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One Health: human, animal and environmental health form one unit - and affect sustainable development.

High on the political agenda

The COVID-19 pandemic has provided a dramatic illustration of the extent to which the health of people, animals and the environment is interdependent, which is why “One Health” is now high on the political agenda. This document provides an overview of KfW Development Bank’s approach to promoting human, animal and environmental health. Involvement in areas like agriculture, biodiversity, health and water is already contributing to the One Health objectives. Moving forward, it will also be important to give greater consideration to interdependencies between sectors and ensure that structural connections are taken into account in cross-sectoral programmes.

Humans and animals exist both alongside each other and as part of a complex two-way relationship. In both cases, the environment provides their livelihood. Wild animals and livestock are directly relevant to humans’ ability to eat, make a living and prosper. In turn, intact ecosystems and species diversity contribute to clean air, clean water and fertile soil, which are essential to the health of humans and animals.

These interdependencies form the core of the One Health approach. It was developed under the leadership of the “tripartite collaboration”: a partnership between the World Health Organisation (WHO), the Food and Agriculture Organization of the United Nations (FAO) and

the World Organisation for Animal Health (OIE).

The approach brings different sectors together and operates at local, regional, national and global level. It seeks to improve health around the world, thereby contributing to sustainable development. Its aim is to ensure that people, animals and the inhabited and uninhabited environment prosper – taking all interdependencies into account.

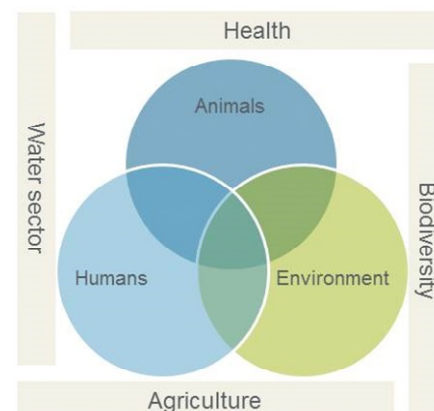
Zoonoses endanger health and sustainable development

The latest coronavirus has shone a spotlight on the dangers of “zoonoses”. These are infectious diseases that are transmitted from an animal to a human and vice versa. Transmission may be through direct contact with an infected animal (e.g. through consumption of contaminated animal products) or it may be indirect, such as via a contaminated environment or vectors (e.g. mosquitos, ticks). Two thirds of all human diseases have zoonotic origins, including Ebola, SARS, MERS and COVID-19 at present.

Due to population growth, urbanisation, greater encroachment on areas of wilderness, more mobility, climate change, and altered methods of animal breeding and husbandry, the potential for zoonoses to cause pandemics is increasing. This not only poses risks to public health; it also endangers social, financial and economic systems.

The socio-economic consequences are enormous: the COVID-19 pandemic has not only caused almost a million fatalities worldwide to date, it has also dramatically exacerbated poverty and food insecurity. This is primarily due to loss of income, basic services that are inadequate

or lacking altogether (such as drinking water supply) and interruptions to value creation and supply chains.



One Health: when different sectors interact, it becomes possible to ensure the welfare of people, animals and the environment.

Building resilience, recognising interdependencies

Interdependencies between different sectors and targeted crisis prevention and resilience building measures are at the heart of the One Health approach. This means that the concept goes far beyond preventing infectious diseases. A lack of access to basic services and supplies (e.g. inadequate hygiene and sanitation facilities, a lack of nutrition and malnutrition) and environmental factors (e.g. pesticides, air pollution) can cause or exacerbate both pandemics and other health risks. Inadequate hygiene, for example, is not just a key driver behind the spread of epidemics; it is also a significant reason why around 1.5 million children a year die of diarrhoeal diseases before their fifth birthday – primarily in countries in the southern hemisphere.

KfW Development Bank’s commitment helps to:

- Sustainably improve global health and health security, thereby helping to reduce medical and social inequality worldwide.
- Limit the negative effects of climate change and global warming on health.
- Conserve biodiversity and preserve natural habitats (soil, forest, water).
- Ensure that people have sustainable sources of healthy food.
- Enable everyone to access drinking water and sanitary facilities, thus preventing illnesses.
- Strengthen global partnerships and One Health networks that connect the health of humans, animals and the environment.

