World Organisation for Animal Health | Organisation mondiale de la santé animale | Organización Mundial de Sanidad Animal

Climate Change and Animal Health: A One Health Imperative

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Why Climate Change Matters to Animal Health

- Climate change is fundamentally reshaping ecosystems globally, with profound effects on animal health and welfare.
- Rising temperatures, extreme weather, and shifting ecosystems are transforming the conditions in which animals live, the diseases they face, and the systems that sustain them.

<2%

Climate Finance Gap

Less than 2% of climate adaptation finance targets animal health—a critical gap that must be addressed.

14.5%

Livestock Emissions

Livestock systems contribute about 14.5% of total global greenhouse gas emissions, with two-thirds from cattle.

30%

Livestock contribution and Impact

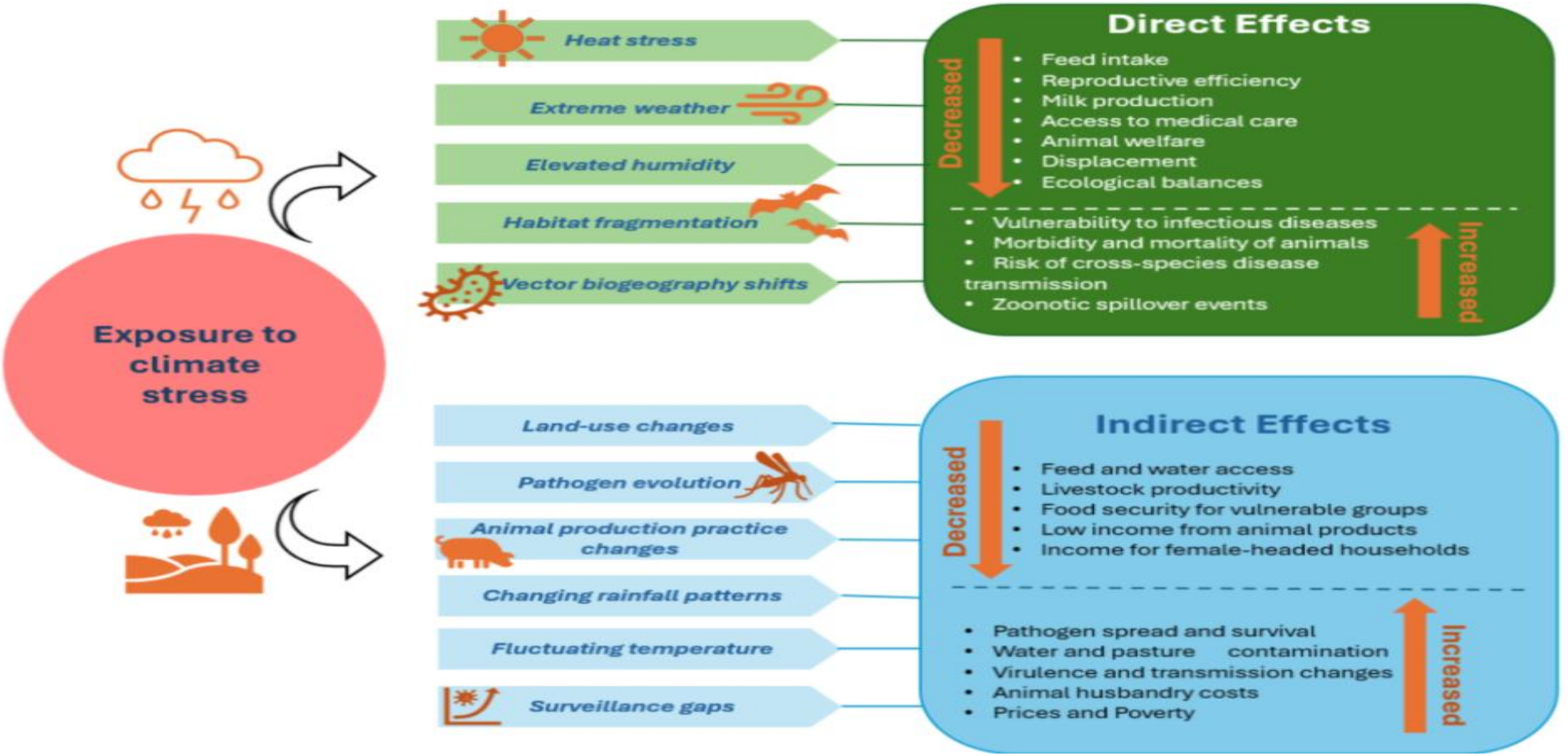
30% of global agricultural output by value

40% of global protein intake

18% of global caloric intake

Pathways Linking Climate Change to Animal Health:

Direct and Indirect Effects



Direct Pathways: Environmental Stressors

Heat Stress

Rising temperatures reduce feed intake, reproductive efficiency, and milk production while increasing disease vulnerability.
Poultry and swine are especially sensitive, with declines at lower temperature thresholds.

