Research

"This Is Not Water" - Hydropower Conflict Centre in Times of Green Paradox

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In her work "This Is Not Water", the artist Carolina Caycedo addresses the local effects of large-scale hydropower projects in South America. But how is this renewable energy source treated in times of the "Anthropocene"?

For thousands of years, man has tried to make natural environment fit for his use by shaping it to his needs. For several centuries, technological progress has enabled mankind to control a large part of natural environment on our planet and to transform its consisting naturalness into economic or social added value. In many places this has led to new ecological states, which carry with them not only a complete loss of biodiversity, but cause also nature to adapt and function artificially. Hydropower is part of this story of man’s use of natural resources. In recent decades, hydropower projects have undergone increasing expansion which is influencing relationships between nature and humans at a global level. What can be done in times in which local action and global thinking are no longer possible without taking each other into account?

Background

In 2016, hydropower plants with a total capacity of 31.5 GW were installed worldwide. In South America, expansion tripled compared with the previous year. Several drivers are responsible for this development. In addition to national interests, the need for independence from international energy markets and the expansion of renewable energies, security of supply for energy-intensive heavy and large industries play a particularly important role. In Peru's mining regions, for example, major projects amounting to 1000 MW were installed.[1]

Globally, approximately 4100 TWh of electricity are generated annually by hydroelectric power plants, which currently represent the largest source of renewable energy and corresponds to a total share of approximately 6.8 % of global primary energy consumption. Between 2005 and 2015, installed capacity grew by 39%, which corresponds to an annual growth of 4%.[2] The International Energy Agency, which is known for its conservative forecasts in the field of renewable energies, expects the hydropower sector to grow by a further 25% to over 5,000 TWh by 2025 and to over 10,000 TWh by 2050. [3]

Driving forces

At the beginning of the twenty first century, the expansion of hydropower was largely favored by the Clean Development Mechanism. The "Mechanism for Sustainable Development" allowed international donor countries to participate in global climate protection and at the same time export energy technologies or finance "best practice" projects in an international context.[4] The mechanism agreed upon supports companies in industrial nations in offsetting the impacts of climate change by expanding renewable energy projects in the global south. The emissions avoided by these measures can then be traded through volume-related pricing mechanisms – known as offsetting. By this, companies can still label their unavoidable emissions as "climate-neutral" and enable cross-financing of the implementation of various "climate protection projects" at a global level.[5]

In Peru, as well as within Africa, overpriced large-scale hydropower projects are being developed. These intensive intrusions in ecosystems, as for example the ongoing projects in the Congo Basin, are not aimed at supporting the African population -which is energy undersupplied- by means of cheap electricity with its added value; but is rather aimed at providing internationally operating mining and quarrying companies with a permanent and stable energy supply. This is not only a matter of accelerating the creation of value in the country, but it is also a driver for increasing global income and resource inequality. Most of the Congolese neither benefit from the profit generated by these projects, either through tax profits nor through state-sponsored recovery plans that would restore the environment due to the extraction or use of their natural resources. The Congolese Grand-Inga dam project is expected to produce twice as much electricity as the Chinese Three Gorges Dam when completed. In Africa, more than 600 million people still have no access to the electric grid and additionally a large part of the power lines are in private hands. This industry-friendly expansion is being promoted mainly through financing mechanisms linked to international

cooperation and development aid.[6]

The conflict

The use of hydropower leads to various types and forms of use and resource conflicts regarding resource use at a global level. Geopolitically conflicts take place at upper transnational and underlying levels,[7] with arid regions being under additional pressure due to the construction of large-scale hydropower plants.

One example of this is the "Renaissance" dam in the Blue Nile in Ethiopia, scheduled for construction. Due to the evaporation and the retention of river sediments, this construction will impact Egyptian agriculture, which is completely dependent on the Nile and whose vulnerability will increase in times of strong urbanization and climate change. With the construction of this dam, Ethiopia is trying to strengthen its position within East Africa. Power generation, agriculture-friendly irrigation management and flood protection were the decisive arguments that countries within the Nile catchment area joined forces around, in an alliance called the "Nile Basin Initiative" (NIB). Still to join is: Egypt.[8] The conflict between Tajikistan and Uzbekistan, surrounding the construction of the Rogun Dam, is similarly critical. In this conflict, cotton production, energy independence and careless construction planning play a role in threatening political gestures and diplomatic deadlocks.[9]

Besides transnational political conflicts, negative effects on social and ecological conditions at a local context, which might arise from the construction of hydropower plants, are particularly relevant. Classic conflicts of use between agriculture (water storage for dry seasons) and hydropower operators (water retention for winter time due to increased energy demand) play the main role in regions with established agricultural systems, whereas, on the other hand, in large infrastructure projects, in off-grid or structurally weak regions, a multitude of lines of conflict between different actors, take place.