One Health makes a major contribution to the development goals

The trinity of humans, animals and the environment, with its wide-reaching effects, is also reflected in the Sustainable Development Goals (SDG). Stronger promotion of One Health could support the following SDG in particular: zero hunger (SDG 2), good health and well-being (SDG 3), clean water and sanitation (SDG 6), responsible consumption and production (SDG 12), climate action (SDG 13), life below water (SDG 14), life on land (SDG 15) and peace, justice and strong institutions (SDG 16). However, many challenges are interrelated, meaning that measures should engage at multiple points in order to achieve good human, animal and environmental health.

Poverty and food insecurity get worse in times of crisis

Over 1.3 billion people worldwide are affected by multi-dimensional poverty. The latest estimates suggest that the COVID-19 pandemic will cause a 20% increase in extreme poverty, relative to current levels – if measures to combat the pandemic are not implemented, or if they fail. This also increases the risk of food insecurity, which manifests itself in famine, hunger and malnutrition. Nonetheless, a healthy diet is important as a way of strengthening the body's own ability to prevent and fight diseases.

Use of natural resources and the climate affect one another

In many partner countries, people are heavily dependent on natural resources: crops, livestock and natural resources like wood or fish form the basis of their livelihood. The encroachment of people on unspoiled areas of nature and changes in land use increase the potency of the interface between humans and animals. The health risks increase, the pressure on land and water resources grows.

Over-use of resources disrupts ecosystems and leads to loss of biodiversity. That encourages the spread of pathogens and increases the likelihood of them jumping between humans and animals. It also reduces ecosystem services for humans, such as water, microclimates, soil health and medicinal plants, and the associated effects on health.

People in poorer countries are also more exposed to the impact of climate change due to their greater dependence on natural resources. This exacerbates their financial insecurity. Climate change and the associated rise in extreme natural events (such as heat waves) affect food security, accelerate the degradation of agricultural land and directly harm human health. For example, more than 45,000 people died in the 2003 heat wave in Europe.

Loss of biodiversity and climate change increase the risks to health

Climate change and loss of biodiversity are mutually reinforcing, as the changing climate makes ecosystems more vulnerable to disruption. At the same time, loss of species and habitats means that less carbon dioxide is absorbed, thereby driving climate change. This vicious circle of risks creates conditions that encourage the new illnesses we are seeing and increase the risk of zoonoses. Vectors, i.e. transmitters of illnesses, can multiply in new places thanks to

Example 1:

Preventing zoonoses in Vietnam

Vietnam is known as a “zoonotic hotspot”: there, the likelihood of illnesses jumping from wild animals to humans is high. The reason? Consumption of wild animal products is widespread, especially among the urban population. On behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), KfW, in cooperation with WWF, is financing measures to preserve the Central Annamites ecosystem. These help to prevent zoonoses. In the cities Hue, Da Nang and Tam Ky, 89 market stalls, shops and restaurants were identified as selling wild animal products (meat, medicine, souvenirs) and thus breaking the law. This information was passed to the local authorities and stricter checks reduced violations by 70%. The rangers also patrol the conservation areas, looking for wild animal traps. Since the project began, wire traps have been reduced by more than half as a result. Action against poaching also reduces the risk of dangerous pathogens reaching illegal markets and spreading from there.



A species-rich, intact environment is essential for human well-being.

altered climatic conditions, and transmit viruses there (for example, the transmission of the West Nile virus by Asian tiger mosquitoes in Germany).



Patrols on the search for wild animal traps in Vietnam.

Conservation areas vital for One Health

Conservation areas play a central role in the “One Health approach”: they maintain ecosystems and preserve the diversity of animals, plants and microbes that is essential to humans’ lives and survival. Expanding these reserves and their effective protection ensures that these – ideally connected – ecosystems remain intact. In doing this, it is necessary to prevent encroachment on areas of nature while securing the livelihood of local people. This is why sustainable forms of resource use are an important component of FC projects.

Supporting conservation agencies in partner countries offers an effective way to combat poaching and the illegal trade in wild animals and wild animal products at a local and international level. In turn, better hygiene and stronger monitoring of the legal trade in wild animals at national level reduce the risk of zoonoses in a targeted manner.

