

ONE HEALTH: A CROSS-SECTORAL, HOLISTIC APPROACH TO REDUCE DISEASE RISK AND BUILD RESILIENCE



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ABSTRACT

One Health recognises the inherent linkages between the health of humans, animals and the environment, and advocates cross-sectoral collaboration to achieve a broad range of public health, food security and trade outcomes. Though it remains challenging to build a framework to best capture all of its benefits, One Health is attracting renewed attention in the wake of the COVID-19 pandemic. This chapter highlights research supported by the Australian Centre for International Agricultural Research over the past ten years in Fiji, Lao People's Democratic Republic, the Philippines and Viet Nam, including for disease control, and offers recommendations for development co-operation providers wishing to integrate and support this holistic approach in policies and programmes.

The health of humans, animals and the planet are closely connected

- The truly global nature of COVID-19, compared to previous health security crises, brings the potential of the One Health approach to the fore in international development.
- To realise the full potential of One Health, interventions should engage the community and translate gender, knowledge, cultural practices and risk perception into robust disease surveillance and control programmes.
- While One Health requires a fundamental shift in existing institutional operations and finance mechanisms, its collaborative, multi-sectoral and transdisciplinary way of working recognises that sustainable solutions cannot be delivered by one sector alone.

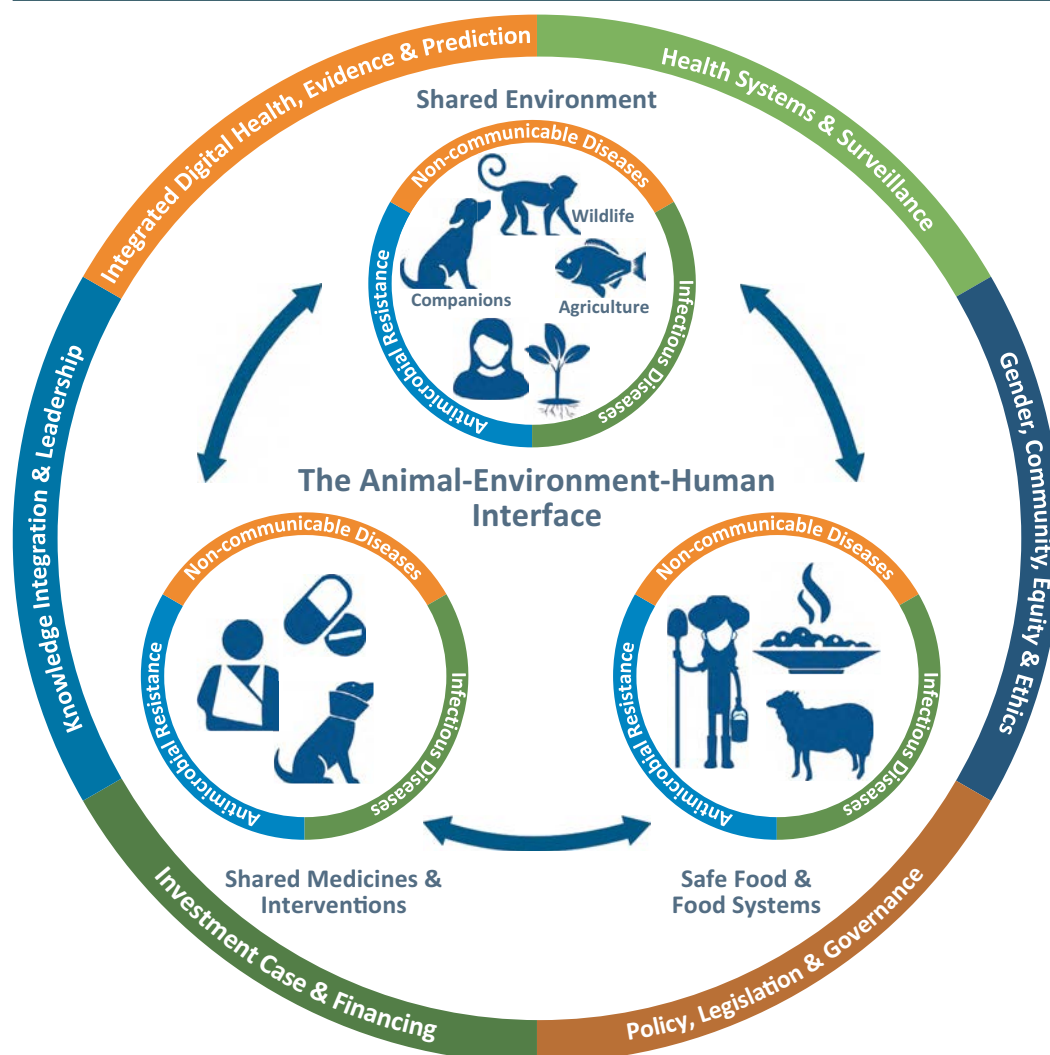
One Health recognises that the health of humans, animals and our broader environment is interconnected. It promotes a collaborative, multi-sectoral and transdisciplinary way of working, recognising that sustainable solutions cannot be delivered by one sector alone. While the concept stems from earlier thinking around comparative medicine, the emergence of severe acute respiratory syndrome (SARS) and Highly Pathogenic Avian Influenza (HPAI) in the early 21st century expanded the One Health concept to encompass the environmental perspective.

