

Resilient Agriculture For Global Health

Only a different kind of agriculture can help to fight pandemics

Eva Gelinsky (translated by Renate Zauner)

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INTRODUCTION

Is the Covid-19 pandemic a natural disaster of sorts that hits humankind like a violent storm?¹ No. This pandemic also has political and economic causes, and it affects humans in a very unequal way. The highest health and death risk of Covid-19, once again, is poverty (e.g. GRAIN 2020a). Moreover, the emergence of the pandemic is not at all surprising. For more than two decades, epidemiologists, biologists and critical social scientists have been warning about new disease outbreaks and their potentially global dissemination (Davis 2005, 2020, Wallace 2009). Since the 1980s, experts have been observing a more pronounced dynamic as regards infections. We are increasingly witnessing pathogens that jump from animal to human hosts

1 In an article in the *Passauer Neue Presse*, on 14.12.2020, the German finance minister, Olaf Scholz, said that the coronavirus is “a natural disaster, comparable to an earthquake or a volcanic eruption.” Similar comparisons were made by the professor of philosophy, Albert Newen, on 17.01.2021 in *Der Spiegel*: “Storms, earthquakes, floods, tsunamis – we as humans time and again experience them. Hardly anybody denies the threat they pose. The corona pandemic is also such a natural disaster...”

(zoonoses or zoonotic diseases)². Our globalised supply chains, commodity flows and travel activities contribute to the dissemination of viruses and bacteria within a very short time.

It has now been more than one year since the pandemic started, but we are still hardly discussing its causes. Our event aims to facilitate such a debate. With experts from the USA, Canada, Australia and Austria, we wish to discuss the connections between our industrialised and globalised agriculture, pandemics and the water and climate crisis. We also wish to debate how we got into this situation and which structures were and are its decisive drivers. Together, we would also like to think about strategies that promote a different relationship with nature, in particular in agriculture, in order to ideally prevent pandemics. This also encompasses the central question as to *who* could implement these alternatives.

Our event focuses on the following 3 theses:

- **Thesis 1:** The increase in the emergence of viruses (zoonoses) is a consequence of our industrialised and globalised food production.
- **Thesis 2:** Those who cause the crisis are also its foremost beneficiaries.
- **Thesis 3:** The way out of this impasse is a different “metabolism” between humankind and nature: agroecology and food sovereignty instead of factory farming, the climate crisis and the privatisation of land and water.

The following text is intended as an introduction to the event, but can also be used for future reference and consolidation.

ARE SMALLHOLDERS AND WILD ANIMAL MARKETS CENTRAL “SOURCES OF THE VIRUS”?

In hindsight, it was mainly down to luck that the bird flu, MERS and the swine flu epidemics did not result in even more deaths. Their pathogens either were very contagious and only slightly pathogenic (such as the swine flu, 2009), or hardly contagious, but deadly (bird flu, 1997, MERS, 2012). Covid-19 shows that different variations are possible at all times: the virus is very contagious and has a high mortality rate (depending on the age of the infected person, underlying health conditions and the state of healthcare, Dudel et al. 2020).³

Covid-19 is caused by a coronavirus that is present in bats. A wild animal market in the Chinese province of Wuhan is said to be responsible for the present outbreak; the exact transmission routes and intermediate hosts remain unclear.⁴

More than half of today’s new zoonotic pathogens emerge in marginal areas of production, e.g. in markets in the outskirts of towns, or in settlements that have been established near plantations. There, the local

2 According to the World Organisation for Animal Health (OIE), the number of epizootic diseases has tripled in the past 15 years (Leclair 2020a).

3 <https://www.mpg.de/16647475/covid19-unterschiedliche-todesfallraten> Emerging variants can increase the case fatality rate: <https://www.aerzteblatt.de/nachrichten/121191/Britische-Variante-B-1-1-7-Studien-deuten-auf-erhoehte-Mortalitaet-hin>

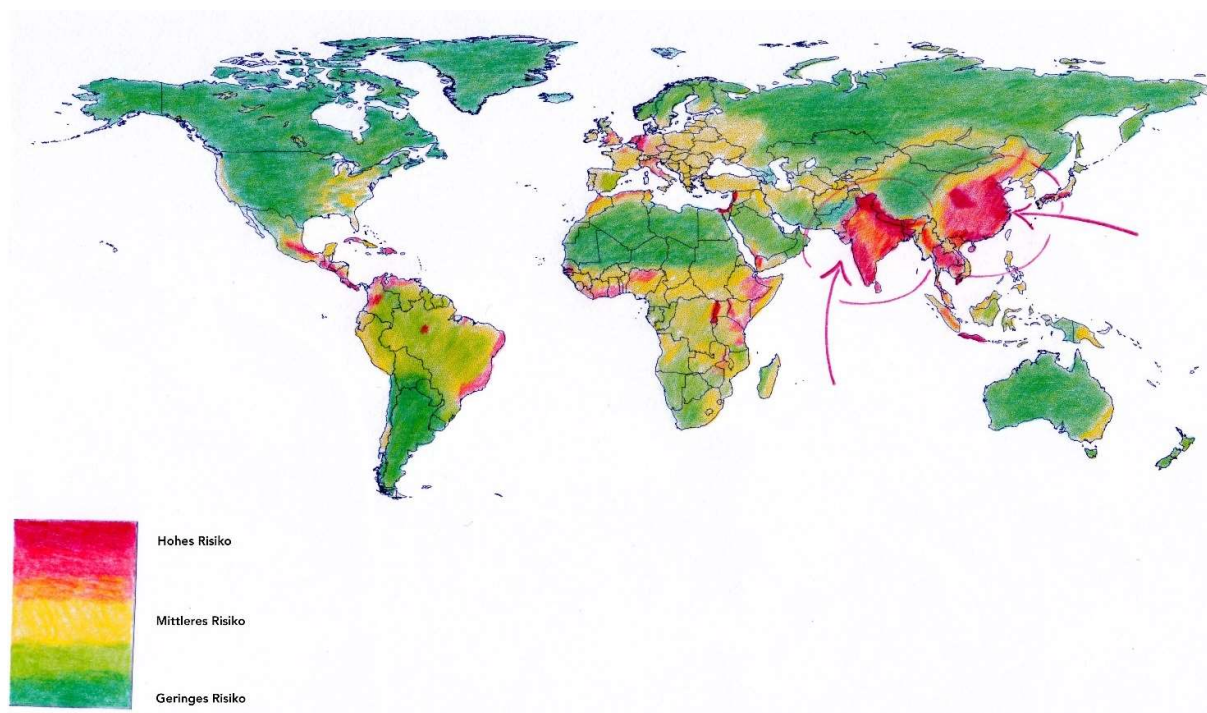
4 <https://www.who.int/health-topics/coronavirus/origins-of-the-virus>, <https://media.mercola.com/ImageServer/Public/2021/April/PDF/who-enters-damage-control-mode-pdf.pdf>

communities are initially infected by (wild) animals, before the particularly “successful” pathogens spread further.

The co-evolution of humans and microorganisms

Diseases that originate from microorganisms which are naturally present in the environment (e.g. bacteria), or from close contact between animals and humans (zoonoses), are not new. Humans and microorganisms live and develop in co-evolution, in a constant process of mutual adaptation. While thousands of people in the poorest countries still contract or die from infections,⁵ scientific and social progress in the Global North⁶ – antibiotic and antiviral drugs, better housing, sanitation and clean drinking water – have resulted in a situation in which many diseases have been pushed back entirely, or to a large extent (“epidemiological transition”, Becker 2020, p. 15). However, these successes are very fragile: on the one hand, antibiotic and antiviral treatments become ineffective if they are used on a massive scale. Multi-resistant germs have already become a serious threat in many countries. On the other hand, and this is one of the central issues of our conference, globalised commodity production is promoting the emergence of new diseases (in particular zoonoses).

A few years ago, representatives of the EcoHealth approach⁷ published a world map in the Lancet journal (Morse et al. 2012) that not only depicts former epidemics since the 1940s, but which also points to where the next pathogens are likely to appear: China, Indonesia, as well as parts of Latin America and Africa were coloured dark red as possible “breeding grounds”.



5 <https://www.theguardian.com/environment/2020/mar/22/water-saving-an-important-but-ignored-weapon-in-solving-climate-crisis-says-un>

6 This includes emerging countries, such as China, Brazil.

7 A research approach that studies the connections between ecological changes and human health, with a focus on zoonoses.

