

Natural Resources, Raw Materials, and Extractivism:

The Dark Side of Sustainability

Hannes Warnecke-Berger

University of Kassel

Hans-Jürgen Burchardt

University of Kassel

Rachid Ouaiassa

Philipps-University of Marburg



| The Author(s)

Dr. Hannes Warnecke-Berger, University of Kassel is a senior researcher at the University of Kassel and project coordinator of extractivism.de

Prof. Dr. Hans-Jürgen Burchardt, University of Kassel holds the chair of international and inter-society relations at the University of Kassel.

Prof. Dr. Rachid Ouaisa, Philipps-University of Marburg holds the chair of Middle Eastern politics at the Center for Middle Eastern Studies at Philipps-University Marburg.

Extractivism Policy Brief is an Open Access online publication downloaded freely at www.extractivism.de. Readers are free to share, copy, and redistribute this document in any medium or format for any purpose, even commercially, according to the [Attribution-NoDerivs 3.0 Germany \(CC BY-ND 3.0 DE\)](https://creativecommons.org/licenses/by-nd/3.0/de/). Conditions imply that no changes are made to the text, and writers and the www.extractivism.de project are referenced correctly as the original. Extractivism Policy Briefs publish on social-economic, cultural, political, and timely topics concerning extractivism in both regions. Extractivism.de team is responsible for reviewing, fact-checking, editing, and publishing the final policy briefs. The opinions expressed in each publication are exclusive of the respective authors and do not necessarily reflect the views of the project. Extractivism.de cannot be held liable for any consequences concerning a policy brief following its publication.

© Extractivism.de, 2022, All rights reserved.

| IN SHORT

EN

- Extractivism is the dark side of sustainability
- raw materials and primary commodities are the backbones of the global economy
- extraction and export of raw materials lead to Extractivism understood as a development model
- Extractivism is persistent, prone to crisis, and affects domestic and international constellations

DE

- Extraktivismus ist die Schattenseite der Nachhaltigkeit
- Rohstoffe sind das Rückgrat der Weltwirtschaft
- Die Extraktion und der Export von Rohstoffen führen zum Entwicklungsmodell Extraktivismus
- Extraktivismus ist persistent und krisenanfällig und beeinflusst nationale und internationale Konstellationen

FR

- l'extractivisme est le côté obscur de la soutenabilité
- les matières premières et les produits de base sont les piliers de l'économie mondiale
- l'extraction et l'exportation de matières premières conduisent à l'extractivisme en tant que modèle de développement.
- l'extractivisme est persistant, sujet à des crises, et affecte les constellations nationales et internationales

ES

- el extractivismo es el lado oscuro de la sostenibilidad
- las materias primas y los productos primarios son la columna vertebral de la economía mundial
- la extracción y la exportación de materias primas conducen al extractivismo entendido como modelo de desarrollo
- el extractivismo es persistente, propenso a las crisis y afecta a las constelaciones nacionales e internacional

Towards a New Energy Age?

Natural resources are the essential pillar of humankind: They provide raw materials and energy used for economic and human activities.¹ In the 21st century, raw materials and energy carriers remain one of the most critical lubricants of the global economy. More than 100 countries specialize in extracting and exporting raw materials (UNCTAD, 2021a). Raw materials directly affect the livelihood of at least a fourth of the world population who lives in countries dependent on raw material exports. These countries pursue extractivism as a development model.

The issue of natural resources will continue to grow in the coming years. Climate change affords decarbonization, which affords to rethink the laws of motion of the global economy. The only option to influence climate change is pushing for a worldwide energy transition. This push again implies a shift of the resource base both of production and consumption on a global scale. In a nutshell, climate change means energy change, which translates into shifting raw material production and consumption patterns. This shift has severe implications for many countries, the international system, and the world economy.

Climate change, energy transition, and the drive towards sustainability are among the most pressing issues of our current times. Therefore after an extended period of silence, raw materials are again back on top of newspapers and headlines. Global demand explodes, prices tend to increase, the supply with necessary materials stagnates, stumbles, and even comes to a halt.

