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HOW MAX ROSER'S "OUR WORLD IN DATA" CONTRIBUTES TO RAISING AWARENESS AND COMBATING CLIMATE CHANGE

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ABSTRACT

With the website OurWorldInData.org economist Max Roser, University of Oxford, explains to make progress against the world's largest problems by making corresponding research and data publicly available. This discussion paper will address the question of how Our World In Data contributes to solving the challenges of climate change based on the article "CO2 and Greenhouse Gas Emissions" by Hannah Ritchie and Max Roser. This discussion paper comes to the conclusion that Ritchie and Roser are proposing less concrete solutions and instead are combining data that are already publicly available. This is not how they create new solutions, but they show clearly the need for action worldwide. The fact that most of the data shown is publicly available gives their message a particular strength: Ritchie and Roser show how clear the need for action should actually be for all political decision-makers.
Keywords: climate change, sustainability, Our World In Data, Max Roser

INTRODUCTION

Since about the beginning of the 2010s, there has been an increased interest in Germany in the topic of sustainability, which seems to have replaced environmental protection in a more specific sense. Especially since mid-2018, interest in sustainability has increased massively (*Google*, 2019b). Not surprisingly, the massive increase in the interest in sustainability also occurred during the period in which the "Fridays For Future" movement emerged (*Google*, 2019c), whose representatives call for concerted and determined global action against the progression of climate change (*#Fridays For Future*, 2019).

The growing interest in sustainability - at least in Germany - coincides with the launch of the project Our World in Data, which was founded in the summer of 2014 (*DomainTools,* 2019). The work of the project will be published on the corresponding website ourworldindata.org. The German economist Max Roser, a researcher at Oxford University, is the founder of the project and has set himself the task of providing a long-term perspective on the development of the world, rather than limiting himself to short-term events. The project website says: "Our World in Data presents the empirical evidence on global development in entries dedicated to specific topics" (*Our World In Data,* 2019a).

Within the framework of the project, various statistics on different topics will be presented and, as a rule, explained or interpreted in order to show the readers the

connections. The thematic complexes include questions on the development of the world population (*e.g.* with regard to life expectancy, age structures, gender relations or child mortality), health (*e.g.* with regard to air pollution, causes of death, tobacco consumption or malaria), food and nutrition (*e.g.* with regard to hunger, famine, land use or the use of fertilisers) or energy (e.g. access to energy, production of energy or the use of fossil fuels) (*Our World In Data,* 2019b).

In this review paper, the author addresses the question of whether and how Our World in Data contributes to education and/or combating climate change. This is based on an article that Ritchie and Roser first published on the project's website in 2017 and revised extensively in October 2018 (*Ritchie and Roser*, 2018). The article focuses on CO_2 and greenhouse gas emissions. In addition to the question of the extent to which connections are shown and explained in addition to mere data, the focus is on the question of whether the corresponding article also provides concrete approaches to solving the problems described.

DISCUSSION

The discussion on whether and to what extent the project Our World in Data contributes to solving the challenges of climate change is based on the article "CO_2 and Greenhouse Gas Emissions", first published by Ritchie and Roser in 2017 and updated in 2018 (*Ritchie and Roser*, 2018).

The article by the authors, which contains a total of around 10,000 words, is divided into sections after an introduction. First, the development of CO_2 emissions over time is presented, followed by explanations on per capita CO_2 emissions, annual CO_2 emissions and cumulative observations. Ritchie and Roser then show the consumption-based (trade-adjusted) CO_2 emissions as well as the emissions by fuel and by sector. Then they explain the global inequalities in CO_2 emissions (*Ritchie and Roser*, 2018). Roser, in particular, has already addressed issues of global inequality in other research projects (*Atkinson et al*,. 2017; *Sterck et al*,. 2018; *Nolan et al.,* 2018).

The last third deals first with emissions of other greenhouse gases, again from different perspectives. This is followed by explanations of possible future scenarios on emissions, on greenhouse gas concentrations in the atmosphere, on CO_2 emissions and on the prosperity and CO_2 intensity of economies (*Ritchie and Roser*, 2018).

In the introduction, Ritchie and Roser first introduce the topic of greenhouse gases, which cannot only be held responsible for climate change, but above all, contribute significantly to the climate of Planet Earth: without greenhouse gases, the Earth's climate would be around 18 degrees Celsius below zero (*Ma*, 1998). In the following, Ritchie and Roser discuss that with industrialization, the average global temperature anomalies have also increased significantly over the past 175 years (*Ritchie and Roser*, 2018). The relationship between global climate change and greenhouse gas emissions is scientifically proven (*Field et al,* 2014).

