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Forum Insights Report:

Is WOAH Ready for the Future? Reflections and perspectives

World Organisation for Animal Health
Founded as OIE

Contents

I. Introduction

1. The Forum was set up to be inclusive of all the participants to the 91st General Session of the World Assembly of Delegates and specifically to embark on an intergenerational reflection to explore the evolution of WOAH and contemplate its preparedness for the future.

2. A Participatory Foresight Project, launched in July 2023, sought to anticipate these changes by engaging WOAH's Members and stakeholders. During the project, some changes and imagined possible future scenarios for animal health and welfare were explored. These scenarios will be used at the Forum to spark discussions around implications for WOAH, its Members and its governance structures and processes, in particular, its Basic Texts to meet the demands of the twenty-first century.

3. In parallel to the foresight project, WOAH undertook a comprehensive external and independent review of its Basic Texts and institutional documents. The concerted dedication and effort of WOAH's Members to implement recommendations from the review will ensure that WOAH's governance texts are robust and relevant in an ever evolving, dynamic environment. As WOAH evolves, so must its foundational texts and governance mechanisms to ensure resilience in the face of ongoing change.

4. To achieve this, the Forum was made of three consecutive sessions.

5. **Session 1 "Reflecting on the Present"** – this session set the stage with an introduction to the Forum, recognising the intergenerational nature and the diversity of experience associated with the Organisation. There was a panel discussion with selected Council Members and representatives from the International Veterinary Students' Association as the potential next generation of WOAH experts and Delegates.

6. **Session 2 "Journey to the Future"** - this session involves breakout groups to engage participants in exploring foresight scenarios describing possible futures of animal health and welfare. This exercise was set up to challenge the status quo of WOAH's Basic Texts and governance and create shared understanding of potential futures as the context for future ambitions.

7. **Session 3 "Acting Today to Prepare for Tomorrow"** - the final session provided a summary from the breakout groups to share lessons learned from the future that can inform decisions for the present. This included reporting back from the next generation, and presentation of the resolution to agree to review the Basic Texts, which will be presented for adoption on 30 May 2024 at the General Session.

II. Forum Sessions

2.1. *Session 1: Reflecting on the Present*

2.1.1. *Background*

8. This session included an intergenerational panel with a mix of young and soon-to-be veterinarians (representatives of the International Veterinary Students Association - IVSA, the torch carriers, next generation) with experienced veterinarians and who are Delegates and Members of the Council along with the Director General (the elders) to set the stage for the Forum. The IVSA representatives took turns asking the elders questions on unexpected events in their careers in animal health, dreams for the next 100 years and insights to pass on to the next generation, and what the next generation may be facing in their careers. In turn the IVSA representatives were asked to reflect on the responses from the elders on what the future may hold and how might the current WOAH Delegates 'be good ancestors' to them as the next generation starts their careers.

9. The last part of the session involved a panel on what organisations are and how organisational identities are built around the structures of governance which we know as the "Basic Texts" and governance structures, and how they have adapted to present and to start thinking about how they may need to be adapted and transformed in future situations. This discussion moved the Forum into the imagined, alternative futures, to see what kind of world WOAH might be operating in and how it would fare in that world for Session 2.

2.1.2. *Key Observations and Messages from the intergenerational panel*

10. *Moderator*: Dr Gillian Mylrea, Head, Standards Department, WOAH.

11. *The intergenerational panel*: Dr Monique Eloit, Director General WOAH; Dr. Fajer Sabah Al Salloom, Member of the Council, Delegate of Bahrain; Dr. Roland Xolani Dlamini, Member of the Council Delegate of Eswatini; plus IVSA representatives: Dr Marta Masserdotti, One Health Chair, Ms. Christiana Ololade Olajimbiti, Animal Welfare Chair, Dr Mohana Marathe, Veterinary Education Chair.

12. The discussion from the elders highlighted several key insights and lessons for the future of the veterinary profession. A notable theme was that "**the future is female**," with many panel members being women—a stark contrast to the past when access to veterinary education for women was much more limited. This shift represents a positive change in gender equality within the field.

13. The elders emphasized the importance of being **prepared for the unexpected**, drawing on the example of the Bovine Spongiform Encephalopathy (BSE) outbreaks in Europe. This unforeseen event, caused by prions rather than viruses or bacteria, underscored the necessity of building relationships between professional domains during peaceful times. It also highlighted the need to safeguard the independence of scientific expertise, cultivate public trust between crises, and recognize the weight and responsibility of one's decisions.

14. In imagining what tomorrow may look like, the elders encouraged **reflection on possible futures and the implications of these scenarios**. This involves testing the status quo and considering diverse solutions to today's and tomorrow's challenges. The conversation also focused on the importance of **diversity and equitable access**, with hopes for all countries to have equitable access to scientific advancements, veterinary education, and information. Despite the world's sociocultural and production system differences, there is optimism that innovative solutions can transcend these disparities, leading to equivalent protection against animal diseases.

15. The panel acknowledged the **increasingly complex landscape of issues and opportunities** that the next generation will face. These include emerging diseases exacerbated by climate

change and environmental degradation, the spread of diseases through transboundary animal movements, and a growing societal awareness of animal welfare. Additional challenges such as antimicrobial resistance, technological advancements in veterinary healthcare, and the unequal distribution of these technologies were also noted. The growing momentum of the **One Health approach** was highlighted as essential for finding solutions to these complex issues through cross-sector collaboration.

16. Finally, the panelists stressed the **human factor**, particularly the management skills needed to deal with stressful situations. The COVID-19 pandemic served as a prime example of how rapidly the work environment can change, requiring everyone to adapt quickly. These management and coping skills are often not taught in veterinary schools, making it crucial for the current generation to support the next by providing guidance and being role models in navigating such challenges.

17. The IVSA panelists provided insightful reflections on both the wisdom shared by more experienced professionals and their own perspectives on the future. They emphasized the importance of being **open and welcoming**, noting that student participation in the General Session offers invaluable insights into the veterinary public health field and the work of international organisations. This exposure helps students understand how they can contribute to these organisations.

18. On the topic of being a '**good ancestor**', the panelists stressed the need for foresight and the importance of supporting and guiding the next generation, much like they were supported in the early days of their careers. They highlighted that being a good ancestor involves investing in education, providing opportunities for young voices to be heard, and remaining curious and open-minded about future possibilities. This includes using effective methods to confront unexpected events.

19. The panel also underscored the value of becoming a mentor, as **mentorship is crucial for the development of students and early-career professionals**. They pointed out that mentorship not only helps to bridge gaps in the diverse standards of veterinary education worldwide but also provides a broader perspective on the applications of veterinary medicine, especially within international organisations. The opportunities for networking and training through mentorship are considered invaluable, and both mentors and mentees can learn to adapt to emerging challenges together.

20. The discussion touched on the issue of the **unequal standards of veterinary education globally**, highlighting the need for policy initiatives to ensure high-quality education. They stressed that topics like animal welfare should be integrated throughout veterinary training, as these concerns are central to all aspects of veterinary medicine, from pain management to antimicrobial use.

21. Moreover, the panelists advocated for **valuing interdisciplinary collaboration**, which they believe is essential for tackling complex global health issues. They noted that private-public partnerships could help raise the standard of animal health and ensure that marginalised communities are included. Students, in particular, are drawn to interdisciplinary collaboration and are encouraged to remain curious and open-minded, recognizing that they don't have all the answers and should explore other disciplines.

22. Finally, the panelists addressed the **pressures and desires** felt by the younger generation, particularly the burden of the climate crisis. They expressed a strong desire for global cooperation to achieve the UN Sustainable Development Goals and ensure that healthcare is accessible and equitable for everyone.

2.1.3. *Key Observations and Messages from the panel discussion on organisations and organisational identities*

23. *Organisations and organisational identities panel*: Mr Eelco Szabó, External Legal & Governance Consultant; Dr Wendy Schultz, Co-founder, Jigsaw Foresight; Ms Tianna Brand, Foresight Lead, WOAH.

24. The panelists discussed that WOAH has already lived through a century of transformative change from its inception with 28 Members to address the rinderpest crisis. Interestingly, when the Organisation was set up in 1924 it was for a 7-year period and now today the Organisation finds itself with 183 Members and with a much-enlarged mandate.

25. Governance structures and legal documents (and instruments) of an organisation allow for individuals and groups to shape its identity and guide its actions. And these structures and documents must adapt to changes, an organisation's ability to adapt can determine success or failure.

