

Climate Change- Disasters and Animals

Dr Jimmy Tickel
IIAD, Texas A & M

17 th January, 2024



World
Organisation
for Animal
Health
Founded as OIE

Organisation
mondiale
de la santé
animale
Fondée en tant qu'OIE

Organización
Mundial
de Sanidad
Animal
Fundada como OIE



What can I do about climate change?



LEARN THE BASICS

The basic facts of climate change, uncovered by more than 150 years of research, can be summarized in 5 key points.

IT'S REAL Observations from thousands of weather stations around the world show our world has warmed 1.9°F since 1880.

IT'S US Human activity is the main cause of warming over the past century.

EXPERTS AGREE There's scientific consensus, based on thousands of studies, that human activity is the primary cause.

IT'S BAD The impacts are serious and are already affecting people.

THERE'S HOPE We have the technology needed to avoid the worst climate impacts.



KNOW YOUR IMPACT

The total amount of greenhouse gases that are generated by our actions is called a carbon footprint.

CALCULATE The average carbon footprint for a person in the United States is 3 times the global average. You can estimate your own footprint using online tools like the US EPA Household Carbon Footprint Calculator.

EVALUATE Everyday things that you can do to reduce your personal contribution to a warming planet include reducing food waste, improving energy efficiency in your home, and evaluating your modes of transportation.

Lasting solutions to climate change will require action on a global scale but bringing down our personal footprint will pave the way for bigger change.



TALK ABOUT IT

Talking about climate change with family and friends can increase awareness of the impacts and solutions. Here are some tips for productive conversations.

CONNECTION Show the relationship between climate change and the things your friends and family care about.

DIALOG Have a conversation—not a lecture—and remember to ask questions about how they feel and what they think.

OPTIMISM Talk about solutions, many of which have health benefits, save money, and preserve resources.

PERSISTENCE Look for opportunities to weave climate change into other discussions, like when you're talking about weather extremes or traffic congestion.



ENGAGE NOW

Climate change can no longer be considered a problem of the future. It's happening now. Our actions today will determine tomorrow's climate and its consequences.

ACTIVE CITIZENSHIP Your vote, at the local, state and federal level matters—aspects of the climate change problem require transformations that only government intervention can make.

CLIMATE LEADERSHIP Your voice matters—support climate-friendly policies and investments in organizations you care about: your business, school, place of worship, and social clubs.



www.purdue.edu/climate



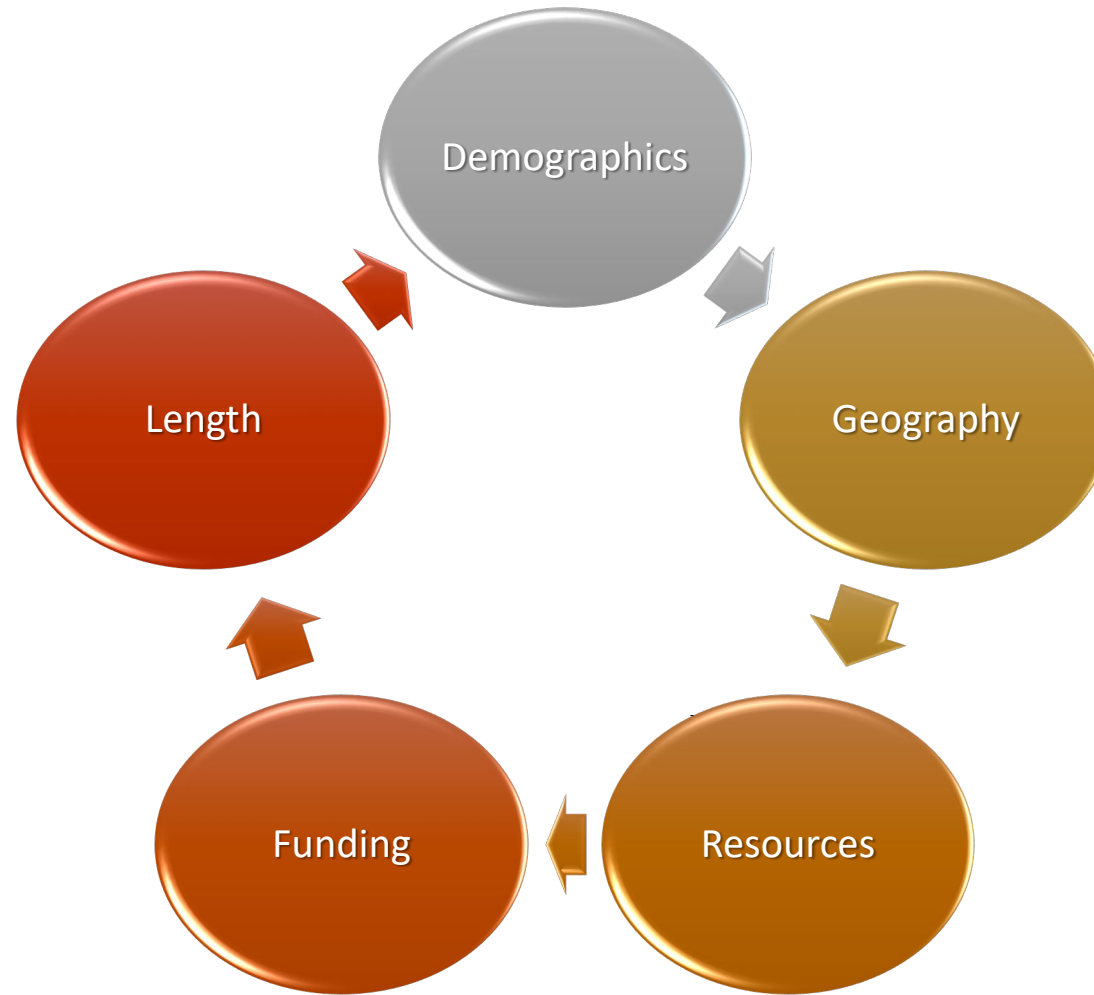
While others research and seek to stop/reverse climate changes.....

