

INVESTING IN ONE HEALTH:

# HOW PHILANTHROPY CAN SUPPORT HEALTHY PEOPLE, ANIMALS, AND ECOSYSTEMS AND PREVENT FUTURE PANDEMICS

JANUARY 2023





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### Acknowledgements

*The underlying research and analysis for this report was conducted by Dalberg Advisors, with support and input from scientists and staff at WCS, and generous funding from the Gordon and Betty Moore Foundation. The team at Dalberg Advisors would also like to thank the many staff members at various foundations who shared their perspectives with Dalberg through interviews and other discussions. Questions or comments about this report can be directed to [Oren Ahoobim](#) at Dalberg Advisors or [Carolyn Gray](#) at WCS.*



## 1. Executive Summary

**The global impacts of the ongoing COVID-19 pandemic and the growing risk of such events in the coming decades are stark reminders of the tremendous need for effective pandemic prevention.** Most pandemics result from the spread of viruses from wildlife or domesticated animals to humans. To be effective, prevention efforts must therefore target root causes of animal-to-human spillover and localized transmission before it becomes an outbreak in humans. Unfortunately, most pandemic prevention efforts in recent years have focused on containment of outbreaks and not the primary prevention of spillover. Improving primary prevention requires a cross-sectoral approach to identifying and addressing the drivers of spillover and spread that is informed by environmental conservation, public health considerations, and the broader socio-economic, political, and ecological context that shapes human and animal behavior and interaction.

**One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems, recognizing that they have intrinsic and inseparable relationships.** These relationships are important for preventing spillover of disease from animals to humans, as well as for other important priorities including global food safety and food security, the growing threat of antimicrobial resistance, and the resilience of health systems and livelihoods, especially for communities most affected by the degradation of the natural world. A One Health approach considers and integrates the underlying socio-economic, political, and ecological drivers of health risk and disease emergence, thus allowing for better primary prevention.

**Interest in One Health from the public sector, including funding for pandemic prevention, has grown modestly in recent years.** Interest has been driven by increasing government support for the One Health approach and by the urgency to strengthen pandemic preparedness following the global experience of COVID-19. Major multilateral agencies – including the World Health Organization, the Food and Agriculture Organization of the United Nations (UN), the World Organization for Animal Health, and the UN Environment Programme – have spearheaded collaboration models to elevate One Health. In 2022, the World Bank launched a Financial Intermediary Fund (FIF) for Pandemic Prevention, Preparedness, and Response with a USD\$1.3 billion initial commitment that acknowledges the importance and relevance of the One Health approach. The FIF has several sovereign donors among its founding members and is supported by the G20, while the U.S. government played a leading role in its conception and creation.

**Despite these and other recent initiatives by public funders, the focus and magnitude of their efforts fall short of what is needed for true pandemic prevention.** The FIF serves as a good example of this gap. Appearing sizeable at first, its USD\$1.3 billion initial commitment is, in fact, a fraction of the estimated cost of primary pandemic prevention, which scientists place at USD\$20-30 billion *annually*.<sup>1</sup> Moreover, based on our review of initial FIF documentation and early discussions, it appears that more upstream initiatives such as curbing deforestation and forest degradation, effectively preventing contact between people and wildlife through commercial markets and trade, and managing urban encroachment appear to lie beyond the FIF's scope. This is a missed opportunity given the critical role these efforts can play in reducing the drivers of pandemics and facilitating with true pandemic prevention.

<sup>1</sup> Bernstein et al. (2021), [Dobson et al. \(2020\)](#)

**Private philanthropy has made more limited investments toward One Health approaches.** Many foundations who are active in the areas of human health, animal health, climate change, and environmental conservation are familiar with One Health, but do not look to this cross-sectoral approach to guide their grant-making.

**Our landscape review finds that between 2019 and 2021, 0.7% of the health and/or environment-focused grants of some of the largest philanthropic funders reflected a One Health approach. This represented 0.3% of total philanthropic dollars these foundations invested in health, the environment and associated topics (see Figure 4).**

Following the emergence of COVID-19, there was a modest increase in One Health-aligned philanthropy, with investments growing from approximately 0.5% of total grants in health or environment in 2019, to 0.9% of grants in 2020, and dropping back to 0.6% of grants in 2021. Despite some incremental increases in response to COVID-19, the overall findings are sobering: the share of One Health-related grants made by the largest private foundations with health and/or environment programs represent a very small portion of their grantmaking, amounting at best to less than single-digit percentages.

**Similarly, although private funders recognize the growing risk of future pandemics and the central role that One Health can play to prevent them, investments focused on primary pandemic prevention have been minimal (see Figure 5).**

Our analysis suggests that 2% of reviewed grants and 7% of philanthropic dollars can be connected to pandemic prevention or mitigation in line with the One Health approach. Investment in pandemic-related efforts (excluding those limited to COVID-19 response) peaked in 2020 at 13% of philanthropic dollars analyzed, dropping to 4% in 2021. These efforts were overwhelmingly targeted toward containing disease spread after an outbreak in humans (see Figure 6). Efforts to support primary pandemic prevention thus amounted to single-digit percentages of analyzed health and/or environment-related grantmaking by top funders. These quantitative findings are consistent with our discussions with private funders, who highlighted the lack of focus on primary pandemic prevention.