Covid-19 underlines this trend. In the current global health crisis, the supply of raw materials is becoming precarious. The regional centers of the world economy curtail global trade relations and even stop serving hubs of international transport routes. The provision of the industry and the supply to the end consumer gets tightened. Topics such as higher heating costs, rising gasoline prices, and more expensive batteries for electronic vehicles or e-bikes are attracting more and more attention both within academia and the expert community and in everyday life. This attention goes hand in hand with the desire to control climate change and overcome society's dependence on fossil fuels through greater sustainability.

However, the claim to rapid, profound, and condensed social and ecological change in the direction of an energy transition also has a dark side, and these dark sides are often ignored or even neglected. What is the option of raw material exporters given that their exports could be less critical and less valuable in the future?

For countries dependent on raw material exports, sustainability risks turning into a dystopia. As a potential driver of crisis within these countries, sustainability can have devastating consequences, as the case of Venezuela forcefully underlines. Furthermore, these crises impact the international level and affect large parts of the world population. Raw materials turn out to be one of the key factors determining the success or failure of this global sustainability strategy.

¹ There is no finally shared definition of natural resources, raw materials and primary commodities. The following definition therefore serves as a starting point: Natural resources are unprocessed materials that potentially serve living beings to manage their existence and livelihood. Raw materials are the

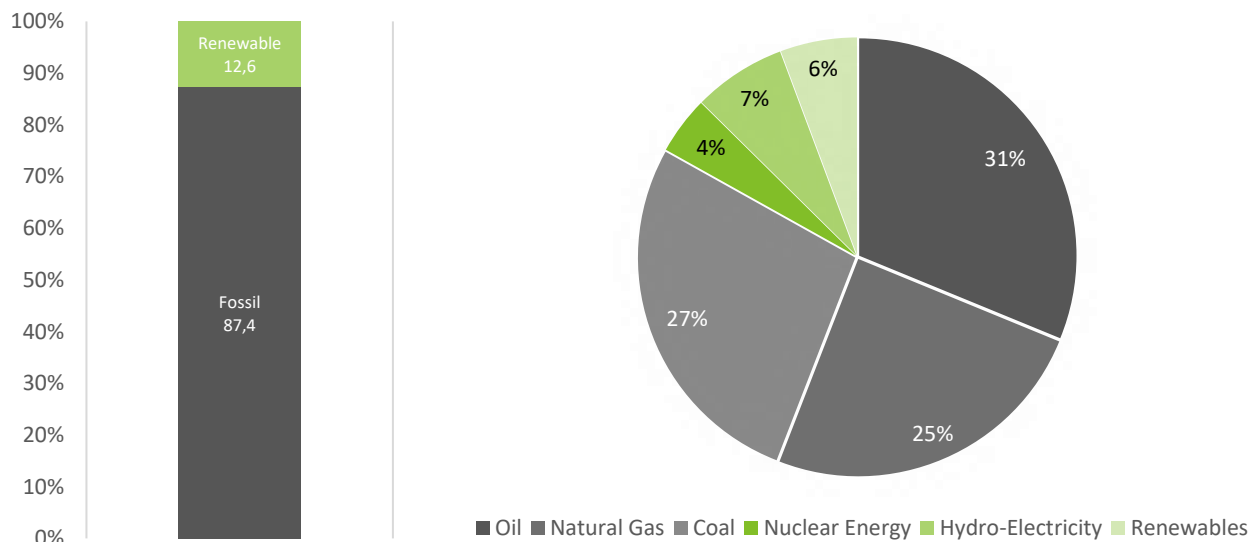
part of natural resources that are further processed to finally enter production and consumption. Primary commodities, in turn, are raw materials that are (internationally) traded and therefore commodified.

Raw Materials are the Backbone of the World Economy and a Crucial for a Global Energy Transition

The world economy is still locked in a fossil energy age. The following tables and figures exemplify the actual situation and its principal challenges. They underline that raw materials play a pivotal part in global trade, although with shifting centers of gravity. Latin America and the Middle East and North Africa (MENA) are crucial. Both

regions are net suppliers and export raw materials towards the center of industrial production and consumption in North America, Europa, and Asia. Fossil energy carriers deliver more than 87 percent of global energy; less than 13 percent comes from renewable energy sources.

FIGURE 1: WORLD ENERGY CONSUMPTION



Source: own elaboration based on BP 2021.