“someone” needs to prep and respond....

and that “someone” is “us”



Climate Change challenges



Occurs



stormy

Magnified

Goal > Prepare and Respond at all levels:



National



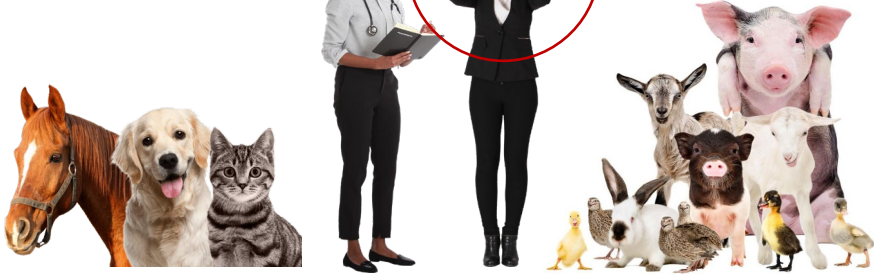
Sub-National



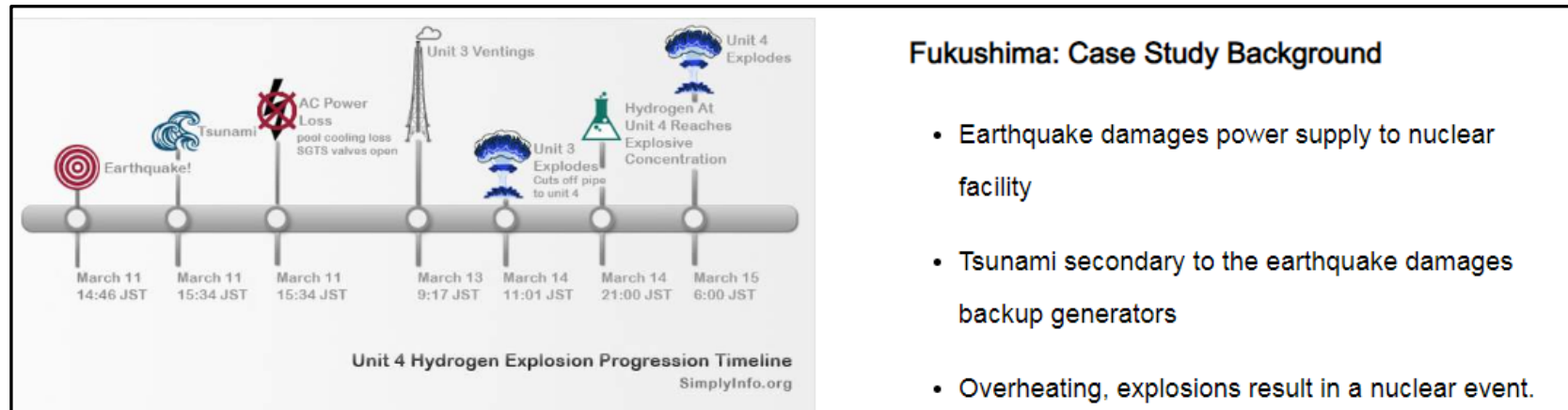
Local/Community



Care-giver



There are precedents of events or combinations of events that provide case studies for Climate Change escalation



5 LOUISIANA LANDFALLS 2020 ATLANTIC SEASON



Louisiana, US responds to 3 hurricanes, 2 tropical storm landfalls in one season

During Covid Pandemic

Key: think larger in scope, duration, frequency and overlapping.



Figure 1: Community Lifelines for Incident Stabilization

Human Health and Safety drives response
and restoration of these services are critical for Animal Welfare

Important considerations for animal response:

- Response to animals will likely need to utilize the overarching human response mechanisms to take advantage of benefit, funding, prioritization and recovery efforts
- Producers and animal care takers should be prepared to self-respond for **5-7 days minimum** for any disaster event



Today:

Assess, Adapt, Adjust our Emergency and Disaster Management approaches/tools to address Potential Climate Change Impacts

- ✓ Emergency Management approaches/tools
- ✓ Step by step process



Emergency Management Approaches/Tools



Systems approach >

What is at risk



All-Hazards >

Focus on what we can do



Disaster Management Cycle > Year-round prep



Readiness Assessment >

? Level of prep



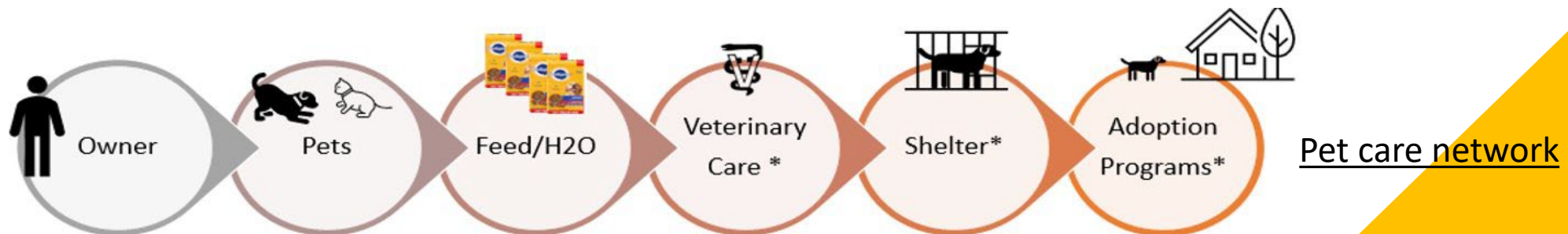
Future Planning >

Staying ahead

Systems Approach: Value Chains and Care Networks



Dairy Value Chain



Consider Climate Change impacts on each node and the chain/network as a whole



All-Hazards Approach

Focuses on developing capabilities to impacts of all potential events rather than individual events