**The urgency of funding cross-sectoral initiatives—especially those at the intersection of conservation and health—has been brought into focus by the COVID-19 pandemic and recognized globally by international organizations (e.g., WHO, World Bank).** In addition to the pandemic's devastating human toll, its economic consequences have also shown the disproportionate costs of letting a pandemic occur relative to the cost of pandemic prevention – the USD\$11 trillion in COVID-19 response costs in addition to the USD\$10 trillion in global economic losses<sup>2,3</sup> are roughly equivalent to paying for one thousand years of pandemic prevention.<sup>4</sup>

**This has, at least fleetingly, opened doors and started conversations across human, animal, and ecosystem health issues and their interconnectedness.** This can be a first step toward more integrated philanthropy and increased collaboration, but it requires higher levels of investment, broader cross-sectoral portfolios, and a greater sense of urgency. Additional structural and/or process-oriented changes may also be necessary to enable the success of integrated or cross-sectoral portfolios for adopting the One Health approach. These might include (i) steps to encourage greater collaboration internally and externally, (ii) an evolution of results measurement approaches to make them better suited for initiatives that address pandemic root causes and systems-level challenges, and (iii) a commitment to longer-term investments that are de-risked via coalitions and partnerships. Existing funder collaboration models such as the Climate and Land Use Alliance (CLUA) and the Global Alliance for the Future of Food have been successful at demonstrating how funders can work together on interconnected issues and systems-level initiatives.

**Private funders find themselves at a crossroads between swiftly capitalizing on a moment of opportunity for more collaborative, integrated, and root cause-focused efforts to protect our health and our planet, or maintaining their status quo – with risk of repeated global catastrophes.** Private philanthropy is uniquely positioned to support higher-risk endeavors with promise for greater impact, to ensure that causes taken on by both private philanthropy and public actors serve pressing needs of diverse sectors in society, and to help sway and mobilize public funding. If private funders, alongside other partners, do not step in to play this role and push the needle in One Health-aligned initiatives for pandemic prevention and beyond, we are headed toward a future where global health and environmental emergencies become the new normal: risking the health of humans and animals and the planet's survival.

2. [World Economic Forum, Oct 12, 2020](#)

3. [Reuters, Jan 20, 2022](#)

4. Scientists estimate the cost of primary pandemic prevention to be in the range of USD\$20 billion to USD\$30 billion annually. See [Bernstein et al. \(2022\)](#), [Dobson et al. \(2020\)](#)

## 2. One Health and Pandemic Prevention

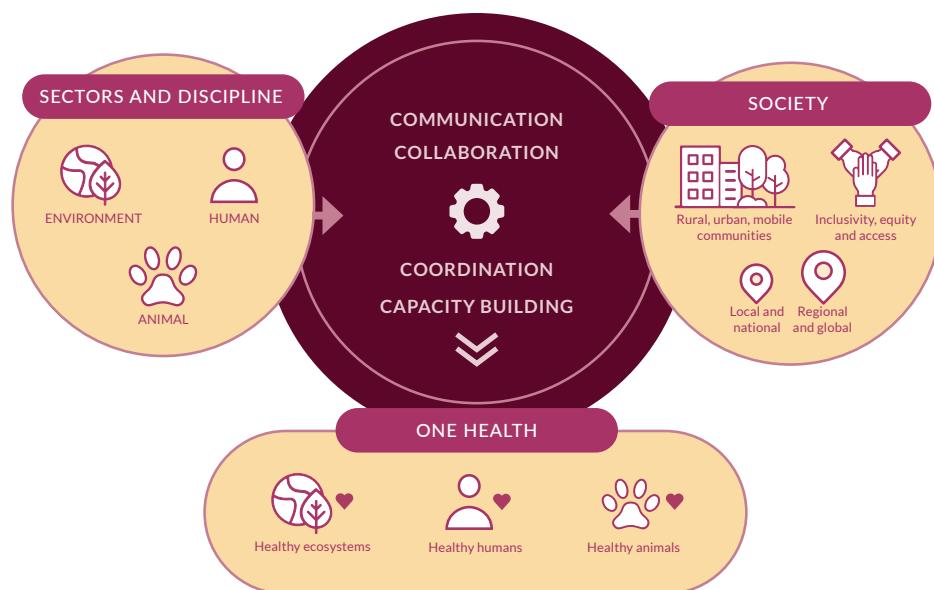
### 2.1 Overview of One Health

One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems. One Health recognizes that the health of humans, domestic and wild animals, plants, and the wider environment are closely linked and interdependent (see Figure 1).<sup>5</sup>

The principles underlying One Health were established in an international symposium in 2004 in New York City.

