has been done, namely „loss and damage" (UNFCCC, 2022). However, in order to really have a sustainable impact on global climate justice, the other three areas must also be considered.

Part of global climate justice must therefore also be procedural justice. The decision-making processes that have existed so far on climate issues are not necessarily entirely equitably distributed. Not only are decisions often made at national levels in forms of NDC's, „National Determined Contributions" (UNFCCC, 2020), but many of the heavily affected countries, which often contribute the least to climate change, are lumped together with all the other countries (Pottier et al., 2017), but of course often do not have as much say as large industrialized nations (Alfarargi, 2021). This means, that these parties are often not heard and thus, unfortunately, cannot participate in the fight against climate change in any form.

Retributive justice also plays a very important role in climate issues. It is about punishing the parties that cause great damage to our planet fairly. However, all previous attempts in this direction have failed miserably, as most punishments are not particularly realistic or appropriate. Companies and Countries exploit entire regions, destroy the landscape and usually only pay a relatively small fine, which ultimately makes the operation oftentimes worthwhile (Atkinson, 2020). This is exactly where a stop must be put. The companies and countries would have to be punished so severely that destroying our planet would no longer be worthwhile for them. Otherwise, the destruction of the earth and the injustice that goes with it will become ever greater and finally perhaps really represents a risk for the entire continuance of mankind.

Finally, there is distributive justice. This encompasses, in the case of global climate justice, including everyone and guaranteeing everyone a fair share of the resources by rethinking the current distribution of resources and opportunities in terms of climate change. Because the current distribution in climate matters is highly unjust (Meyer & Roser, 2006). Those countries and parties with the greatest risks usually also have the least resources for the fight against climate change (Tol et al., 2004). In addition, the general distributional inequity that exists in our world naturally affects inequities in climate change. As many factors of climate change, as we know it, are also related to our understanding of development. Most people do not have the means to fight climate change and therefore protect themselves against the consequences of climate related issues (Levy & Patz, 2015).

All of these four areas are part of global climate justice and should therefore also be addressed. Depending on the area or problem, one of the theories often lends itself better than another. Nevertheless, their complex combination is necessary to understand the scope and extent of global climate justice. The question that quickly arises, however, is how? How could this be changed? What means and methods can be used to support one of these forms of justice or global climate justice in general? How can we create a world with a fairer approach to the issue of global climate justice?

3. The role of technology in terms of global climate justice

Even though climate change is an inevitably global issue, many states and nations still rely on a variety of national approaches. Many countries have made it their task to reduce their country's emissions and thus contribute to the fight against climate change. In most cases, this is done through new technologies and inventions that are used in the fight against climate change and are intended to help repair our planet or protect it better in the future, which again falls in the realm of restorative justice. This includes, for example, emission reducing infrastructure projects (UNOPS, 2021), the establishment of smart cities (Minevich, 2021) or various apps for saving emissions or waste (Douglas & Brauer, 2021).

However, most of the time these projects are only about climate change itself and the goal of reducing emissions. Almost no one asks the question of justice. Every country seems to care about itself, but certainly not about creating a fairer and more equitable world and giving everyone in the world the opportunity to play their part in this fight. This might has one significant reason in particular, the digital divide.

3.1 The Digital Divide

With the ever increasing digitization, or the ever increasing level of technology, more and more people have gained access to technologies. Be it access to the Internet, access to cell phones, or access to any other form of technology. But there is also a large part of this world that is denied this access. These are not only older people, or people from remote regions, (Fang et al., 2019) but above all countries that do not have as high a level of technological development as many industrialized nations. (Chen & Wellman, 2004)

So the digital divide refers to the unequal distribution of technology and access to the Internet between different demographics, such as race, income, geography, and education. The divide can result in unequal access to information, opportunities, and resources, exacerbating existing social and economic disparities.

In the case of Climate justice and climate change, the affected people have no possibility whatsoever to inform themselves about the topic or to use of these technologies (Salter, 2021). This means that a large part of the world's population is already excluded from the process of global climate justice from the outset. Not least because many of these processes now take place digitized or require a certain degree of infrastructure or technological progress.

When it comes to climate justice, therefore, we should not only pay attention to repairing the damage we have done so far or to prevent new damage, but to also take care of the inclusion of all people in the process of climate justice. This brings us back to the theory of distributive and procedural justice. The digital divide encompasses two key aspects: unequal distribution of technology, which is often tied to wealth, and unequal representation in decisions regarding climate justice, which is frequently linked to access to technology.