Impacts > capabilities

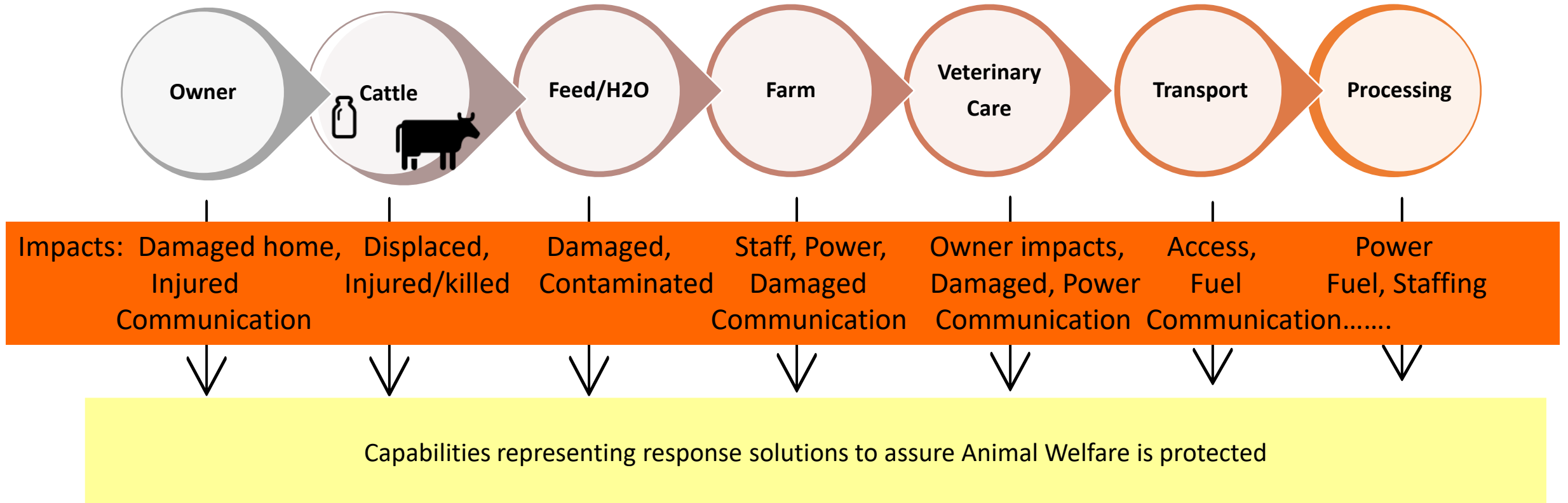


Steps to arrive at an All-Hazards approach

1st Most likely types of Events	2nd	3rd Impacts	4th CAPABILITIES capacities
Floods		>	
hurricanes, cyclones		>	
Volcanos		>	
Wildfires		>	
Earthquakes		>	
Winter storms		>	
Tsunami		>	
Droughts, famine		>	
Animal Diseases		>	
Nuclear contamination		>	
Political disruptions (War)		>	

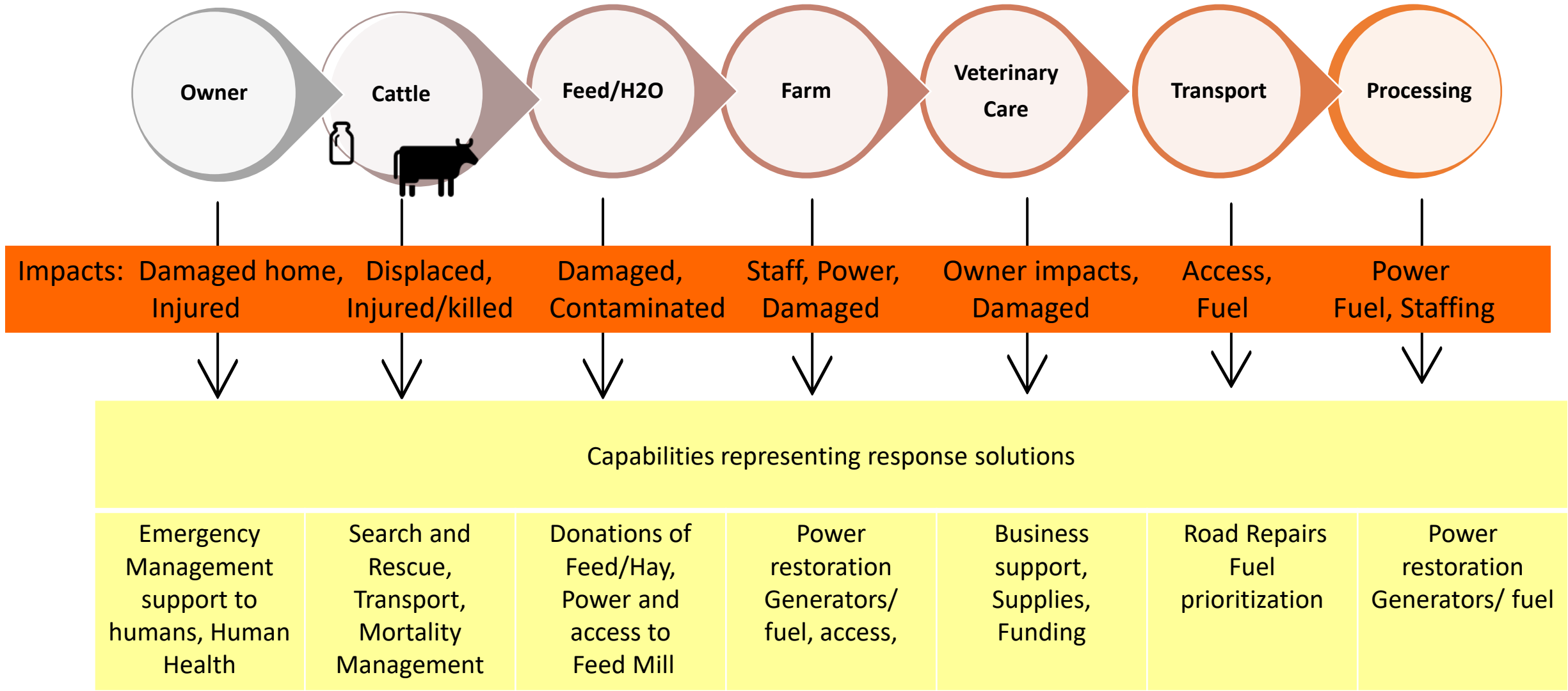


Assess impacts and capabilities ability to prevent impact cascades





Assessing impacts to nodes of Value chain to understand needed capabilities





Potential Impacts > Proposed Capabilities + Climate change



Potential Impacts from disaster events	Capabilities representing Response solutions (+ climate change)
Prevent/mitigate injury/death	Evacuation to safer areas (+further/longer evacuations)
Loss of shelter	Evacuation or temporary shelters (+larger/longer shelter ops)
Loss of food/water/bedding	Provision/Donations management/ transport/storage distribution
Injury/or sickness	Veterinary care (+more VS involvement)
Dead animals	Mortality management (+ changes in options)
Displaced animals	Search and rescue (+ S&R paired with human)
Loss of life/status (owners)	Adoption/Re-homing programs (+ more surrendered animals)
Loss of communication	Restoration of communication (+ scope /frequency)
Loss of power	Restoration of power (+ scope /frequency)
Contamination	Decontamination
Recognize disease outbreak/spread	Surveillance (+ changes in disease patterns)
Prevent Disease Spread	Depopulation/Disposal/Decontamination (+ changes in options)
Prevent Disease Spread	Vaccination

