Overview of the “Stepwise Approach Towards Rabies Elimination” and recent improvements

On behalf of the Global Alliance for Rabies Control

2nd sub-Regional PARACON meeting

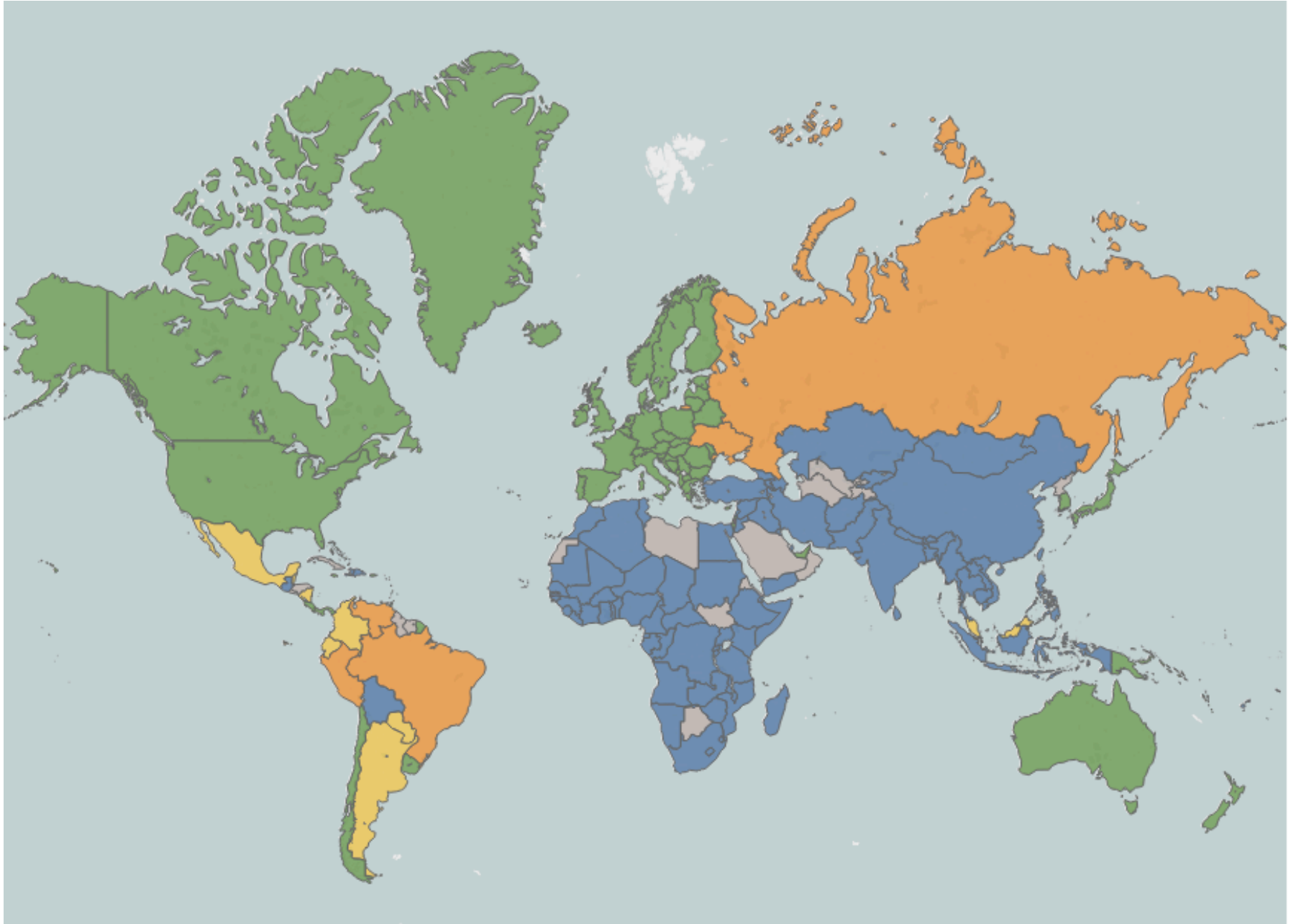
13 – 15 September 2017

Global Alliance for Rabies Control

www.rabiesalliance.org

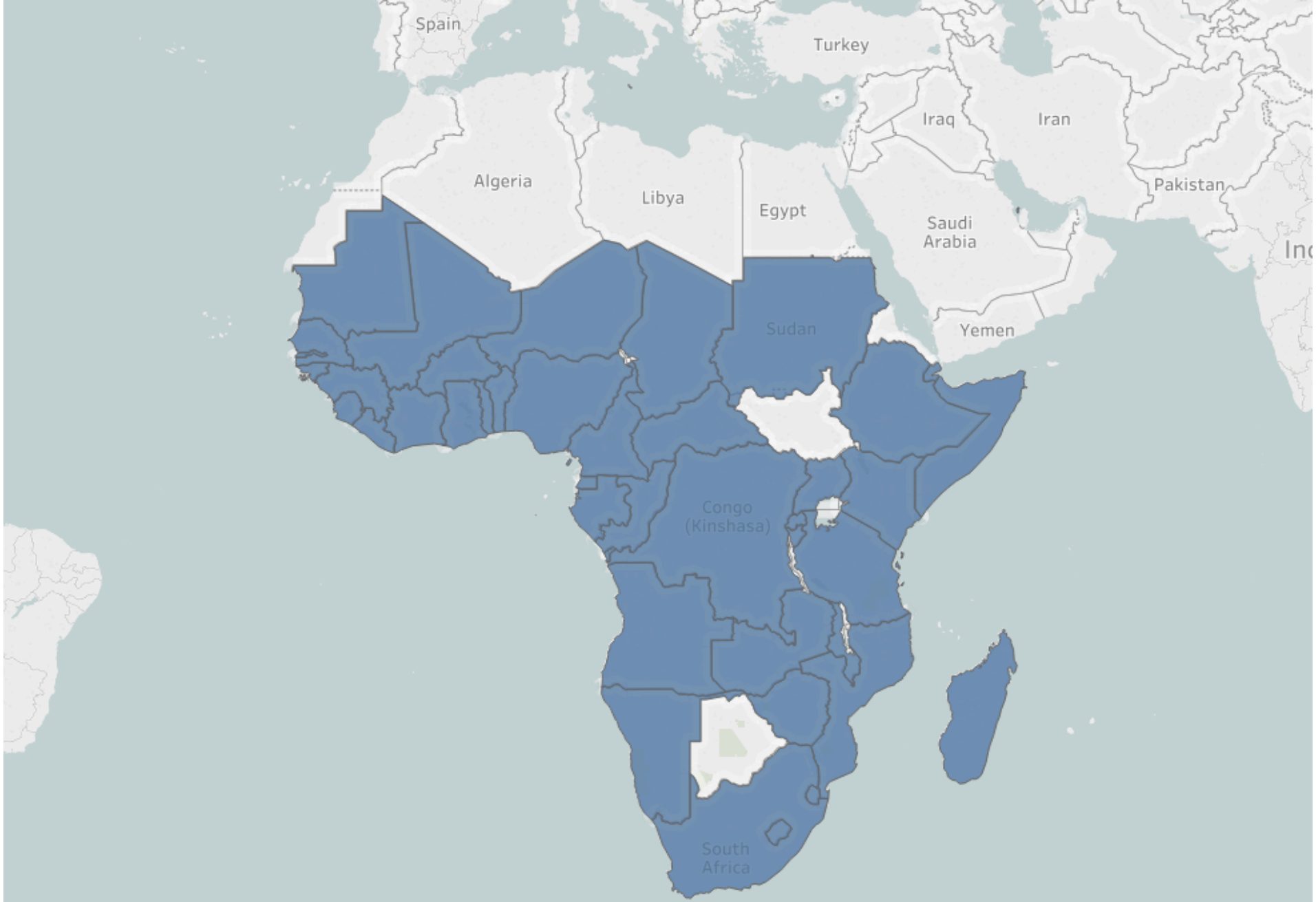
The value of the “Stepwise Approach Towards Rabies Elimination” assessment

Global Alliance for Rabies Control