As regards practises that promote disease, the paper focuses on wildlife markets, exotic eating habits, and the encroachment of local farming communities into forests, which is often accompanied by the use of fire to clear land. Does this mean that indigenous communities and small-scale crop and livestock farming such as backyard farming are the real problem? This position is maintained not only by scientists, but also by representatives of the health sector and the big agribusinesses (→ [Background information and links: Pandemic\(s\)](#))

In case of a regional outbreak, experts will become active: biologists, epidemiologists and phylogeographers⁸ tackle the genetic sequencing of the virus and study its evolutionary dynamic. How infectious is the new strain, how fast does it spread and which modes of transmission are possible? However right and important this work is, in particular when the task of these experts is also to contain an epidemic; does it suffice for our understanding of the *causes* of disease outbreaks?

THE POLITICAL VIROLOGY OF THE WORLD AGRICULTURAL MARKET

The epidemiologist and biologist Rob Wallace, who has worked on these very questions for many years, clearly answers this question in the negative. He first started to doubt his scientific approach in 1997, when he studied the outbreak of bird flu. “No matter how I looked at them, the genetic sequences I was compiling of influenza couldn’t tell me why H5N1 emerged in Guangdong in the mid-1990s”, he later summarised (Wallace 2016, 10). He began to go beyond the genetics and region of origin of the influenza virus, and started to also integrate the *prevailing social and economic conditions* into his research on the causes of epidemics. China has been undergoing a fundamental transformation process since the 1990s. Agriculture, including meat production, is also being restructured. The agricultural sector, which is increasingly dominated by multinationals that are acting on a transnational level, is, in China as well, increasingly geared towards the world market. In the case of H5N1, it emerged that it is mainly intensive poultry breeding that is supplying a nearly perfect environment for virulent pathogens, for them to not only multiply rapidly, but also to mutate and become potentially even more infectious. Pathogens were released into the environment via the contact of employees with the animals, the open transport of animals⁹ between the farm and the slaughterhouses, and the removal of slurry. “Biosecurity” regulations do not put an end to this (→ [Background information and links: Meat production](#)).

The more Wallace analysed the root causes, the more complex the picture became. He emphasises that further aspects have to be integrated into the analysis: traditional backyard farming, for example, could also become critical from an epidemiological point of view, if chickens have direct contact with wild birds. However, he says, wild birds prefer to stay near human settlements if their natural habitat is destroyed, polluted, drained or covered with buildings. He explains that smallholders are impacted when domestic agriculture is restructured and increasingly geared towards the world market – a path that many countries have not taken voluntarily (→ Box). Not all smallholders give up their farms and leave the area. Very often, small farms are integrated, as suppliers, into the structures of the agricultural groups. “The new arrangements belie the superficial distinction that has been made between industrial farms exercising “biosecurity” on the one hand and small farmers whose flocks are exposed to the epidemiological elements. Factory farms ship day-old

8 Phylogeography studies the historical processes that may be responsible for the past to present geographic distributions of genealogical lineages, in this case the distribution of viruses.

9 There are both transports of live animals – to the slaughterhouse – and transports of animals that have died prematurely on the farms.

chicks to be raised piecemeal by contracted farmers. Once grown (and exposed to migratory birds), the birds are shipped back to the factory for processing.” (Wallace 2016, 75). In his view, the violation of biosecurity appears to be built directly into the industrial model (ibid.). (→ see below and [Background information and links: Meat production](#))

Consequences of structural adjustments in countries of the Global South

The debt crisis in many countries of the Global South in the 1980s entailed a change of paradigm in development policy. If a government's debts reached a level at which it could no longer service them, and could not supply itself with new money on the financial markets, the International Monetary Fund (IMF) stood in as a “lender of last resort”.

However, these credits were only granted if the governments committed themselves to introducing a number of economic policy measures. These conditions became known as structural adjustment programmes (SAP). The individual economic policy demands of the SAPs always were the same, regardless of the major national and regional differences. In 1989, US economist John Williamson coined the term “Washington Consensus” for this policy, since both the multilateral finance institutions headquartered in Washington, the International Monetary Fund and the World Bank, and the US government and internationally operating finance institutions strictly enforced it. The demands of the programme included a reduction in public spending, currency depreciation, privatisation, no or very small wage increases, trade liberalisation, strengthened property rights, price increases for agricultural products, a decrease of subsidies and price controls, as well as an increase in taxes on consumer goods. Analyses of structural adjustment programmes, in many cases, furnish evidence of a worsened situation as regards food and agricultural income. In many countries that extensively liberalised their markets following pressure from the IMF and the World Bank, the provision of food for the population by domestic agriculture has almost completely collapsed.

Today, the measures of the international creditors have different names and there has been an increase in the use of new instruments, such as the conclusion of bilateral free trade agreements. However, privatisation and liberalisation are still often demanded as a precondition for credit, and the resulting problems have remained the same. For many developing countries, their dependency on the world market was their undoing. For decades, they were told that the opening of the markets, the import of cheap food and the concentration on the production of a few export products was the right way. However, this path has led many of them into a hunger crisis.¹⁰

Back to Covid-19. According to Wallace, we also have to differentiate in the case of wild animal markets. “(...) wet markets and exotic food *are* staples in China, as is now industrial production, juxtaposed alongside each other (...). Indeed, the two food modes may be integrated by way of land use. Expanding industrial production may push increasingly capitalized wild foods deeper into the last of the primary landscape, dredging out a wider variety of potentially protopandemic pathogens. Peri-urban loops of growing extent and population density may increase the interface (and spillover) between wild nonhuman populations and newly urbanized rurality. Worldwide, even the wildest subsistence species are being roped into ag value chains” (Wallace 2020b). “So while the distinction between factory farms and wet markets isn't unimportant, we may miss their similarities (and dialectical relationships).” (ibid.). The sale of meat from wild animals, for example, is no longer organised on a local or regional level only. This sector also is subject to the mechanisms of a

10 Cf. the presentation by Mathias Binswanger on World Food Day 2019: https://welternaehrungstag.ch/wp-content/uploads/2019/10/Wet19-2_MathiasBinswanger.mp3 (audio version), https://www.youtube.com/watch?v=ccX_sXxqPR8 (summary on YouTube)

maximisation of profits¹¹ and, just like agribusiness, is supplied with capital by big funds and banks. Which interests do these institutions have and which developments are particularly relevant for the developments described by Wallace?

AN IMPORTANT DRIVER: ON THE ROLE OF FINANCE CAPITAL IN THE AGRICULTURAL SECTOR

Since the financial crisis of 2007-2008, the agricultural sector (once again) has been seen as a lucrative business area. The most important issue for the causal relationships described by Rob Wallace is land grabbing, the worldwide acquisition of agricultural land.

The fact that finance capital¹² is interested in the agricultural sector is not entirely new. Bank credits or commodity futures with agricultural products have been in existence since the 19th century. In the past few years, speculation with agricultural commodities, such as wheat and maize, has increased significantly because the regulations that had put a check on this kind of business were relaxed by politics.¹³ Speculative futures trading significantly contributed to the global food price crisis (Hachfeld, Pohl, Wiggerthale 2013). Financial service providers have also become active in the management of agribusiness: for a few years now, big investment management corporations, such as BlackRock, have, by means of their funds, become important share owners of the big agribusiness corporations. This means that they can also influence the business policy of the corporations and influence the market (Gelinsky 2021).¹⁴

Land grabbing has turned hunger into a business as well, for the combination of ever more people, less land and increasingly degraded soils turns food into a safe investment.

Land is scarce in Europe, the USA, China, and it is expensive. New land has to be developed, and it is mainly to be found in the Global South, in Africa, Asia and South America.¹⁵ Funds, banks, governments – all of them are competing for access to farmland. Land grabbing is currently estimated to affect 43 to 200 million hectares¹⁶, which corresponds to approximately half of the surface of Western Europe. This is the amount of land that has been sold or leased long-term to foreign governments, financial players, multinationals and private individuals. “Land bank” is the new term for cropland, propagated by the managers of hedge funds, the private equity sector and the big pension funds.¹⁷ The buyers, such as China and Saudi Arabia, use the

11 In China, the wild animal sector employs nearly 14 million people, with an annual turnover of 74 billion US dollars (ibid., 16).

12 This term, which was introduced by Hilferding (1910), refers to the sector in which different players (banks, investment funds, pension funds, etc.) trade securities.

13 The US Commodities Futures Trading Commission (CFTC), e.g., relaxed the restrictions that had limited speculative trading in agricultural commodities such as wheat, maize and soy beans in 2005. In 2006, it exempted a certain class of funds from the remaining limitations.