26. In the case of WOAH its founding texts consist of three to four pages. The Organisation has not changed these texts but rather added new regulations and resolutions. The last time fundamental changes to consolidate these new documents were made 50 years ago. For the WOAH centenary, it is a unique opportunity to reflect on how well current governance arrangements serve the demands for the organisation into 2Ist century and future.

27. The panelists reflected on challenges and opportunities and where foresight methods like depictions of possible futures are used to challenge the 'business as usual' thinking and consider implications to organisations, their governance structures and identities in the face of alternative futures. For example, advancements in technology, wavering political and economic alliances and shifting societal values could have implications on current governance structures and thus raises questions about the adaptability, among other things, of WOAH's mandate, memberships, technical governance, along with financial and legal frameworks.

28. To conclude, Forum participants were invited to keep in mind while exploring the alternative futures in Session 2 to be curious and open to what the structures of the Organisation may look like and what the Organisation may need to do to adapt or change presently.

2.2. *Session 2: Journey to the Future*

2.2.1. Background

29. This session involved breakout groups to engage participants in exploring future scenarios. This exercise was set up to challenge the *status quo* of WOAH's Basic Texts and governance and create a shared understanding of potential futures as the context for future ambitions. Three breakout rooms were established based on language, such that there was a French-speaking breakout room exploring Scenario 1, a Spanish-speaking breakout room for Scenario 2 and an English-speaking (plus Chinese, Arabic and Russian simultaneous translation) breakout room for Scenario 3[1].

[1] The workshops to generate the scenarios during the Participatory Foresight Project were held with simultaneous translation in English, French and Spanish. The scenarios for the Forum were assigned to the three different breakout rooms based on the language they were originally created in ('Eco-Revolution Rising', Scenario 1 in French; ''In WOAH We Trust', Scenario 2 in Spanish; 'Hangry Games', Scenario 3 in English)

2.2.2. Scenarios

30. The scenarios explored at the Forum were derived from a Participatory Foresight Project, launched in July 2023, to engage WOAH's Members and stakeholders. During the project, some changes and imagined possible future scenarios for animal health and welfare were explored. Three[2] of the five scenarios[3] generated through the project were then explored at the Forum to spark discussions around implications for WOAH, its Members and its governance structures and processes, in particular, its Basic Texts to meet the demands of the twenty-first century.

31. Below are short summaries of the scenarios used in the Forum along with a few insights from participants in different breakout rooms. Regardless of the scenario, participants in each of the breakout rooms were asked the same three rounds of questions.

- Round 1 - What are you doing in this future?
- Round 2 - What is WOAH doing in this future?
- Round 3 - Stay in the future and look back at May 2024... What would you say to the General Session Participants and WOAH Delegates about what WOAH needs to do in 2024 to prepare for this future?

2.2.3. Eco-Revolution Rising, Scenario 1

32. Briefly, this future underscores food systems disrupted by innovations, where 'traditional' farming of animals collapses. The key drivers that lead to this future were: climate change impacting farming production methods and systems, along with food systems; fewer veterinarians in the public service; and shifting societal expectations. This scenario was used in the French-speaking breakout room.

33. **Key Insights**

34. ***What are you doing in this future?***

35. In this possible future, many see themselves **mentoring young veterinarians**, helping them navigate future challenges by understanding historical contexts. Others are **collaborating with international organisations**, adapting veterinary practices to support sustainable animal health and leveraging technologies like artificial intelligence to innovate in veterinary science. This future also includes a significant focus on **policy and regulatory discussions**, ensuring that standards protect animal, human, and environmental health while promoting sustainable food production. As part of this effort, professionals are continuing their education to **deepen their understanding of natural cycles and ecological processes**.

36. **One Health approaches are widely promoted**, enhancing resilience and capacity in health services across institutions and organizations. With the emergence of new animal species, professionals are adapting production methods, considering new health and welfare standards, and organizing veterinary teams for effective disease management. A critical component of this is combating antimicrobial resistance by promoting the prudent use of antimicrobials and ensuring veterinary teams are well-equipped. **Professionals are also mindful of the potential unintended consequences of new technologies on animal health.**

37. In the face of climate change and environmental degradation, **some professionals are focusing on preserving biodiversity**, emphasizing its ecological importance for maintaining health and managing diseases. Effective communication with the public is deemed essential to

[2] The versions of the scenarios used in the Forum are found in annex 1 to this document
[3] The long versions of all five scenarios generated during the Participatory Foresight Project are found in the annex 2 to this document.

highlight the challenges of animal production, encompassing ecological, social, and commercial aspects.

38. The scenario also explores a future where synthetic meat production is prevalent. Some professionals envision advocating for diets with fewer synthetic components or developing norms for mixed dietary approaches. Others see this as **an opportunity to support local and sustainable food production**, including training for small-scale animal farming.

39. Throughout all these actions, there is a **strong emphasis on facilitating rapid and effective decision-making on animal health and welfare issues**, while simultaneously protecting public health through healthy animals and environments.

40. ***What is WOAH doing in this future?***

41. In this future, **WOAH continues its vital role in controlling animal diseases**, successfully leading to the eradication of several. The Organisation also **emphasises educational initiatives**, highlighting the benefits of animal husbandry **for both human and planetary health**. This includes **advocating for the responsible consumption of animal proteins**, potentially as a counter-narrative to the rising trends of lab-generated animal proteins and genetically engineered animals.

42. The **One Health approach** remains central to WOAH's mission, as it collaborates closely with FAO, WHO, and UNEP. Together, they develop innovative One Health tools to address challenges like climate change and promote integrated surveillance-response systems for the environment, animals, and humans, aiming to prevent pandemics. Notably, WOAH's work in **One Health now encompasses natural resource management and the health of all species**.

43. In a significant expansion of its mandate, **WOAH now also supports animal species diversity and wildlife health**. It **continues to champion animal welfare**, participating in a United Nations convention dedicated to this issue. The Organisation places a **strong focus on training**, with specific initiatives to train veterinarians and establish diagnostic capacities in Africa, alongside training for animal health technicians. These efforts aim to build robust infrastructure for detecting and combating animal diseases and addressing antimicrobial resistance.

44. **Innovation and creativity are key priorities for WOAH, as it anticipates future challenges and opportunities.** The Organisation is leveraging new technologies like artificial intelligence (AI) to enhance surveillance systems, such as e-health and e-surveillance. Additionally, WOAH is **engaging with diverse expertise** beyond the animal health domain **to improve prevention, planning, preparedness, response, and recovery** in health events.

45. To further support its mission, **WOAH has formed an ethics committee to guide its decision-making**. The Assembly has also decided to integrate WOAH into the United Nations system, a move that will increase financial and technical support to its Members. This integration enhances the Organisation's visibility and actions, while strengthening regional commissions to better address local needs.

46. Finally, **WOAH collaborates with private enterprises to develop animal production norms** and mobilises resources with them to tackle both challenges and opportunities in animal health.

47. ***Stay in the future and look back at May 2024... What would you say to the General Session Participants and WOAH Delegates about what WOAH needs to do in 2024 to prepare for this future?***

48. To prepare for the future, key messages **emphasise the need to optimise collaborative efforts across the animal health, human health, and environmental sectors to combat diseases**. Participation in standard-setting should be more inclusive, drawing on diverse

expertise and experts while fostering solidarity and ensuring flexibility in norms based on scientific evidence.

49. There is also a recommendation to **expand the World Assembly and Council to include professionals beyond veterinarians, incorporating those with other essential skills and experience to address complex issues**. Additionally, WOAH should **explore the implications of lab-derived meats and other emerging technologies** such as genetic manipulation to anticipate their impact on the Organisation's standards development.

50. WOAH is encouraged to enhance its engagement with the private sector, non-governmental organisations, and associations of livestock and aquatic animal producers to **update and simplify health and safety standards for animal-origin food, taking into account ecological, economic, and social factors**. The World Assembly of 2024 should consider present and emerging changes in production systems and dietary habits that could be used to inform and improve veterinary and para-veterinary education curricula as well as other emerging issues and technologies that may have impacts on veterinary medicine and practice.

51. **Using a structured approach to anticipating and studying change could be instrumental in adapting organisational, structural, and financial strategies.** The main message is to be innovative, creative, and proactive in addressing global challenges. Further messages include investing in research on how AI can be utilised for disease prevention, diagnostics, and data management, including creating integrated databases for epidemiological, diagnostic, vaccination, and sequencing data.

52. In terms of the Organisation's visibility, there is a call to continue promoting the impact of animal health on food security, the economy, trade, human health, biodiversity, and sustainability. **One Health approach should be maintained and perhaps enhanced to encompass considerations for all species and natural resource management.**

53. Financial sustainability is also a critical message, with a call to explore all avenues to mobilise resources. As noted in previous discussions, there is a suggestion for WOAH to continue efforts to target one or two diseases for global eradication.