WHO. 2017. Weekly epidemiological record / Relevé épidémiologique hebdomadaire

Global Alliance for Rabies Control



WHO. 2017. Weekly epidemiological record / Relevé épidémiologique hebdomadaire

Global Alliance for Rabies Control

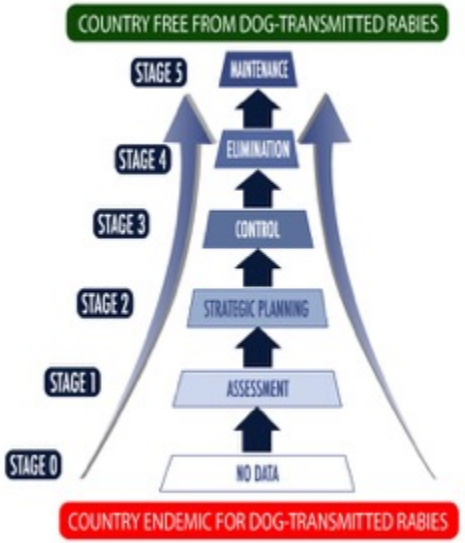
Global Alliance for Rabies Control

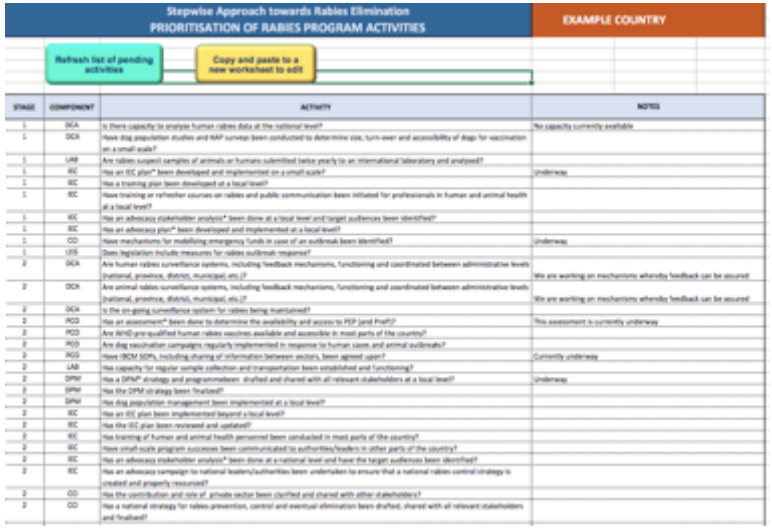
The use of the SARE tool

- Where to start the process of eliminating rabies?