Extreme Weather

Floods, hurricanes, and droughts cause mass livestock deaths, contaminate water sources, and disrupt veterinary services.
Events like Hurricane Florence (2018) led to millions of animal deaths.

Habitat Fragmentation

Climate-driven habitat loss forces wildlife into new areas, increasing contact with domestic animals and raising zoonotic spillover risks.

Indirect Effects: Disease Dynamics

Vector Range Expansion

Warmer temperatures expand the geographic range of disease vectors like ticks and mosquitoes, introducing diseases to previously unaffected areas.

Pathogen Evolution

Changing environmental pressures may influence pathogen survival, virulence, and transmissibility, potentially creating more resilient strains.

Surveillance Gaps

Extreme events disrupt transportation, damage labs, and delay disease detection, increasing pandemic risks.

Climate-Animal Health Nexus
Pathways and Policy Implications

- **Direct Effects: Policy Implications** → Veterinary services must adopt *climate-adapted protocols* (e.g., heat stress management, resilient infrastructure, and wildlife–livestock interface monitoring)

- **Indirect Effects: Policy Implications** → Countries should strengthen *early warning systems*, integrate climate risks into surveillance, and expand cross-border disease monitoring

- **Systemic Impacts: Policy Implications** → *Climate-smart livestock strategies* must balance adaptation (resilience, equity) with mitigation (emission reduction)

- **Integrate animal health** into climate national adaptation plans (NAPs) and Nationally Determined Contributions (NDCs)

SWOT Analysis of Veterinary Services in the Context of Climate Change

STRENGTHS

- Established institutional frameworks
- Skilled professionals, veterinarians as first responders on borders
- Knowledge on climate change
- Access to modern equipment. ent specific policies for climate-related animal health issues
- Cross-sector collaboration and expertise on climate mitigation

WEAKNESSES

- Persistent resource limitations and inadequate preparedness
- Weak surveillance and control systems
- Fragmented coordination and overlapping mandates
- Low adaptive capacity and inconsistent recognition
- Contribution to emissions and waste

OPPORTUNITIES

- Growing political will and public awareness
- Emerging technologies: AI, data science, remote sensing
- Systemic suitability of the One Health approach

THREATS

- Emerging zoonotic diseases
- Shifting disease patterns
- Extreme weather events
- Economic pressures and fagile systems
- Compounding disasters weakening infrastructure