More recently, One Health has developed from a tightly defined view of zoonotic disease mitigation to an approach that can address today's much broader socio-economic, environmental, human health and livelihoods challenges (Häsler et al., 2014^[1]). These range from sustaining ecosystem services to food and nutritional security, poverty, and fair trade (FAO/WHO, 2014^[2]), and now include non-communicable disease (Amuasi et al., 2020^[3]) (Figure 8.1). As a result, One Health is promoted as an underlying framework to support a range of existing international development initiatives,

including the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction, as well as the attainment of universal health security and global action on tackling antimicrobial resistance (World Bank Group, 2018^[4]; Seifman, 2020^[5]). The COVID-19 crisis has amplified calls for One Health approaches.¹ As yet, though, neither coordinated global support nor systematic allocation of resources towards integrated, cross-sectoral policies and programmes has been forthcoming (Häsler et al., 2014^[1]; Galaz et al., 2015^[6]; Seifman, 2020^[5]).

Establishing strategic international partnerships for the generation and dissemination of knowledge has been highlighted as key to achieving the desired international collective action to address a range of global public goods that are pertinent to One Health. It should be noted, however, that for the global public good theory to work, it must encourage what Ng and Ruger (2011^[7]) called "mutual benefit to all" through financial contributions from both high-income countries and lower and middle-income countries, as distinct from donations of "aid" from richer to relatively

Figure 8.1. The “One Health” approach



Source: Amuasi, J. et al (2020_[3]), “Reconnecting for our future: The Lancet One Health Commission”, *The Lancet*, Vol. 395/10235, pp. 1469-1471, <https://www.sciencedirect.com/science/article/pii/S0140673620310278?via%3Dihub>.

poorer countries. Given the truly global impact of COVID-19 compared to previous health security concerns such as SARS, HPAI and Ebola, now may be an opportune time for partners to revisit the potential for global public goods theory as a framework for One Health.

How development co-operation providers can integrate or support One Health approaches

One Health advocates for cross-sectoral collaboration to achieve a broad range of

health, food security and trade outcomes. However, collaboration may only be sustainable if there are “obvious benefits” to engaging across sectors (Bennett, Glandon and Rasanathan, 2018_[8]). Three key lessons, outlined here alongside examples of transdisciplinary interventions, have emerged from ACIAR’s more than a decade of experience with One Health.² Its long-term research support and co-designed programmes can be illustrative examples for development co-operation providers wishing to support a One Health approach.

Lesson 1: Commit for the long-term by adapting resourcing and reporting requirements for transdisciplinary projects

The long-term nature of projects must be factored into the One Health design process, particularly the time commitments required to build trust and partnerships. The examples outlined here are long-term approaches that have demonstrated results over a five- to ten-year time frame. Similarly, it may be necessary to rethink programme monitoring, reporting and evaluation processes for One Health approaches to ensure they adequately capture the varying perspectives, benefits and motivations for each project or programme partner.