If we think of the example of a social climate movement such as Fridays for Future or Extinction Rebellion. A significant amount of today's social movements take place in the digital space, limiting access for those who do not have smartphone or internet access. This marginalization prevents people from being informed about these movements and excludes their potential participation. Thus, already in the first place, a huge part of the world's population is prevented from having a say or a voice in such issues. The example of a social movement can, of course, also be applied to a large number of institutions. Without the lack of technological resources, it is not possible for institutions as well as states to participate fairly and equitably in the issue of climate justice or climate change.

It can be concluded that technology, and access to technology, is a rather dominant factor in the question of global climate justice. Thus, technology should be a much larger part of the global climate justice discussion than it has been, especially the technological access. Efforts should be made to give more people access to the technologies that will enable them to play their part in global climate justice. Be it to be part of certain decision making processes, part of the global climate justice movement, or to raise their voice.

4. Models for climate change

But apart from general access to everyday technology, there are of course also specific technologies that can be used and deployed globally, as opposed to building smart cities, introducing zero-emission vehicles, or even constructing specific buildings (D'Acosta, 2021).

These are mainly diagnostic, predictive and organizational technologies, which can be assigned to artificial intelligences and machine learning to a large extent. AI and machine learning prediction models can be used to simulate climate-related measures and their effect or providing better disaster relief by better distributing the necessary resources through the AI system and also to analyze the existing conditions. (Climate Change and AI, 2021; Rolnick et al., 2023)

According to a BCG Climate AI Survey Report from 2022, AI plays a crucial role in addressing the Climate Crisis. The study surveyed more than 1.000 private and government institutions and "87% replied, that advanced analytics and artificial intelligence, or simply "AI", is a helpful tool in the fight against climate change today" (BCG, 2022, Survey Methodology). However, it must also be clearly stated here that the use of AI and machine learning in the same moment generates high emissions itself, which must not be disregarded (Cowls et al., 2021).

Such climate disaster or prediction methods and models, that can be used to better protect and serve affected areas or even make a process more environmental friendly, are an international fair way of supporting global climate justice. Not only can they be used to prevent future worldwide disasters that can affect every country. Such models usually also

incorporate the entire globe and take all marginalized groups or their areas into consideration. (Haggag et al., 2021; GFDL, 2023)

However, it has to be said that many of these models and supports come at a high cost, which cannot be paid by the severely affected and marginalized countries in most cases. This confirms the assumption that distributive justice must be taken into account and it should be ensured that everyone has access to such technologies or can simply benefit from them if the technological or infrastructural standards of a country are not sufficient for even using them.

5. Conclusion

In conclusion, global climate justice is a pressing issue that demands immediate action. Climate change poses a significant threat to the well-being of all individuals, particularly those in vulnerable communities. Addressing this crisis requires a comprehensive strategy that includes a global approach that really includes all parties, that reflects all of the four justice theories, and not just the restorative approach. Such an approach should give all parties as much access as possible to the discussion and the possibilities in the fight against climate change and the associated consequences, which is not the case right now. Only through a collective endeavor can this problem be solved at all.

Technology can play a vital role in addressing the global climate crisis but also represents a big challenge in form of the Digital Divide, as not everyone has the same access to technology. But advancements in technological tools and inventions have the potential to significantly reduce our global emissions and therefore fight against climate change. Furthermore, artificial intelligence and machine learning can be used to monitor and predict the impacts of climate change, which can aid in the development of effective mitigation and adaptation strategies. But even here, care should be taken to ensure that the latest tools and opportunities benefit everyone, not just those who have created them in the first place. Nevertheless, it is also crucial to acknowledge that technology alone will not solve the climate crisis. It will in the best case help and represents an opportunity to tackle the issue.

Addressing global climate justice requires the active participation and collaboration of governments, businesses, and individuals. And that has to happen on a fair and shared ground. We must all work together to create a sustainable future for the generations to come. The importance of equity and justice cannot be overstated in this endeavor, as the impact of climate change disproportionately affects marginalized communities. It is our responsibility to ensure that the solutions we implement are inclusive and equitable for all.

Technology is a powerful tool in the fight against climate change, but it must be used in conjunction with other efforts to truly make an impact. The time for action is now, and we must all do our part to create a more just and sustainable world for all.

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