The global water crisis is coming to a head

For a healthy diet, two litres of – safe – drinking water per person per day is the official recommendation. However, more than 2 billion people cannot access this due to a lack of suitable systems for obtaining, treating and distributing drinking water. The COVID-19 pandemic also shows that basic hygiene and hand washing are vital for protecting global health. Deficiencies in sanitation are even greater than those in drinking water supply: over 4 billion people have no adequate facilities to maintain personal hygiene (e.g. private latrines at a suitable distance). Even hospitals and schools often lack suitable sanitary facilities.

This enables infectious diseases to spread fast, especially in heavily populated districts and poor areas of cities. Stagnant water offers a breeding ground for vectors (mosquitoes, etc.). Poor hygiene encourages the transmission of illnesses via droplet or smear infection and through drinking water.

In cities, the environmental risks associated with untreated sewage from households and industry are also particularly high. Agriculture, land conversion, industry and climate change put additional pressure on water resources. Today, over half of the world’s wetlands have already been destroyed, with around a quarter of humanity suffering as a result of water shortages. And this proportion is set to rise.

Example 2:

Drinking water and access to sanitation in DR Congo

In the Democratic Republic of the Congo, access to safe drinking water and (basic) sanitary facilities is particularly limited. Major causes include a lack of investment and the limited capability and efficiency of the water company *Régie de distribution d’eau* (REGIDESO). Loss of income due to the pandemic is exacerbating the problems. This is why the majority of the population uses untreated water that carries health risks. These risks are further increased by the inadequate provision of latrines and toilets. Waste water and faeces are released into the environment. The consequences for health are impeding development in DR Congo. This is why KfW, on behalf of the Federal Ministry for Economic Cooperation and Development, is supporting measures to improve supply infrastructure in medium-sized towns. Low-cost technologies like taps and basic sanitary facilities in public buildings increase access to affordable, safe drinking water and to sanitation. To date, the programme has already improved the situation for 1.1 million people and strengthened management of REGIDESO.



Water is essential to public health.

Investment in the water industry: important for health and the environment

The quality and availability of water are crucial to good health. The best way to ensure that water is safe is to treat drinking water, remove potential sources of contamination and monitor water quality on an ongoing basis.

Similarly important are adequate sanitation and safe management of wastewater via wastewater treatment plants, sewage systems and decentralised solutions. Investments in infrastructure are most effective at changing public attitudes to hygiene when they are supplemented by hygiene and awareness-raising campaigns, e.g. about basic and menstrual hygiene and food preparation. More capacity and better framework conditions ensure that these systems can operate sustainably in the long term and, in particular, in times of crisis.

To achieve One Health objectives, the water industry should deploy integrated water resource management and take interdependencies with other sectors into account: incorporating alternative water resources – like rainwater, treated wastewater or seawater – can reduce over-use of water and the conflicts that this causes. This helps to preserve important ecosystems such as wetlands, rivers, lakes etc., along with their biodiversity. Efficient use of water, especially in agriculture, is an important factor in the long-term availability of water as a resource for humans, animals and the environment.

Sustainable agricultural and food systems for “One Health”

Agriculture plays a very important role in relation to global challenges like poverty, hunger, malnutrition, resource degradation, climate change and loss of biodiversity. On the one hand, it causes these problems, but on the other, it offers solutions. The more sustainable agricultural production is, the more it can help to resolve these global challenges. This ultimately benefits the health of our ecosystems and our production bases, but animals and humans benefit too.

Protection and sustainable use of ecosystems and production bases

Technological developments in recent decades have led to a huge increase in agricultural productivity in many areas. At the same time, farmland has expanded because the growing global population needs more food and the sector provides income and employment in developing countries and emerging economies, as a key economic driver. However, the continuous conversion of natural landscapes and ecosystems into farmland causes long-term damage to the health of our ecosystems.

Deforestation of large areas of woodland, drainage of wetlands and other drastic land conversion measures must be prevented. To achieve this, agriculture needs to be productive and efficient while being managed based on the principles of ecologically sustainable farming. This means making more responsible and careful use of the natural production bases – soil, water and biodiversity.