- How far is a country really in their efforts?

Global Alliance for Rabies Control





Stepwise Approach towards Rabies Elimination
PRIORITISATION OF RABIES PROGRAM ACTIVITIES

EXAMPLE COUNTRY

Refresh list of pending activities

Copy and paste to a new worksheet to edit

STAGE	COMPONENT	ACTIVITY	NOTES
1	DCA	Is there capacity to analyze human rabies data at the national level?	No capacity currently available
1	DCA	Have dog population studies and RAP surveys been conducted to determine size, turn-over and accessibility of dogs for vaccination on a small scale?	
1	LAB	Are rabies suspect samples of animals or humans submitted twice yearly to an international laboratory and analysed?	
1	IEC	Has an IEC plan* been developed and implemented on a small scale?	Underway
1	IEC	Has a training plan been developed at a local level?	
1	IEC	Have training or refresher courses on rabies and public communication been initiated for professionals in human and animal health at a local level?	
1	IEC	Has an advocacy stakeholder analysis* been done at a local level and target audiences been identified?	
1	IEC	Has an advocacy plan* been developed and implemented at a local level?	
1	CO	Have mechanisms for mobilizing emergency funds in case of an outbreak been identified?	Underway
1	LEG	Does legislation include measures for rabies outbreak response?	
2	DCA	Are human rabies surveillance systems, including feedback mechanisms, functioning and coordinated between administrative levels (national, province, district, municipal, etc.)?	We are working on mechanisms whereby feedback can be assured
2	DCA	Are animal rabies surveillance systems, including feedback mechanisms, functioning and coordinated between administrative levels (national, province, district, municipal, etc.)?	We are working on mechanisms whereby feedback can be assured
2	DCA	Is the on-going surveillance system for rabies being maintained?	
2	PCO	Has an assessment* been done to determine the availability and access to PEP (and PrePI)?	This assessment is currently underway
2	PCO	Are WHO pre-qualified human rabies vaccines available and accessible in most parts of the country?	
2	PCO	Are dog vaccination campaigns regularly implemented in response to human cases and animal outbreaks?	
2	PCO	Have IBCM SOPs, including sharing of information between sectors, been agreed upon?	Currently underway
2	LAB	Has capacity for regular sample collection and transportation been established and functioning?	
2	DPM	Has a DPM* strategy and programmeboen drafted and shared with all relevant stakeholders at a local level?	Underway
2	DPM	Has the DPM strategy been finalized?	
2	DPM	Has dog population management been implemented at a local level?	
2	IEC	Has an IEC plan been implemented beyond a local level?	
2	IEC	Has the IEC plan been reviewed and updated?	
2	IEC	Has training of human and animal health personnel been conducted in most parts of the country?	
2	IEC	Have small-scale program successes been communicated to authorities/leaders in other parts of the country?	
2	IEC	Has an advocacy stakeholder analysis* been done at a national level and have the target audiences been identified?	
2	IEC	Has an advocacy campaign to national leaders/authorities been undertaken to ensure that a national rabies control strategy is created and properly resourced?	
2	CO	Has the contribution and role of private sector been clarified and shared with other stakeholders?	
2	CO	Has a national strategy for rabies prevention, control and eventual elimination been drafted, shared with all relevant stakeholders and finalized?	

Achievable and Actionable Priority activities Country:_____

After determining the gaps, the participants should identify the main actions required to move their country forward. Five priority activities from now to the next full PARACON (2018) should be determined below for both short- and medium-term.