14 <https://www.akweb.de/politik/blackrock-als-multiples-machtzentrum/>

15 Land grabbing increasingly takes place in the North as well, cf. Anderl, Wolkenhauer 2021: Kein Plan für's Land? In: Jacobin, 23.03.2021. <https://jacobin.de/artikel/agrarpolitik-landkonzentration-landgrabbing-landnahme-agrarlobby-bill-gates-bodenpolitik-bauernverband-hoefesterben-narodniks/> and https://www.fian.de/uploads/media/2014_Landgrabbing_Europa_web_01.pdf

16 <https://breadforall.ch/topic/land-grabbing/>

17 In 2009, Land Matrix, an independent initiative, started to collect information on land deals for which public data is available. By July 2020, the database held information on closed, intended or failed deals covering almost 82.5 million hectares. The peak of land grabbing was reached in 2008, both with respect to the size (7.1 million ha)

acquired land as offshore farmland, in order to secure their own food supply. Many areas are also used to cultivate plants for agrofuel or popular commodities, such as palm oil. (Investment) banks, such as the Deutsche Bank or Goldman Sachs, invest both in agribusiness – e.g. pig breeding and poultry farms in China – and in farmland for feed crops.

What is the impact of land grabbing? The land, which is used as a fixed asset, is restructured so as to achieve maximum revenue with the crops and livestock chosen: maximum yield, the highest possible number of animals – and maximum profit. Small-scale farmed plots have to give way to enormous monocultures, and forests are cleared for plantations. The cultivation of the land mostly demands the use of pesticides, herbicides and artificial fertilisers, as well as the use of machines. Intensive farming, the lack of crop rotation and the use of heavy machinery degrade the soil. If the land is irrigated, (ground) water stocks also decrease. The International Institute for Sustainable Development (IISD) therefore judges that land grabbing in truth is water grabbing, i.e. that it is about access to the springs (Smaller, Mann 2009, → [Background information and links: Water](#)). A vicious circle is set in motion, which – if the yields are to stay permanently high – will necessitate an ever-increasing amount of external, polluting inputs.

For the local population, land grabbing often is linked to dispossession, displacement and hunger.¹⁸ People who do not find a low-paid job as a day labourer in the new agribusiness are forced to migrate to cities. These offer only few possibilities to earn a living and find accommodation; and these people mostly do not have access to healthcare either. This means that these migration movements become another decisive factor for the further spread of zoonotic diseases:

“Indeed, the story of smallholder displacement and labor mobility now appears central to the intertwined political economy and ecology of land use, rural livelihoods, and zoonotic disease. This much is apparent from the disproportionate COVID-19 fatalities being borne by migrant populations in one of the wealthiest nations of the world, Singapore, a country that depends on migrant laborers, many of whom long displaced from their agrarian communities.” (Liebman et al. 2020, 7)

The developments outlined above not only have negative impacts locally; their effects are global. This is exactly what Rob Wallace points out when he criticises the fact that finance capital accelerates new, possibly global pandemics (Wallace 2020a, 33, Wallace 2020d): by making investments in the industrialised meat trade, investment banks, such as Goldman Sachs, become co-responsible for the creation of new, pathogenic strains of viruses. With their financing of meat producers, such as JBS¹⁹, or palm oil plantations, Swiss banks are also helping wild animals, whose traditional habitats have been destroyed, to transmit pathogens to plantation workers. If these workers commute between plantations and peri-urban settlements, the pathogen can potentially spread to an ever-increasing number of humans (or their animals). Finally, globalised commodity chains also transport diseases, which is why epidemiologists such as Rob Wallace are not the only ones who consider other pandemics on a global scale to be highly likely.

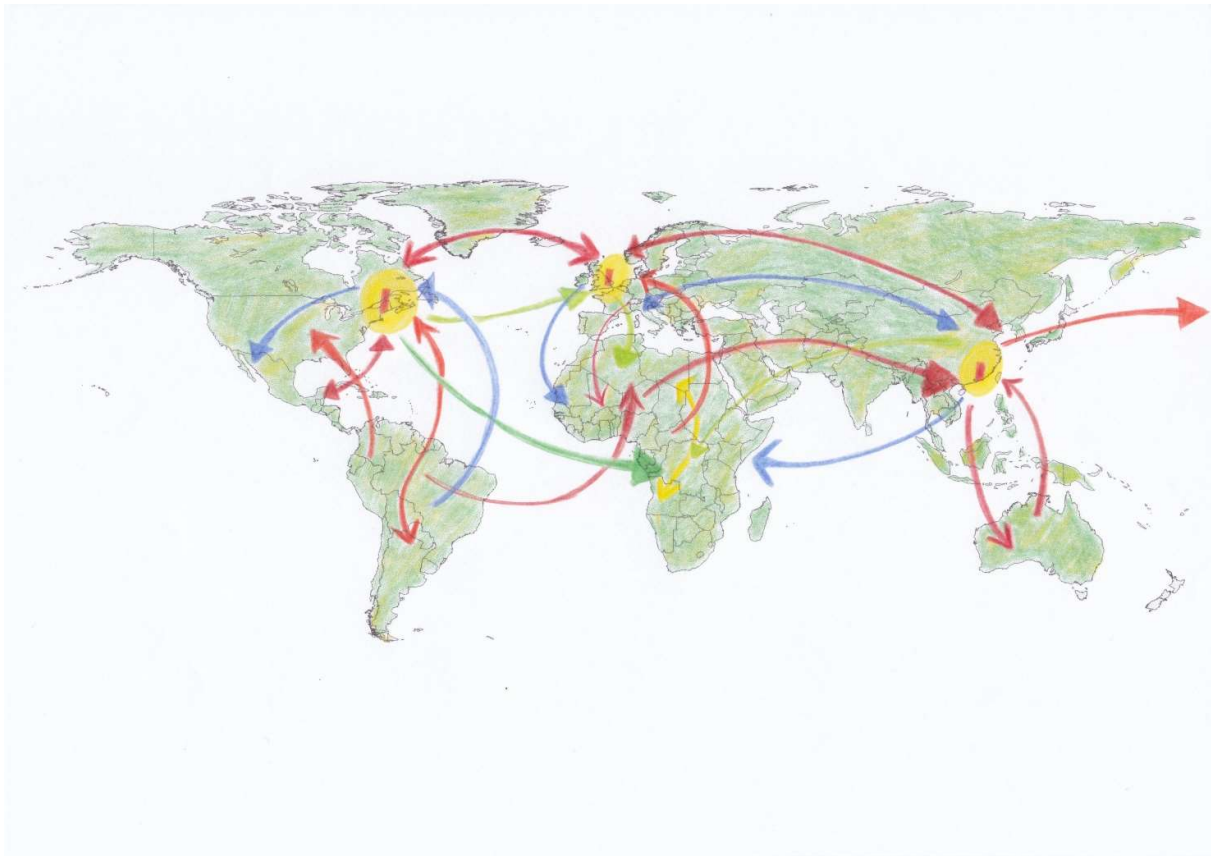
and the number of deals (193 acquisitions). From 2011 onward, a downward trend can be seen. Eastern Europe has been the main target region in terms of the total area of closed deals, followed by Africa, which has the highest number of closed deals. Other top target countries are Russia (12.3 million ha), Indonesia (3.8 million ha), Papua New Guinea (3.7 million ha), Brazil (3.7 million ha) and the Ukraine (3.3 million ha), followed by South Sudan and Mozambique with 2 million hectares respectively (Herren et al. 2020, 68).

18 The NGO GRAIN describes this in several case studies: <https://grain.org/en/category/537>

19 JBS (abbreviation of *José Batista Sobrinho Sociedade Anônima*) is a Brazilian public limited company. It is the biggest meat producer in the world and the biggest meat processing company in South America. See <https://chainreactionresearch.com/wp-content/uploads/2020/12/Domestic-Banks-Finance-74-of-Brazilian-Beef-Soy-.pdf>

Therefore, upon closer inspection, the initial quoted claim that the pandemic is similar to a “natural disaster” that “hit humankind” turns out to be a rather perfidious diversionary tactic. Globally present processes, *interests and mechanisms of oppression and exploitation* will become basically invisible if one takes this perspective. What is more: in this approach, disciplines, such as epidemiology, serve the interests of those who are in great part responsible for the precarious situation. This is why Rob Wallace is so fiercely committed to a political virology or virology as a social theory (Wallace 2020c).

Another look at the map of “virus hot spots” mentioned above shows that the situation is far more complex. Besides local and regional factors, we also have to integrate the global networks, interests and power relations. This is the only way to understand the origin and dynamic of pandemics. Wallace summarises this as follows: if one were to replace fixed points on the map with relationships, such as the commodity, money and migration flows, then major financial centres, such as New York, London and Hong Kong, would be the worst breeding grounds for diseases (ibid.).



MANY CRISES, ONE CAUSE

The connections and structures described by Rob Wallace not only govern the emergence of diseases; they are also responsible for other global crises. Besides the water crisis (→ [Background information and links: Water](#)) and climate change (→ [Background information and links: Climate](#)), the massive loss of biodiversity (IPBES 2019) is also important in this context. However, both global warming and the loss of biodiversity do not simply result from the structures already mentioned; these processes also mutually influence and reinforce each other.