These twelve principles, known as The Manhattan Principles, are recommendations for taking a more integrated and holistic approach to preventing infectious disease outbreaks and maintaining the integrity of ecosystems for the health of humans, domesticated animals, and wildlife. These principles were updated and refined in 2019 as The Berlin Principles. Over the years, the notion of One Health has become better understood as the roots of a variety of health crises (e.g., swine and avian influenza, antimicrobial resistance, and, of course, the ongoing COVID-19 pandemic) have been traced to environmental degradation and disease spillover from animals to humans. Tackling zoonotic diseases, combatting antimicrobial resistance, strengthening health systems, and addressing loss of ecosystem services like access to safe food and water are key priorities at the human-animal-environment health interfaces for the One Health community, but they are not sufficient to prevent pathogen spillover at source.<sup>6,7,8</sup>

Figure 1: Illustrating the One Health concept (adapted from the One Health High-Level Expert Panel)



5. OHHEP definition of One Health

6. Overview of the Joint Plan of Action of the Quadripartite Collaboration for One Health, Apr 2022

7. Member States Information Session on the Joint Plan of Action of the Quadripartite Collaboration for One Health, Mar 2022

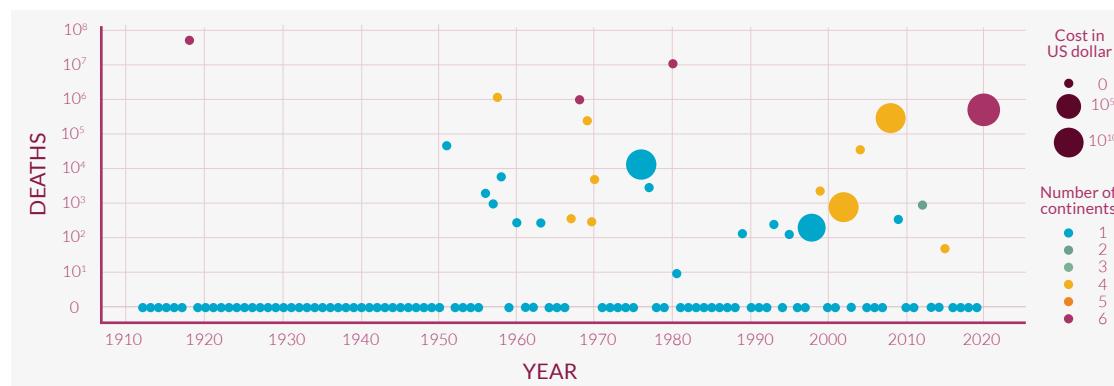
8. World Bank Group and EcoHealth Alliance Policy Brief, Jan 2018

## 2.2 Growing Importance of One Health in an Era of Increasing Pandemic Threats

The devastating effects of the ongoing COVID-19 pandemic have highlighted the need for stronger approaches to **pandemic prevention**. With almost 600 million reported cases, close to 6.5 million deaths, and estimated costs of response exceeding USD\$11 trillion with an additional USD\$10 trillion in global economic losses, COVID-19 has demonstrated the catastrophic impacts a global pandemic can bring.<sup>9,10</sup> In contrast, the estimated cost of primary pandemic prevention actions is placed at USD\$20 billion annually.<sup>11</sup> Thus, the financial impact of COVID-19 is roughly equivalent to paying for one thousand years of primary pandemic prevention.

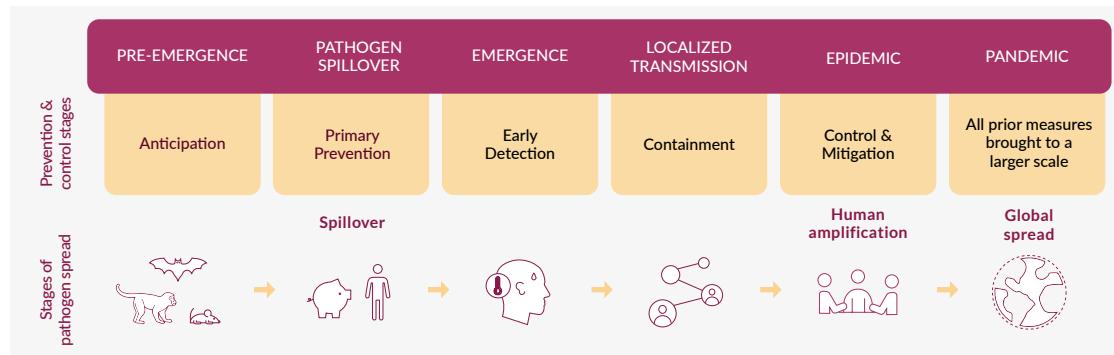
More broadly, **novel viral outbreaks are occurring at an increasing rate and a higher proportion are larger outbreaks (see Figure 2)**. As the global population and globalization increases, it is expected that pandemics will occur more frequently and affect more people.<sup>12</sup> Recent analyses place the probability of experiencing an extreme pandemic like the one caused by COVID-19 in a person's lifetime at 38%: a figure that may double in the coming decades.<sup>13</sup>

Figure 2: Deaths per year from novel viral zoonotic outbreaks since 1912 (adapted from Bernstein et al. 2022)



Research has shown that **pathogen spillover of viruses from animals to humans is the major source of pandemic risk**, with 60-75% of all infectious diseases in humans originating in animals.<sup>14</sup> Importantly, using a One Health approach helps society identify and address the *drivers* of spillover, including those related to (i) ecosystem and habitat integrity, particularly tropical and subtropical rainforest loss; (ii) human-animal-wildlife interfaces, particularly wildlife exploitation, trade and markets, and animal husbandry; and (iii) human health and economic security, especially at infectious disease hotspots and for Indigenous Peoples and local communities.