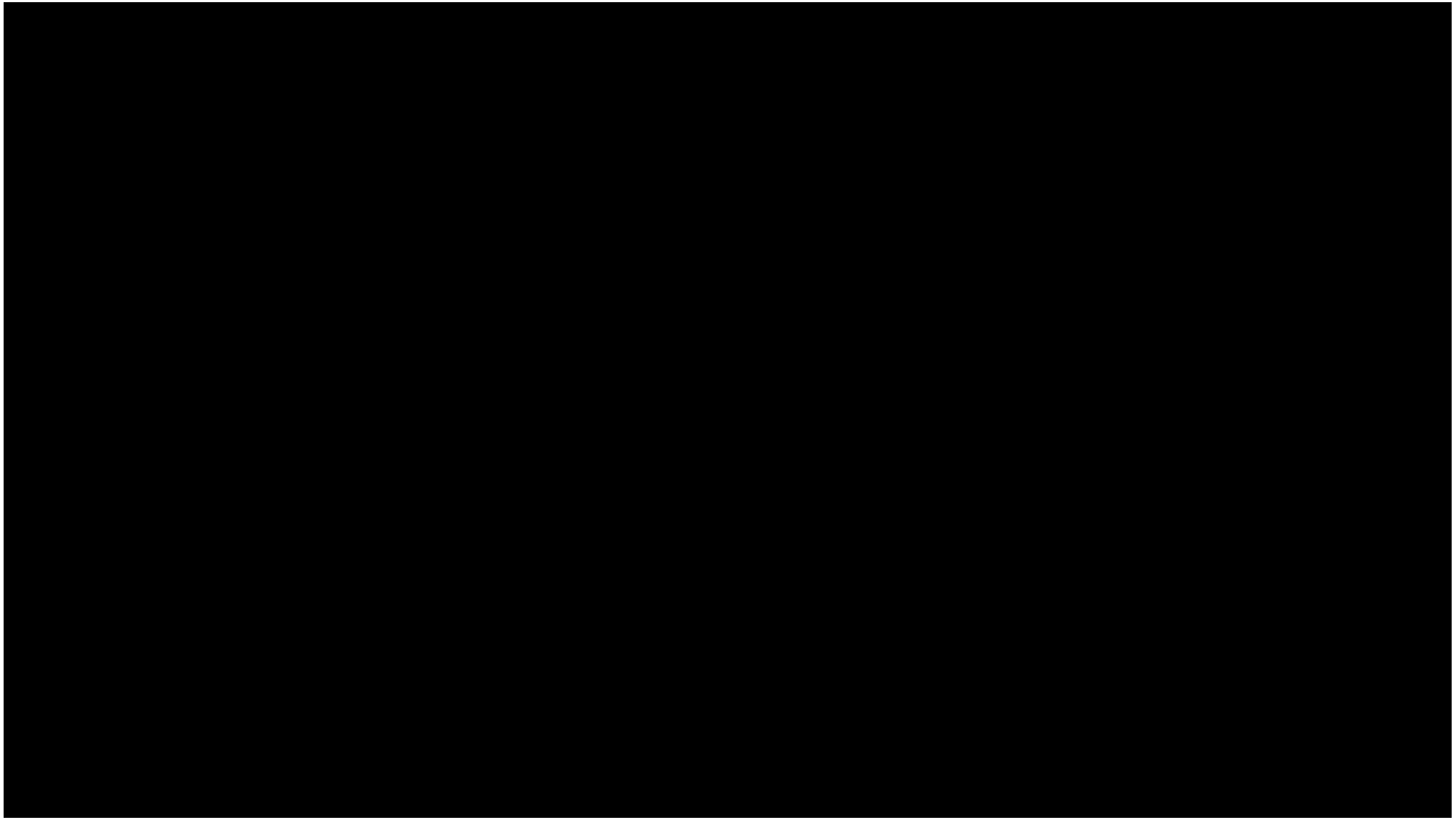
Activities intended: Short term plan (now to 2018)	Objective targeted	Indicators (how do you measure progress?)	Institution/ Department responsible	Comments Potential assisting partners (national, international)	Process (How will the activity be achieved?) e.g. stakeholder meetings, fund-raising, strategy development	Estimated date of completion
Activity 1						
Activity 2						
Activity 3						
Activity 4						
Activity 5						