The volumes, directions, and the current geography of global trade are a reflection of this fossil energy age. In 2020, trade with primary commodities accounted for more than one-fourth of total world trade. According to the statistics on world trade provided by the United Nations Commission on Trade and Development (UNCTAD), one-third of this commodity trade consists of energy fuels, more than a third of agricultural goods, and the final part, currently around 28 percent but with a clear tendency to increase, consists of minerals, metals, and ores. Additional need for raw materials from China and India and the increasing support for sustainability in Europe and North America fuels global demand. Both processes go hand in hand and spur global prices for raw materials. Meanwhile, there has been a slight shift away from agricultural goods and towards fuels, minerals, and

metals. If economic life does not adapt to more sustainable living, production and consumption remain based on fossil fuels, and this picture will not change. However, both production and consumption are not static. China and India, among of the most populated world regions, are continuously gaining access to global markets, last but not least, increasing the living standards of their population. During the last 20 years, both countries have experienced an unexpected rise in their middle classes, resulting in a shift in consumption patterns (Jaffrelot & van der Veer, 2008). This trend will further affect energy and raw material consumption patterns as the experiences during industrialization in Europe and North America underline (Fouquet, 2014). China has successfully combated poverty. Absolute poverty decreased from about 66 percent of its

population in 1990 to currently less than 1 percent. India currently follows this example. It has reached to reduce absolute poverty of more than 50 percent of its population in 1988 to less than 8 percent in 2021 (World Bank, 2021; World Data Lab; see Crespo Cuaresma et al.,

2018). Nevertheless, living standards and increasing welfare translate into rising demand for consumer goods and energy. Both, in turn, are dependent on the supply of raw materials.