Figure 3: Phases of pandemic emergence (adapted from Bernstein et al. 2022)



However, the bulk of global pandemic response has focused on shoring up post-emergence preparedness that is primarily oriented toward public health, including vaccine and drug development, human health surveillance, and strengthening of health systems.<sup>15</sup> These activities are important, but can neither fully contain disease spread nor address underlying causes of infectious disease emergence, such as land use change and deforestation, biodiversity loss, and climate change.

9. [World Economic Forum, Oct 12, 2020](#)

10. [Reuters, Jan 20, 2022](#)

11. [Bernstein et al. \(2022\) Sci Adv](#)

12. [Bernstein et al. \(2022\) Sci Adv](#)

13. [Marani et al. \(2021\) Proc Natl Acad Sci](#)

14. Ellwanger and Chies (2021), Jones et. al. (2008), Taylor et al. (2021)

15. [Report of the Scientific Task Force on Preventing Pandemics \(Aug 2021\)](#)



### 3. Overview of Funding for One Health

#### 3.1 Public Funding Supporting One Health and Pandemic Prevention

**In recent years, governments and multilateral institutions have dedicated more funding under the banner of One Health.**

**Health.** In the wake of the COVID-19 pandemic, governments have committed large sums toward pandemic preparedness, often citing One Health as informing their approach. For example, in June 2021, France announced a commitment of 750 million euros (USD\$750 million) toward bolstering preparedness and response capabilities, including for emerging infectious diseases via an integrated One Health approach as part of its Health Innovation Plan 2030.<sup>16</sup> Germany also announced plans in 2021 to spend up to 150 million euros (USD\$150 million) per year to implement the One Health approach on a global level, including efforts geared toward partner cooperation, capacity strengthening, and raising awareness of One Health issues among decision-makers and the public.<sup>17</sup> Among multilateral institutions, the World Health Organization, the Food and Agriculture Organization of the UN, the World Organization for Animal Health, and the UN Environment Programme are developing a Joint Plan of Action that outlines a commitment to collectively advocate for and support the implementation of One Health.<sup>18, 19, 20</sup> More recently, the World Bank launched a Financial Intermediary Fund (FIF) for Pandemic Prevention, Preparedness, and Response (PPR) with a USD\$1.3 billion initial commitment by several founding funders, which acknowledges the relevance and importance of One Health for pandemic prevention.<sup>21, 22</sup>

**Despite these financial commitments and nods to One Health, most efforts do not go far enough in scope and scale given the nature of the underlying problems and the degree of urgency in addressing them.** For instance, the FIF is anticipated to focus primarily on country-level disease surveillance systems and to be only partially, if at all, aligned with primary prevention efforts like biosecurity in animal husbandry and monitoring of wildlife trade.<sup>23</sup> Initiatives that address root causes, such as curbing deforestation in biodiversity hotspots and managing urban or agricultural encroachment, lie beyond the FIF's scope.

#### 3.2 Private Philanthropy at the Conservation-Health Nexus

**While leaders at many private philanthropic organizations see value in the One Health approach, our research suggests that they do not employ a One Health lens to guide their grantmaking.** In conversations with funders who fund conservation initiatives and/or health initiatives, leaders regularly acknowledged the potential benefits of applying a One Health approach in grantmaking. However, in a review of grants from key private health and environment funders between 2019 and 2021, our analysis found that only 0.7% of analyzed grants could be readily associated with the One Health approach<sup>24</sup> representing 0.3% of total analyzed philanthropic dollars (see Figure 4). Discussions with private funders supported these observations, as they similarly highlighted the overall lack of investment in line with the One Health approach.

16. [French Government, 'Innovation Santé 2030' Overview, 29 Jun 2021](#)

17. [German Federal Ministry for Economic Cooperation and Development website](#)

18. [WHO statement, 29 Apr 2022](#)

19. [WHO press release, 31 Mar 2022](#)

20. [FAO press release, 15 Mar 2022](#)

21. Beyond the World Bank, the FIF is currently supported by ten sovereign donors – the U.S., Italy, Germany, Indonesia, China, the U.K., South Korea, the U.A.E., Japan, and Singapore – as well as the European Commission. Private funders have also provided support.

22. [World Bank PPR FIF Fact Sheet, accessed 9 Aug 2022](#)

23. [World Bank PPR FIF White Paper, 17 May 2022](#)

24. Based on the extent to which grants consider interdependencies between – and impact across – human, animal, and ecosystem health.

Quotes from interviews with private funders:

**“Very little, if any, of our funding is at the environment-health nexus. We don’t talk about it that way or describe it from the One Health perspective.”**



**“A small fraction of the Environment Program is explicitly health-oriented. A lot of our work falls at the intersection unintentionally but framing that as health-motivated is disingenuous.”**

**“Today, One Health is a hot topic at a global level – but finding locally relevant solutions that translate into global outcomes is hard.”**



**“My sense of One Health right now is that it’s a bit of everything to everyone, and so it’s very fuzzy and difficult to operationalize.”**



Following the emergence of COVID-19, there was a modest increase in One Health-aligned philanthropy, but it still represented a small fraction of overall funding from these funders. The proportion of One Health-related grants climbed from approximately 0.5% of analyzed grants in 2019, to 0.9% of analyzed grants in 2020, and dropped to 0.6% in 2021. This shift was even smaller when looking at funding in dollar terms, with One Health-related investments rising from 0.2% of analyzed dollars in 2019 to 0.4% of analyzed dollars in 2020 and 2021. We note that comparing these data across a relatively short time horizon of three years is not intended to make the case that there are meaningful changes from year to year, but rather that the relative proportion of One Health aligned grants is very small in any year.