Global Alliance for Rabies Control

How does the “Stepwise Approach Towards Rabies Elimination” assessment work

Global Alliance for Rabies Control

Demonstration of the SARE tool



Global Alliance for Rabies Control

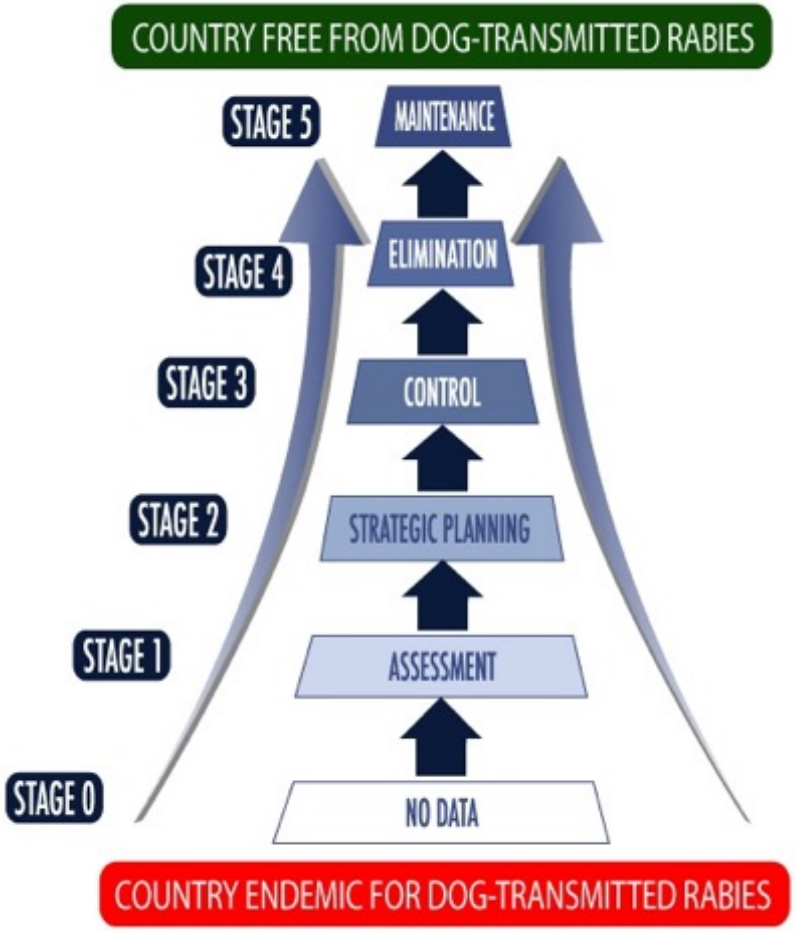
SARE assessment outputs

Global Alliance for Rabies Control

The SARE score

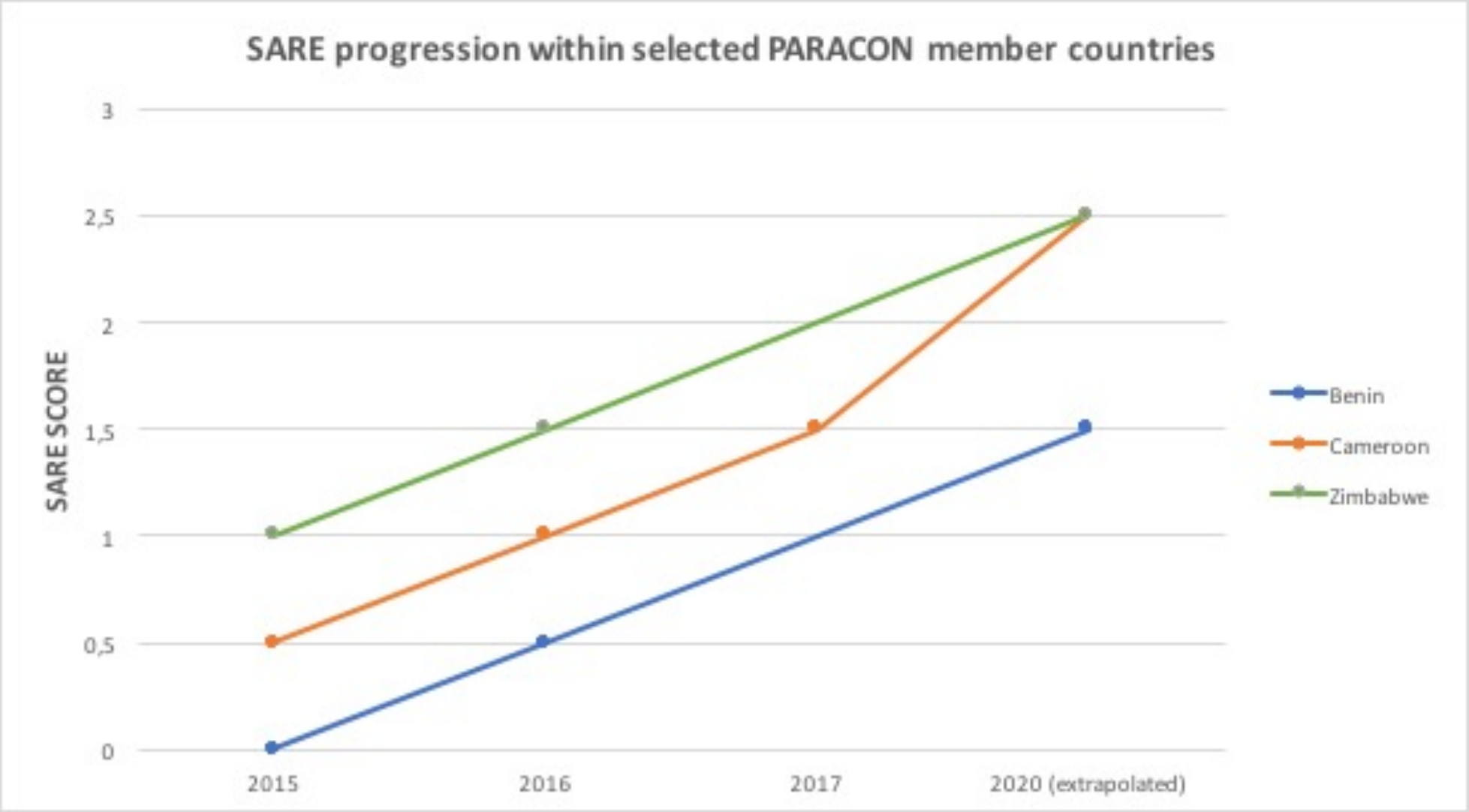
- The SARE score shows clear progress (or lack thereof)