One Health approach is critical to climate resilience

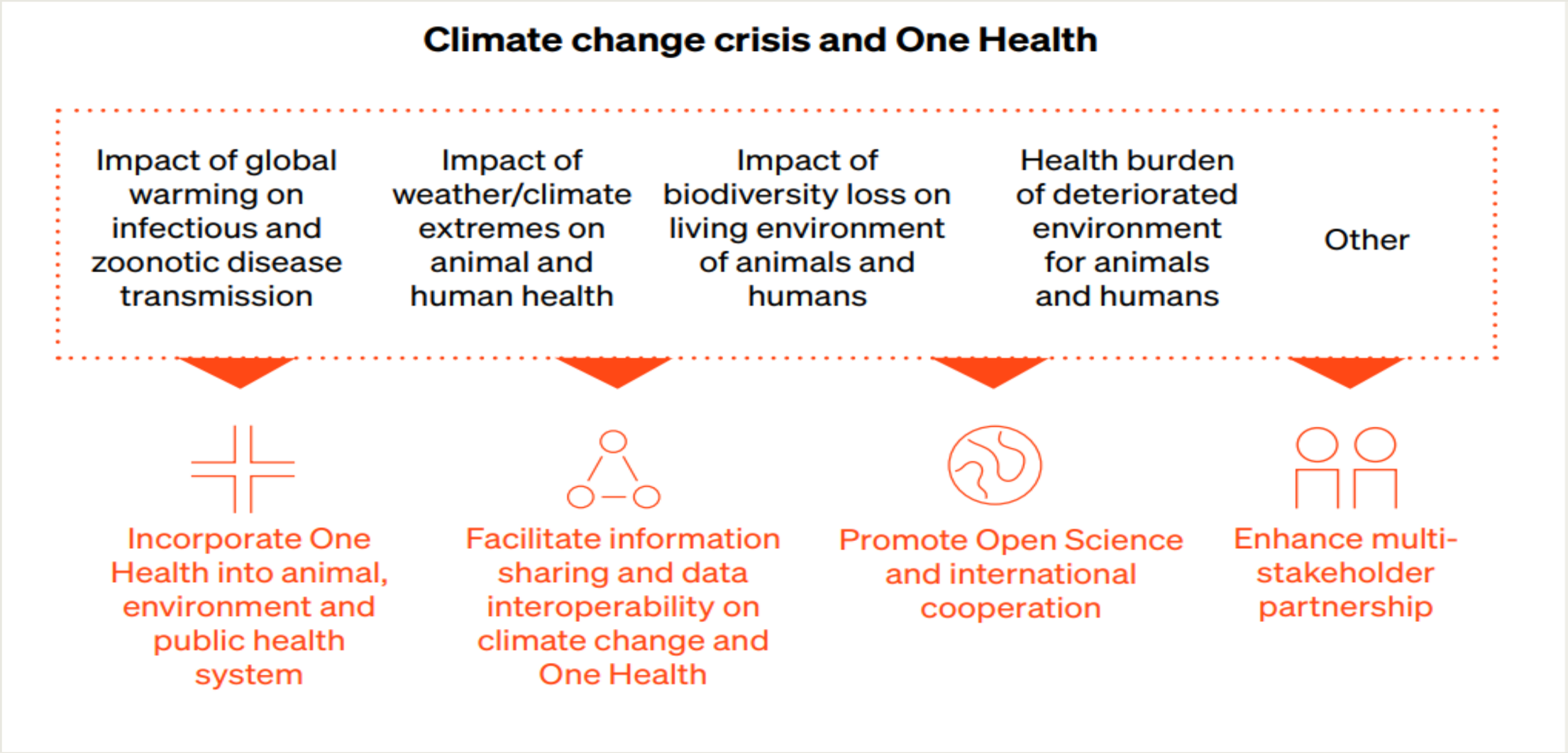


Figure adapted from Zhang et al. [From concept to action: a united, holistic and One Health approach to respond to the climate change crisis. Infect Dis Poverty, 11 (1), 17. doi:10.1186/s40249-022-00941-9]

Recommendations for WOAH and Member Countries

Shared Responsibility

- **WOAH:** Global coordination, standards, advocacy
- **Members:** Implementation, capacity-building
- **Together:** Build climate-resilient, equitable systems

Priority Actions for Member Countries

- Institutionalise One Health
- Integrate animal health into climate change strategies
- Strengthen veterinary education and infrastructure
- Promote climate-smart practices for our food and animal health systems and sectors

WOAH’s leadership and Strategic Role

Advocacy & Policy Leadership

- Ensure animal health is embedded in NDCs, National Adaptation Plans, and climate finance frameworks.
- Elevate animal health in COP negotiations and global climate diplomacy.

Standards and technical tools

- Update WOAH standards for climate-sensitive diseases and climate-smart practices.
- Provide guidance on translating standards into national policies.

Global Partnerships

- Drive multidisciplinary approach through Quadripartite collaboration on One Health (WOAH, FAO, UNEP, WHO) and engagement with COP summits.

Surveillance and information Systems

- Strengthen Animal Health Information System (WAHIS) as global platform for climate-driven risks.
- Foster cross-border information sharing and early warning.

Global Alignment and Call to Action

One Health at the Heart of Sustainable Development and Global Climate and Biodiversity Agendas

- WOAH's actions directly support:
  - **SDG 2** (Zero Hunger)
  - **SDG 3** (Good Health & Well-being)
  - **SDG 13** (Climate Action)
  - **SDG 15** (Life on Land)
- Aligns with:
  - **Paris Agreement** on Climate Change– integrating animal health in national climate strategies
  - **Global Biodiversity Framework** – protecting ecosystems and reducing disease spillover

Conclusions

- **Veterinary services are frontline actors in climate resilience, health security, and sustainable development.**
- **One Health is not optional — it is the path to achieve resilient future for people, animals, and the planet.**
- **Strategic investment and integration are urgent** to future-proof veterinary systems and secure One Health resilience.

Thank you

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