Let me illustrate this with three examples:

- The loss of biodiversity – the clearing of a forest rich in structures and species, to make way for a palm oil plantation – is precisely what is promoting the spread of pathogens: wild animals, such as bats, can no longer find food in the degraded remains of their traditional habitat, so they settle down in plantations and infect the people working there (Wallace 2020a, 85ff. and → [Background information and links: Pandemic\(s\)](#))
- If global temperatures rise by significantly more than 1.5 degrees – a scenario that is becoming ever more likely, according to scientists (Lebling et al. 2020) – the speed of the loss of species will increase, and more species will disappear. For the warming, according to forecasts, will be so rapid, that many species will not be able to adapt, e.g. by migrating to cooler regions (IPCC 2019, Trew, Maclean 2021). However, an accelerated loss of biodiversity is a factor that, in turn, can promote the emergence and spread of diseases.
- Global warming will further aggravate water scarcity and thus food supply in many regions of the world (→ [Background information and links: Water](#)). Forecasts predict a massive increase in migration (“climate refugees”) (Balsari, Dresser, Leaning 2020). Will these people have sufficient access to medical care, enough food and clean water? The current refugee crisis and the Covid-19 pandemic show that these basic requirements of public health absolutely cannot be taken for granted in the Global North, either (Howard, Bartram, Brocklehurst 2020). Climate change will thus not only intensify global inequality, but will also contribute to a global health crisis, with or without further pandemics (ibid.).

When this is integrated into the world map, it features even more arrows and connections; the image is starting to become unclear. However, the overview is still not complete. It lacks the fundamental driver that has created the mentioned structures and is primarily responsible for their destructive effects. With *this* look at the various crises, we are confronted with very basic questions about the current relationship between humans and nature.



SOCIAL “METABOLISM” WITH NATURE – BEYOND AGRICULTURE

In every production process and all processes along the value chain – whether they concern the production of machines or the supply of services – valorisation is achieved by extracting, processing and transforming natural materials and disposing of them as refuse, poisons and emissions. As such, each value chain is always simultaneously a *metabolism with nature*.²⁰

At first sight, it seems to be a trivial statement that each human production process and value chain is always also a metabolic process with nature, in particular if one thinks about production forms such as agriculture, in which nature is very obviously worked on, changed and valorised, but also polluted and destroyed. However, this perspective is anything but obvious. This becomes clear when one puts on the “glasses” of neoclassical theory.²¹ This concentrates on the production factors of capital and work. Nature, if it appears at all, only does so as a theoretical placeholder in the form of external effects²². While it is acknowledged that “market economy” production can have a negative impact on nature, it is not deduced from this that production should therefore be fundamentally reorganised. Instead, the overuse and underuse of nature is transformed into a *cost problem* and thus integrated into the “logic of capital”: neoclassicism therefore assumes that exploitation of nature takes place because it has no or no correct *price*. The suggested steering instrument, therefore, is to put prices on nature as a whole, which means that it has to be privatised (Dasgupta 2021). So the negative effects that the pursuit of profit entails for the environment are to be eliminated by optimising the pursuit of profit.

Water scarcity: big promises, even bigger profits

Since groundwater reserves are being overused, they risk running dry in the long term – the mining of minerals and fossil resources is expected to pollute even more freshwater. Agriculture is by far the largest consumer of water, accounting for nearly 70% of world demand. Fattening cattle and pigs, in particular, is very water-intensive. However, the irrigation of major plantations and monocultures not only also absorbs large amounts of water, but also poses a risk to rivers and groundwater with pesticide and fertiliser residues. Climate change is further aggravating the situation. Besides floods, we are witnessing an increasing number of droughts. The increased scarcity brings those to the scene who see privatisation as the only solution: water would have to become a commodity, with its price depending on supply and demand. This is what the UN – that already announced back in the 1990s that water is an economic good²³ – the World Bank and lobbying organisations, such as Water Resource Group (WRG), declare. They are convinced that economic incentives are needed to save water and make its use more efficient. However, “attractive business models” necessitate clear and enforceable property rights, “appropriate” tariffs, quotas and price mechanisms. The privatisation of water is driven by different measures and models: projects of public-private partnerships, for example, are used to privatise communal water companies, the bottled water industry exploits public groundwater reserves and sells the bottled water, in many countries a separation of water rights and land rights was

20 In-depth and on the theoretical background: 2020, 188 ff., Foster 2000, cf. also Zeller 2020, 28 ff.

21 This theory still dominates the mainstream of economic theory.

22 External effects, or *external costs*, are generated, e.g., if companies only calculate the business costs of their production and pass on (externalise) the social and ecological costs to society. Production areas such as industrialised meat production, which generates enormous external costs, only turn into a profitable business because of the possibility of externalisation.

23 Principle 4: ‘Water has an economic value in all its competing uses and should be recognized as an economic good’, https://www.un.org/esa/sustdev/publications/WWDR_english_129556e.pdf, p. 5

enforced, enabling the trade in water rights and intensifying water grabbing (for an overview, see Barlow 2020, 17 ff.) Australia is one of the countries that have already introduced a market for water. It hosts *Waterfind*, the first stock exchange in the world on which water can be bought and sold (“When it rains, the price of water falls, when it is hot, it rises”). Everybody can buy water on the stock exchange for their own use or for speculation. The consequence: water at market prices has led to a massive rural exodus. While agribusiness benefits, numerous small farms had to close down; water simply became too expensive for them. Since the beginning of 2021, it has also been possible to “properly” speculate with water: one of the biggest options and futures exchanges in the world, the CME in Chicago²⁴, offers futures, i.e. something is sold at a predetermined price at a specified time in the future. It is now feared that the same thing could happen to other important agricultural commodities, such as wheat.²⁵ Poverty and scarcity are thus good conditions and means for speculators who want to do successful business. However, for those who “only” want to use water, the effects can be disastrous.²⁶

The extent of the global crisis that we face indicates that the exploitation of humans and nature has developed a new dynamic in the past decades; the “metabolic rift” has widened further. The changes are now so fundamental and massive that they have led the earth into a new geological epoch: The Anthropocene (Angus 2020). The extent and the dynamic of the changes have progressed to a point at which they seriously endanger the basis of human existence (on global warming see Zeller 2020). On the one hand, this makes a change in policy all the more urgent; on the other, the necessary change is made more difficult by the established dynamics. The use of fossil fuels, in particular, as one of the decisive drivers of further growth, has not only increased enormously over the past decades; fossil energy is needed everywhere, also and especially in agriculture.

SPEED OF CAPITAL ACCUMULATION VERSUS “INHERENT TIME” OF NATURE

“Competition for investment produces constant pressure to speed up the cycle, to go from investment to production to sale ever more quickly.” (Angus 2020). Industrial agriculture is also subject to this logic. This can be illustrated by the example of livestock farming: in 1926, it still took 16 weeks for a chicken to reach the slaughter weight of about 1 kg, today it only takes 6 weeks to reach that weight (→ [Background information and links: Meat Production](#)). High-yield breeding, a change in the rearing of livestock, and the use of hormones and concentrated feed enable industrialised livestock farms to not only produce *more* meat, but to produce *more meat faster*. The suffering of animals caused by this, the massive emissions of greenhouse gases (→ [Background information and links: Climate](#)), the pollution of water and air, the spreading of new viruses (→ [Background information and links: Pandemic\(s\)](#)) and other external costs do not count for the polluters, the operators and investors of this sector. They can pass on the costs to the general public (Wallace 2020a, 65, FAIRR 2020).

24 The US-American *CME Group* is one of the world’s largest options exchanges and the biggest futures exchange in the world. It came into being in July 2007, with the merger of the exchanges *Chicago Board of Trade (CBOT)* and *Chicago Mercantile Exchange (CME)*.

25 The food price crisis of 2007-2008 is also attributed to price speculations on the stock market. According to estimates by the FAO, at least an additional 75 million people worldwide went hungry due to the price increases in 2007, 41 million of them in Asia and the Pacific and 24 million in Sub-Saharan Africa. The US-American Ministry of Agriculture estimates the effect of the price increases in 2007 to 30 million additional people suffering from hunger in 70 developing countries analysed. More than 60 countries experienced social and political unrest, which partly turned violent (Hachfeld, Pohl, Wiggerthale 2013).

26 <https://www.arte.tv/de/videos/082810-000-A/wasser-im-visier-der-finanzhaie/>

This causes a permanent tension between the “inherent time” of nature and the accumulation of capital: fertile soils are destroyed, forests are cleared, livestock and wild animals are exploited until they collapse – because our production system has to permanently disregard²⁷ and overtake the natural cycles of reproduction.