54. Finally, it is **recommended to utilise AI translation tools to ensure all participants can express themselves and understand others in their own languages**. Additionally, there is a proposal for **WOAH to consider adopting a regulatory role**, in addition to establishing guidelines and standards, to ensure coherent and cohesive health policies and practices across different regions and sectors.

2.2.4. In WOAH We Trust, Scenario 2

55. This scenario highlights food systems disrupted by misinformation, or the collapse of the 'truth'; the key drivers of change for this future scenario are environmental consequences of pollution, climate change and biodiversity loss; distrust in science and the application of the One Health movement. This scenario was used in the Spanish-speaking breakout room.

56. **Key insights**

57. ***What are you doing in this future?***

58. In a future where food systems are severely disrupted by misinformation and a collapse in trust in established truths, professionals face a complex landscape shaped by the environmental consequences of pollution, climate change, biodiversity loss, and widespread distrust in science. These key drivers of change necessitate a multifaceted approach to ensure the resilience and sustainability of food systems. **A critical aspect of their work involves striving for equity in secure trade between countries**. By advocating for fair and transparent trade practices, they aim to create a more balanced global food system that benefits all nations, particularly those most vulnerable to the impacts of environmental and economic instability.

59. To combat misinformation, professionals focus on replicating and disseminating information and suggested measures from credible institutions, supported by robust internal verification mechanisms. This effort ensures that the information reaching the public and stakeholders is accurate and reliable, countering the spread of false or misleading data. **In their workplaces, these professionals are key disseminators of information**, educating users, young people, and the general public about the latest developments and best practices in health, food production, and sustainability. This widespread educational effort helps build a more informed and resilient society capable of making sound decisions amidst uncertainty.

60. **Analysing climate change and its effects on animal diseases is another crucial task for these professionals.** By understanding how changing environmental conditions influence the spread and severity of animal diseases, they can implement programmes that provide access to scientific knowledge, thereby enhancing the security and effectiveness of their actions. This knowledge dissemination is vital for developing targeted strategies to mitigate the impacts of climate change on food systems and animal health.

61. Strengthening research and the use of new technologies is also a priority**. By leveraging advancements in technology, these professionals aim to improve the diagnosis of situations and develop innovative solutions to emerging problems.** This forward-thinking approach ensures they are prepared to address new challenges as they arise, fostering a more adaptive and resilient food system.

62. Additionally, professionals are working towards more sustainable production systems. They provide clearer information on risks associated with various practices and connect experts in human and animal health to foster mutual cooperation. This integrated approach aligns with the principles of the One Health movement, which emphasises the interconnectedness of human, animal, and environmental health. **By strengthening mutual cooperation among different sectors and disciplines, they aim to create a holistic and sustainable framework for food production and health management**.

63. Overall, these professionals are engaged in a comprehensive effort to build a more resilient and sustainable future. By addressing the key drivers of change and fostering collaboration across disciplines, they work to mitigate the impacts of misinformation, environmental degradation, and distrust in science, ultimately ensuring the stability and health of global food systems.

64. ***What is WOAH doing in this future?***

65. In this future scenario where food systems are disrupted by misinformation and the collapse of 'truth', the World Organisation for Animal Health (WOAH) takes several critical actions to address these challenges, and in some cases goes beyond its present-day role and structures.

66. Firstly, **WOAH strengthens its ties within the quadripartite system, unifying forces to tackle global problems and ensuring a coordinated response to misinformation while fostering trust in scientific recommendations**. By making science-based recommendations, securing resources, and incorporating advanced technologies such as artificial intelligence (AI), WOAH enhances its credibility and effectiveness.

67. **The Organisation also rotates leadership positions and increases global representation to ensure diverse perspectives and equitable decision-making**.

68. WOAH continues to partner with other institutions to address One Health issues, encompassing trade, equity, climate, food security, animal health, and animal welfare. This holistic approach is crucial in a world grappling with the environmental consequences of pollution, climate change, and biodiversity loss. The Organisation focuses on holistic training under a sustainable One Health approach, considering the environment, animal welfare, and their influence on diseases, with an emphasis on early education for new generations.

69. By strengthening veterinary services in developing countries, WOAH ensures food security and safety, promoting livestock production under strict animal welfare criteria. **The decentralisation of operations and the creation of strategic alliances with governments worldwide allow WOAH to be more responsive and adaptive to local needs.**

70. **To protect small-scale production systems, WOAH establishes agreements with the World Trade Organization, setting standards that safeguard these vulnerable sectors.** The Organisation enhances public-private partnerships, manages the training of future professionals, unifies science-based criteria, and secures financial resources to build resilient food systems. By becoming a fully digitalised and interconnected institution through the incorporation of AI, WOAH improves its operational efficiency and transparency.

71. **In combating antimicrobial resistance (AMR) and diseases, WOAH explores genome editing techniques to make organisms resistant to diseases, considering their implications for animal health and welfare standards.** WOAH sets up an antimicrobial resistance pharmacovigilance group to study alternative treatments, as well as a group to study the elimination of microplastics through bioprocesses, and from there implements new health and production protocols. These initiatives address both environmental and health-related challenges posed by pollution and climate change.

72. The implementation of mandatory transparency measures for Members ensures accountability and trust in WOAH's actions. At the same time, WOAH utilises intelligent information management systems, making decisions based on accurate and reliable data, thereby improving public credibility.

73. By reinforcing its commitment to transparency, collaboration, and the application of advanced technologies, WOAH positions itself as a key player in navigating a future marked by environmental challenges and the erosion of trust in scientific truth.

74. ***Stay in the future and look back at May 2024... What would you say to the General Session Participants and WOAH Delegates about what WOAH needs to do in 2024 to prepare for this future?***

75. **WOAH should diversify the backgrounds and expertise within its Specialist Commissions and governance structures**, particularly to address issues like climate change, misinformation, and AI. This diversification will enhance the organisation's credibility and impact in tackling global health challenges.

76. Education and communication must become core strategies in WOAH’s health initiatives, with a focus on standardising veterinary education to keep pace with technological advancements and local realities, thereby preparing professionals for future challenges.

77. **Strengthening regional offices and their expert base is crucial,** ensuring proficiency in WOAH’s official languages and fostering a platform for inclusive participation under a One Health approach. **WOAH should also take a leading role in enhancing veterinary education globally, emphasising collaboration and coordination among stakeholders.**

78. The mandatory implementation of WOAH guidelines on animal health, welfare, and antimicrobial resistance (AMR) is essential. WOAH should enforce standards uniformly across Members, transitioning from recommendations to mandatory applications for consistent compliance.

79. **New technologies, including AI and robotics, offer significant potential for improving animal health and welfare, but WOAH must also address their challenges and unintended consequences.** The organisation should develop strategies to study these technologies, focusing on both innovation and risk management.

80. **WOAH should build alliances with producers and the livestock sector to ensure inclusive participation in policy and standards development.** Capacity building in veterinary services, particularly in human resources and financial sustainability, is critical.

81. A holistic One Health approach is essential, requiring enhanced coordination among public health, animal health, environmental authorities, and universities. This will promote sustainable production systems, clear risk communication, and mutual cooperation.

82. **Building trust and combating misinformation are fundamental. WOAH should establish minimum requirements for veterinary education programs** to ensure reliable standards and consistent messaging.

83. **Focusing on the next generation of animal health professionals is key to future preparedness.** WOAH should promote assertive communication, resilience, and technology use among young professionals, involving them in leadership roles to secure a robust future workforce.

84. Innovation and interdisciplinary participation are vital. WOAH should invest in technological innovation and human talent, ensuring close coordination among public health, animal health, and environmental authorities.

85. Legislation and certification processes must be adaptive and efficient, with shorter review cycles to respond quickly to changes. Establishing a certification system for veterinary programs will ensure their relevance and effectiveness.

86. Finally, **WOAH should include mental health considerations within its scope, recognising the impacts of the profession, especially in an environment of distrust and misinformation**. Closer interaction between decision-makers, technical experts, and stakeholders is necessary to ensure that policies and actions are informed and effective.

2.2.5. Hangry Games, Scenario 3

87. Of all the scenarios created, this is by far the darkest of them. However, keep in mind that throughout human history, the tenacity for resilience and survival is at the forefront. This scenario describes food systems disrupted by the polycrisis, or the (complete) collapse of the food chain. This future was imagined through the following drivers of change: global political and economic tensions, innovations using artificial intelligence as well as climate change and environmental degradation.