- Allows countries/regions to measure their progress on any time frame



Global Alliance for Rabies Control

Example of incremental SARE increase



Global Alliance for Rabies Control

Stepwise Approach towards Rabies Elimination - Example Country ,

STAGE 1,5

ACTIVITY SUMMARY

COMPONENTS	PENDING ACTIVITIES	ACCOMPLISHED ACTIVITIES
Data collection and analysis *Total number of activities = 22*	12	10
Prevention and Control *Total number of activities = 26*	16	10
Laboratory diagnosis *Total number of activities = 13*	7	6
Dog population related issues *Total number of activities = 13*	9	4
Information, Education, Communication *Total number of activities = 21*	16	5
Cross-cutting issues *Total number of activities = 12*	6	6
Legislation *Total number of activities = 13*	3	10

STAGE SUMMARY

STAGE*		PENDING ACTIVITIES	ACCOMPLISHED ACTIVITIES	STAGE COMPLETED?
0	Total number of activities = 6	0	6	COMPLETED
0,5				COMPLETED
1	Total number of activities = 44	10	34	COMPLETED
1,5				PENDING
2	Total number of activities = 31	21	10	PENDING
2,5				PENDING
3	Total number of activities = 23	22	1	PENDING
3,5				PENDING
4	Total number of activities = 10	10	0	PENDING
4,5				PENDING
5	Total number of activities = 6	6	0	PENDING

* Scores in increments of 0.5 show progress along a particular stage.

Global Alliance for Rabies Control

Stepwise Approach towards Rabies Elimination
SUMMARY OF RABIES PROGRAM ACTIVITIES

EXAMPLE COUNTRY

STAGE	DATA COLLECTION & ANALYSIS		PREVENTION & CONTROL		LABORATORY DIAGNOSIS		DOG POPULATION RELATED ISSUES		INFORMATION, EDUCATION, COMMUNICATION	
	Pending	Accomplished	Pending	Accomplished	Pending	Accomplished	Pending	Accomplished	Pending	Accomplished
0						Have contacts with an international rabies reference laboratory or international collaborating/reference center been established?				
						Has at least one human or animal rabies suspect sample been submitted to an international rabies reference laboratory for confirmation?				
1		Are dog rabies cases reported from a local to the national level?		Are vaccines for human rabies prophylaxis available in one or more parts of the country?		Is there capacity to conduct rabies diagnosis in at least one national laboratory (veterinary or medical laboratory)?		Have discussions been held with stakeholders to create a dog population management strategy at a local level?		Has an assessment been done to determine what message should be communicated to the target audience at a local level?
		Are human rabies cases reported from a local to the national level?		Has the supply and access to WHO pre-qualified human rabies vaccines for PrEP for professionals at risk been ensured in local areas?		Have several rabies suspect samples of animals or humans been submitted to a national laboratory and analysed?		Have you involved officials in waste management in your stakeholder meetings		Have the target audiences been identified at a local level (e.g. at-risk communities, dog owners, children)?
		Are all human or animal rabies testing results being reported to a relevant international database such as WHO, OIE or PARACON?		Are dog rabies vaccines available in at least one location in the country?		Is animal rabies diagnosis conducted in at least one national laboratory?			Has an IEC plan* been developed and implemented on a small scale?	
		Is there capacity to analyze dog rabies data at the national level?		Has dog vaccination been initiated in some parts of the country?	Are rabies suspect samples of animals or humans submitted twice yearly to an international laboratory and analysed?					Has broad public awareness messaging started at a national level?
	Is there capacity to analyze human rabies data at the national level?			Has Integrated Bite Case Management (IBCM)* been implemented at a local level?						Has an assessment been undertaken to determine the training needs of the professionals at a local level?
		Has an animal rabies surveillance* system been established at the national level?		Have Standard Operating Procedures (SOPs) for coordinated action on reported outbreaks* been established?						Have human and animal health professionals involved in rabies control been identified at a local level?