The huge increase in the use of fossil energy was a central precondition for a development in which not only the speed but also the extent of the exploitation could be increased and pushed once more (→ [Background information and links: Climate](#)). This gives a new quality to the destruction of nature. “The rift in Earth’s carbon metabolism widened slowly for a century, and then reached a tipping point in the years following the Second World War. The Anthropocene, which in retrospect had been a possibility since the Industrial Revolution began, became a reality in the second half of the twentieth century, when the rift in the carbon cycle suddenly expanded past the point of no return.” (Angus 2020)²⁸

The major acceleration

Earth scientists have, in the context of major international projects – such as the 2001 *Millennium Ecosystem Assessment* (MEA) and the *International Geosphere-Biosphere Programme* (IGBP) established by the UN Environment Programme – noticed, independently from each other, that the history of the Earth has been undergoing an accelerated transformation since the middle of the 20th century. “It is only beyond the mid-20th century that there is clear evidence for fundamental shifts in the state and functioning of the Earth System that are (1) beyond the range of variability of the Holocene, and (2) driven by human activities and not by natural variability.” (Steffen et al. 2015, 13). These discoveries have triggered a debate on the definition of a new age – the Anthropocene. However, the Anthropocene is not only a *biophysical* phenomenon. It also is a *socio-ecological* phenomenon, thus marking a qualitative change in the metabolic relationship between human society and nature. (Angus 2020) From an Earth System perspective, history since the 1950s can be told as an account of the expansion of “fossil capitalism” into every aspect of life and every part of the globe. (ibid.). Over a quarter of the CO₂ added to the atmosphere since 1870 was emitted after 2000 (ibid.).

The acceleration also affects agriculture (Moser 2013), which has been able to enormously increase both its productivity and its output. For a few decades, the productivity rates of agriculture even surpassed those of the industrial sector.²⁹

ACCELERATED INDUSTRIALISATION OF AGRICULTURE AS OF THE 1950S

These growth rates were made possible by the development and introduction of various inputs and measures: these have since made it possible – to a greater extent than ever before – to organise agricultural production according to the model of the industrial sector (see box). The use of “synthetic inputs in plant production, the chemical-based approach to the feeding of livestock, the increase of livestock production that was decoupled from the amount of available land by the import or purchase of feed by the farms, the motorisation of many

27 By “disregard” we mean: natural processes such as times for growth, maturity or regeneration, are “dead time” for capital; “dead” because it cannot multiply during that time, but is “lying about” unused.

28 In his book, Angus (2020) describes the developments that are responsible for this, mainly in the USA and Europe. Ecosocialist authors such as Iain Angus emphasise the planetary limits of human metabolism with nature, on the discussion of the “limits” concept, see Dietz, Wissen 2009.

29 “The productivity performance of agriculture during the post-war boom was outstanding (...) its rate of TFP [total-factor productivity] growth from 1967 to 1992 exceeded the rate in manufacturing in seven Western European countries out of eight and the average difference was 94 per cent” (Federico 2012, 21).

steps in farming – all these processes are based on the massive increase in the use of fossil energies” (Auderset, Moser 2018, 257, Angus 2020, Ch. 10, Industrial Agriculture).³⁰

The long-standing debate as to whether agriculture is an industry like all others (cf. Auderset 2017) has been decided in favour of “the industry” as of the 1950s.

What is agriculture, what is industry?

Agriculture, with the help of solar energy and a foundation on the soil, *uses* animals and plants within the biosphere. It thus produces food for humans, animals and plants, shapes the farmed landscape and creates biodiversity. Since it can *reproduce* a considerable part of the resources it uses in the production process (and has to do so, since a cow can only produce milk if it has had a calf), agricultural production is seasonal and depends on the reproduction cycles of plants and animals. In contrast, since the thermo-industrial revolution in the late 18th century, processing in industry is based on the *consumption* of mineral resources and therefore can work with constant and mass production. The industrial processing of minerals from the lithosphere (the interior of the earth) results in not only consumer and investment goods, but also emissions that are disposed of via the atmosphere, in the form of energy matter that is irreversibly dumped in the biosphere (Moser 2015).

The industrialisation of agriculture, i.e. the application of industrial production, processing and marketing methods, entails a change in process quality along the entire value chain of food production. Contrary to the principles of a circular economy that were found in traditional agricultural production systems, such as former subsistence agriculture, or organic agriculture in its original, “real” form, industrial production processes are driven by linear processes, the disruption of energy cycles and closed material loops (e.g. nitrogen), by an increased use of capital for the purchase of external inputs (seeds, fertilisers, etc.) and energy, as well as by the substitution of human power by machines and equipment. Agroindustrial farms are characterised by a high degree of specialisation, division of labour and rationalisation. They concentrate on standardised mass production and show a dominant orientation towards productivity and profit.

The forced industrialisation of agriculture is accompanied by a fundamental reorientation of the *thinking about agricultural production systems*. The knowledge of small-scale farmers, which is more closely geared toward the “inherent time” of nature, is devalued and to a large extent driven out of the agricultural canon (Auderset, Moser 2018, 256 ff., Kloppenburg 2009).³¹ While, before the Second World War, agricultural science faculties and schools were still definitely conscious of the specific “metabolic relations” between humankind and nature in agricultural production and tried to integrate them, a completely different kind of knowledge has been imposed since: “The centre-stage was now being taken by knowledge that was biased

30 These developments are initiated and steered by politics. Example EU agricultural policy: although the measures and regulations have undergone constant changes over the past decades (agricultural reforms), the goal of the agricultural policy of the EU has remained unchanged since the end of the 1950s (1957: founding of the European Economic Community (EEC), today’s European Union (EU)) – to establish and secure the international competitiveness of European agriculture. In order to achieve this, smallholders have to transform themselves into specialised production facilities that work exactly as “normal” industrial companies do. Since this structural change threatens smallholders, requires traditional modes of production to be abandoned and can ruin the agriculture of whole regions and also the environment, the EU has introduced complicated measures and regulations (1st, 2nd pillar ...). These are intended to guide the structural change, mitigate the resulting hardships, and reduce the most serious environmental damage.

31 Traditional farming knowledge is not only devalued in the Global North, but to a large and devastating extent in the Global South, too.

toward the development of rationalisation and growth potentials through the use of mineral resources.” (Auderset, Moser 2018, 260)

This concerns virtually all areas of agricultural production. Numerous steps that were formerly done by or with the help of animals were motorised, which put an end to multifunctional breeding goals. If animal traction can be replaced by machines, the breeding of cattle, pigs and poultry can put a stronger focus on individual usable characteristics, i.e. the yield of meat, the speed of weight increase, the amount of milk, and egg production. In combination with new forms of livestock rearing (more animals in a smaller space), a transfer to feeding that incorporates a number of performance enhancers, it is hence possible to significantly increase the quantitative output of livestock production (→ [Background information and links: Meat production](#)). Smallholders and their expertise are being marginalised, while agriculture increasingly relies on quantitative knowledge and findings based on scientific experiments of genetic and biomolecular research. A similar development can be observed in plant cultivation: agronomical knowledge of smallholders – for example on better resistance of heterogeneous farming systems against extreme weather events, disease and pest infestations – was neglected in this field as well; the more that chemical inputs successfully stabilised and standardised plant nutrition and pathology, the more traditional knowledge was sidelined. Only the availability of these industrial “silver bullets” thus made it (partially) possible for farmers to emancipate themselves from natural restrictions; with the corresponding ecological consequences.

However, while most farmers hardly benefit from this enormous increase in productivity – on the contrary, they are increasingly caught in the “agricultural rat race”³² – companies in upstream and downstream areas³³ do good business. Moreover, since they do not have to pay for the costs caused by this system, they are very interested in agricultural production that remains this input-intensive. This has led to dependencies and “lock-ins”, not only on the level of the individual farms, but at many decisive points in the entire system (e.g. as regards the use of pesticides, cf. Clapp 2021, or fertilisers, cf. Beste 2015). Just like in every other industrially organised sector, the mode of production in agriculture is also guided by capital valorisation³⁴. It is nearly impossible to withdraw from this competition and race.

In order to further increase growth rates, numerous technical instruments and measures are now being presented. They are often presented and marketed as “solutions” for some of the particularly negative consequences of this kind of production. However, these “techno-fix approaches”³⁵ only create new dependencies and problems. Since they intensify the “flourish or perish” structural change, they put pressure on the very farms and forms of farming that ought to be urgently strengthened for the establishment of a *different* metabolism between humans and nature.