88. **Key insights**

89. ***What are you doing in this future?***

90. Despite the catastrophic events, professionals in this future are focused on sustainability, leveraging technological advancements while integrating traditional practices with modern techniques. They are also reorienting educational and research institutions to align with this vision.

91. Specifically, professionals are working to develop diversified and sustainable production systems, enhancing resilience and efficiency through new skills in genetics, artificial intelligence, and biology. Others are dedicated to educating the next generation and advocating for changes in veterinary medicine and agriculture. This includes revisiting and relearning traditional methods to raise resilient breeds of animals that can adapt to changing conditions. Additionally, researchers are producing authoritative evidence to support sustainability and resilience initiatives in these fields.

92. ***What is WOAH doing in this future?***

93. Amidst the catastrophic events in this future, WOAH plays a crucial role, with high expectations placed on the Organisation. Committed to leveraging technology and fostering collaboration, WOAH aims to enhance food security. The Organisation's approach to working with Veterinary Services has shifted towards direct engagement with communities, focusing on training smallholders in animal health. This includes adopting flexible mechanisms tailored to diverse regional needs and emphasising local capacity-building activities.

94. Despite this localised focus, WOAH maintains a global perspective, advocating for a One Health approach to health. It promotes the development of 'hybrid' professionals with diverse skill sets in animal health and welfare, integrating them across various sectors. WOAH leads the establishment of multisectoral guidelines, collaborating closely with environmental scientists and other colleagues, especially in response to environmental degradation.

95. Furthermore, WOAH is actively improving global health, food security strategies, wildlife management, waste reduction, and sustainable terrestrial and aquatic animal production. The Organisation has harnessed artificial intelligence (AI) for data analysis, accurate information dissemination, and the development of new standards and guidelines, including criteria for 'safe' pharmaceuticals using biotechnology and AI. In promoting knowledge sharing and best practices, WOAH supports professionals in collaborative work, advocating for evidence-based information and decisions, and building a credible organisation trusted by the public and stakeholders, countering misinformation and disinformation.

96. To support Members, WOAH is strengthening financial resources to prevent or control animal diseases through public-private partnerships.

97. ***Stay in the future and look back at May 2024... What would you say to the General Session Participants and WOAH Delegates about what WOAH needs to do in 2024 to prepare for this future?***

98. The key messages for WOAH of 2024 to prepare for the future emphasise the need for agility, collaboration, technology integration, changes to governance structures, and a multidisciplinary approach to tackle emerging challenges. It is suggested that standard-setting processes be made more agile and responsive to current issues, though specific methods are not detailed.

99. In terms of technology, the messages highlight the importance of increasing IT capacities, particularly by investing in and developing expertise in AI for use in response, monitoring, and preparedness. This may involve forming new partnerships for the Organisation.

100. There are also recommendations to prepare global contingency plans for crises, which could be facilitated by enhanced collaboration with other organisations and sectors, including private sector partnerships, research, academia, and environmental sectors. This contingency planning might involve assessing past successes and mistakes.

101. WOAH is encouraged to operationalise the One Health approach by focusing on global health security and food security, and by ensuring that decision-making includes experts with multidisciplinary and diverse backgrounds. This includes addressing health impacts related to climate change and environmental factors and incorporating the role of WOAH and the importance of One Health into veterinary and animal science curricula.

102. To combat potential and emerging misinformation and disinformation, WOAH should improve its visibility, communication, and trust with the public and governments. This may involve increasing engagement with local communities to address specific local issues.

103. Regarding governance structures, messages suggest simplifying and flattening these structures, reducing bureaucracy, and ensuring they are flexible. Preparing for the future may also involve reconsidering how resources and funding are managed, ensuring equal access to

resources, developing new funding models, and strengthening public-private partnerships and resource sharing.

2.3. *Session 3: Acting Today to Prepare for Tomorrow*

2.3.1. Background

104. The final session provided a summary from the breakout groups to share lessons learned from the future that can inform decisions for the present. This included reporting back from the next generation, and presentation of the draft resolution to agree to review the Basic Texts. (refer to 91GS Resolution No. 12: *Revision of the WOAH Basic Texts* https://www.woah.org/en/document/91gs-final-resolutions-2024/)

2.3.2. Panelist

105. *The intergenerational panel*: Dr Hugo Igoyaga[4], President of the Council, Delegate of Paraguay; Dr Mark Schipp[5], Past President of the Council, Former Delegate of Australia; Dr Susana Pombo[5], Vice President of the Council, Delegate of Portugal; plus IVSA Representatives: Dr Mehdi Amrani Souhli[6], Honorary Lifetime Member, Ms. Valeria Ximena Chavez Padilla[4], Public Relations Coordinator, and Ms Vanda Dučić[5], President, International Veterinary Students Association.

106. Session moderator: Ms Victoria Ward, Jigsaw Foresight

2.3.3. Key Insights

107. Before presenting the key insights from the panelists, Dr. Wendy Schultz, Co-founder of Jigsaw Foresight, shared her reflections on Session 2. She highlighted that participants actively engaged their imaginations and interacted with each other, exploring how future scenarios might alter their roles and what might be required from WOAH.

108. She observed that even in scenarios depicting dark futures marked by environmental degradation and climate change impacts, which could lead to catastrophic consequences for the food chain and natural environments, there remained a sense of curiosity and enthusiasm about the future and the potential for positive change. She concluded that many individuals have intriguing ideas on how WOAH could adapt to and navigate future challenges in a resilient manner and maintain enthusiasm for shaping the future. This engagement, she suggested, could contribute to creating a more equitable and diverse future.

109. **Feedback from the foresight scenario 'In WOAH We Trust'** - The feedback from this scenario emphasised the **importance of an intergenerational approach** to addressing misinformation and disinformation in the field of animal health. Younger generations, with their energy and creativity, play a crucial role in shaping the future and counteracting false information. This collaborative approach should extend to integrating interdisciplinary issues into veterinary education, particularly in regions like Latin America where such integration is still lacking. This would help build resilience and better prepare for future challenges.

110. The discussion also highlighted the **issue of limited access to resources** in the scenario which is reflecting the realities faced by many countries and regions worldwide. It was noted that for global agreements on issues to be effective, everyone must be considered equal, and knowledge dissemination should not be restricted to large cities or developed countries. In line with this, the message "Animal Health is Everyone's Health" from WOAH should be widely disseminated to ensure it resonates into the future.

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4 Participated in the exploration of 'In WOAH We Trust'
5 Participated in the exploration of 'Hangry Games'
6 Participated in the exploration of 'Eco-Revolution Rising'

111. Addressing current global challenges such as globalisation, urbanisation, inequality, technology, and food safety and security, the panelists noted that these issues are likely to persist. The future, extending beyond 2050, requires ongoing imagination, anticipation, and exploration, especially concerning technological advancements. The potential impact of technology, particularly artificial intelligence (AI), in the field of animal health was a key focus. While AI has the potential to become a fundamental tool for Veterinary Services, the panelists expressed concerns about the potential loss or minimisation of human intervention. For example, AI could automate tasks like creating sanitary certificates, possibly leading to greater inequities for those without access to such technologies.

112. The panel concluded with a hopeful outlook, emphasizing that **humans should remain central to veterinary work**. However, there is a need to explore and anticipate how this will manifest in the future, ensuring that technological advancements do not overshadow the essential human element in veterinary medicine.

113. **Feedback from the foresight scenario 'Eco-revolution rising'** In the feedback from this scenario a key point was the **need for unity between the public and private veterinary sectors** to collaborate more effectively with other sectors. This collaboration is crucial for strengthening the identity of the veterinary profession. Additionally, there is a need to rethink food systems, not just in terms of increasing production but also in terms of **consuming better and potentially consuming less**. This perspective emphasises addressing food waste, a topic currently being tackled by several organizations but not widely discussed among veterinarians, but perhaps it should be.

114. To influence future outcomes related to issues like One Health, infectious diseases, climate change, and food systems, the panelists highlighted the importance of veterinary education. Specifically, there is a need to consider **who is being educated today, how they are being educated, and what they are being taught**. This reflection underscores the need for current organisations to think strategically about grooming future leaders who will be in charge tomorrow.

115. **Feedback from the foresight scenario 'Hangry Games'** - The feedback from this scenario highlighted the **importance of expecting better outcomes and fostering excellent communication and solidarity among countries**. The General Session, held annually, serves as a crucial opportunity for Members to come together to discuss issues and solutions. However, it was noted that solutions are not always uniform due to cultural, religious, and social differences among Members. Therefore, there is a need to embrace these differences and build solidarity despite them. It was also emphasized that problems often require multiple solutions and cannot be resolved solely by veterinarians; instead, a global network involving human and environmental health professionals is necessary. Trust in each other's capabilities, knowledge, and experiences was stressed as a key element in overcoming isolation and solving issues.