From a socio-economic point of view, long-term participation in value creation is often not designed to benefit local communities. The right to water and local co-determination over the use of water resources can be undermined by neoliberal water pricing or legislation. In many places, an integrated assessment of environmental risks according to international standards which takes local actors and key stakeholders into account is not yet an established or transparent procedure. The conscious exclusion of local actors and ecological criteria in decision-making processes during the planning phase of these macro projects can lead to local protests, social unrest and resistance movements.[10]

Ecologically speaking, hydropower can be described as a climate-friendly energy source, but when considering the negative impact on ecosystems, biodiversity and climate in local contexts, this assumption needs to be revised. In addition to the release of methane, the loss of carbon storage through flooding of forest areas, (large-scale) hydropower projects can potentially eliminate endemic species and unique ecosystems or put them under pressure through negative environmental effects. A further side effect is the intensive expansion of

infrastructure in structurally weak regions. The construction of the Tucurui Dam in Brazil resulted in increased deforestation rates in an area of 1000 km2 around new hydropower plants, as the expansion of the road network enabled the economic management of untouched forest areas.[11]

The Models

Many of these local impacts on existing social-ecological systems can be found in the Planetary Boundaries system described by Rockström et al. This approach describes the limits of the resilience of existing natural systems which are subject to anthropogenic overexploitation, including man’s strong influence on natural water cycles.[12] If one considers large-scale hydropower projects in the sense of the Anthropocene after Crutzen's ideas of "Man as a geological force", the effects and irreversibility of the dams and interventions in natural water circulation and hydrogeological systems built worldwide are so vast -due to straightening and overexploitation- that the supposed natural "original state" of these resources is most likely irretrievably lost in many places.[13]

But how to bridge the gap between local events with global models and scenarios? If one uses a social-ecological system (SES)[14] to model the relationship between society and nature in the context of hydropower, it quickly becomes evident that both nature (climate protection vs. biodiversity) and society (local community vs. hydropower operators/power consumers) cannot be represented in a bipolar SES. Rather, ecological and social systems oppose each other. When getting a full picture of this conflict, a multi-polar SES, from local to global, results a clearly paradox. Ecological and socio-economic added value (market value) at the global level can therefore carry with them a loss of social and ecological systems in the local context (loss of livelihood and quality of life).

Adding an economic dimension to the multipolar social-ecological point of view, it quickly becomes evident that the driver for this ambivalence is a market-driven development of energy markets and the profit-orientation of energy consumers. An ethical and regulatory dimension is not to be found within these considerations[15]. Both Karl Marx (1867)[16] and Christophe Bonneuil (2015)[17] do not see man as the primary driver for this strong anthropogenic transformation of natural space. They speak of an "unequal (ecological) exchange" starting with industrialized countries, through the permanent exploitation of nature by a "capitalist elite". For it is clear, and therefore the social-ecological perspective is so relevant for the interpretation of anthropogenic dominance and its consequences on the earth system, that in addition to the irreversible loss of natural environment, it is the man himself who suffers under his own dominance - in times of the "Capitalocene".[18]

The artwork

In her video installation (contribution to the exhibition "There Will Come Soft Rains?", Basis, Frankfurt am Main 2018), Carolina Caycedo, the artist behind the installation, deals with this distortion of the original socio-hydrological relationship between natural electricity and profit-

oriented use of resources using the example of large-scale hydropower plants in South America. She allows the Great River to be tamed, twists it, turns it in all directions in the film, tames it, directs its power. For some, this removal of sincerity symbolizes harmonization and increases in attractiveness; for others it seems like a distortion, like the presentation of a false force of nature, "only" a force of nature that can no longer claim to be natural. - "This Is Not Water".[19]

When looking at "This Is Not Water", it seems that both the choice of stylistic means and the staging of the object of reflection "the epoch of artificiality, in which naturalness is no longer a reference point", are brought into focus. But are we really "after nature", in the Anthropocene? Or is our dominance within the Earth system not rather a part of nature, which it corrects in the course of its development by its resilient strength and resumes pursuant to memory? "Nature after Nature"? [20]

Even if we look at nature in its supposedly pure form, we evaluate it from an anthropogenic perspective. Let us therefore return to Marx (Paris manuscript 1844): "'The nature which develops in human history – the genesis of human society – is man's real nature; hence nature as it develops through industry, even though in an estranged form, is true anthropological nature. "[21]/[22]. Later, through science and philosophy, we were able to counter mythical understanding with a secular view of weather or natural phenomena. Today we have to go one step further and accept that it is not only physical heteronomy that influences our atmosphere, our earth system, but that we are the ones who have empowered ourselves in the "language of the gods"[23] and must now learn how to speak it.[24]

The anthropogenic over shaping of natural space can be expressed in many models. It is important that the human being is viewed in a differentiated way in its impact on natural space and that its impact within the earth system (positive and negative impact) is dully recognized and understood. The monetization of ecological loss is still not on a par with the macroeconomic indicators of our time in regards to its significance for our actions.