In their article, Ritchie and Roser then show various developments over time and various snapshots from different perspectives on the development and distribution of CO_2 emissions. In particular, two findings are to be emphasized: first, carbon dioxide emissions have risen massively in recent years and decades (*Ritchie and Roser*,

2018). Since 1950 alone, global CO_2 emissions have increased sevenfold (*Le Quéré et al.,* 2018). Secondly, greenhouse gas emissions are highly heterogeneous among the individual countries of the world. Among the countries with the highest emissions are the oil states of the Middle East, *i.e.* Kuwait, the UAE and Qatar. Ritchie and Roser summarize these data in their article as far as possible without evaluation, comprehensibly and precisely. This can easily give the impression of a few clear causers of the emissions, whereby the subsequent cumulative consideration of CO_2 emissions paints a picture that especially the United States as well as Russia and China are major emitters (*Ritchie and Roser,* 2018).

Ritchie and Roser ring in a similar process - an unambiguously seeming fact turns out to be more complex than it initially seems – with the introduction of the term "consumption-based" calculation of CO_2 emissions: Up to this point, the authors have reported CO_2 emissions in their article on a production-based basis in principle, as provided for by the guidelines of the Intergovernmental Panel for Climate Change (*Eggleston et al.,* 2006). In the consumption-based analysis of CO_2 emissions, international trade between nations is taken into account. If country A imports a product X from country B and the product has been produced in country B, the CO_2 emissions for product X would be added to country B in the production-based analysis. In the consumption-based analysis, however, the CO_2 emissions for product X are attributed to country A. In particular, those countries that are heavily dependent on imports of goods and merchandise are now showing significantly worse values than before. Countries that are particularly weak in the production and export of CO_2-intensive products are also emitting particularly strongly from this perspective. Switzerland and Luxembourg, as well as Togo and Botswana, are among the countries with the highest CO_2 emissions in the world. China, Iran and Russia, on the other hand, emit very little CO_2 (*Ritchie and Roser,* 2018).

According to this analysis of consumption-based CO_2 emissions (based on *Peters et al.*, 2012), Ritchie and Roser show that the 16 richest percent of the world's population not only emit 39 percent of production-based CO_2 emissions, but as much as 46 percent of consumption-based CO_2 emissions, with energy production being the most important sector that has been growing particularly strongly for years. Consequently, the relationship between a country's CO_2 emissions and GDP per capita as well as poverty results from this: With a few exceptions, it can be summed up practically nationwide that CO_2 emissions increase with a country's prosperity (*Ritchie and Roser*, 2018).

In many publications and sometimes also in the popular media (*Kühni and Roser*, 2017, *Käppeler*, 2016, *Matthews*, 2017), the authors enjoy some attention with their comments on CO_2 and greenhouse gas emissions: With their article, the authors Hannah Ritchie and Max Roser Stand today list more than 70 citations listed on Google Scholar (*Google*, 2019a). The Swedish poverty researcher Hans Rosling also quotes parts of the article in his book "Factfulness" and refers about ten times to the project Our World In Data (*Rosling et al.*, 2018). *Bill Gates* (2018) describes Roser as one of his favourite economists.

With regard to the style of the article, it can be said that the authors focus mainly on the visualization of data that is practically always publicly available. *Ritchie and Roser*

(2018) put these data into context with each other, show connections - sometimes surprising ones - and discuss them; scientifically, but without overwhelming the general reader at the same time. They also refer to the uncertainties and limitations of the data they present, for example in the measurement and estimation of CO_2 emissions, as *Liu et al.* (2015), for example, point out for China.

It should also be noted that *Ritchie and Roser* (2018) focus on the description and explanation of existing data. However, they do not make any proposals on how to reduce CO_2 emissions or greenhouse gases. Nor are their statements an offensive plea in this direction: Both the present article in particular and Our World in Data in general are above all a representation of the status quo and the past, primarily on data that are generally „in any case" publicly available.

CONCLUSION

The aim of this paper is to use the article „CO_2 and Greenhouse Gas Emissions" as an example to show how Our World in Data contributes to education and/or combating climate change. The article was first examined structurally and then in terms of content, and the authors' approach was presented.

Ritchie and Roser (2018) also introduce the less inclined reader to the topic of CO_2 and greenhouse gas emissions, thus enabling easy access to sometimes complex scientific work. The authors succeed in conveying a clear message to the reader, for example on the responsibility of wealthy nations in the context of climate change, without having to explicitly name them. In particular, those sections that compare classic economic measures such as GDP per capita or poverty with CO_2 emissions or present emissions not only based on production but also on consumption make this particularly clear.

The fact that, in principle, all the data used would be publicly available - and one could ask oneself why anyone would have to reprocess them at all - seems not so much a shortcoming, but even beneficial to the actual message: The data that *Ritchie and Roser* (2018) show point to a clear responsibility, but at the same time political decision-makers still seem to lack the will (or the pressure) to act. Using climate change as an example, Our World in Data shows precisely those data that show the world's existing development potential.

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