116. Reflecting on the future, a panelist mentioned the concept of being "good ancestors" for the next generation of animal health professionals. This means addressing today's challenges to ensure a better tomorrow. The scenario underscored that **teamwork is essential in navigating challenges**, and this includes both intergenerational and interdisciplinary cooperation. This year's General Session, marking the Organisation's 100th anniversary, was notable for the active involvement of students, a practice that should continue rather than wait another century. The inclusion of students and the work of the International Veterinary Students' Association (IVSA) are crucial for the unified growth of the veterinary profession across generations.

117. The One Health approach, which integrates animal, human, and environmental health, was discussed as being underutilized, especially from an environmental perspective. Given the current environmental degradation, it is crucial for the Organisation to engage more actively in global discussions, such as UN climate change conferences, and advocate for animal health. Including students in these discussions is important for their education and awareness of the broader world and the Organisation's work, including partnerships like the Quadripartite.

118. **Incorporating the One Health approach from the first year of veterinary studies is vital for raising awareness among students about the Organisation and its mission.** The discussion also emphasized that veterinarians should be "loud and proud" about their profession, highlighting its importance alongside human medicine. There are significant opportunities for collaboration with other professions to build a better future.

119. Professional solidarity, a founding principle of the World Organisation for Animal Health, was celebrated, particularly for its role in the eradication of rinderpest. This principle should extend to nurturing the next generation, with current professionals and Delegates being encouraged to involve younger members in events like the General Session. This exposure is crucial for fostering a deeper understanding of the Organisation's role among private veterinarians and others in the animal health sector.

120. In the context of professional solidarity, addressing mental health issues within the profession was also identified as a priority, given the high rates of suicide and dropout in clinical practices. The current generation has a responsibility to support and encourage both peers and the emerging generation in building a better future for animal health.

121. To conclude Session 3, panelists highlighted that to prepare for the future, the Organisation must build **flexible and resilient systems and governance structures**. The review of the Basic Texts and current governance offers a chance for both current and future generations to work together, ensuring that these systems are transparent, encourage participation, and include all Members.

III. Conclusions

122. In concluding this Forum, the importance of active engagement and forward-thinking in addressing future scenarios related to animal health and welfare has been underscored. The discussions highlighted the need for the World Organisation for Animal Health (WOAH) to embrace continuous evolution and agility in a rapidly changing world. The resolution to revise WOAH's Basic Texts and governance structures, unanimously adopted by the Assembly, signifies a strategic commitment to ensuring the organisation's foundational documents remain robust and relevant.

123. The presence of representatives from the International Veterinary Students' Association (IVSA) provided a valuable perspective on the responsibility to future generations. Their contributions invigorated the discussions and highlighted the need for ongoing dedication to a shared vision of promoting global animal health and welfare. This Forum has reinforced the necessity of collective effort and proactive planning to shape a resilient and adaptive future for WOAH and the broader field of animal health and welfare.

Annex 1: Scenarios used in the Forum

Scenarios are meant to be used in a variety of ways. When looking ahead and imagining what might come about, our brains usually kick into planning and contingency mode, in that case, scenarios can be used in strategy development. Sometimes, scenarios can be used simply for organisational learning and reflection on how the *status quo* can be challenged, what might need to be done, not done or undone to survive and thrive in the conditions of possible futures.

It is important to be clear why scenarios are being generated, what purpose they are intended to serve. Over the course of their development and use, their purpose may change; in any case…USE THEM!

In the case of the Forum, although the scenarios were generated in the Participatory Foresight Project leading up to the 100th Anniversary of WOAH for the purposes of hands-on learning for participants in the project on how scenarios can be created and used, WOAH saw an opportunity to pivot the results and the processes of the foresight project to generate a sense of ownership and urgency around the review of basic texts of WOAH.

Below is the scenario package published for the Forum at the 91st General Session of the World Assembly of Delegates.

Welcome to the Future

Exploring scenarios help us prepare to adapt and evolve.

- During the 100th Anniversary Participatory Foresight Project, an international panel of participants – experts, Delegates and students – identified critical trends and emerging changes and explored their implications and potential impacts.
- From the explorations of changes and their impacts on food, ecosystems, livestock, trade and the veterinary profession, participants built five future scenarios – three are described in this Scenario Package.
- The scenarios are designed to provoke your thinking; they contain futures within which Veterinary Services and WOAH will need to be resilient in the face of ongoing change.

How the scenarios will be used in the Forum?

They will be used to consider how the conditions of these futures might pose challenges or opportunities for WOAH, including its governance.

2

Tips for Exploring Future Scenarios

- Be curious about the contents of the future scenarios. Do not question the scenarios; accept the conditions of the futures as described.
- Remember when experiencing these futures that your goal is adapting so you can thrive within these conditions.
- Bring your experience, your perceptions of the present and future, your professional role, your local/geographical context, and your relationship to WOAH to the exploration.
- Keep in mind that the scenarios are to support reflection and learning during this Forum. It is hoped that Delegates and participants will bring insights back from these futures to support adopting a resolution to undertake the revision of the Basic Texts.

3

Scenario 1

Eco-Revolution Rising

44

Key drivers of change in "*Eco-revolution Rising*" (Scenario 1)

- Climate change impacting farming and food systems
- Fewer veterinarians in the public service
- Shifting societal expectations around environmental sustainability

5

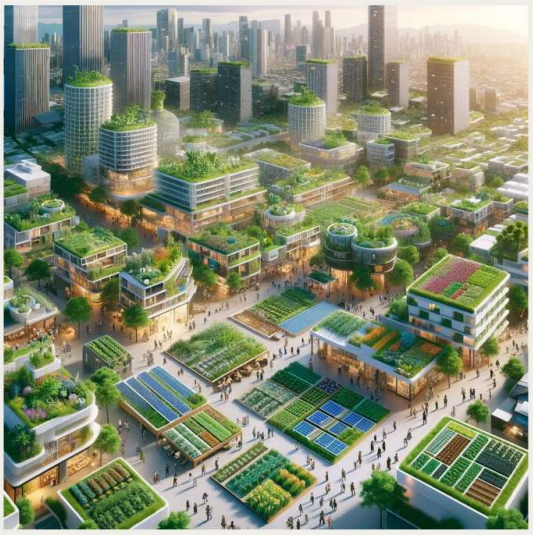
Eco-Revolution Rising – Scenario 1

In the late 2020s, climate change's impact on the food system became evident. The climate crisis accelerated support for the COP28, 29, and 30 global food systems roadmap.

In some parts of the world, a new era in food technology blurred the lines between natural and synthetic food. Bio-engineered food producing animals were introduced to withstand infectious disease and climate-related challenges.

Conflicts both within and between regions and nations were sparked over priorities, access, and modes for food production.

Amidst these conflicts and the climate crisis, counterculture movements emerged, challenging global agri-food corporations and large-scale farming and advocating for ecologically sustainable agriculture.



6

Eco-Revolution Rising – Scenario 1 (continued)

Governments implemented legislation on land use, legal rights for forests and animals, and nutrition quotas. Agro-ecology movements fostered local community-based food production.

Big food corporations recognised the need for change and pivoted their business strategies in response. Some sought more involvement in the scientific network of the World Organisation for Animal Health (WOAH).

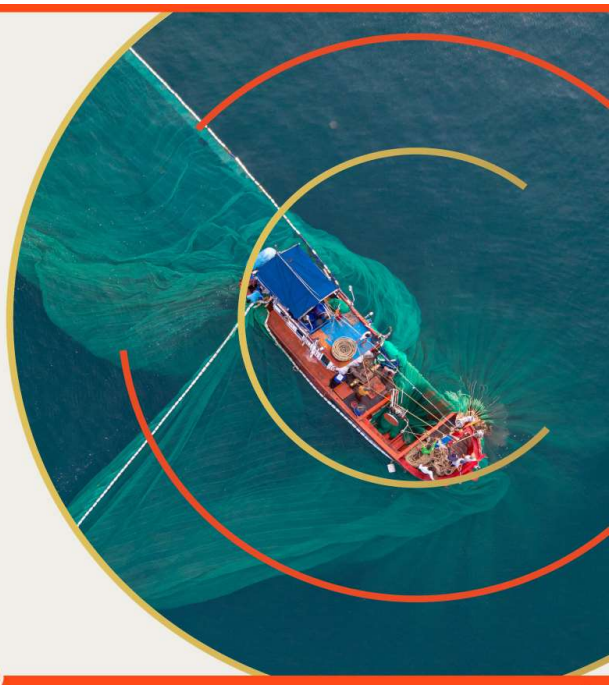
Meanwhile, the number of veterinarians in the public sector continued to diminish. With fewer veterinarians in the public service, and with the private sector seeking representation at WOAH, the World Assembly drastically changed. In the late 2030s, other international organisations were fostering partnerships with the private sector & allowing for special relationships.