**note this list is not comprehensive



Proposed Capabilities >

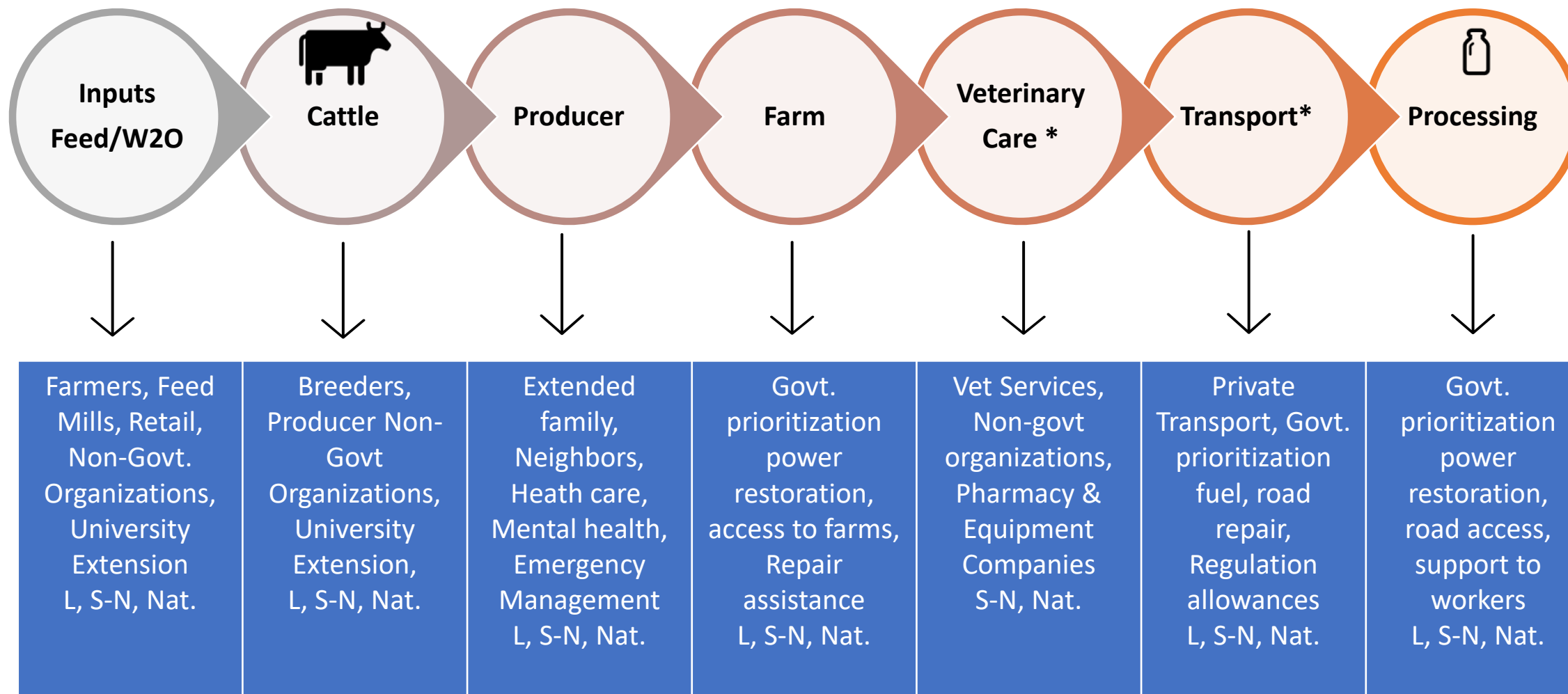
who will do these tasks?

Capabilities that represent Response solutions	Response and Support
Evacuation to safer areas	
Evacuation or temporary shelters	
Provision/Donations management/ transport/storage distribution	
Veterinary care	
Mortality management	
Search and rescue	
Adoption/Re-homing programs	
Restoration of communication	
Restoration of power/temporary emergency power (generators)	
Decontamination	
Surveillance	
Depopulation/Disposal/Decontamination	
Vaccination	





Where will the help come from? Using a value chain/care network approach helps identify stakeholders which will respond/support response.





Impact that requires response	All-Hazard Capabilities
Damaged housing	Evacuation or temporary shelters/adoption programs
Damaged or loss of food/water	Provision/Donations management transport/storage/distribution
Loss of power	Restoration of power/temporary emergency power (generators)
Injury/or sickness	Veterinary care
Displaced	Search and rescue
Loss of life (animals)	Mortality management
Loss of communication	Restoration of communication
Contaminated animals due to exposure to chemicals/rads	Decontamination of animals using trained and equipped decon teams
Recognize Disease outbreak	Implement surveillance program
Prevent Disease spread	Implement effective biosecurity program
Prevent disease spread	3 D, Vaccination programs



Let's add these All-Hazard Response Capabilities to our Incident (Event) Command Structure