Demonstrating the cost-effectiveness of One Health interventions

As implementation of One Health requires a fundamental shift in existing institutional operations and finance mechanisms, it is thus crucial to demonstrate the added value of cross-sectoral collaboration (Zinsstag et al., 2015^[9]). The concept of integrated interventions for disease control is not new (WHO, 2007^[10]; Schelling et al., 2005^[11]), but in recent years there have been increased calls to refine existing economic methods to better justify individual sectoral benefits (Häsler et al., 2014^[11]).

A project in Lao People's Democratic Republic from 2009 to 2015 was one of the first to demonstrate the value added of incorporating both zoonotic and non-zoonotic diseases of humans and animals in the same intervention (Okello et al., 2018^[12]). The project implemented a joint human-animal control programme to address an abnormally high prevalence of the epilepsy-inducing zoonotic parasite *Taenia solium* (pork tapeworm) in the project area (Okello et al., 2014^[13]). *T. solium* is the top-ranked food-borne parasite of global importance (FAO/WHO, 2014^[2]), and control requires a combination of therapeutic and behavioural interventions to simultaneously address the

pig and human reservoirs. Using standard World Health Organization measures of cost-effectiveness for health interventions, an integrated approach to controlling additional diseases of both pigs³ and humans⁴ was compared to control the zoonotic disease alone; large-scale, integrated actions were demonstrated to be significantly more cost-effective (Okello et al., 2018^[12]). Furthermore, pigs are a key contribution to household incomes for the rural poor in Lao People's Democratic Republic. It is noteworthy that including pig health treatments in this human disease control programme appeared to generate additional buy-in from both the target communities and government livestock departments. It is unlikely this would have been achieved had the intervention addressed a human zoonosis alone.

Additionally, a recent five-year impact evaluation of the project found that household toilet usage had increased almost tenfold and the prevalence and intensity of environmental parasite contamination decreased significantly over to the 2013 baseline. Social and diagnostic work concluded that in the medium term, the intervention's associated behavioural communication packages, as described by Bardosh et al. (2014^[14]), were more successfully adopted than the human and animal therapeutics. This likely led to the observed sustained reduction in parasite prevalence, which highlights the importance of a transdisciplinary approach to One Health interventions. A follow-on project starting in early 2021 aims to further explore the linkages between behaviour change and the broader societal benefits of reduced disease prevalence in both pigs and humans.

Lesson 2: Co-design research and embrace a cross-cutting perspective

Better understanding of how policies could be developed and funded across multiple sectors involved in global health issues is key to the One Health approach (Bennett, Glandon and Rasanathan, 2018^[8]; Galaz et al., 2015^[6]).

ACIAR's research commissioning model, grounded in a research co-design process, allows for close consultation with in-country partners that helps project teams understand differing sectoral roles and responsibilities and the individual stakeholders within sectors. As concerns partnerships with government ministries and other institutions, a common challenge for donors is how to ensure a holistic approach through existing programme- and project-funding processes. In the future, international development agencies may need to change their organisational culture to break down silos to foster a systems perspective. ACIAR, for example, has a set of advisors in cross-cutting issues such as gender, climate and economics who assist programme managers in the project review process, ensuring alternative views are considered outside its relatively technical silos.

Navigating sectoral mandates, roles and motivations

Developing methods to understand the differing mandates and motivations of decision makers can be very informative, as demonstrated by the results of in-depth analysis in Fiji of the effect of climate change on weakening human and animal health systems in the context of antimicrobial resistance (AMR) (ACIAR_[15]). Fiji has one of the world's highest bacterial caseloads, and the emergence of resistant microorganisms is reported in the country's hospitals (Jenney et al., 2014_[16]). Cases of human diabetes are also some of the highest in the world, necessitating high levels of antibiotic usage, which further increases AMR risk. According to early findings, one effect of climate change – or more specifically, the fear of more frequent cyclones and other adverse weather events – is that population density is increasing in parts of the country perceived as at lower risk. Increased human population densities impact sanitation provision and associated disease spread, with the potential to further increase the use of antibiotics and other therapeutics. They can also increase the connectivity between

humans, animals and the environment, meaning that existing resistant bacteria can move faster throughout the population.

Thus, the project not only identifies issues that are pertinent to AMR, but also addresses key national concerns over the potentially destabilising effects of climatic events on human and animal health systems. It also allows options for greater integration of environmental perspectives into existing AMR narratives, thus strengthening the motivation for cross-sectoral policy development and action.