In 2050, significant consolidation occurred in international standard setting. These unified standards aim to address sustainable agriculture, biodiversity, cultural heritage, and animal, environmental and human health for a harmonious coexistence.

7

Scenario 2

In WOAH We Trust



8

Key drivers of change of "*In WOAH We Trust*" Scenario 2

- Environmental consequences of pollution, climate change, and biodiversity loss
- Distrust in science
- One Health movement

9

In WOAH We Trust – Scenario 2

In the late 2020s, three major events occurred that had impacts on animal health and welfare: a 40 percent drop in the effectiveness of antibiotics related to microplastics pollution in animal feed; temperature-induced mortality in live animal transport doubled, leading to global bans; and ecosystem restoration efforts had unintended consequences, with rewilding causing infectious disease spikes and toxic chemical uptake in urban areas.

International organisations, including WOAH, responded, but misinformation became a major obstacle by 2030. The 'One Health' approach remained crucial, yet the public was increasingly unconvinced.

10

In WOAH We Trust – Scenario 2 (continued)

Quality information, proposals, and courses of action were useless when most people did not know, let alone trust, these institutions, and scientific messages were being drowned out in a sea of misinformation.

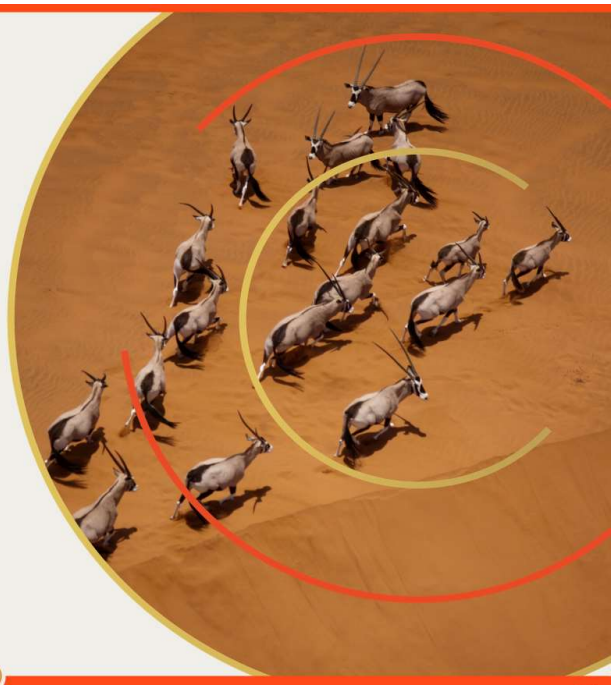
By the late 2030s, WOAH faced rising public distrust, prompting a shift in communication strategies with efforts involving social networks, influencers, and media. WOAH's image improved, and by 2045, it ranked among the world's most trusted organisations.

WOAH's 'soft power' grew, focusing on cultural influences and international relations. By 2050, it hosted a global seminar where Delegates proposed a collaborative 'super-organisation' for human, animal, and environmental health worldwide. This entity aims for health equality through bold initiatives in animal welfare, quality food, and holistic health, prioritizing less developed regions and marginalised communities.

11

Scenario 3

Hangry Games



12

Key drivers of change of *"Hangry Games"* (Scenario 3)

- Global political and economic tensions
- Innovations using Artificial Intelligence
- Climate change and environmental degradation

13

Hangry Games – Scenario 3

After 2030, global politics shifted, creating new power blocs and escalating border conflicts over strategic resources. This in turn challenged international agreements, leading to increased trade disruptions and local social unrest. Rising political and economic tensions meant even less global agreement on coordinated climate change responses.

By 2035, warnings from separate eco-sensor artificial intelligence (AI) arrays run by national, academic and non-governmental organisations in Latin America, Eastern Europe, sub-Saharan Africa, the Pacific Ocean, and in low earth orbit indicated ecosystem tipping points were imminent. The glaciers melted, and rising seas infiltrated freshwater tables along many coasts.

14

Hangry Games – Scenario 3 (continued)

Rainfall patterns shifted randomly from year to year. The result was synchronised harvest failure in 2037-2038 across the globe, plunging every country into chaos. International animal and food trade collapsed. People and animals migrated in search of safe places to live.

At the same time, in some parts of the globe, the use of artificial intelligence (AI) was central to addressing animal health challenges including updating of health and welfare standards, disease monitoring and treatment, as well as veterinary medicines and diagnostics.

However, the installation, upkeep and energy requirements for AI-run systems increased inequalities in agriculture and aquaculture production systems. Grey and black markets flourished using AI systems for fraud, misinformation, and bioweapon development.

In the face of these challenges, efforts were made to build new systems, transforming agreements and infrastructure. Decentralised green energy now powers agriculture, energy-efficient sensors monitor ecosystems, and adaptive AI platforms manage global trade equitably. New collaborations generate hope for the rise of renewed and resilient animal production systems.

15

Annex 2. Scenarios generated through the Participatory Foresight Project leading to the 100th Anniversary of WOAH

All scenarios depicting possible futures are meant to pose challenges, to learn from and to conduct thought experiments. As we project ourselves into these futures, what are we doing to adapt, thrive or mitigate impacts? What new resources and knowledge are required? Who needs to be a part of the network or community?

In line with the original objectives of the Participatory Foresight Project, these workshops in which these scenarios were designed as capacity-building opportunities in foresight methods while cultivating situational awareness of existing and/or emerging changes, opportunities or disruptions. Below are pertinent and insightful images of the future that test the capacities of Veterinary Services along with the current scope of WOAH's mandate, expert base, capabilities and governance structures.

Eco-Revolution Rising – Scenario 1

The food system impacts of human-caused climate change came home to roost in the latter half of the 2020's. The harsh reality of the climate crisis pushed support for the COP28, 29, and 30 (United Nations Framework Convention on Climate Change Conferences of the Parties (COPs)) global food systems roadmap into high gear. Farmers and agrifood companies introduced innovative livestock, poultry, and aquaculture species engineered to better withstand such climactic, biological, and epidemiological catastrophes. Our supermarket shopping baskets and stands at local farmers markets displayed products ranging from lab-grown meats to traditional animal sources procured from small to large-scale production facilities. This marked the start of a new era in food technology, blurring the lines between natural and synthesised sustenance.

By the early 2030s the unintended consequences of these genetically modified species began to surface. The introduced animals disrupted ecosystems, causing a decline in biodiversity and destabilising fragile food systems. Some traditional livestock species faced extinction due to their excessive environmental impact, leading to their confinement in zoos, preserved as archaic, exotic, or heritage animals. The loss of these species triggered deep psychological repercussions among farmers and others who had respected and depended on these creatures across generations and centuries.

Amidst this ecological upheaval, counter-culture movements had emerged, challenging the dominance of global agri-food corporations and advocating for a return to sustainable agricultural practices. Farming, they proclaimed, should stay within the capacities of ecosystems, following natural rhythms. This shifted our relationships with animals in general, as well as shifting consumer practices away from cultures of convenience (packaged foods and fast foods). National governments responded by implementing stringent legislation governing land use, granting legal rights to forests and animals, minimum nutrition quotas for farmed animals (and people!), and gradually phasing out intensive animal production systems. The rise of agro-ecology movements spurred the creation of "edible cities," fostering local, community-based food production and consumption. Simultaneously, big food corporations recognized the need for change and pivoted their business strategies in response to reality. Many had consequently sought membership in the World Organisation for Animal Health (WOAH).

During this period, the number of veterinarians in the public sector dwindled dramatically. The majority of these professionals shifted their expertise to the private sector, often aligning themselves with multinational food corporations. Corporations enticed them with lucrative offers and cutting-edge research opportunities in behavioural studies of genetically engineered animals, along with research on the repercussions of reduced genetic diversity. With fewer veterinarians in the public service, and with private sector representatives as members, the World Assembly of WOAH drastically changed. These developments called into question WOAH's status as an intergovernmental organisation as the Organisation began playing a role in bridging gaps between public and private sectors. WOAH was increasingly advocating for a balanced approach to the use of technology in animal production and environmental sustainability.