All-Hazard Capabilities

Evacuation or shelters/adoption programs

Provision/Donations management
transport/storage/distribution

Restoration of power (generators) and roads
Prioritization

Veterinary care

Search and rescue

Mortality management

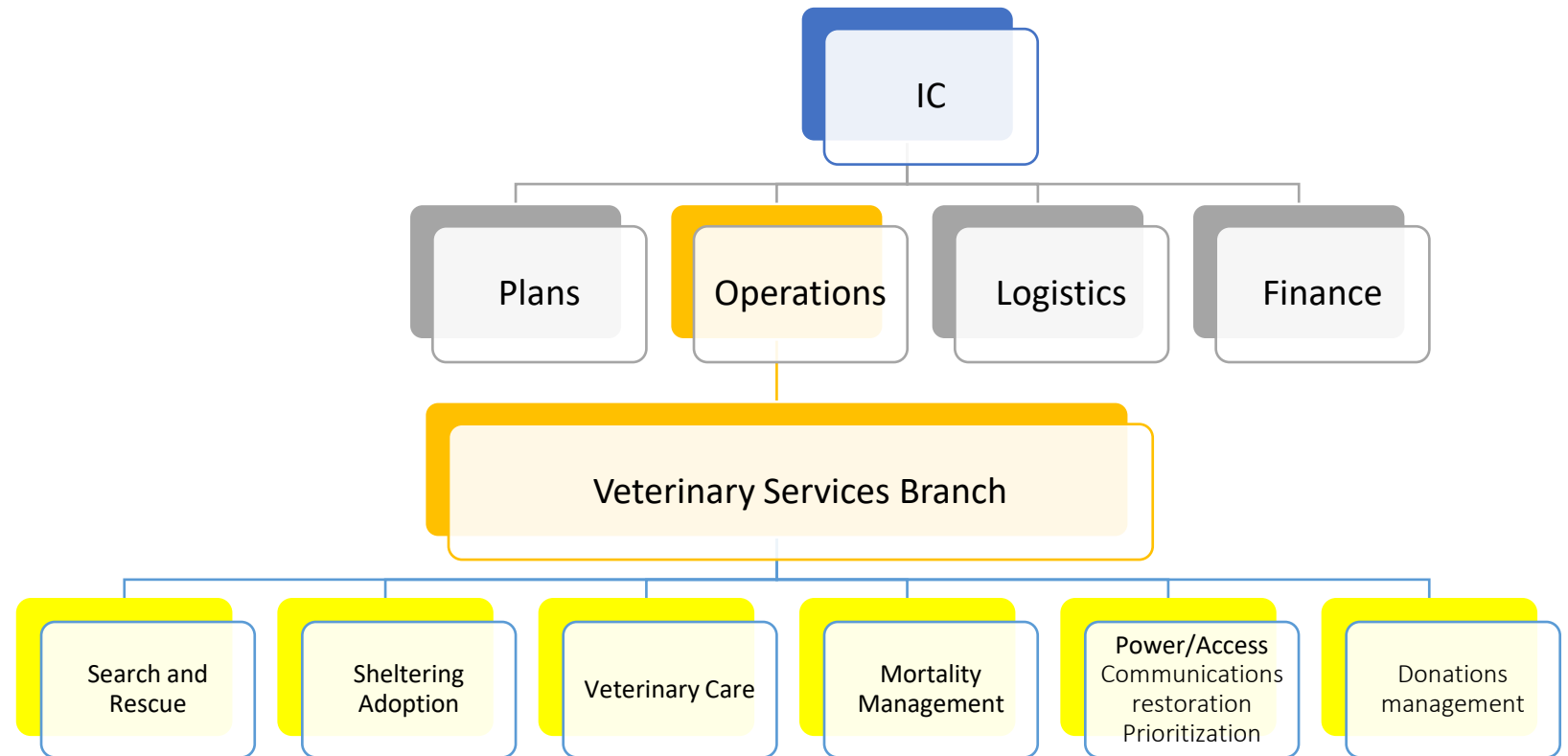
Restoration of communication

Decontamination of animals using
trained and equipped decon teams

Implement surveillance program

Implement biosecurity program

3 D, Vaccination programs



Incident Command Structure showing capabilities most likely needed

**Challenge of preparing for additional burdens
due to Climate Change on
Emergency and Disaster Preparedness responsibilities**

- VS will likely need to dedicate full time staff to develop a professional response coordination capability if not already in place
 - Technical experts in Operations, Logistics and Planning.
 - Coordinate Training programs with train-the-trainer components that allow for Para-Veterinary and Lay personnel to train/prep local and producer actions.
 - Strong relationship with Emergency Management and other government response agencies.
 - Coordinate animal welfare stakeholders to prevent, mitigate, prepare and respond to additional challenges climate change can bring to animals in disasters
 - Set goals for advancement

Current

2yr

5yr

10yr

25yr

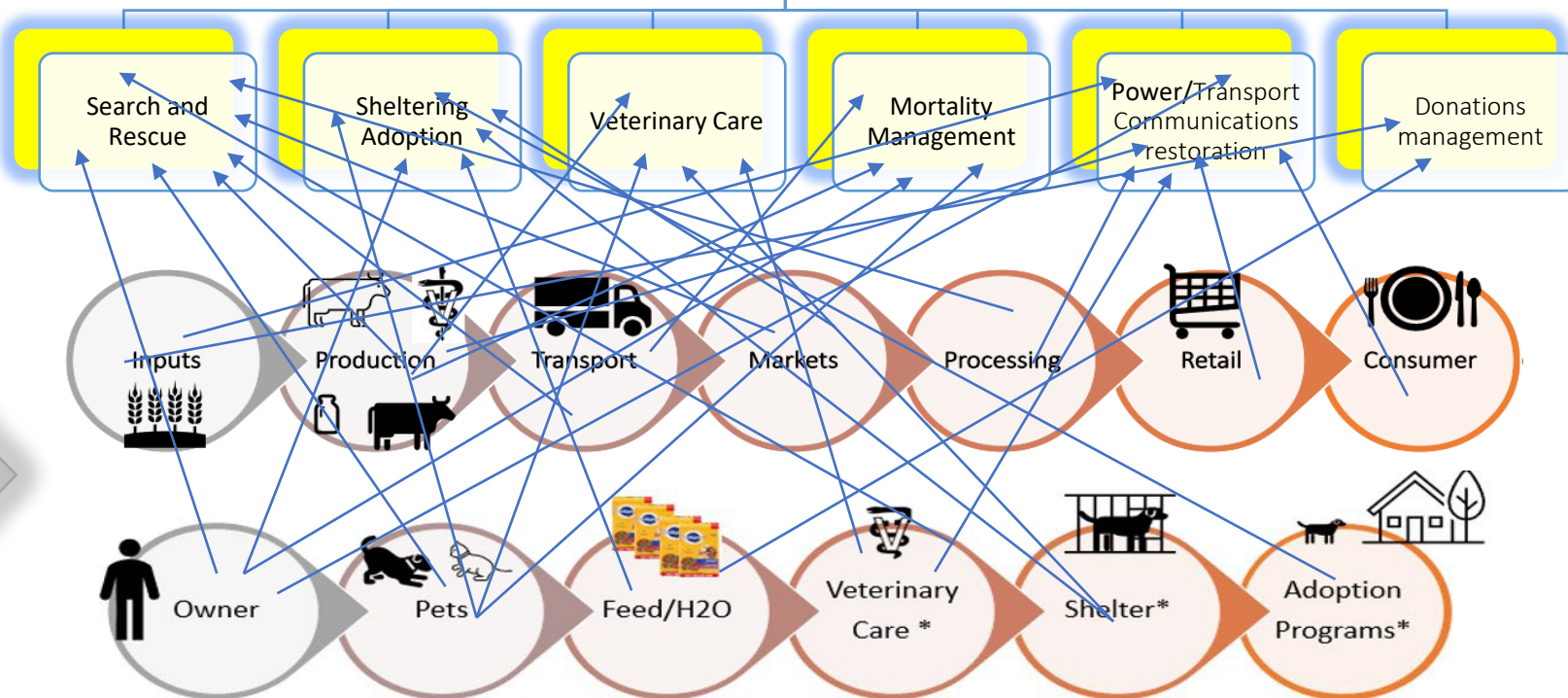
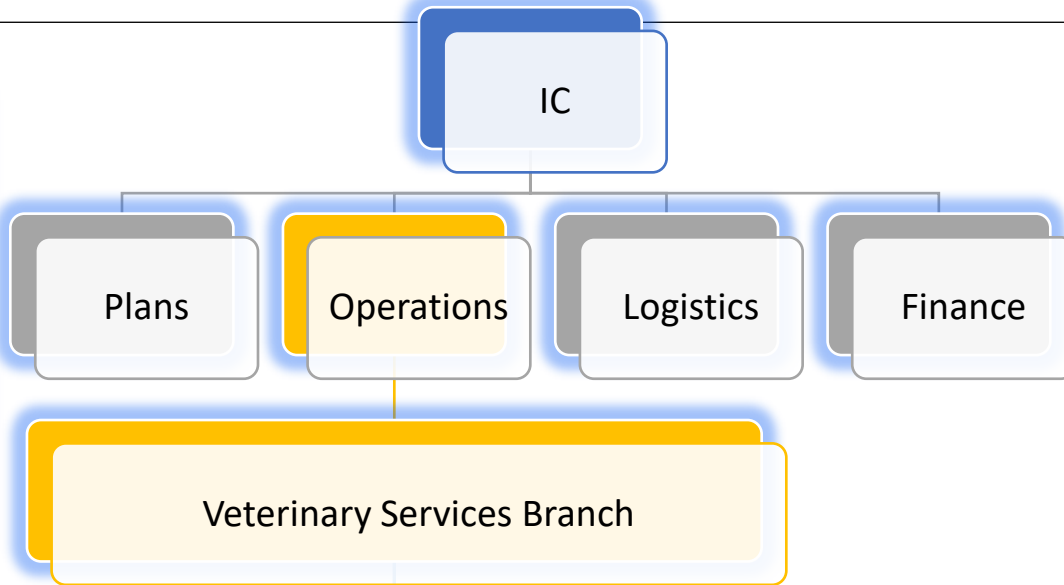