**“COVID-19 brought a recognition that if you pull one thread, five other things come along with it.”**

Quote from interviews with private funders.



Figure 4: Magnitude of analyzed investments (health and/or environment-focused grants of some of the largest philanthropic funders) that could be considered in line with the One Health approach. (Top) Proportion of grants considered in line with the One Health approach among all analyzed grants across 2019-2021 (88 of 12,609, or 0.7%). (Bottom) Proportion of philanthropic dollars (~\$65.1 million, or 0.3%) considered in line with the One Health approach among all analyzed philanthropic dollars across 2019-2021 (\$USD, B).



### 3.3 Private Philanthropy Focused on Pandemic Prevention or Mitigation

Philanthropic investments fall short of meaningfully supporting efforts toward pandemic prevention and mitigation.

Our analysis suggests that, between 2019 and 2021, just 2% of health and environment grants by top funders focused primarily on preventing and mitigating pandemics, representing just 7% of analyzed dollars (see Figure 5).<sup>25</sup> While the number of pandemic-related investments that could help prevent zoonotic emergence and spillover<sup>26</sup> increased from 2019 to 2020 as the COVID-19 pandemic initially unfolded, this did not hold through 2021 and was not reflected in the relative portion of invested philanthropic dollars.



**“Donors certainly gave funds toward the current pandemic in a variety of forms, but prevention would be a small minority. It was mostly vaccines, etc.”**

Quote from interviews with private funders.

Figure 5: Connecting analyzed investments to future primary pandemic prevention and mitigation across 2019-2021 (excluding those limited to COVID-19 response) (Top) Proportion of analyzed grants that could be directly associated with future pandemics among all analyzed grants (247 of 12,609, or 2%) (Bottom) Proportion of analyzed philanthropic dollars that could be directly associated with future pandemics among all analyzed grants (USD \$B) (~\$1.5 billion, or 7%)



25. There is partial overlap between grants that could be readily associated with the One Health approach and grants focused primarily on preventing and mitigating pandemics; however, the latter category includes pandemic-related investments that go beyond the scope of One Health (e.g., bolstering national testing systems, scaling up critical care capacity, and advancing equitable vaccine development and distribution).

26. Examples of such investments include developing surveillance systems to detect and prevent pathogen spillover and transmission, studying human-animal interactions including attitudes toward feeding animals, exploring digital sensing for animal healthcare in farming, creating predictive models of the risk of zoonosis emergence, and combatting deforestation and unsustainable land conversion.

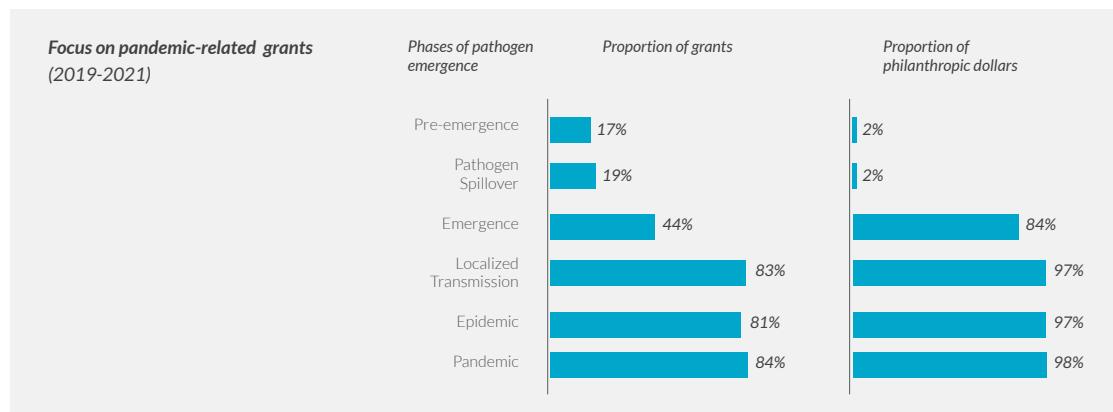
**Investments were overwhelmingly targeted toward containing disease spread after an outbreak occurs in the human population.** Across all pandemic-related grants, containment of or response to local, regional, or global spread represented over 80% of grants and as much as 98% of philanthropic dollars directed to pandemic-related efforts (see Figure 6). This is perhaps not surprising, as many foundations focused on pandemic response in the immediate aftermath of the COVID-19 outbreak.

**“While we believe that you’re not going to solve for pandemics unless you get better at understanding animal-human disease transfer among other things, we still focus our work on the human piece.”**

*Quote from interviews with private funders.*



Figure 6: Focus of pandemic-related grants in terms of phases of pathogen emergence for the entire analyzed period (2019-2021), looking at proportion of grants (left) and proportion of philanthropic dollars (right). Note that percentages do not add up to 100% because there is overlap between areas of focus.





## 4. Opportunities for Private Philanthropy to Advance the One Health Approach

The urgency of grantmaking in line with a One Health approach has been brought into focus by the COVID-19 pandemic, which has, at least fleetingly, opened doors and started conversations across typically siloed areas. One Health challenges point to the need for cross-cutting initiatives that consider the interdependencies of human and animal health and the environment for survival of the planet. Yet, we have seen little action toward translating this aspiration into meaningful intersectional grantmaking. True action requires higher levels of investment and a greater sense of urgency before the window of opportunity closes. Ultimately, these changes must originate within and across individual institutions while still reflecting organizational mandates, values, and priorities.