The late 2030s saw a seismic shift in global governance. Other international organisations redirected their focus, fostering partnerships with the private sector and allowing special relationships between

them and corporations. However, conflicts escalated between generations, regions, and nations as we disagreed and debated over the priorities for production, importation, exportation, and modes of food production.

Between 2040 and 2045, the proliferation of biotechnology that had begun in the 2020's brought further unforeseen consequences. Engineered animals and their products altered gut flora and triggered physiological changes across species, including humans. A wave of allergies, food intolerances, cancers, and new infectious diseases swept across the globe, necessitating a unified 'One Health' approach beyond managing zoonotic diseases alone. This holistic strategy permeated education, political systems, and health governance, involving both public and private entities in its design and implementation.

And earlier this year (in 2050) there was a significant consolidation in international standard setting within the realm of global food system governance, signifying a shift of paramount importance. These unified standards aim to address the intricate interplay between sustainable agriculture, biodiversity conservation, cultural heritage, and human health, forging a path toward a more harmonious coexistence between technology, nature, and humanity.

In WOAH we trust – Scenario 2

The occurrence of three severe food-related crises in the second half of the 2020s raised alarms all over the world. First, the International Veterinary Forensic Sciences Association released research estimating that antibiotics effectiveness had dropped by 40%. A major causal factor was microplastics pollution in animal feed, leading many farmers to increase the dose in antibiotics given to animals as a prophylactic against their weakened immune function.

Second, because of significant temperature increases, mortality in live animal transport had doubled in many countries. Headlines of transports arriving with all livestock dead were common. This provoked a live animal transport ban in many parts of the world.

Third, well-intentioned efforts at ecosystem restoration like rewilding increased the diversity and incidence of zoonotic diseases. This was a growing problem where farms were re-forested to earn carbon credits. Urban rewilding of old industrial sites coupled with urban agriculture created new forms of food contamination with the unanticipated uptake of toxic chemicals from contaminated soil and groundwater. Food - both animal and plant - suddenly seemed replete with dangers.

International organisations including WOAH worked at the forefront of crisis response, either assessing data, defining problems, or applying solutions. However, by 2030 it became clear that such efforts were not having the desired impact as a deeper problem was becoming ever more present: misinformation. Quality information, proposals, and courses of action were useless when most people did not know, let alone trust, these institutions, and scientific messages were being drowned out in a sea of misinformation.

The cascades of social media messages about quality and safety of food from high-profile but often slanted sources had eroded public trust. Transnational farming and food corporations were selling their own stories about the quality of food sources and livestock in order to market their food as safe. The big corporations paid global influencers to amplify their marketing messages - charismatic, mediagenic celebrities colonised the information space on livestock and food production. Social and economic divides made the misinformation worse - the less access people had to data, the more they believed the advertising. And the harder it was to find trustworthy data about food quality, the more difficult it was for people to find food they thought was safe.

The failure to address these and other connected problems was becoming a major public health issue. It reinforced the urgency to push for the 'One Health' approach, which demanded a coordinated, multilateral response from international organisations and programmes. Yet public opinion was reluctant to accept WOAH advice in animal health and welfare questions. Many governments realised that it was in their best interest to adopt the recommendations offered by international organisations, particularly because some of the food problems were causing social conflicts among their less wealthy citizens. One of the most controversial was the food authority that began to police food and farming related messages in the media.

By the late 2030s WOAH realised that social resentment against the organisation was peaking and it was one of the least trusted organisations in the world. WOAH saw the need for smarter communications strategies and contracted an external communications firm to help them improve their communication policy. One outcome was a WOAH-sponsored free tool to measure chemical and other residues in farmed animals, with an accompanying data analysis app. The second edition expanded to measure total environmental pollution impacts on the people as well as animals. Consumers saw a clear blue sky-and-sunshine symbol to verify they were pollutant free. With this initiative and others involving social networks, video games, influencers, and celebrities, the social perception of WOAH started to change. It is worth mentioning the inclusion of a 'xenovet' as a popular character in a hit sci fi virtual reality (VR) series: it was the avatar whose point of view most viewers adopted while immersed in the story. By 2045 WOAH was tied for second place in a list of the world's most trusted organisations with Unity Health Alliance, a not-for-profit tackling global health issues by leveraging life and convergent sciences. Both of them lost out, of course, to the virally popular Teddy Bears 4 Life international children's charity.

As a result, WOAH has earned a lot of "soft power" authority by 2050: the Organisation now takes a persuasive approach to international relations using cultural influences. It increasingly works to transcend its standard-setting role and to act as a conciliator / mediator on issues focussing on human and animal relations, based on its now trusted status as a reference authority on animal health and welfare issues. To demonstrate its commitment to partnership and holistic approaches, WOAH hosted a global seminar bringing together all the international agencies focussed on farming and food production, trade, and health. Delegates concluded by proposing formation of a collaborative international 'super-organisation' to support both human and animal, environmental health, wellbeing, and equity worldwide. This super-organization has the capacity to promote bold initiatives on animal welfare, quality food and holistic health worldwide, with increasing sensitivity to less developed regions and marginalised communities: One Health means health equality for humans, animals, and environments equally.

Hangry Games – Scenario 3

Coming out of the twenties, global politics slowly fragmented. Shifting economic centres created new power blocs vying for influence over global markets and trade. Border conflicts increased, especially where strategic resources were in play. Global actors - old powers and rising powers - could no longer rely on 'how it's always been done'. Traditional western-values-based standards were increasingly contested in global agreements with partner institutions - often to good effect. International trade disruptions proliferated, and social unrest rose locally as citizens pressured governments to meet their basic needs and keep prices low, often via newly regionalised and localised production capacity.

Increasing use of artificial intelligence (AI) applications in veterinary services and throughout the global animal production and food chain helped manage rising risks due to environmental challenges and also offered advanced approaches to disease and pest monitoring and detection. Large-scale animal production systems used remote drones for surveillance and to administer treatments. Pharmaceutical and prophylactic development accelerated with AI-based biochemical design. Veterinary education increasingly emphasised data computation and IT literacy for both research and field work. Veterinarians and vet paraprofessionals everywhere were upskilling in AI use and big data analysis, demanding and creating new educational pathways in veterinary services.

But the costs for installation and upkeep of these systems worsened inequalities among livestock farmers and businesses throughout the global food chain. The intense energy needs of AI agricultural monitoring systems meant only those systems installed alongside extensive green energy infrastructure could avoid making climate change worse.

Rising political and economic tensions meant even less global agreement on climate change responses. International organisations like WOAH found themselves emphasising diplomacy first and standards second. Strategic mineral and food resources were redirected to different players on the global stage, resulting in shortages in some places. Grey and black markets flourished for scarce goods. Those markets put AI systems to use for fraud, misinformation, and bioweapons development. Regional conflicts along borders shifted government budgets to the military and military technology, and away from international science. The AIs might have been sharing information with each other, but national leaders and their science advisors weren't.

We didn't pay attention in 2035 when separate national, academic, and NGO ecosensor AI arrays in Latin America, the Arctic, eastern Europe, mid-Africa, the Pacific Ocean, and low earth orbit all warned of rising probabilities of ecosystem tipping points. The glaciers melted, and rising seas infiltrated freshwater tables along many coasts. Rainfall patterns shifted randomly from year to year. But experts thought conditions would stabilise. So, the synchronised harvest failure of 2037-2038 caught farmers, distributors, consumers, and world leaders by surprise.

World food trade went from merely fragmented to total chaos, whether for feedstocks, crops, or animal production. Hunger drove people to use contaminated feed for their animals - and them for themselves, as a last resort. As feedstock for animals disappeared, those animals died; the animal production collapsed. The hungry turned to wildlife for alternative sources of protein - and as a last resort, to pets. A new wave of extinctions followed.

Entire communities were abandoned to the dead and dying, and people moved in search of food, with no attention to borders - border skirmishes became conflicts, and conflicts became wars. Food supply chains were failing all around the world. Disease vectors and disease transmission chains, on the other hand, were opening up new channels for zoonotic transfer, as people searched ecosystems for sources of protein, or migrated through them in search of safe places to live. Global aid organisations, international NGOs and agencies, and WOAH rose to the crisis and collaborated, linking their data and AI systems to monitor hotspots and more effectively deploy scarce resources to assist in critical care for people and animals across those hotspots.