North Carolina
 10m People
 9m Swine
 780k Cattle
 28k Sheep
 24m Chickens
 30m Turkeys
 100 Counties

North Carolina
 (US) is **0.30**
 times as big as
 The Balkans

Incident
 Management
 Team
 (Government)
 8 people



Govt. IMT uses:
Owners
Volunteers
Veterinarians
Response NGO's
Industry / Assoc.
Universities
Emerg Management
Other Agencies
Retailers

100's



Examples of preparedness tasks that likely require a dedicated person:

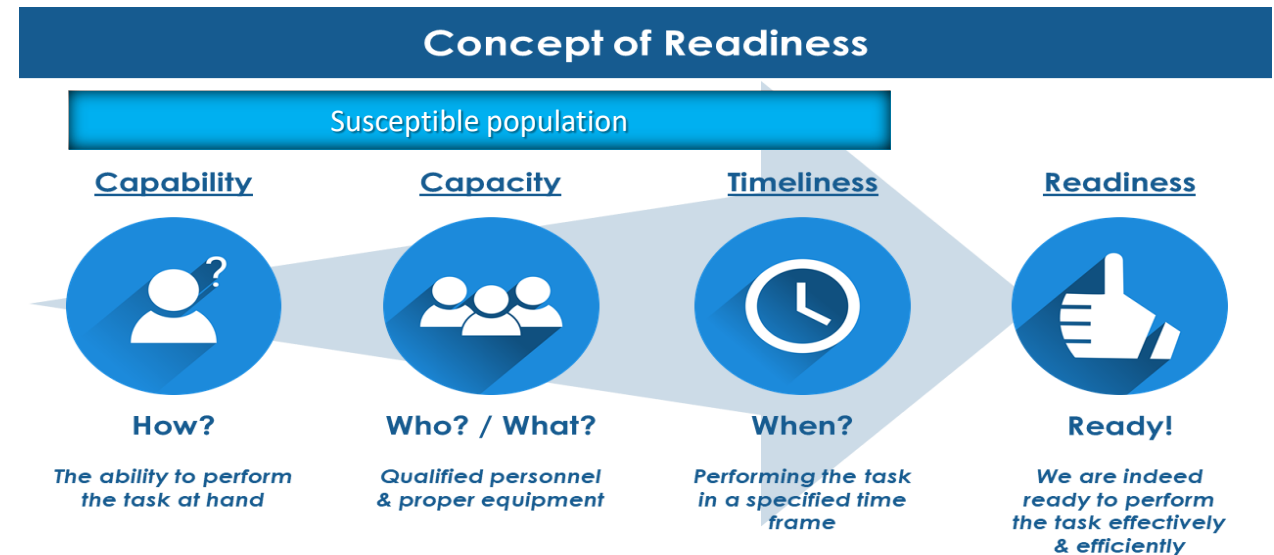
Readiness Assessments

Readiness Assessments performed on proposed critical capabilities at all levels of government for both Public and Private stakeholders

Readiness assessments should include:

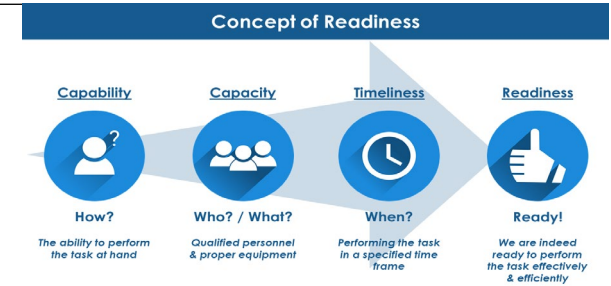
- ✓ Evaluation of each Task's past response-to-recovery performance
- ✓ Additional challenges that may come (ex. Climate change)

Based on these assessments, goals for preparedness can be established. This is where Climate change impacts can be factored in as climate change may alter/magnify the need for/conduct of tasks.