To that end, philanthropic leaders can consider some important questions as they seek to improve health and conservation outcomes by taking a more cross-sectoral approach:

1. How can we foster greater collaboration across program areas to gather the combined expertise required to enable effective intersectional grantmaking and take on One Health challenges?

Areas for consideration:



Clearly articulating multiple impact pathways at the individual grant level and thereby enabling grants to look for intersectional benefits as well as tie into historic missions



Creating decision-making bodies that can serve as a first-pass filter for intersectional grantmaking before escalating topics to the level of a Board



Adapting hiring practices to bring on individuals with multi-disciplinary and cross-sectoral expertise



Creating new positions or task forces explicitly focused on 'crosstalk,' collaborative funding pools, etc.

Quotes from interviews with private funders:

“Some of the connections [between health and environment] are obvious to those who've worked in the field, but as funders we are siloed in what we do.”



“We have defined things by field of expertise: an environment team doesn't have health expertise or even development expertise.”

“We look for ways in which our programs intersect, but it hasn't materialized organically in our climate and pandemics work. For an atmospheric scientist to focus on pandemics is tough.”



“There's a recognition that where we as philanthropy can add the most value is at the intersection of topic areas... we're moving toward a cross-cutting way of thinking about things.”

★ **Example: The Oak Foundation** has integrated the intersection of environmental and health work throughout each of their Environment sub-programmes. Beyond just the impact of the project (i.e., conservation), they look to maximize impacts around the project (e.g., job creation, health benefits). Examples are campaigns around pesticides weakening ecological systems in Brazil, antibiotics in industrial husbandry in Eastern Europe, sustainable food production in China and Southeast Asia, and understanding the legal and illegal trade routes for wild food.

2. How might we shift our results measurement approach for grantmaking that falls at the intersection of conservation and health (including One Health priorities)?

Areas for consideration:



Developing measurement systems that consider funders' contribution to complex objectives (alongside the contributions of other actors), instead of focusing on results that can be more directly attributed to a single actor



Setting clear expectations for stakeholders (including Board members) about what is feasible to measure when addressing complex, upstream challenges

Quotes from interviews with private funders:

**"We aren't comfortable donating without outcomes, and we want to make statements of attribution for the things we're funding, but with acknowledgment of the system level. We wouldn't expect to make a short line between our attribution and larger systems level change."**



**"We try to measure across the contribution-attribution gradient, understanding that our contribution in an outcome is present even if attribution is unclear. Our job is to create enabling conditions for the outcomes."**

**"Our Board does not expect attribution, but evidence of contribution to our higher-level goals. We focus on contribution, but we apply the same level of rigor with an understanding that the theory of change is not always linear."**



★ **Example: The Children's Investment Fund Foundation (CIFF)** uses data at the core of all of its programmes and regularly reviews progress to identify areas that could be changed or adapted to increase impact. For investments aimed at improving the enabling environment, CIFF focuses on understanding contribution rather than claiming attribution.

3. How can we avoid 'boom and bust' funding cycles when taking on systems-level challenges, including One Health issues?

Areas for consideration:



Committing to long-term funding for initiatives to better understand spillover mechanisms and how to address root causes, and developing strategies and mechanisms to allow for consistent support irrespective of other global events and crises.



Seeking out coalitions and partnerships to de-risk long-term or systemic endeavors, as well as to provide the level of resources and interdisciplinary breadth necessary for impact

Quotes from interviews with private funders:



**"How do we get away from 'boom and bust' funding? If COVID-19 can't convince us, I don't know what will."**

**"Governments get rewarded for throwing cash at the problem in the moment. Philanthropy alone can think about the longer term and start investing in research and capacity-building to assist governments and make it cheaper to address the next fire when it happens."**



4. How can philanthropies build funder coalitions that prioritize intersectional grantmaking and address root causes?

Areas for consideration:



Starting or building on coalitions of aligned funders around intersectional efforts, such as One Health, to: (i) actively shape goals and priorities; (ii) co-invest and de-risk upstream and long-term funding efforts; (iii) align on clear entry points that they might collaborate on and rally behind; (iv) share examples of successes and implementation strategies; and (v) act as champions to catalyze further public and private investments toward intersectional and/or root cause opportunities

Quotes from interviews with private funders:

**“You need a few champions that are investing and saying, ‘Why don’t you join us?’ Peer-to-peer pressure goes a long way in the community.”**



**“We look for donor convening – when donors come together, it makes it easier to jump in to [larger or more nebulous] commitments.”**

★ **Example:** The Climate and Land Use Alliance (CLUA) brings together diverse donors working to end and reverse tropical deforestation on a global scale. While each member of CLUA may be well suited to drive impact on a particular aspect of this bigger agenda based on their individual approach and theory of change, these funders are able to better coordinate and learn from each other’s work and in doing so, may achieve collective impact greater than the sum of their individual efforts.