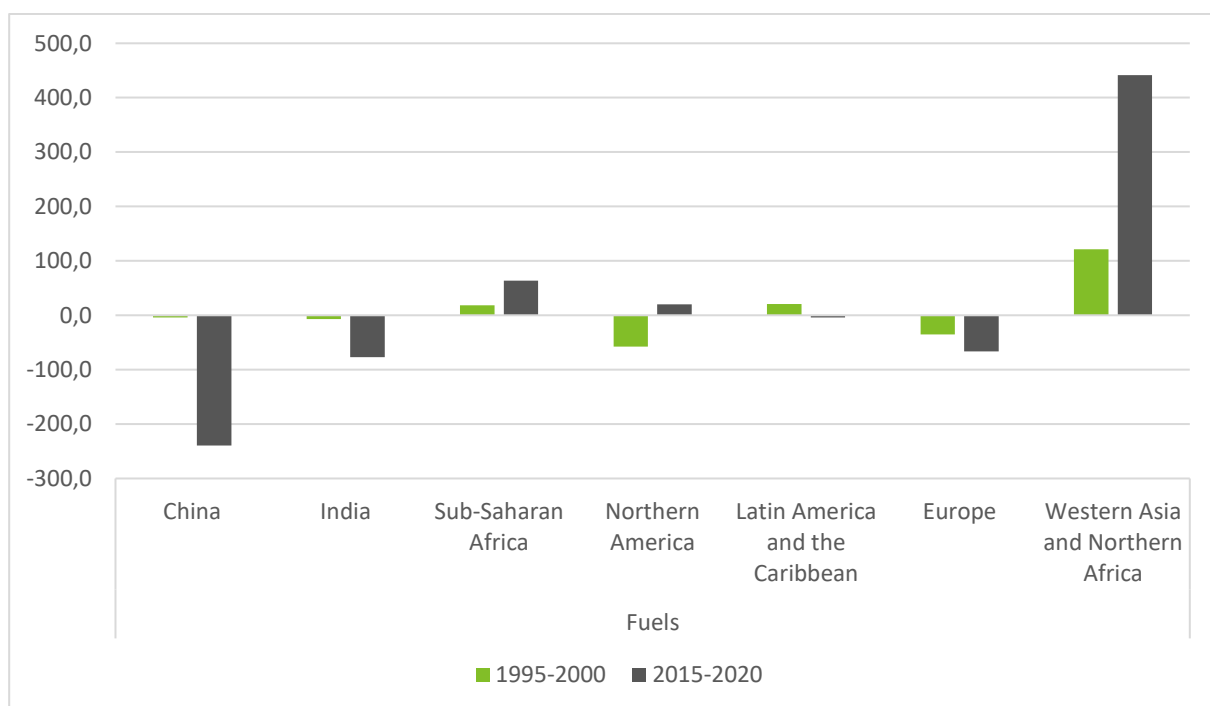
The Shift from Fuels to Minerals

Sustainability is deeply regionalized. First signs of sustainability strategies launched in some, albeit few, world regions already affect trade relations. While the technologically advanced economies and first and foremost Europe and the US embarked on a technological wave in which energy demand and material consumption stagnate or even decrease, emerging markets experience impressive growth rates in line with an alarming increase of demand for fossil fuels and minerals. Furthermore, in Europe, the demand for raw materials is shifting from fossils to minerals.

Raw material trade balances mirror these trends. Emerging markets and European countries are crucial regions concerning the implementation of global sustainability. Their production and consumption regime

is a root cause for the negative raw material trade balances. These regions are the driver for both the overall increase of raw material demand and the shift from fuels to minerals. The following figure scrutinizes regional trade balances in fossil fuels. The figure shows that the rise of China and India is accompanied by the massive demand for fuels from these countries, while the net demand from Global North regions did not change fundamentally. North America became even a net fuel exporter, and Sub-Saharan Africa deepened its export base in this regard. China, India, and Europe are the demand driver of fossil fuels. The growing export surpluses of the MENA region and Sub-Sahara Africa compensate for the net deficit of Europa, China, and India.

FIGURE 2: FUELS TRADE BALANCE BY REGION, 5-YEAR AVERAGE (IN BN CURRENT US\$)



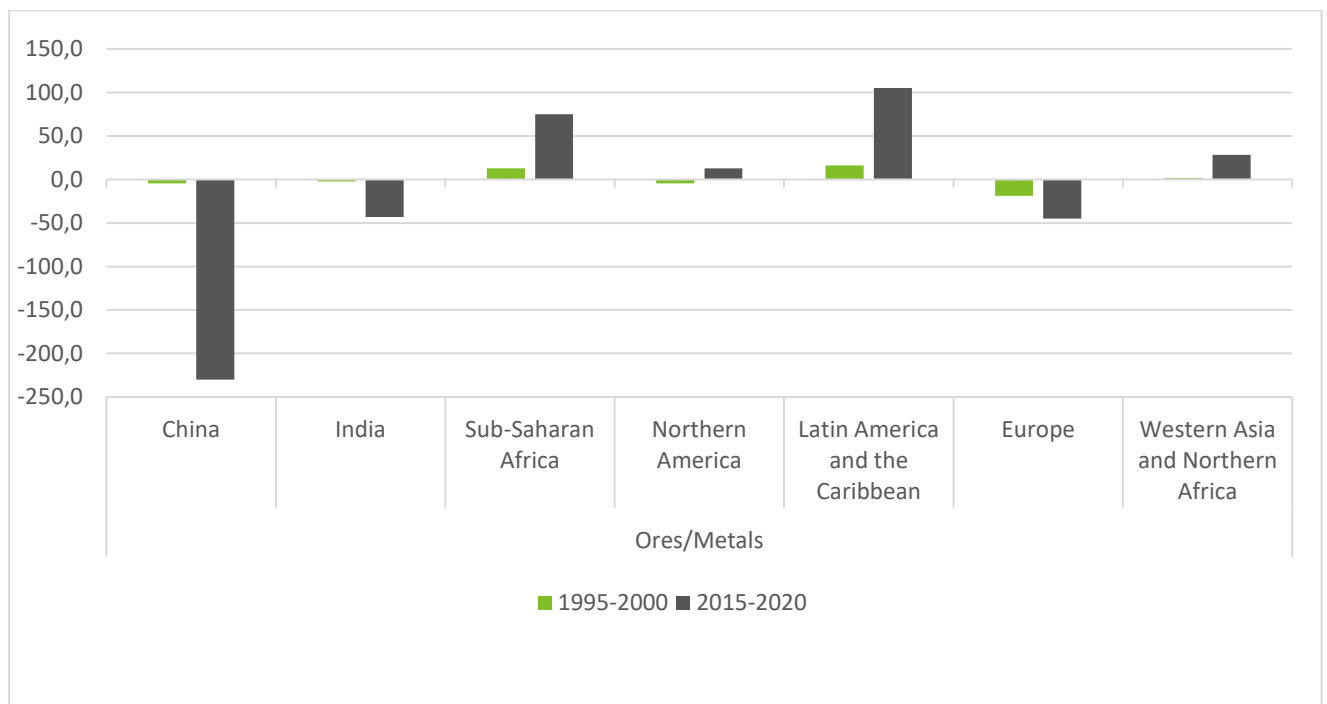
5-year average in bn current US\$. Source: own elaboration based on UNCTAD 2021b.