Readiness Assessment for _____ Province. Climate change greatest current impacts include extended tropical weather patterns in production areas.




Task	Capability	Who	Capacity/Timeframe/Population at risk
Mortality Management			
	Burial	Industry	Bury 1% of susceptible population within 48 hrs (add climate change considerations: except during cyclone season)
	Composting	Govt/Industry	Compost 5% of susceptible population within 72 hrs (add climate change considerations: solid base pad and covers)
	Incineration	Govt.	0% unless waivers are granted through emergency declaration 2% of susceptible populations within 72 hrs (less during cyclone season)
		Zoo	10% of susceptible population within 72 hrs
	Landfill	Govt.	30% of susceptible population within 72 hrs with declaration waiver Includes companion animals, livestock and poultry




Examples of tasks that likely requires a dedicated person: **Future Planning**

Future (forward) planning is a planning approach that involves assessing disaster response and predicting what additional resources, strategies, adaptations will be needed as response to an event occurs. As climate change occurs continuously in the background, such future planning efforts are also needed across the whole response plan to address climate change related challenges to response needs over time. Predictive modeling can greatly assist Future planners as they include trends and projections of how impacts may change over time. Ex. **Mortality Management**


Predictive information from climate change assessments and modeling industry and other trends

 Preparedness
Current status

Based on susceptible animal populations located in high-risk areas and current climate change impacts reflected in duration and frequency of flooding and cyclones, mortality management readiness is needed at the following:
2% of the susceptible population within 72 hrs

 Preparedness
5yr status

Based on recent event impacts, growth predictions in susceptible populations in high-risk areas and projected climate change impacts, including increased mortality due to diseases, mortality management needs are likely to increase. 5 yr proposed Readiness for Mortality Management:
10% of the susceptible population within 72 hrs

 Preparedness
10yr status

Based on increase need for mortality disposal capacity proposed at the 5yr status mark and trends in environmental health concerns as human populations are projected to expand in the area also occupied by industry, 10yr goals should include either/and expansion of landfill capacity or advancement of other options with composting prioritized as a best practice option.

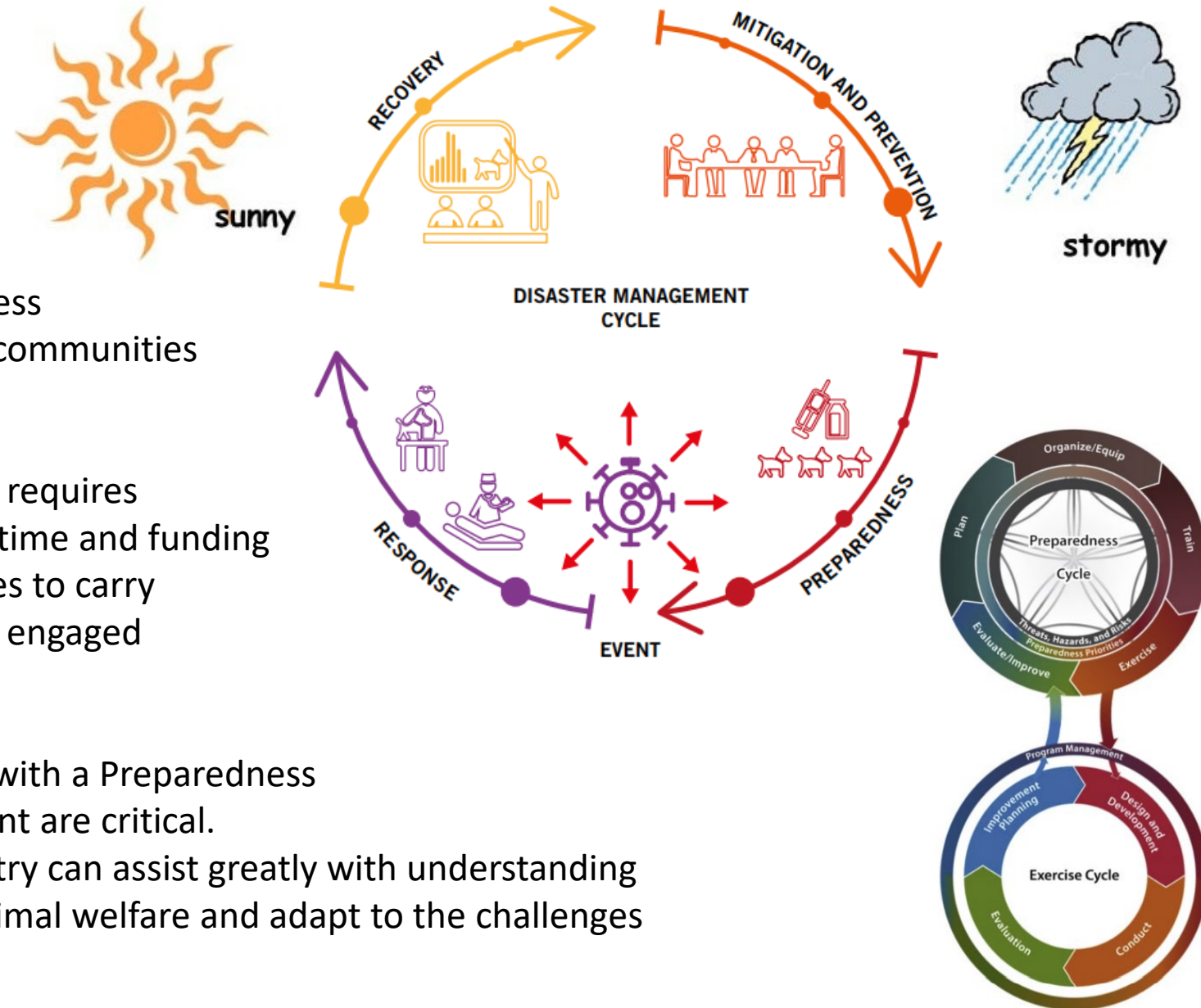


Disaster Management Cycle

There are a great many tasks to prepare to address the many disasters that your country, province, communities and citizens/animals may face.

The work that is required to prepare adequately requires dedicated, trained personnel who are given the time and funding to develop the plans, relationships, and resources to carry out the tasks. Preparedness activities should be engaged throughout the year.