## 5. Call to Action for Private Philanthropy to Tangibly Support One Health Initiatives

Private philanthropy has the chance to proactively shift toward built-for-purpose structures, processes and expertise internally, as well as coalitions and long-term efforts externally, to effectively pursue intersectional and One Health-aligned causes including primary pandemic prevention. By developing mechanisms that allow foundations to successfully support intersectional and cross-cutting topics, private philanthropy will be able to direct its resources toward projects and movements across the One Health space, including tackling pandemic root causes. If they act now, private funders have the chance to catalyze and amplify the growing momentum within the public sector for a unified One Health narrative and action plan, as well as work to ensure those are highly relevant and impactful for communities across the planet. Public and private investments toward pandemic prevention that claim to endorse the One Health approach, including the World Bank's PPR FIF, must be built upon and supplemented with targeted engagement on key issue areas that ensures these investments stay true to the notion of primary prevention. Engagement with One Health gives private funders a clear opportunity to advance their own missions, harness co-benefits, serve the populations they prioritize, and contribute to global good in both the near- and long-term.

**If private foundations are not able or willing to capitalize on this moment of opportunity, there is a real risk of repeated global catastrophes.** While the COVID-19 pandemic has created greater awareness among funders of addressing prevention, this awareness must be turned into action to avoid future global ecological and human health disasters. The response to COVID-19 involved political and governance-related failures within many countries and internationally, and the development of life-saving vaccines at an unprecedented pace led many to expect that technological advancements will “save the day” in future pandemics. These dynamics can unfortunately overshadow efforts to elevate the importance of intersectional, root cause-focused pandemic prevention now. If funders continue to ignore investments in primary pandemic prevention and intersectional prevention strategies, future global pandemics will be inevitable. Without shifting away from historic mindsets and strategies, we are destined to endure a cycle of global health and environmental emergencies risking the health of all on the planet.



## 6. Appendix

### Overview of the Research Informing this Report

#### I. Quantitative Analysis

We leveraged Candid's Foundation Directory Online, a database of funders, to perform a high-level quantitative analysis of grantmaking in recent years. Our goal with this analysis was to begin to understand trends in giving related to pandemic prevention and mitigation, the One Health approach, and the intersection of health and environmental conservation. Our quantitative analysis is meant to be directional and includes several assumptions. This analysis was conducted through three steps:

##### 1. Funder selection and compilation of grants

Funders were selected for inclusion in our analysis based on the prominence of their grantmaking in the realms of health and/or the environment. Prominence was determined based on total attributed giving in either area in 2019, as per the Foundation Directory Online. The foundations we selected for further grant analysis included: The Bill and Melinda Gates Foundation, Bloomberg Philanthropies, the David and Lucille Packard Foundation, the Gordon and Betty Moore Foundation, the Leona M. and Harry B. Helmsley Charitable Trust, Robert Wood Johnson Foundation, the Rockefeller Foundation, Walton Family Foundation and William and Flora Hewlett Foundation. In addition, we included Wellcome Trust, as they are a major donor in health and their 2019 grantmaking was not reflected in the Foundation Directory Online database. While additional donors not captured in the Foundation Directory Online are likely relevant to One Health and/or pandemic prevention, we faced feasibility and data availability limitations when searching for aggregated, public grants by individual donors. Consequently, we elected to use this donor set from the Foundation Directory Online database as we felt that it is a strongly representative sample of the space. We explored the OECD Private Philanthropy for Development (CRS) grant database as an alternative source for our quantitative analysis. We ultimately chose to use the Foundation Directory Online given that grantmaking captured in the OECD dataset was limited to developing countries only and there was lack of data from the year 2021, which we considered important as the first full year affected by the COVID-19 pandemic.

For each of the above funders, we exported CSV files of all grants within the Foundation Directory Online database from 2019-2021 labeled under a set of subject areas: Agriculture, Fishing & Forestry; Environment; Health; Philanthropy; Science; and Unknown/unclassified.<sup>27</sup> These subject areas were selected to help define the two key spaces of health and the environment that our research focused on, in order to ultimately define the conservation-health nexus. The addition of Science, Philanthropy, and Unknown/unclassified was to ensure that grants that may be adjacently relevant to this nexus were included. Grants were aggregated by each foundation for analysis and duplicates were removed.

<sup>27</sup>. Information available in Foundation Directory Online was occasionally incomplete. Notable exceptions were: (1) Data for Wellcome Trust include grants from 2017, 2020 and 2021. Information from 2018-2019 was unavailable, and so 2017 grants were chosen as a proxy for pre-pandemic grantmaking and are included within the analysis of 2019 grants. (2) The final step in our analysis was a grant-level deeper dive. This relied on a grant's description to ultimately characterize its relevance to pandemics, pandemic prevention and the One Health approach. There was variability in the level of detail or even existence of grant descriptions between and within organizations. As a result, efforts were made to ensure consistency and a systematic approach to this step of the analysis as much as possible, but this was an important limitation in our methodology. Grants that lacked any description were removed from the dataset entirely and not counted toward any sums.