32 “Farmers who adopt early use of a technology that is more productive or less costly than the prevailing state-of-the-art technology, i.e., when prices have not as yet decreased as a result of increased efficiency, capture a windfall profit. When others begin to use the new technology, total production increases and prices start to fall. Farmers who have not yet adopted the technology or practice experience a price squeeze: their incomes decrease even if they work as hard as before. Thus they must change [or give up their business]” (IAASTD 2009, 73).

33 This refers to the areas of agricultural inputs (fertilisers, feed, seeds, animal genetics, machines, etc.), as well as processing and distribution.

34 In “industrially” organised production, a company does not produce goods to satisfy human needs. Companies produce to make profits and accumulate capital. The profit generated in the production process thus is not a means to produce “good, useful things”, “things” rather are a means for profit. However, nothing can be valuable in the economic sense if it does not have a utility value – and is bought because of it. Under the pressure of competition, companies have to act this way. This necessarily entails a growth dynamic, an increase in the consumption of resources and an exploitation of humans and nature.

35 These demonstrate the instrumentalist encroachment of the “industrial metabolism” particularly well. On the prevailing “fetish of technology” cf. Harvey 2003.

BIOSECURITY IN LIVESTOCK FARMING AS A "TECHNO-FIX"

"If you actually want to create global pandemics, then build factory farms."³⁶

Pathogenic or deadly pathogens have been spreading time and again for many years on livestock farms that rear hens, pigs or cattle in large numbers in a very confined space. Pigs have been hit particularly hard recently. From 2018 to 2019, half of the pig population in China fell victim to African Swine Fever (ASF).³⁷ From China, swine fever spread via South Asia. In 2018, it arrived in Central Europe. On 10 September 2020, the first carcass of a wild boar that was proven to have died of African Swine Fever was found in Germany. The German meat industry is alarmed and fears massive losses. The spread of the disease is already obstructing meat exports, resulting in a collapse of the prices for pork in the autumn of 2020. By March 2021, the state of Brandenburg, in which the first wild boar that died of ASF was discovered, had already spent more than 6 million euros on protective measures.³⁸

Is African Swine Fever transmitted by wild animals, just like bird flu? Do these have to be kept at a distance with fences in order to protect livestock? Both animal health experts from the FAO and representatives of the meat sector mainly blame smallholders for these diseases, because their animals could get into contact with infected wild animals there – in their "backyard". "The main reason that you have African swine fever in China and Eastern Europe is that you have a lot of backyard farming in both parts of the world," says Rick Janssen, president of the European Association of Porcine Health Management (EAPHM) (GRAIN 2020b, 2). In 2005, a similar remark was made by a FAO representative on bird flu: "The backyard chicken is the big problem and the fight against bird flu must be waged in the backyard of the world's poor." (Fresco, quoted in GRAIN 2006). Or Margaret Say, Southeast Asian director for the USA Poultry and Egg Export Council: "We cannot control migratory birds but we can surely work hard to close down as many backyard farms as possible." (ibid.)

How did China react to the outbreak of African Swine Flu (ASF)? In order to contain the epidemic, numerous animals on small farms were culled, while at the same time the Chinese state supported the creation of major farms with at least 500 pigs according to the regulations of so-called biosecurity.³⁹ The measures prescribed by the intergovernmental commissions for the fight against animal diseases (World Organisation for Animal Health, OIE), classify farms into four categories according to their presumed risk of infection: "sector 1 is high-density, closed operations with intensive production that are integrated into the industry; sector 2, large-scale intensive units that are closed but not integrated with the industry; sector 3, medium-scale intensive units not integrated with the industry and sector 4, extensive units with fewer, free-range animals, often living with other species." (Leclair 2020a).

These four sectors correspond to four grades of biosecurity. Thus, the spread of a virus is to be contained by keeping the animals in closed spaces or behind partition walls, so that they cannot come into contact with infected wild animals. Moreover, they have to be fed with purchased feed products and not with farm-derived

36 Dr Michael Greger, quoted from <https://www.fairr.org/article/industry-infected/>

37 This pathogen is harmless for humans (so far).

38 The permanent 255 kilometre-long, protective fence along the Oder-Neisse-border and the 315 kilometre-long double fencing around the three ASF core areas alone cost around 5.77 million euros (<https://www.sueddeutsche.de/wirtschaft/agrar-potsdam-schweinepest-bekaempfung-kostet-ueber-sechs-millionen-euro-dpa.urn-newsml-dpa-com-20090101-210319-99-883766>).

39 Images of the newly erected, multi-storey factory farms in China can be found, e.g., in The Guardian: <https://www.theguardian.com/environment/2020/sep/18/a-12-storey-pig-farm-has-china-found-a-way-to-stop-future-pandemics->. The company Guangxi Yangxiang Co. Ltd. (<https://yangxiang.com/english.html>) mentioned in the article is regarded internationally as a reference company for "biosecurity".

feed.⁴⁰ Biosecurity regulations also concern hygiene rules for workers, such as sinks in the changing rooms next to the pig housing, a change of clothes before entering or leaving the pig housing, and the disinfection of vehicles (cf. Blanchette 2015).⁴¹

Biosecurity regulations, which also do not offer protection against infection because there are no sufficient controls or they are simply not observed (Graham et al. 2008),⁴² present factory farming as the solution to a problem for which they themselves are partly responsible (Wallace 2009, 920 ff., 2020, 57 ff.). In the meantime, investors and other financial players have also come to share this view: the current study by the global FAIRR network⁴³ into the link between intensive livestock farming and the outbreak of diseases concludes that more than 70 per cent of the biggest meat, fish and milk producers are considered “high risk” in the pandemic ranking. None of the 60 biggest groups are considered “low risk”. Investors are forewarned by this research that animal protein producers and processors could be forced to instigate a number of costly measures to stop the outbreak of zoonotic pandemics from becoming the new normal.⁴⁴

While the big structures are continuing to grow and expand, supported by state help and the regime of biosecurity, despite the problems they cause,⁴⁵ small-scale livestock farming is increasingly coming under pressure. This is destroying the very structures and their inherent knowledge that would be crucial as the “nucleus” of a fundamental reorientation of agricultural production (→ [Background information and links: Alternatives](#)).

Small-scale livestock farming under pressure

Before the outbreak of the epidemic, there were more than 40 million small-scale pig farms in China, many of which reared pigs for the big groups. They were hit hard by the first wave of ASF outbreaks and the corresponding culling campaigns. The model of biosecurity that has been supported by the international authorities, the big companies, and government authorities as an answer to ASF cannot be implemented by small producers, or is simply too expensive.⁴⁶ From the point of view of the FAO, smallholders ought to face the dictates of the market anyway, in order to survive: “Flourish or perish”. “They have to up production to make more profit and use the surplus revenue to invest in biosecurity”, says Wantanee Kalpravidh (FAO, quoted after Leclair 2020b).

40 However, both Russian and Chinese authorities have identified industrial feed as one of the main vectors for ASF outbreaks in their countries. (GRAIN 2020b).

41 The research of Alex Blanchette on pig farms in the American Midwest clearly shows how industrialised agriculture also affects humans who work in these structures.

42 “There is substantial evidence of pathogen movement between and among these industrial facilities, release to the external environment, and exposure to farm workers, which challenges the assumption that modern poultry production is more biosecure and biocontained as compared with backyard or small holder operations in preventing introduction and release of pathogens.” (Graham et al. 2008, 282) “The violation of biosecurity appears built directly into the industrial model.” (Wallace 2009, 939)

43 The members of the FAIRR network are banks, pension and investments funds and foundations, many of which come from the area of “sustainable investment” or “green investment”.

44 https://cdn.fairr.org/2020/06/03000923/FAIRR_An_Industry_Infected_Report_Public.pdf

45 As early as autumn 2019, just one year after the ASF epidemic began, the top pig-farming companies in China had earned enough to reverse losses and many of them were registering record profits. The companies are now ploughing their profits into expansion plans not only within China, but also in other ASF-affected countries, such as Vietnam and Russia (GRAIN 2020b)

46 Chinese experts put the costs of new housing, chemicals and other associated inputs at about 220 RMB (US\$30) per pig, way out of the reach of the average small farmer (GRAIN 2020b). Lucile Leclair describes similar developments for France (2020a, 2020b).