The way in which soil is used and animals are kept is crucial to their health. For example, heavy mechanical tillage, monoculture and inappropriate grazing can lead to soil degradation and loss of nutrients on arable and grazing land. Minimal tillage, diversification through intercropping and better management of grazing land, or erosion prevention measures like walls made of stones and earth, can help to preserve soil health.

Factory farming in confined areas and inappropriate use of antibiotics can encourage the spread of infectious diseases and create antimicrobial resistance (AMR) among livestock (see below). Better stabling or free-range rearing can reduce this problem. These measures also affect human health. This is because sustainable production on healthy soil and responsible livestock rearing result in nutrient-rich food. Diversified



Gentle cultivation and permanent plant cover protect arable soils from degradation.

production systems increase the range of available foods, enabling a varied diet which helps to prevent malnutrition and associated diseases.

Example 3:

Sustainable business fund

Loss of species diversity, degraded soil, deforestation and contaminated water are all consequences of increasing human encroachment. In addition, there is the use of pesticides and antibiotics in agriculture. This impacts on the micro-climate and the soil and has long-term negative consequences for human and animal health. In order to help limit these problems, KfW, on behalf of the Federal Ministry for Economic Cooperation and Development and the EU, along with Finance in Motion and the NGO Conservation International, founded the eco.business fund as a public-private partnership. Compliance with environmental and social standards is imperative for the fund, as it is for all of KfW's agricultural promotional projects. Local companies whose business models are aligned with the fund's environmental objectives receive financial support to help them replace traditional production methods with sustainable alternatives. The focus is on the following four pillars: agriculture and agri-processing, fishery and aquaculture, forestry and ecotourism.

Ensuring that farmland is used to produce a variety of nutrient-rich foods in sufficient quantities should be a priority. At the same time, it is vital to inform people about how they can eat a healthy and balanced diet.

Ensuring safe production and healthy food

Where irrigation is used in agriculture, systems should be put in place to ensure high water quality, efficient and effective drainage and wastewater management. The same applies to water storage tanks and water for livestock. Stagnant and contaminated water carries the potential for waterborne diseases or disease-carrying parasites that can cause infectious diseases.

The use of substances that are harmful to the environment and to health should be avoided where possible. If synthetic fertilisers, agrochemicals or pharmaceuticals are deployed, they must be used correctly to ensure that they are effective, safe and used properly. This helps to avoid direct health risks to humans and animals and the associated illnesses. It is also important to avoid contaminating soil and water, with benefits for the quality of animal and plant products and ultimately for health. The storage of agricultural products can also pose a risk of foodborne illness. This is why modern post-harvest and storage methods and well-designed transport systems are necessary.

As well as safe methods of production and the correct infrastructure, quality standards and controls are needed throughout the entire agricultural value

creation chain to enable the manufacture and processing of high-quality foodstuffs. Ultimately, we are all aiming to design the agrarian and food production system in a sustainable way so that everyone can eat a healthy and balanced diet all of the time. This forms the basis of our health and strengthens our body's ability to prevent and fight off diseases.

Weak healthcare systems are unable to respond

Healthcare systems also play an important role in the One Health approach. In countries of the southern hemisphere, these systems often lack adequate equipment. Healthcare emergencies are not prevented, are often identified too late and are not handled adequately. This creates an environment in which epidemics and/or pandemics can develop.

Example 4:

Fighting neglected diseases

Among the member states of the Central African Economic and Monetary Community (CEMAC), neglected tropical diseases (NTDs) represent a major health issue at the interface between humans and animals, with serious consequences. Due to widespread poverty among those affected, little attention is paid to research and the development of new therapies. This is why, on behalf of the Federal Ministry for Economic Cooperation and Development, KfW is financing measures to monitor or treat diseases on the WHO list of NTDs (for example, deworming campaigns in schools). Health ministries in the CEMAC states can, with research institutes or civil society organisations, apply to the Central Africa Healthcare Organization for funding. This also promotes greater cooperation between state and non-state actors. Promotional fellowships for scientists from the region help to expand research capacity

Furthermore, many areas lack specialists, diagnostic capability, medicines and vaccines, as well as meaningful data and early warning systems. It is often impossible to provide basic healthcare. The infrastructure is easily overwhelmed. These risks are increased by healthcare challenges like a high proportion of individuals with chronic illnesses. This

means that healthcare systems cannot work on prevention, as per the One Health approach, and are failing to contain the spread of infectious diseases and fight them effectively.