Mineral raw material trade balances slightly change this picture. Again, Europe, China, and India experience net deficits and depend on imports. However, in the case of minerals and metals, Latin America appears as the global supplier, together with Sub-Saharan Africa and the MENA region. The main driver of demand comes from China and India. In addition to their final consumption of minerals, both countries produce many intermediary products for final manufacturing in Europe and the US. Plus, demand for minerals also arises more and more from Europe as this region is a producer of raw material intensive 'green' technology. Again, net exporters are Latin America, Africa, and the MENA region.

This rough approximation underscores a fundamental trend: The pursued energy transition will shift the global

energy matrix from fossil fuels towards renewables through the global drive towards sustainability. At the same time, fossil fuel still has enormous global weight. Renewable energy sources and the processing and storage of energy are raw material intensive, with supply bottlenecks where very specific 'critical' raw materials and rare earth are necessary for production. The disposal and extraction of these materials are becoming increasingly important. However, some of these raw materials, for instance, cobalt, are geographically highly concentrated, and their location is non-substitutable (Månberger & Johansson, 2019). Therefore, sustainability strategies change the world economy and they will further challenge global material flows.

FIGURE 3: METALS AND MINERALS TRADE BALANCE BY REGION



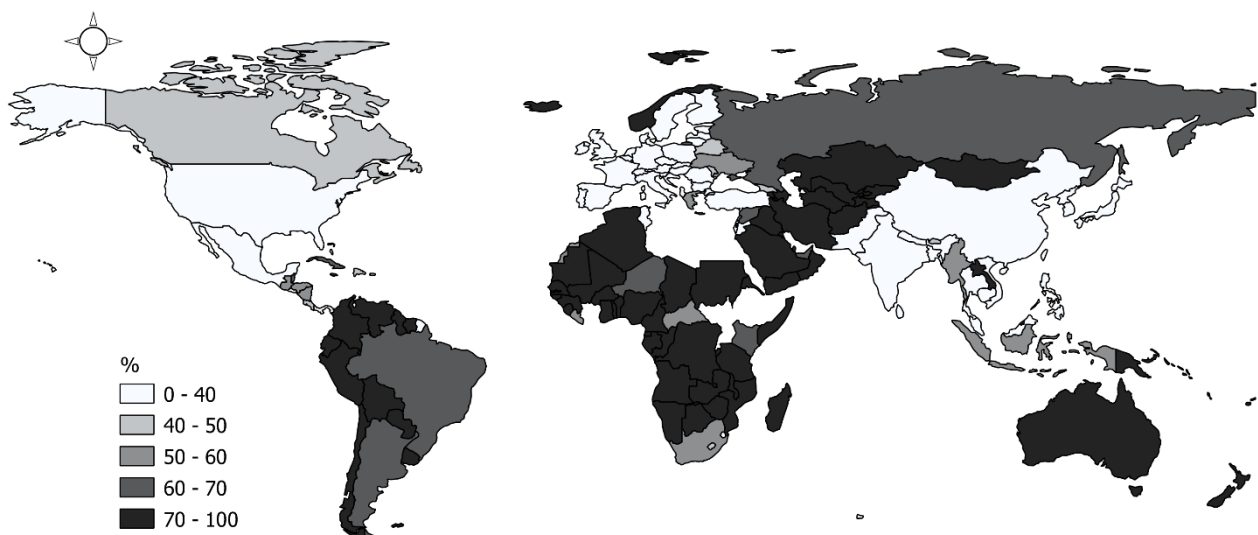
5 year average in bn current US\$. Source: own elaboration based on UNCTAD 2021b

Extractivism: Persistence, Crisis, or Change?