Let us therefore conclude with an assessment by the German Advisory Council on Global Change (WBGU) in 2011, 4 years before the Paris Climate Agreement, which, despite all theoretical euphoria, leads us back to the possibilities for action in real politics: "Hydropower is being expanded only slightly as its sustainable potential is limited." And let's plan to keep an eye on this expansion, to make it holistic and to expand it by a multitude of possibilities.[25]

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Picture: Carolina Caycedo, “Esto No Es Agua / This Is Not Water”, 2015

Film still 1 channel video HD, Sound and Color, 5’20’’, Sound: Daniel Pineda

[1] International Hydropower Association 2017 „Hydropower Status Report 2017“ S. 5, 42-48 https://www.hydropower.org/sites/default/files/publications-docs/2017%20Hydropower%20Status%20Report.pdf

[2] World Energy Council 2016 „World Energy Resources 2016“ S. 16 https://www.worldenergy.org/wp-content/uploads/2016/10/World-Energy-Resources-Full-report-2016.10.03.pdf

[3] International Energy Agency 2017 „Tracking Clean Energy Process 2017“ Energy Technology Perspectives 2017 Excerpt Informing Energy Sector Transformation S. 26 https://www.iea.org/publications/freepublications/publication/TrackingCleanEnergyProgress2017.pdf

[4] Deutscher Bundestag 2016 „Clean Development Mechanism als Instrument der Entwicklungspolitik“ WF VIII – 025/2006 und WF II – 016/2006 https://www.bundestag.de/blob/415004/205d5d3d4a92205495ed17e6122f0773/wf-ii-016-06-pdf-data.pdf

[5] Today, the Clean Development Mechanism is slowly being replaced by the Paris climate agreement, since it is now about reducing rather than compensating. In addition, new standards that take into account the ecological and social added value of the projects have become market stabilizers. Especially in the area of "unavoidable emissions", this compensation mechanism is quite in line with the Paris climate agreement.

[6] Aurélien Bernier 2018 „Strom für Afrika“ Le Monde diplomatique deutsche Ausgabe https://monde-diplomatique.de/artikel/!5480793

[7] Conflicts between the countries in the upper part of the river basin and the countries in the lower part, i.e. downstream (up- and downstream riparians)

[8] Habib Ayeb 2013 "Whose river is this?" Le Monde diplomatique, German edition https://monde-diplomatique.de/artikel/!461436

[9] Régis Genté 2017 "The Great Wall of Tajikistan" Le Monde diplomatique German Edition https://monde-diplomatique.de/artikel/!5379125

[10] Marcela Palomino-Schalscha et al. 2016 „Contested Water, contested development: unpacking the hydro-social cycle of the Ñuble River, Chile; S.889, 897; Third World Quarterly Vol. 37, No. 5, S. 883-901; http://dx.doi.org/10.1080/01436597.2015.1109436

[11] Luke Gibson et al. 2017 Trends in Ecology & Evolution, December

2017, Vol. 32, No. 12; Elsevier Ltd.
https://doi.org/10.1016/j.tree.2017.09.007

[12] Rockström et al. 2009 „Planetary Boundaries: Exploring the Safe Operating Space for Humanity“, Ecology and Society 14(2): 32 http://www. ecologyandsociety.org/vol14/iss2/art32/

[13] Skalak et al. 2013 „Large dams and alluvial rivers in the Anthropocene: The impacts of the Garrison and Oahe Dams on the Upper Missouri River“ Anthropocene 2 (2013) 51-64

[14] Hummel et al. 2011 „Social-Ecological Analysis of Climate Induced Changes in Biodiversity – Outline of a Research Concept.“ BiKF Knowledge Flow Paper Nr. 11, Februar 2011
http://www.bik-f.de/files/publications/kfp_nr-11_neu__71c3b9.pdf

[15] Giovanni Frigo 2017 „Energy ethics, homogenization, and hegemony: A reflection on the traditional energy paradigm“ Energy Research & Social Science 30 (2017) 7–17,
http://dx.doi.org/10.1016/j.erss.2017.06.030

[16] John Bellamy 2018 „Der Öko-Marx“ Le Monde diplomatique deutsche Ausgabe, Juni 2018

[17] Christophe Bonneuil 2015 "The Earth in the Capitalocene" Le Monde diplomatique German edition, November 2015

[18] See footnote 16

[19] Carolina Caycedo 2015 „ESTO NO ES AGUA / THIS IS NOT WATER“,Film Installation

[20] Hartmut Böhme 2017 "Prospects of Nature", Matthes & Seitz Berlin, pp. 12-16

[21] Karl Marx 1844 “Ökonomisch-philosophische Manuskripte” Siehe dazu http://www.mlwerke.de/me/me40/me40_533.htm

[22] German version: “(Die in der menschlichen Geschichte – dem Entstehungsakt der menschlichen Gesellschaft – werdende Natur ist die wirkliche Natur des Menschen, darum die Natur, wie sie durch die Industrie, wenn auch in entfremdeter Gestalt wird, die wahre anthropologische Natur ist.”

[23] According to Lucretius See footnote 20

[24] Hartmut Böhme 2017 "Prospects of Nature", Matthes & Seitz Berlin, pp. 12-16, 70

[25] WBGU 2011 "World in Transition Social Contract for a Great

Transformation" German Advisory Council on Global Change https://www.wbgu.de/fileadmin/user_upload/wbgu.de/templates/dateien/verffentlichungen/hauptgutachten/jg2011/wbgu_jg2011.pdf