There are numerous other technologies that are used to stabilise the crisis-prone system: researchers suggest that livestock ought to be genetically modified, in order to make them more resistant to diseases.⁴⁷ It is not only livestock and crops that biotechnology can “improve”: genetic engineering has long been possible in “wild” nature as well. This is shown by projects on “Gene Drives” (Critical Scientists Switzerland et al. 2019) or auto-spreading vaccines (Nuismer, Bull 2020). However, as is so often the case, these approaches are immature and extremely risky technologies, whose “side” effects – of which it is not clear what exactly they comprise, since research mainly concentrates on the question of their implementation – will very likely concern big areas. Rob Wallace says about these suggestions:

“Agribusiness ever turns us toward a techno-utopian future to keep us in a past bounded by capitalist relations. We are spun round and round the very commodity tracks selecting for new diseases in the first place.”(2020b)

Technologies such as genetic engineering or measures such as “biosecurity” in animal production thus keep us trapped in a destructive rat race. Socio-ecological reforms and a greening of the prevailing production system have been discussed for some time, and there are numerous approaches to a “Green (New) Deal”. However, these do not provide a solution, for the real causes of the destruction remain unchanged: “Greenwashed capitalism, due to the pressure for capital accumulation and the generation of revenues in a competitive environment, continues to be based on the exploitation of humans and the destruction of nature.” (Zeller 2020, 26, *ibid.* 2021) If we want to stop exploitation and destruction, we therefore have to break with the logic of profits and competition. But how can we achieve this?

THE WAY OUT OF THIS IMPASSE IS VIA A DIFFERENT “METABOLISM” BETWEEN HUMANS AND NATURE

The global crises – be it the pandemic(s), the climate, biodiversity or water crisis –are so pressing and seem so enormous that the question of “What shall I/we do?” is too much for many people, and makes them give up. At the same time, social movements, such as the climate movement, Zero Covid, the Blue Communities (see below), as well as the numerous organisations and groups that face agribusiness (including Pandemic Research for the people, see below), show that many people demand urgent ecological and social change. However, the debate about a “Green Deal” or the 1.5 degree goal in climate protection (Zeller 2020, 15 ff.) show that, for the most part, people have still not realised how fundamental that transformation would have to be. There is therefore a big difference between what is necessary and what the majority of humankind thinks possible. The movements thus face the challenge that they not only have to develop a radical programme for social change that encompasses a large part of production (incl. agriculture), transport and the finance sector, but that this programme also has to be planned in such a way that it convinces and includes people who have not been able to imagine alternatives to the prevailing system that really exist and function (*ibid.* 10, 218 ff.). This should not make us conclude that we ought to disregard the strategic goal and only restrict ourselves to “real policy” steps that seem feasible. This would also be wrong from a logical point of view, since scientific findings on the emergence of zoonoses, the loss of biodiversity, global warming and the fragility of the climate and water system show very clearly that these problems can only be contained by radical measures and a fundamental change in course. We therefore certainly have to accept and consider the findings on natural processes and the consequences of our overexploitation of nature. However, we

47 <https://www.tropicbioscience.com/eggxyt>

certainly do not have to accept the way in which the social and economic system we live in is organised (ibid.).⁴⁸

We have to start by asking ourselves: how do we want to organise *labour* in the future? For it is the concrete labour of humans in the production process that creates the social metabolism with nature.⁴⁹ There are no simple “recipes” for new forms of the human metabolism with nature. As regards the area of agricultural production, it could be inspired by “agroecological” approaches, such as those which have been implemented in large parts of the world for centuries (see below and → [Background information and links: Alternatives](#)).⁵⁰ What kind of measures we can implement, and what they will look like, depends, in the end, on social and political power relations. However, how can people be persuaded that measures based on “political realities” or state-organised programmes, such as the European *Green Deal*, are not sufficient to stop global warming, the loss of biodiversity or the development of global pandemics? Social movements and alternative projects play a decisive, strategic role in this process.⁵¹

The following example of the “Blue Communities” shows that numerous initiatives are already trying to become active on a concrete level. The “Blue Communities” are a global movement committed to preserving water as a common good and to ensuring that all people have fair access to this important resource.

In addition, agriculture in particular features numerous projects that specifically practice a different kind of metabolism between humans and nature. The importance of these approaches as a measure against future pandemics is being studied by the “agroecology” working group in the Pandemic Research for the People (PReP) project.

WATER BELONGS TO ALL HUMANKIND. THE “BLUE COMMUNITIES” MOVEMENT

Initiatives such as “Blue Communities” show that projects that start on the local level can also achieve a great deal on the global level.

What is a Blue Community?

The project came into being in 2009, in Canada, as a reaction to the plans of the conservative government at the time to privatise municipal water supplies. A broad alliance of different groups – including the Council of Canadians, a civil rights movement, and a trade union for public service – started an information campaign and supported the communities that fought the privatisation of their water supplies. They jointly developed the principles of the “Blue Communities”:

48 The book “Revolution für das Klima” (Revolution for Climate) extensively discusses concrete examples and steps for a radical transformation.

49 “The central role of labour and thus also of work processes, working conditions, employment relationships, working time and work content in the entire process of production and reproduction and thus also in the social metabolism with nature, is indeed the decisive aspect of an ecosocialist perspective. This has to be explicitly emphasised, particularly in the current situation. The climate movement and the public debate are currently widely dominated by individualistic concepts of cutting consumption, and market-economy suggestions that tax greenhouse gas emissions but do not touch on the productive system as a whole.” (ibid., 42)

50 The *Ejército Zapatista de Liberación Nacional* (Zapatista Army of National Liberation (EZLN)), for example, organised two conferences on this question in 2016 and 2017, titled *ConCienas por la Humanidad*, cf. <https://conciencias.org.mx> and <https://climateandcapitalism.com/2017/04/05/zapatistas-ask-scientists/>

51 For a detailed discussion, see Zeller 2020, 218 ff.

1. A Blue Community commits itself to protect and promote water and sanitation as a human right.⁵² These public services must not be refused to anybody, even when they cannot pay.

2. A Blue Community commits itself to preserve water as a common good. In order to do this, it promotes water and wastewater systems that are financed and operated by public authorities. All decisions on the access to water and sanitation have to be made by the people and their elected representatives, not by a profit-oriented investor.

3. In order to tackle the plastic crisis and to push back the business with bottled water⁵³, a Blue Community bans or phases out the sale of bottled water in municipal facilities, if access to clean, public water is guaranteed. Instead, it protects and promotes its own tap water as a safe and reliable source of drinking water.

From Canada, the movement has spread globally in the past 10 years. There are now Blue Communities in North and South America and in Europe. The most famous Blue Community in Europe is the city of Paris. Other cities, such as Berlin, Brussels, Barcelona and Munich have joined the project. The largest number of Blue Communities outside Canada can be found in Switzerland.⁵⁴

The project and the associated movements and NGOs (such as the Council of the Canadians, the Global Water Justice Movement and Food and Water Watch), whose key initiator was Canadian activist Maude Barlow⁵⁵, follow an approach that could also inspire other initiatives that tackle environmental destruction and the privatisation of nature.

As regards the substance of the issue, the activists emphasise:

- The water crisis is not only an ecological, but also a social crisis.
- The water crisis not only concerns countries of the Global South, but (increasingly) also the Global North. This is why we need an international movement that fights for water justice for all.
- The project focuses on the question of ownership: the utility value of water has to be made equally available to all people. Water must not be transformed into a commodity via appropriation and privatisation, for the benefit of a few people only.
- From the very beginning, the water issue was tackled jointly with the related questions of globalisation and free trade/free trade agreements (e.g. campaigns against the Multilateral Agreement on Investment (MAI), the North American Free Trade Agreement (NAFTA), against the free trade agenda of the WTO and the aggressive privatisation policy of the World Bank).

On the strategic level, the project is characterised as follows:

- It takes up daily experiences of people and their local struggles against privatisation and dispossession and– via accompanying awareness and information campaigns – links these with the global dimension of the issue;

52 <https://www.unwater.org/water-facts/human-rights/>

53 <https://www.bottledlifefilm.com/hauptseite>,
<https://multiwatch.ch/weltwassertag-wasser-unter-oeffentliche-kontrolle/>

54 <https://www.bluecommunity.ch/startseite>

55 Maude Barlow has been working intensively on the subject of water since the mid-1980s:
<https://www.rightlivelivelihoodaward.org/laureates/maude-barlow/>

- It transmits a positive vision and people experience that local resistance against privatisation can be successful;
- It has managed, at a local and global level, to motivate entirely different movements, organisations and institutions – civil rights movements, NGOs, church organisations, universities and trade unions – to collaborate. Moreover, the Council of the Canadians civil rights and environmental movement is characterised by its living inclusive and democratic solidarity structures.⁵⁶

RESEARCH FOR AND WITH PEOPLE IN TIMES OF PANDEMIC: PANDEMIC RESEARCH FOR THE PEOPLE (PREP)

Pandemic Research for the People (PReP) is a project by the organisation Agroecology and Rural Economics Research (founded by Rob Wallace) and comprises different working groups.⁵⁷ It aims to tackle the concrete problems and questions of local communities that are particularly affected by the pandemic. In doing so, the participating scientists explicitly wish to set a counterpoint to established research. They criticise that the latter is too involved in the prevailing mainstream, not only via the corresponding donors (e.g. from industry), but also with regard to institutions and content. This kind of science, in their eyes, thus supports and stabilises a system that is largely responsible for the emergence of pandemics and the overexploitation of humans and nature, even if it does valuable work on questions of the pandemic otherwise.