The drive towards sustainability is against the backdrop of two interlocking global processes that hereto characterize the world economy. First, a small number of economies, such as China and India, are increasingly escaping from the middle-income trap. For the last decades, these countries are catching-up with the Global North, and they have even better performed in terms of growth rates of production and export of manufactured goods. Catching up also signifies an increased demand for raw materials, particularly for fuels, minerals, and foodstuff, with far-reaching consequences for raw material extracting and exporting countries.

Second, the counterpart of catching up emerging markets are countries – at least 50 percent of the economies participating in the international division of labor – deepening their specialization patterns on primary commodities, particularly on fuels and minerals, and agricultural commodities. The vast majority of these economies are located in today's Global South, as the following figure underscores. The map illustrates the global geography of raw material trade and shows that the historical cleavage between Global North and Global South deepened.

FIGURE 4: GLOBAL GEOGRAPHY OF PRIMARY COMMODITY TRADE



Primary Commodities as a Share of Total Exports in %. Own elaboration based on UNCTAD 2021b.

The darker the country's blue, the more they extract and export. Latin America, Sub-Saharan Africa, North Africa, and West and Central Asia are most affected. They export their raw materials to maintain the industrial production and consumption regime in North America, Europe, and Asia.

The extraction of raw materials, be they agrarian, minerals, metals and ores, or fossils, is dirty and burdens the environment. It also provokes social cleavages and regularly introduces multi-scalar inequalities. Extracting raw materials is capital intensive. It involves modern

technology and knowledge, often provided by transnational corporations. However, many raw material exporters do not have the means to build up local facilities and thus depend on compensatory monetary inflows and investments as well as on knowledge transfers and support. With an export composition dominated by primary commodities, raw material exporters do not simply exploit their comparative advantage. However, they get locked into unequal specialization: they virtually depend on this export pattern and find it hard to diversify and leave this setting.

Extractivism is a veritable development model that shapes the entire trajectory of society. It turns out to be an encompassing model of ordering society. Extractivism shapes the economy, but it also imprints politics and influences culture.

Extractivism shapes the economy.

Extractivism signifies that extractivist activities are highly profitable and subsidize economic sectors other than extractive industries. Although the labor force usually employed in extracting raw materials is less than 4 percent of the total labor force (Ericsson & Löf, 2018), extractive sectors affect a large proportion of people not directly employed in the sector. Furthermore, economic extractivism is self-reinforcing. Both comparative advantages within the international environment and the strength of extractivist sectors in the domestic sphere go hand in hand and sustain each other. Extractivism becomes the sole driver of welfare. Within this setting political power outperforms economic efficiency. Innovation and net investment are subordinated to the political access to the fruits of nature and hence to raw materials, their extraction, exploitation, and exportation. The distribution of economic goods and services, the social positioning within a social hierarchy, and the allocation of privileges follow political purposes and are not governed by market forces. Prosperity is not dependent on individual merit, productivity, labor output, knowledge, or democratic voice. By contrast, the strategic access to distributional settings decides on social mobility, and distribution, in turn, is dependent on the exploitation of raw materials and nature.

Extractivism shapes politics.

Political decisions about distribution determine the use of export earnings rather than the efficiency of markets and the productivity of individual companies. Competing social groups have to form coalitions to organize access to political power and gain access to these distributional decisions. The dynamics of these coalitions affect institutional settings, actor constellations, and stratification. As an effect, political institutions often turn out to be exclusive and rather non-democratic, and social

groups regularly act as veto players, eventually blocking social, political, and economic transformations. At the same time, these actors are potential agents of political change. The potentials for transforming extractivism also depend on coalitions interested in maintaining, transforming, or even overcoming extractivism.

Extractivism shapes culture.

Extractivism extends into everyday life and influences cultural processes and habitual routines. It generates a discursive universe, imaginaries, and knowledge landscapes linked to extractive activities. These cultural processes often support promises for development and create myths of economic prosperity. It also shapes religious orientations and cultural mentalities, and often, this culture links up with loyalty for political leaders.