## 2. Keyword search

Across all grants aggregated by donor, we conducted specific keyword searches to identify entries potentially relevant to One Health, pandemic prevention, as well as the intersection of health and conservation/the environment. To determine which grants may be relevant for this intersection, we only considered keyword 'hits' valid if they were present within a particular category of grants. For instance, we sought grants where our set of pre-determined environment-related keywords occurred within grants in the 'health' subject area. Grants that yielded a positive match for any of the following keyword searches were moved to the next stage of analysis:

One Health keywords	Environment keywords within health grants	Health keywords within environmental grants	Pandemic keywords
<ul style="list-style-type: none"> <li>• One Health/ OneHealth</li> <li>• Planetary Health</li> <li>• Eco-health/Ecohealth</li> <li>• Intersectional</li> </ul>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Environment</li> <li>• Land use</li> <li>• Land rights</li> <li>• Climate change</li> <li>• Deforestation</li> <li>• Environmental protection</li> </ul>	<ul style="list-style-type: none"> <li>• Health</li> <li>• Public health</li> <li>• Health security</li> <li>• Disease hot-spot/ hotspot</li> </ul>	<ul style="list-style-type: none"> <li>• Pandemic</li> <li>• Global spread</li> <li>• Zoonotic/zoonosis/ zoonoses</li> <li>• Wildlife trade</li> <li>• Spillover</li> <li>• Poaching</li> <li>• Wet market</li> <li>• Animal-human</li> <li>• Surveillance</li> <li>• Bushmeat</li> <li>• Deforestation</li> </ul>

## 3. Individual grant review

For grants that returned keyword matches, each individual grant description was reviewed in order to determine if they seemed relevant to the intersection of environment and health and attempt to understand their potential implications, if any, for pandemic prevention. In this review, we looked for grants that might fit into four categories: (i) Relevant to key entry points to One Health as internally defined by the Dalberg team, (ii) Relevant to the six Action Tracks articulated in the One Health Joint Plan of Action of the WHO-FAO-WOAH-UNEP Quadripartite to advance and sustainably scale up One Health,<sup>28</sup> (iii) Relevant to pandemic prevention entry points, as internally defined by the Dalberg team, and (iv) Relevant to the six phases of pathogen emergence as articulated by Bernstein et al. in their Science Advances 2022 review<sup>29</sup> on the costs and benefits of primary prevention of zoonotic pandemics and as adapted by Preventing Pandemics at the Source.<sup>30</sup>

To help us determine the relevance of grants to the One Health approach and to pandemic prevention, we identified a set of key One Health areas of collaboration and One Health entry points for pandemic prevention based on thought leadership by experts in One Health<sup>31</sup> and multinationals advancing the One Health approach:<sup>32</sup>

- **One Health areas of collaboration:** (a) Zoonotic diseases and information sharing; (b) Antimicrobial resistance; (c) Health systems strengthening; and (d) Loss of ecosystem services due to ecosystem and environment degradation
- **One Health entry points for pandemic prevention:** (a) Human-animal-wildlife interfaces (incl. wildlife trade and markets, animal husbandry); (b) Protection and maintenance of healthy landscapes for ecosystem and habitat integrity; and (c) Human health and economic security, especially at infectious disease hotspots and for Indigenous Peoples and Local Communities

28. See the [WHO-FAO-WOAH-UNEP One Health Joint Plan of Action Summary](#).

29. See Figure 2 in [Bernstein et al. \(2022\) Sci Adv.](#)

30. [Preventing Pandemics at the Source](#) is an initiative launched in the summer of 2020 with support from a coalition of leading conservation and health organizations working together to ensure that spillover prevention measures are included as part of a comprehensive plan to prevent future pandemics.

31. [Vora et al. \(2022\) Nature; Bernstein et al. \(2022\) Sci Adv.](#)

32. [WHO-FAO-WOAH-UNEP Quadripartite One Health Joint Plan of Action Draft \(11 Mar 2022\); WHO-FAO-WOAH-UNEP Quadripartite One Health Memorandum of Understanding \(17 Mar 2022\); World Bank Group-EcoHealth Alliance 'Investing in One Health' Policy Brief \(Jan 2018\)](#)

Grants with insufficient information in their description to adequately determine if they might sit at the intersection of health and environment were flagged and removed from the dataset. Grants that had passed both the keyword search and individual grant description review were included in our final analysis, shown within the body of this report.

## II. Qualitative Analysis

In addition to our quantitative analysis of grantmaking from the Foundation Directory Online database, our report reflects insights from qualitative teleconference interviews with 17 private philanthropic funders and 6 community stakeholders with strong focus on health and/or environmental conservation as well as pandemic prevention and mitigation.

Private Philanthropic Funders	Community Stakeholders
<ul style="list-style-type: none"><li>• Bill and Melinda Gates Foundation</li><li>• The Chen Yet-Sen Family Foundation</li><li>• Children's Investment Fund Foundation</li><li>• Doris Duke Charitable Foundation</li><li>• Ford Foundation</li><li>• Carlos Slim Foundation</li><li>• Good Energies Foundation</li><li>• Gordon and Betty Moore Foundation</li><li>• IKEA Foundation</li><li>• Margaret A. Cargill Foundation</li><li>• Minderoo Foundation</li><li>• Oak Foundation</li><li>• PAX Sapiens</li><li>• The Rockefeller Foundation</li><li>• Skoll Foundation</li></ul>	<ul style="list-style-type: none"><li>• Climate and Land Use Alliance</li><li>• Climate Leadership Initiative</li><li>• Ending Pandemics</li><li>• India Climate Collaborative</li><li>• Re:wild</li><li>• Wildlife Conservation Society</li></ul>