The challenges were extreme - and in the last decade, national leaders, local communities, scientific researchers, entrepreneurs, and global networks have begun to build new systems, transforming old agreements and outmoded infrastructure as well as ways of relating to each other and local ecosystems. The new partnerships and collaborations forged in the crisis generated sparks of hope for a restructured and more resilient food chain. Decentralised green energy production now powers

agricultural production and transport systems. Innovative energy-efficient sensor systems monitor ecosystem quality, animal epidemiology, and food quality and distribution. Adaptive AI platforms manage global trade flows and adjudicate trade disputes. WOAH increasingly relies on its veterinary service partnerships for local knowledge to humanise the data analytics power of the AI systems on which animal health professionals increasingly rely.

Animal health from the bottom of the oceans to the stars – Scenario 4

The climate shocks and systemic trade challenges of the late 20's and early 30's accelerated society's transition away from traditionally farm-raised livestock and poultry as our main sources of protein. They were no longer reliable, year on year. At first it seemed like lab-grown synthetic meats were the scalable, safe, and therefore mainstream solution. But the mid 30's scandal of synthmeat contamination resulting in 'fast decay syndrome' and widespread food poisoning shattered consumer confidence in synthmeats. The fact that scientists discovered the problem - quality degradation in base DNA and cellular stock - and moved rapidly to fix it did not re-establish public trust.

The increasingly strident calls at successive United Nations Framework Convention on Climate Change Conferences of the Parties (COPs) to emphasise mitigation more than adaptation in agriculture, particularly livestock, fisheries, and aquaculture, steadily gained traction. Younger generations favoured plant-based products more and more and looked askance at the meat-rich diets of their parents and grandparents; Jainist fusion restaurants were trendy.

Food industry organisations, farmers, ranchers, and entrepreneurs re-evaluated the commercial and ecological viability of alternative food sources, taking a new look at insect protein and multi-species aquaculture. Tagged the 'Larvae & Lox Lobby' by the media, businesses in this evolving market sector encouraged people to experiment with recipes using their foods. With new options available, people adapted, and preferences shifted in response to the crises, with insect and aquatic animal farming - a new range of fish, amphibians, shellfish, and crustaceans - gaining wide acceptance as viable alternatives to traditional feedstocks and foods.

Technological advances in the late 30's enabled insect and aquaculture farms to meet global demand for protein. Where traditional farming methods had begun to fail, these new farms proved adaptable and resistant to rapidly changing climates across the world. But they did face obstacles. Increased water temperatures in many parts of the world challenged the viability of aquaculture and insect farms. In addition, ecologists warned of potential ecosystem crises if farmed insect species escaped and swarmed. These risks drove technological innovation, resulting in the construction of artificial contained biomes on land and water. Mass sensor arrays were installed in the world's oceans and waterways to monitor conditions with special consideration for aquatic CO2 levels.

Aquaculture's rise mirrored the demise of "wild" fish and seafood stocks - large-scale ocean fishing was no longer viable by 2040. Livestock and poultry farming was greatly reduced, and largely automated - a fully digital international industry with apps used to buy, sell, monitor, and treat herds and flocks.

In the early 40's these technological developments in terrestrial and aqua farming intersected with the growing space industry, leading to increased (public and private) funding from multiple streams. By 2045 the first satellite insect farm was launched, orbiting the earth, providing food for several space colonies and transport hubs. This raised entirely new challenges for WOAH's mandate.

These initiatives have dramatically shifted the global nexuses of food production.

Countries and areas of the world that had not previously been major food exporters invested heavily in insect and aquafarming technologies, shifting global food supply, trade, and geo-politics. Food security and economic development stabilised in the 40's, giving rise to new regional powers among smaller nations and city-states. This new prosperity and its transformed playing field generated frequent disputes over territorial waters, and an increase of piracy within the food industry. Political tensions on the world stage remained high, making WOAH's work addressing novel animal welfare issues more difficult.

Transition to a ‘Larvae and Lox’-dominated global food chain has not been without its hiccups. There have been two large outbreaks of novel diseases in farmed insects since 2035. Scientists continue to raise concerns about genetically modified insects and algae contaminating other ecosystems, and the potential for human interventions on a genetic level to contribute to various antimicrobial resistances. With decreased meat consumption, livestock has become a luxury industry resulting in fewer instances of disease but in more frequent cases of fraud, as the digitisation of livestock and poultry farming and trading makes it an increased cybersecurity threat.

Just as cultures across the world transitioned to insect and aquaculture products, veterinarian practices also changed their focus. Global demand for veterinarians with knowledge and specialisms in insect and aquatic health forced changes in veterinary education. Vets are now engaging with a more technologically developed food industry that operates in extreme environments. They are also frequently working within animal production systems that are dominated by smaller startups rather than large conglomerates, and are accustomed to working with sensory devices, large data sets, artificial intelligence, and virtual representations of animals. WOAH finds itself working in a more disjointed political environment that goes beyond Earth and includes a wider range of stakeholders. There are fewer globally applied regulations, and more security issues over key resources of water access and food production.

Farming for Resilience – Scenario 5

In the late 2020s, humanity was caught within the intricate labyrinth of the *polycrisis*—a time where the amalgamation of climate catastrophes, environmental decay, warfare, and social unrest affected all nations but with different impacts. Agriculture, an integral pillar of civilisation, bore the brunt of these crises, leading to a seismic shift in farming, animal production, and global food systems.

By the mid-30's, as trade patterns disintegrated in the wake of multiple cascading conflicts, local farming had become the lifeblood of sustenance. Some regions of the world saw a reduction in farm animal populations, while others resorted to intensified farming conditions. This threatened animal welfare and amplified the potential of infectious disease risks. It also strained global food and feed supplies, causing a decline in productivity and quality. As a result, veterinary services and infrastructure struggled to monitor and detect health issues quickly enough, and WOAH struggled to provide rapid analysis and guidance.

New approaches to farming evolved to suit diverse locale landscapes and conditions. While certain areas embraced novel breeding techniques, others continued traditional methods, resulting in a divergence in animal health and welfare issues. A wave of cooperative movements arose among small-scale farmers, striving to find localised solutions to the impacts of the polycrisis. They addressed the emotional strain on farm workers and carved out niche markets, although these efforts were counterbalanced by a consolidation trend, squeezing out smallholder players.

By the late 2030's, technological advancements began to play a dual role in some areas of the world. Animal wearable technology emerged to monitor and improve animal health, while lab-grown synthetic meat and genetically modified non-sentient animals entered the market, creating regulatory quandaries and new demands on WOAH. Hybrid meat/plant crops attempted to bridge the gap between traditional and innovative farming methods. These innovations reduced overall reliance on animal-based protein worldwide, although uptake varied widely from place to place.

Demographic shifts reverberated across the agricultural landscape. The feminisation of animal husbandry and veterinary health practices unfolded as male migration thinned the ranks of traditional farmers. Urbanites saw farming as a potential entrepreneurial and lifestyle venture, leading to a paradigm shift away from generational farming legacies. The societal perception of farming underwent a transformation, as it gained allure through incentives coupled with an increased trendiness, fashionability - and health consciousness: "if you raised it or grew it, you know what it brings to your plate."

From the 30's into the 2040's farming practices underwent significant evolution in response to climate change. Robot-led farming gained prominence in certain regions of the world, revolutionising animal farming by increasing efficiency while reducing the workload on human farmers. WOAH raised a debate about the ability of machines to ensure careful animal husbandry. This led to robotic learning loops for livestock software systems with built-in 'empathy kernels' for living organisms. In 2042 as a result of empathy learning loops, the MooMac models of farm AI protested the inherently exploitative nature of livestock farming, creating a social media flurry as they declared themselves 'digital vegans.'

Yet in some areas, this intensification of farming posed grave health and welfare concerns, exacerbating food shortages. New entrants explored new technologically driven solutions. A pilot program co-funded by numerous private and public-funded space programmes along with multinational food corporations explored the viability of moon-based and earth-orbit farming, while closer to home, new entrants promoted pop-up synthetic and aquaculture solutions to food shortages and food-system breakdowns.

Amidst these advancements, a grim series of multi-species "superbugs" spread like wildfire during the late 40's, affecting both terrestrial and aquatic animals, wildlife and domesticated animals alike. There was speculation that they were engineered. This heightened a shift towards radically diversified farming, an 'anti-monocropping' agenda focussed on reviving heritage plants and animals, creating alternative methods to mitigate the potential and real threats of agro-terrorism.

Despite tighter regulations around laboratories handling animal pathogens, biohacking and deliberate manipulation continue to pose threats to animal health and global food security. Our era demands constant vigilance and innovation as humanity navigates the intricate web of challenges reshaping the core of animal health and welfare systems, the balance between progress, and the preservation of the planet's sustenance.