In sum, extractivism describes that entire societies depend on extracting and exporting raw materials. These societies reproduce themselves through extractivism. Even more: extractivism follows a peculiar movement since it oscillates between persistence and change. Extractivism provides opportunities for raw material exporters, but the model also tends to destabilize societies and entire regions. Prices for raw materials are usually volatile and defined by forces on the world market rather than by local factors of production, while the supply tends to be inelastic. From an initial exploration of raw material sites until commercial exploitation takes over ten years (IRP & UNEP, 2020, p. 57). Although countries pursuing extractivism benefit from price increases that translate into windfall profits and periods of bonanza, they all the more, they suffer from price drops. These price-shocks regularly translate into social hardship and precarity. Extractivism regularly falls into crisis. Only a few cases ever abandoned extractivism and rebuilt their economic structure on non-extractivist pillars.

Extractivism is both at the same time: highly persistent and prone to crisis, and the recent examples of Venezuela or Algeria furthermore demonstrate that these crises affect the world economy and international political constellations.

Extractivism is the Dark Side of Sustainability

The drive towards sustainability deepens extractivism. Demand for those raw materials used for the energy transition and the shift towards a more sustainable mode of living in the Global North changes the material base but entrenches extractivism in the Global South. In addition, fossil fuels will not disappear from the global setting. They are still necessary for industrialization in the catching-up regions of the world. In the end, extractivism becomes precarious and prone to crisis.

The global energy demand will further rise in the coming decades, and conservative estimates assume an increase of up to 40% (IEA, 2018, p. 38). Therefore, managing climate change means further shifting the base of world energy consumption from fossil fuels to other types of primary energy. In addition to the additional development of new, non-fossil, or fossil but climate-neutral sources of energy, this also involves rethinking the current retail network of energy provision and the increasing availability of new technologies for storing energy. The expansion of energy networks, the production of energy from renewable energy sources such as wind or water, and the storage technology for the mobile end-use of energy, in turn, require an increasing amount of raw materials. More specifically, it needs additional raw materials that complement those preferred within the fossil fuel energy age.

An excellent example of this change is mobility products' mineral bases such as cars. The construction of an electric vehicle involves more than six times the volume of minerals than a conventional car (IEA, 2021, p. 28). Therefore, the energy transition will provoke an unseen growth in demand for minerals and metals such as copper, lithium, cobalt, and nickel, which are needed to sustain the shift towards a low-carbon world economy (Koning et al., 2018). This trend has already begun.

This ambiguous process puts pressure on extractivism in the Global South. First, sustainability threatens raw

material exporters as their current export orientation will likely lose significance through an ongoing energy transition. Many raw material exporting countries struggle to define alternative futures in which extractivism plays a minor role. Extractivism appears to be unable to initiate social change towards non-extractivism, which would fundamentally impact social, political, and economic dynamics. It already affects international relations as they support the realignment of raw material exporters with rising world powers, such as China. Second, the combination of fuels and minerals matters. Suppose the impulse towards sustainability remains too weak or counteracting tendencies such as a renewed interest in the fossil energy age regain strength. In that case, existing patterns of extractivism will prevail and deepen. Extractivism in the Global South then propels an isolated locomotive of sustainability in the Global North. Third, many countries have already begun adapting to a changing international economic environment and rising interest in sustainability. These countries diversify their raw material base, shifting their emphasis from fossil fuels towards minerals, metals, and ores. Diversification of raw materials embodies an additional burden for the environment and fortifies social tensions. While extractivism then is challenged, and crises are even more accelerated, at the same time, the overall patterns are somewhat stabilized.

One thing is sure, sustainability challenges extractivism. The outcome still is uncertain. It seems likely that extractivism will continue to shape the global economy for a long time to come. Under the worst conditions, extractivism deepens and translates into endemic crises both within raw material exporting countries and on the international stage. Entrenched extractivism then creates boomerang effects such as transnational migration that directly affect those countries striving for sustainability.

Evaluating Persistence, Crisis, and Change is Crucial

If strategies for sustainability are not thought of globally, countries seeking sustainability externalize the costs of the energy transition to the Global South. In this doomsday scenario, a global zero-sum game emerges. The gains for the sustainability of some then signify the loss of sustainability of others. Entrenched global inequalities are the consequence, which in the end, threatens the overall objective of controlling climate change and pushing for a global energy transition. In this doomsday scenario, the sustainability of one group of countries translates into crisis-prone extractivism of another group of countries. Extractivism then will go hand in hand with changing directions of global commodity and value chains, alternating global constellations of conflict and cooperation, and shifting positionalities of raw material suppliers both within the

international system and within the Global South. Latin America and the MENA region are at the center of this discussion as these regions will be most affected together with Sub-Saharan Africa.