AGROECOLOGY AND FOOD SOVEREIGNTY RATHER THAN FACTORY FARMING, NEW VIRUSES AND FURTHER OVEREXPLOITATION OF HUMANS AND NATURE

In an initial paper, the “agroecology” working group explains this with the example of an article (Gibb et al 2020) that deals with the connections between land use changes, biodiversity and zoonotic diseases.

The researchers of the article by Gibb et al. analyse the results of the extensive PREDICTS database, which contains information from hundreds of studies on biodiversity and land use change. With the help of these data, global patterns can be made visible and comparable. A similar picture emerges everywhere: forests are cleared to create pastures, open plantations and extend settlements. This encroachment of human activities not only creates new interfaces between wild animals and humans, particularly at the edges of forests, but also changes the composition of the animal communities in the forests; a spillover of pathogens is becoming more probable if individual species such as bats, which are regarded as effective virus carriers, benefit from these changes, multiply and penetrate into the cultivated areas.

However, what kind of land use are we talking about? The authors of the PReP working group criticise that the data collected in the PREDICTS data base are not specific or differentiated enough in this regard. They only distinguish four categories of land use: primary vegetation, adjoining secondary vegetation, farmed areas and urban areas. The farmed areas category encompasses cropland, pastures and plantations. Their land use intensity can be minimal or intense.

Apart from analytical limitations that result from uniting very different production systems, this approach has to ignore the impact of the different farming systems on the forest and biodiversity. Many forms of small-

⁵⁶ <https://canadians.org/about>

⁵⁷ <https://www.prepthepeople.net/dispatches>

scale or indigenous farming that have been using forests for a long time for their subsistence, or produce goods for local markets, can hardly be compared to the large-scale destruction of forests by multinational companies that establish plantations on the cleared surfaces:

"[A]gricultural expansion into the forest frontier is not driven by "farmers", "smallholders", or "peasants". Rather, extractive development – including agro-industrialization, logging, and mining – financializing commodity production on the global market, and supply chain consolidation have enabled unprecedented multinational growth into forested lands over the past three decades." (Liebman et al. 2020, 5)

However, it is precisely these more environmentally and people-friendly farming methods that are included in the political measures that the scientists derive from their findings. They not only demand an increased surveillance of forest, but also a strict exclusion of people living there. The displacement and dispossession of indigenous and smallholder communities is now thus not only being justified with conservation measures, but increasingly so with health protection:

"Land grabbing, stealing land from Indigenous people and smallholders, is pursued in the name of conservation and, suddenly, preventing pandemics." (ibid.)

Conservation with or against people?

People in conservation and environmental protection still do not agree on how nature can be protected from further destruction. In Anglo-Saxon countries, in particular, an embittered debate on the (new) approach to conservation has been raging for years. This is also referred to as the great conservation debate.⁵⁸ Proponents of "new conservation" want to not only protect nature from humans but also use it intelligently. If no unspoiled nature remains in the Anthropocene, they say, there will still be ecosystem services⁵⁹, which will have to be taken into account as a service for people that is "worthy of protection". The perspective of this approach is thus a valorisation of nature, or in the words of Kathleen McAfee: "Selling nature to save it."⁶⁰ For a few years now, the economisation in conservation has also been supported at an international level: with the TEEB (The Economics of Ecosystems and Biodiversity), a global programme was initiated in order to systematically record the "services" of nature. The most comprehensive system for putting conservation on a new economic basis has been tried in forest conservation. REDD (Reducing Emissions from Deforestation and Forest Degradation), was to stop or at least reduce deforestation by a system of Payments for Environmental Services (e.g. by the pricing of CO₂).⁶¹ A review of REDD after ten years makes for very sobering reading: the further destruction of tropical forests could not be prevented by the programme.

Traditional conservation that aims to protect nature from humans had been put on the defensive in recent times. However, since "new conservation", at least as regards the protection of nature, has had hardly any success, the so-called "old conservation" is experiencing a renaissance at the moment; a concept which – as many indigenous people, social movements and scientists criticise – enforces conservation against people (Domínguez, Luoma 2020).⁶² This approach is still being adopted, as shown by Gibbs's article in Nature, which

58 <https://www.boell.de/de/2020/10/02/wie-sieht-der-richtige-naturschutz-aus>

59 Critical discussion of the term and approach: Voigt 2015.

60 <https://journals.sagepub.com/doi/10.1068/d170133>

61 http://www.fdcl.org/wp-content/uploads/2016/03/FDCL_REDD_web1.pdf

62 In April 2019, scientists published the report "Global Deal for Nature" (GDN), which calls for the protection of half of the planet, in one form or another, by 2030, in order to contain the climate disaster and global warming (Dinerstein et al. 2019). The creation of nature and national parks, in particular, has become connected to a militarisation of conservation; cf. the study by the Rosa-Luxemburg-Stiftung: "Die «Grüne Armee». Die Militarisierung des Naturschutzes und die Folgen in Afrika."

is criticised by the PReP working group. And if the goal – once again – is to protect areas of “unspoilt” nature from any human influences, it is only consistent to put a rainforest that is used by indigenous people on the same level as a palm oil plantation or a soy field. However, if implemented in this way, “old conservation” will hardly contribute to the conservation of forests, either. On the contrary, it may even serve to further harm nature:

“With surrounding forests evacuated of people, there may be little to stop large-scale plantations and agribusiness from expanding, no matter the conservation promises or policy mandates. Such land grabs further degrade biodiversity, amplifying disease outbreaks. (...) [and] such a program fails to meet its own declared objectives.” (Liebman et al. 2020, 11)

In their paper, the PReP researchers – on the basis of different examples⁶³ – once again show very clearly how massive the consequences of industrial farming are. Neither a further economisation of nature, nor the displacement and dispossession of indigenous communities and smallholders in the name of conservation and health protection, can serve as a way to solve the problem. Instead, the researchers suggest an in-depth study as to whether agroecological⁶⁴ farming could contribute to a containment of the increased spread of zoonotic pathogens. Agroecological farming systems – ideally – are characterised by great diversity: from the kind of land use – e.g. a mix of farm plots, agroforestry and grazing lands – to a diversity of cultures and varieties. This provides a *systemic diversity*, which could form a decisive buffer against the spread of diseases:

“A diverse agroecological matrix of farm plots, agroforestry, and grazing lands all embedded within a forest can conserve animal biodiversity at the landscape level. Agrobiological diversity can make it more difficult for zoonotic diseases to easily string together a bunch of infections and prevail.” (Liebman et al. 2020, 11)

Production that concentrates on the local or regional supply of the population can also have a preventative effect, if it contributes to reducing transportation over long distances:

“The production of food and fiber for local and regional contexts slows the kinds of circulation of goods and people that accelerate disease trajectories well beyond their local origins. Building on the scenarios detailed above, regional trade reduces the spatial extent of livestock movement, greatly reducing the speed of transmission and the expanse over which pathogens can recombine their genes to deadlier effect.”

However, if farmers are to produce in this way, they not only need access to central inputs, such as seeds (Kloppenburger 2004), but also need access to land in particular. The question of land is thus one of the fundamental questions that have to be solved if we are to develop a different kind of “metabolism” that is equally sound for humans and nature. This means that every debate about society’s use of nature is also a social question about the organisation of our society and economy. And vice versa: every social debate about social questions is also always a debate about the social metabolism with nature (Zeller 2020, 27).

*“Agriculture isn’t just about healthy soils and carbon sequestration (...) **food is a social system**. The natural economy of agriculture can be maintained only when connected to farmer autonomy, community socioeconomic resilience, circular economies, land trusts, integrated cooperative supply networks, food justice, reparations, and reversing deeply historical race, class, and gender trauma. Healing the metabolic rift*

https://www.rosalux.de/fileadmin/rls_uploads/pdfs/Studien/Studien_3-20_Gruene_Armee.pdf, cf. also: <https://monde-diplomatique.de/artikel/!5661835>

63 Cf. Liebman et al. 2020 and the literature cited there.

64 “Agroecology – a science, movement, and practice – combines ecological science, indigenous and peasant knowledges, and social movements for food and territorial sovereignty to actualize environmentally just food systems.” (Liebman et al. 2020, 10, cf. also Wezel et al. 2009, Rosset, Altieri 2017)

between ecology and economy driving climate damage and disease emergence at the heart of modern agriculture involves imprinting a different political philosophy upon the landscape.” (Liebman et al. 2020, 14, emphasis added)

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