Another example of a cross-cutting research partnership is the recently concluded, ten-year pig production programme in the Philippines that advocated for closer linkages between smallholder agricultural projects and public health and environmental health agencies (ACIAR, 2020_[17]). Smallholders produce 60-80% of all pork consumed in the Philippines, making pigs an essential commodity for the rural poor in terms of both food security and national income generation. While the project focused primarily on pig disease investigations and market pricing information, it also included a broader environmental component, introducing, for example, rainwater harvesters and biogas generator technology. The biogas digesters received significant support from project stakeholders, particularly women, because they contributed to waste management and to savings on the cost of household gas and time spent preparing food. The shared interest of smallholder farmers, the commercial pig sector and the Philippine government in this programme shows that both the agricultural department and small and medium-sized enterprises have an appetite for a broader approach to development projects aimed at livestock husbandry and disease improvements due to the environmental, health and livelihoods impacts of livestock rearing.

Lesson 3: Let the community lead to achieve holistic interventions

To sustainably strengthen existing institutional supports for One Health, the local community must have a leading role in interventions and consideration must be given to cultural norms. As the Lao People's Democratic Republic project demonstrates, interventions that translate gender, knowledge, cultural practices and risk perception into robust disease surveillance and control programmes, particularly those deemed community-led, are vital to truly understand disease drivers. These result in holistic interventions that go beyond disease control to achieve a number of broader environmental and livelihoods benefits.

Similar benefits can be achieved in other types of interventions. A paradigm shift from traditional hazard-based approaches to a more holistic assessment of food safety risk, for instance, can spur greater effort and investment to reduce the burden of foodborne illness in domestic markets. These, in turn, can catalyse private sector and consumer leadership to complement and support national regulatory systems.

Assessing disease risk and mitigation options in informal food systems

Food systems are rapidly changing in many lower middle-income countries in association with increased consumption of "risky foods largely sold in traditional (informal or wet) markets" (Grace et al., 2015_[18]). Since 2010, ACIAR has funded a large food safety

improvement programme in Viet Nam's wet markets, using pork as the focal commodity, given its popularity and essential contribution to nutrition and livelihoods. The initial phase (2012-17) confirmed that without incentives, adoption of improved practises in wet markets is unlikely (Unger and Grace, 2018_[19]). It also confirmed that testing of interventions should take a gendered approach, as men and women have distinct roles and undertake different activities in the pork value chain.

The current "safe pork" project in Viet Nam builds on this initial work (ACIAR, 2020_[20]). In particular, a Food Safety Performance Tool (Thi Thinh et al., 2020_[21]) has been developed to provide a standardised, consistent assessment of food safety outcomes in wet market value chains. A quantitative risk-based approach is considered within a broader analytical framework of business performance and supply chain governance, while a third pillar builds broader societal concerns into the risk analysis. This latter phase includes consideration of how interventions that aim to address risk – for example, certification, regulation or market closure – might impact and be impacted by gender, equity and cultural norms.

COVID-19 highlights the critical need to keep the health of humans, animals and the planet in balance. For development co-operation actors wishing to adopt or support the One Health approach, this means committing for the long-term, co-designing cross-cutting research, and letting the community lead. It would also require a systemic allocation of resources.

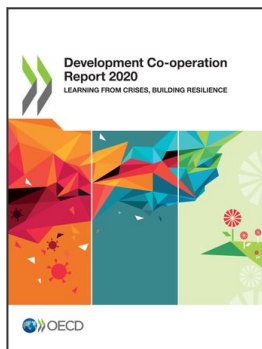
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NOTES

1. See, for example, *Preventing the Next Pandemic: Zoonotic Diseases and How to Break the Chain of Transmission* (UNEP and International Livestock Research Institute, 2020_[22]) at: <https://cgspace.cgiar.org/handle/10568/108707>.
2. For almost 40 years, ACIAR has funded research for development partnerships to better understand these linkages in lower middle-income countries. More recently, its focus on social, economic and policy research aims to contribute new thinking to policy processes and investment frameworks that better support One Health operationalisation through a regional public goods lens.
3. These include classical swine fever and internal parasites.
4. These include soil-transmitted helminths.



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