Global Alliance for Rabies Control

What is new in the current version

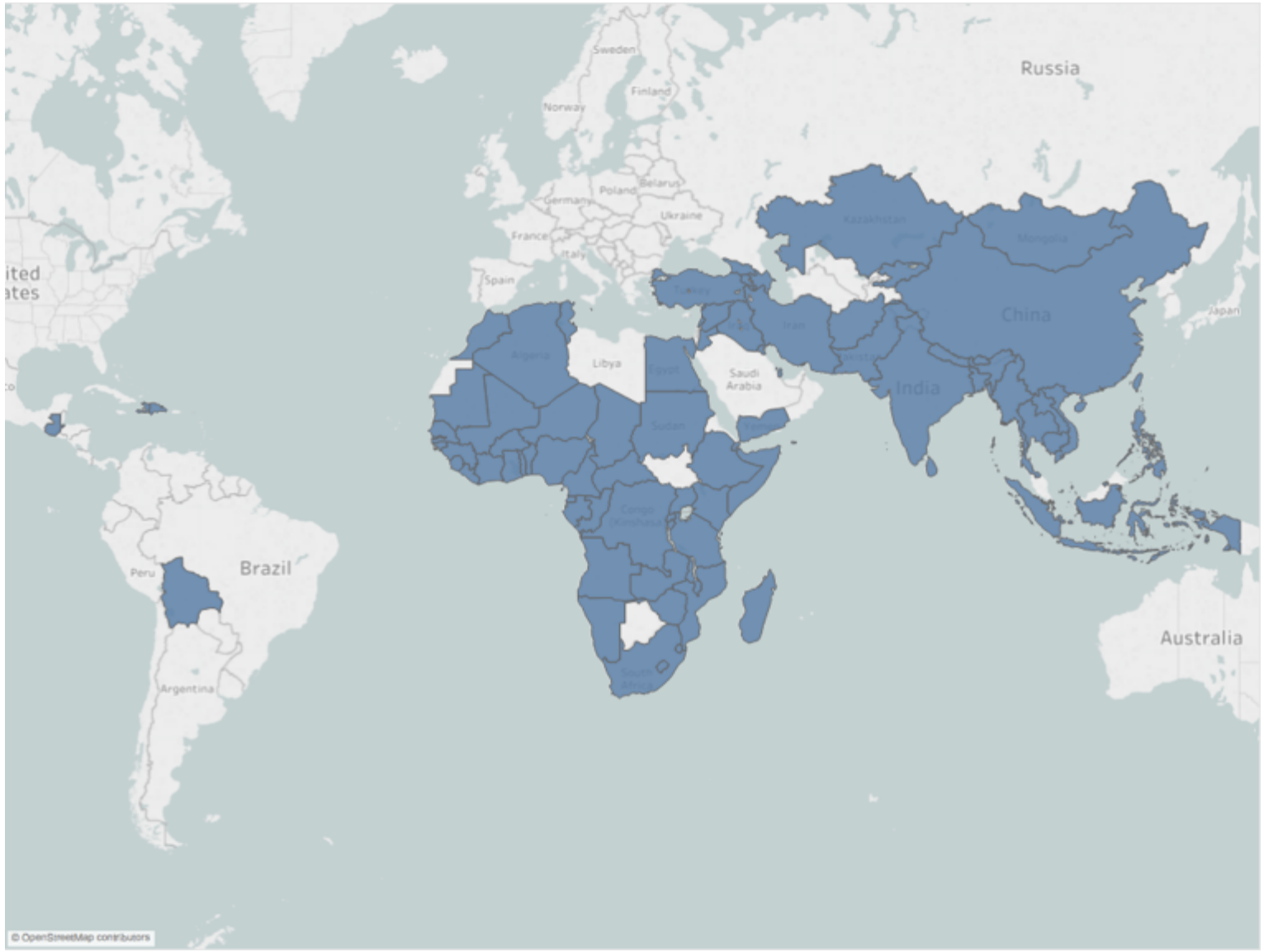
- The activities have been reworded and updated
- The ”Summary” page has been updated and improved
- The prioritization of activities is much easier