Antimicrobial resistance makes the situation even trickier

There is an additional healthcare challenge at the interface between humans, animals and the environment. Excessive use of antibiotics is leading to antimicrobial resistance. AMR is one of the biggest concerns in the fight against "major" infectious diseases like malaria and tuberculosis; it is putting humanity's achievements to date at risk. Improper use of antibiotics also contaminates wastewater and drinking water, which further encourages the emergence of resistant pathogens.

Combating these health risks requires robust healthcare systems – as the current COVID-19 pandemic has once again shown. This is why boosting human healthcare and veterinary systems and systems to preserve environmental health are a key part of the One Health approach. Better prevention, diagnosis and treatment of infectious and non-infectious diseases improve the capacity of healthcare systems to respond.

Example 5:

New vaccines and diagnostics

In low and medium-income countries, there are often shortages of essential healthcare products to fight diseases that are a danger to public health – including NTDs. In light of the increasing prevalence of new (zoonotic) pathogens and AMR, new, effective vaccines, diagnostic tests and medicines are especially important. KfW is supporting the development and market launch of these via a range of financing mechanisms (e.g. Federal Ministry for Economic Cooperation and Development-supported **healthcare funds GHIF and Adjuvant GHTF**, or the **product development partnerships** financed on behalf of the Federal Ministry for Education and Research (BMBF)).

This is particularly relevant for containing neglected tropical diseases (NTD) which occur primarily in low-income countries. These countries lack incentives for inno-



Research must not be neglected.

vation and research to develop medicines for the private market (problem: low levels of solvency). Public and philanthropic donors can counteract this by investing in the development of new, effective and affordable medicines, vaccines and diagnostic tests. This simultaneously helps to limit AMR. By using them responsibly, we can get maximum benefit from these new medicines.

Reliable early warning and monitoring systems can identify when illnesses are spreading. This facilitates a better understanding of illnesses and the ways in which they are transmitted from animals to humans. Modern information and communication technologies are crucial here: they provide emergency personnel, national health centres and authorities, experts and political decision-makers with relevant real-time data, enabling them to take targeted action.

Conclusion: One Health requires holistic cross-sector strategies

Realistically, in an increasingly connected world it will not be possible to completely avoid outbreaks of dangerous infectious diseases in future. However, systematic implementation of a One Health approach can decrease the likelihood of zoonoses occurring, and the danger associated with them. It is important to ensure that measures in different sectors dovetail in a tailored manner. This includes both preventive measures (in areas like agriculture, supply of drinking water and sanitation, biodiversity) and the introduction of



The development of effective drugs and vaccines is essential to curb AMR.

measures to quickly identify, contain and treat outbreaks via high-performing healthcare systems and the development of effective vaccines, diagnostic processes and medicines.

The above examples show how sustainable measures in the areas of health, agriculture, drinking water supply, sanitation and biodiversity help to improve the health of humans, animals and the environment and how these can be promoted through development cooperation.

From KfW's perspective, there are two strategies for achieving the One Health objectives:

Firstly: leverage opportunities to take more account of the interdependencies between the four sectors. Without biodiversity there is no sustainable agriculture. Without water, good health is impossible and there is no species diversity. If clear positive effects in an adjacent sector can be enhanced, or relevant risks reduced, this should be given greater consideration when planning and executing FC projects. This creates opportunities to boost a wide range of effects in line with One Health.

Secondly: preventing health crises will require cross-sectoral One Health programmes. These can provide a single hub for more targeted ways to link measures to protect ecosystems with measures to safeguard animal health and prevent diseases in humans. This would be especially relevant in "hotspots" where biodiversity is at risk, and places where humans and wild ani-

mals often come into contact, or which create exceptional public health risks.

Fighting pandemics effectively and creating structural barriers to prevent health, socio-economic and ecological crises requires one thing above all else: an interdisciplinary political framework that enables long-term commitment, regardless of contemporary trends.

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