Use of a Disaster Management Cycle combined with a Preparedness Cycle which includes an Exercise Cycle component are critical. Emergency Management Agencies in your Country can assist greatly with understanding how to utilize these planning tools to benefit animal welfare and adapt to the challenges that climate change may bring.





Disaster Management Cycle



Value chain nodes



	Mitigation/Prevention	Preparedness	Response	Recovery
Inputs node	impacts to Feed/H2O	generators/storage		? % recovered
Production Node	Impacts to farm, animals, producer, staff	Farm plans		? % recovered
Transport	impacts to fuel and access			? % recovered
Markets	impacts to power, communication, access			? % recovered
Processing	impacts to facility, staffing, power			? % recovered
Retail	impacts to brand, stores, etc.			? % recovered
Consumer	impacts to homes, power		assistance programs	? % recovered



Climate
Change!

Summary:

- Climate Change's potential impacts will require us to be more efficient, prepared, nimble and resilient.
- As Climate Change impacts can affect nearly every aspect of our planning and response efforts, we need to assess those impacts throughout all of our Emergency Management approaches and tools.

Thank you

Dr Jimmy Tickel



INSTITUTE FOR
INFECTIOUS ANIMAL DISEASES

12, rue de Prony, 75017 Paris, France

T. +33 (0)1 44 15 19 49

F. +33 (0)1 42 67 09 87

woah@woah.int

www.woah.org

[Facebook](#)

[Twitter](#)

[Instagram](#)

[LinkedIn](#)

[YouTube](#)

[Flickr](#)



World
Organisation
for Animal
Health

Founded as OIE

Organisation
mondiale
de la santé
animale

Fondée en tant qu'OIE

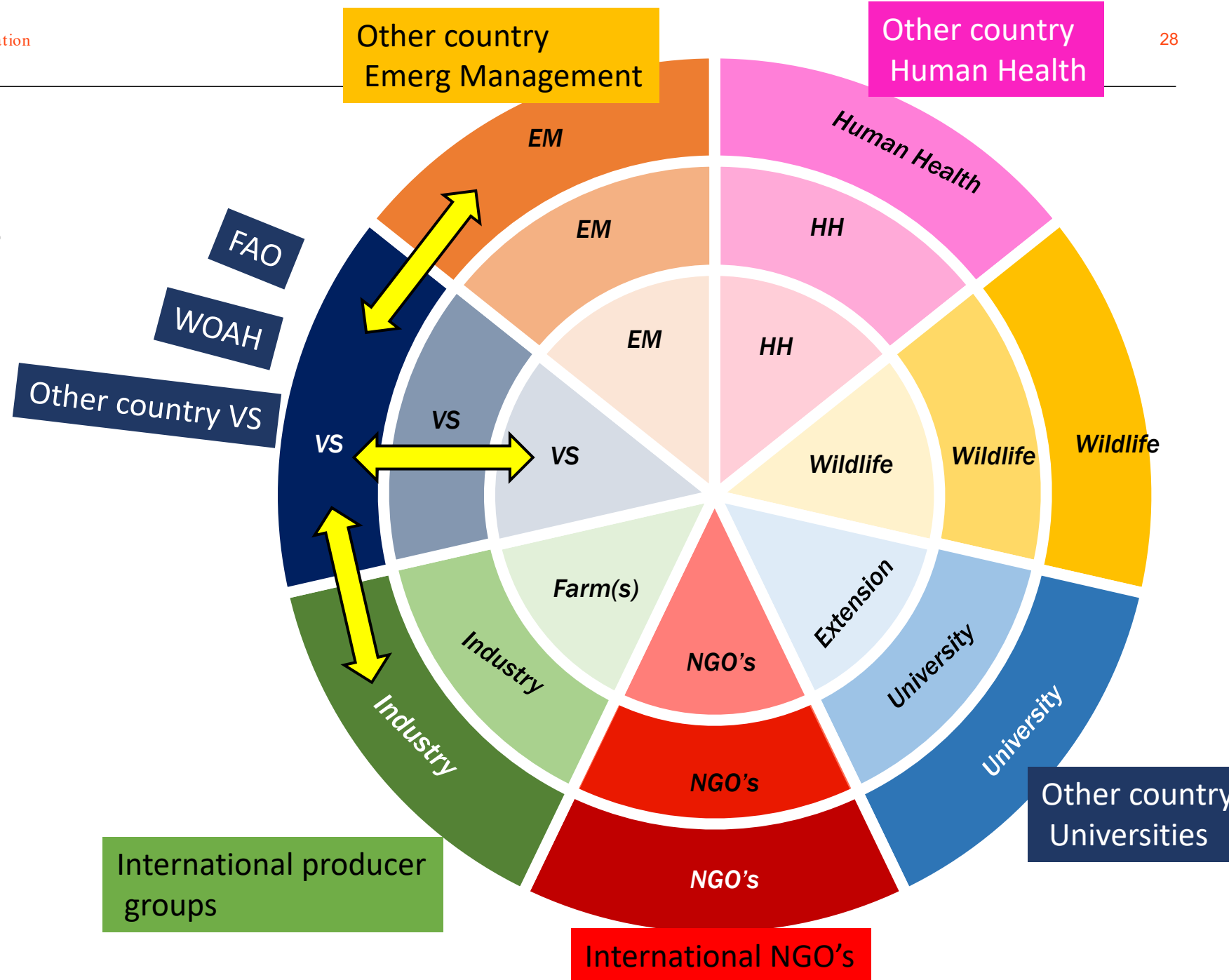
Organización
Mundial
de Sanidad
Animal

Fundada como OIE



Response Partners' Wheel

(essentially, a "map" of stakeholder collaboration)





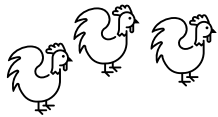
Examples of systems: Animal care networks / value chains



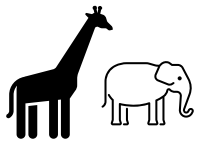
Owner > **companion animal** > food/water > Veterinary Care > Shelter > Adoption Programs



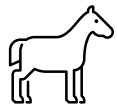
Owner > **cattle** > food/water > farm / staff > Veterinary care > markets/transport > Processing



Owner > **poultry** > food/water > farm / staff > Veterinary care > markets/transport > Processing



Owner > **exotic animal** > food/water > Staff > Veterinary care > facility integrity



Owner > **horse(s)** > food/water > facility/farm > Veterinary care > Emergency Stable