These remarks underscore that dealing with raw materials is central to understanding and evaluating global change. Extractivism appears to be at the core of the issue. Understanding both the persistence and the crisis of extractivism and evaluating opportunities for change and options for political support is crucial to support sustainability and reach the pursued energy transition. These issues call for new research and theory development and require particular awareness and sensitivity to social change within the extractivist model.

References

- BP. (2021). *Statistical Review of World Energy*. British Petrol.
- Crespo Cuaresma, J., Fengler, W., Kharas, H., Bekhtiar, K., Brottrager, M., & Hofer, M. (2018). Will the Sustainable Development Goals be Fulfilled? Assessing Present and Future Global Poverty. *Palgrave Communications*, 4(1). <https://doi.org/10.1057/s41599-018-0083-y>
- Ericsson, M., & Löf, O. (2018). Mining's Contribution to Low- and Middle-income Economies. In T. Addison & A. Roe (Eds.), *Extractive Industries: The Management of Resources as a Driver of Sustainable Development* (pp. 51–70). Oxford University Press.
- Fouquet, R. (2014). Long-Run Demand for Energy Services: Income and Price Elasticities over Two Hundred Years. *Review of Environmental Economics and Policy*, 8(2), 186–207. <https://doi.org/10.1093/reep/reu002>
- International Energy Agency. (2021). *The Role of Critical World Energy Outlook Special Report Minerals in Clean Energy Transitions. World Energy Outlook Special Report*. IEA Publications.
- International Energy Agency. (2018). *World Energy Outlook 2018*. IEA Publications.
- International Resource Panel, & United Nations Environment Programme. (2020). *Mineral Resource Governance in the 21st Century: Gearing Extractive Industries Towards Sustainable Development*. United Nations Environment Programme.
- Jaffrelot, C., & van der Veer, P. (Eds.). (2008). *Patterns of Middle Class Consumption in India and China*. Sage.
- Koning, A. de, Kleijn, R., Huppel, G., Sprecher, B., van Engelen, G., & Tukker, A. (2018). Metal Supply Constraints for a Low-Carbon Economy? *Resources, Conservation and Recycling*, 129, 202–208. <https://doi.org/10.1016/j.resconrec.2017.10.040>
- Månberger, A., & Johansson, B. (2019). The Geopolitics of Metals and Metalloids Used for the Renewable Energy Transition. *Energy Strategy Reviews*, 26, OnlineFirst. <https://doi.org/10.1016/j.esr.2019.100394>
- United Nations Commission on Trade and Development. (2021a). *State of Commodity Dependence 2021*. United Nations Publications.
- United Nations Commission on Trade and Development. (2021b). *UNCTADstat International Trade Statistics*. United Nations. <https://unctadstat.unctad.org/EN/>
- World Bank. (2021). *World Bank Development Indicators*. World Bank. <https://databank.worldbank.org/source/world-development-indicators>

EXTRACTIVISM

| The Project

The collaborative research project ***extractivism.de*** links the Universities of Kassel and Marburg. The project scrutinizes the extractivist development model and proposes new economic, political, and sociological conceptions of extractivism. It preliminarily focuses on Latin America and the Maghreb patterns. The project researches the conditions under which these patterns affect the persistence and transformative capacity of extractivism and its respective institutional settings. Finally, it explores how extractivism affects cultural processes and habitual routines and questions under what conditions and how far the development model extends into institution-building and social practice, i.e., everyday life.

The project aims to understand extractive societies not as deviants from the Western trajectory of development but in their own logic and their own particularities. The project, therefore, combines a strong empirical focus with theoretical work. It links both broad field research and data gathering of primary data and the qualitative and quantitative analysis of available secondary sources with a stringent transregional comparison. It develops methods in cross-area studies and investigates whether and why similar patterns of social change emerge in different areas and world regions despite significant cultural, social, or religious differences. Finally, the project intends to translate the findings for politics, society, and development cooperation.

Please visit www.extractivism.de for further information.