Global Alliance for Rabies Control

Global SARE uptake

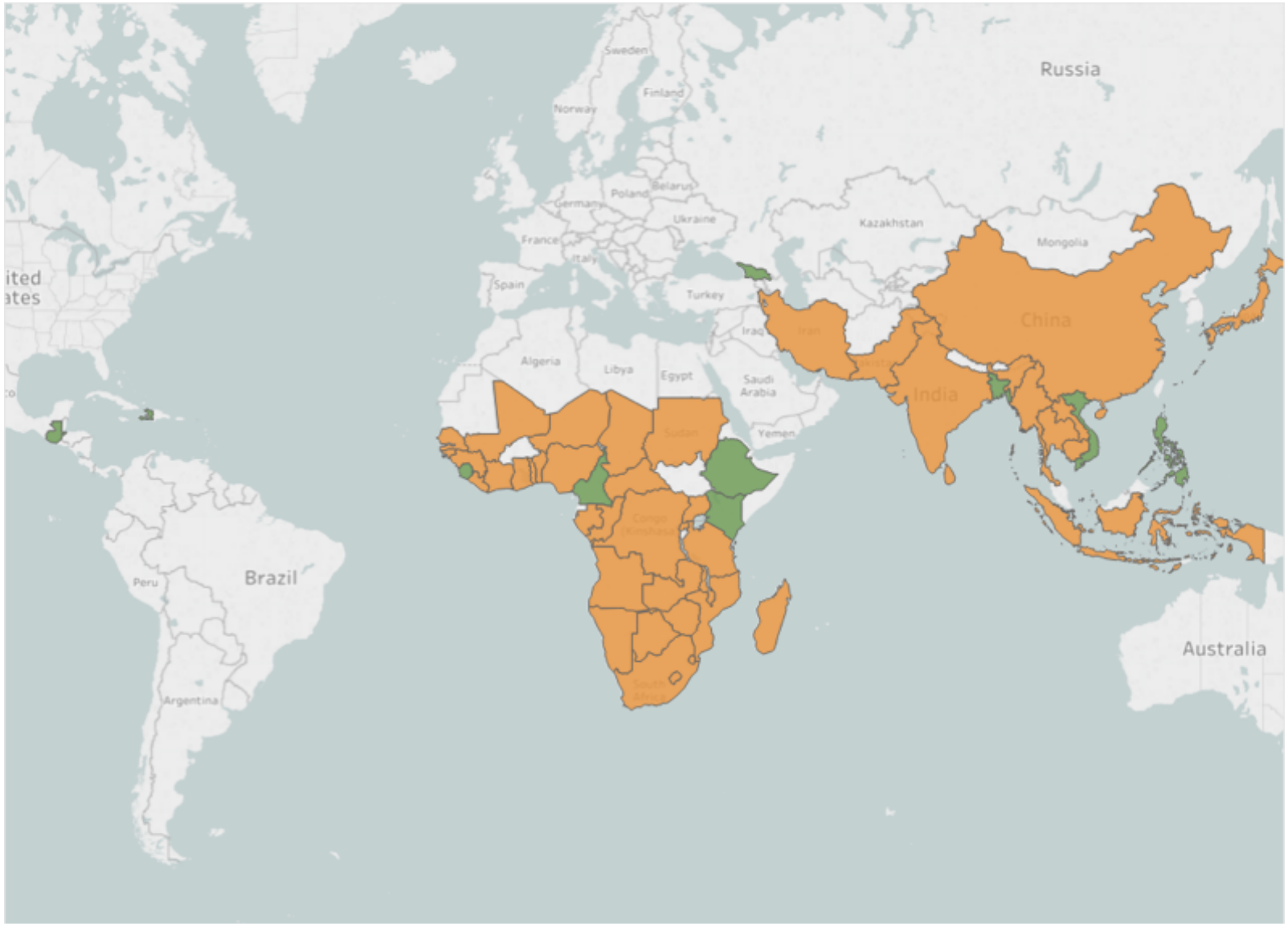
Global Alliance for Rabies Control

Countries endemic for canine-mediated rabies



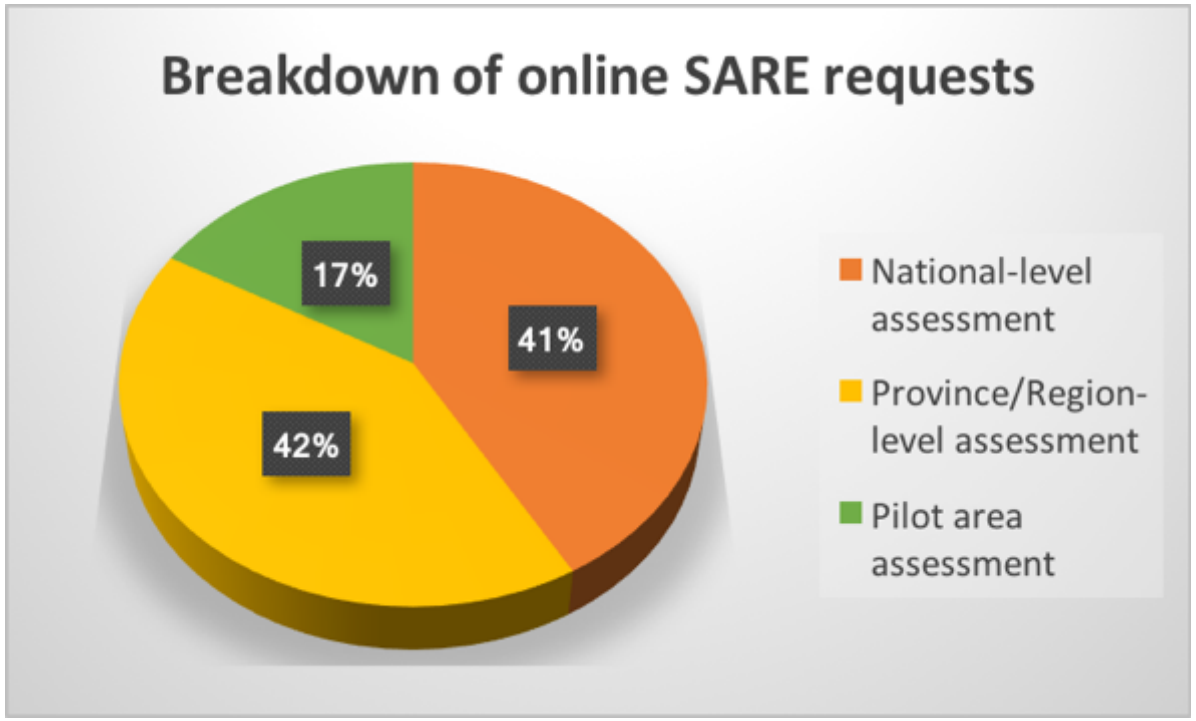
Global Alliance for Rabies Control

Countries where the SARE assessment has been done



Global Alliance for Rabies Control

Online SARE Requests



Global Alliance for Rabies Control

The next steps

- Look at additional tools that support the SARE assessment
- Determining the SARE score
- Prioritizing the pending activities

Global Alliance for Rabies Control

THANK YOU

www.rabiesalliance.org

Lesotho
South Africa
Swaziland
Mozambique
Madagascar

Tanzania
Kenya
Uganda
Ethiopia
Sudan
Zanzibar

Zimbabwe
Malawi
Zambia
Botswana

Ghana
Nigeria
Liberia
Sierra Leone

PLANNING RABIES ELIMINATION: TOOLS FOR A COMPREHENSIVE RABIES APPROACH

PARACON

September 13, 2017

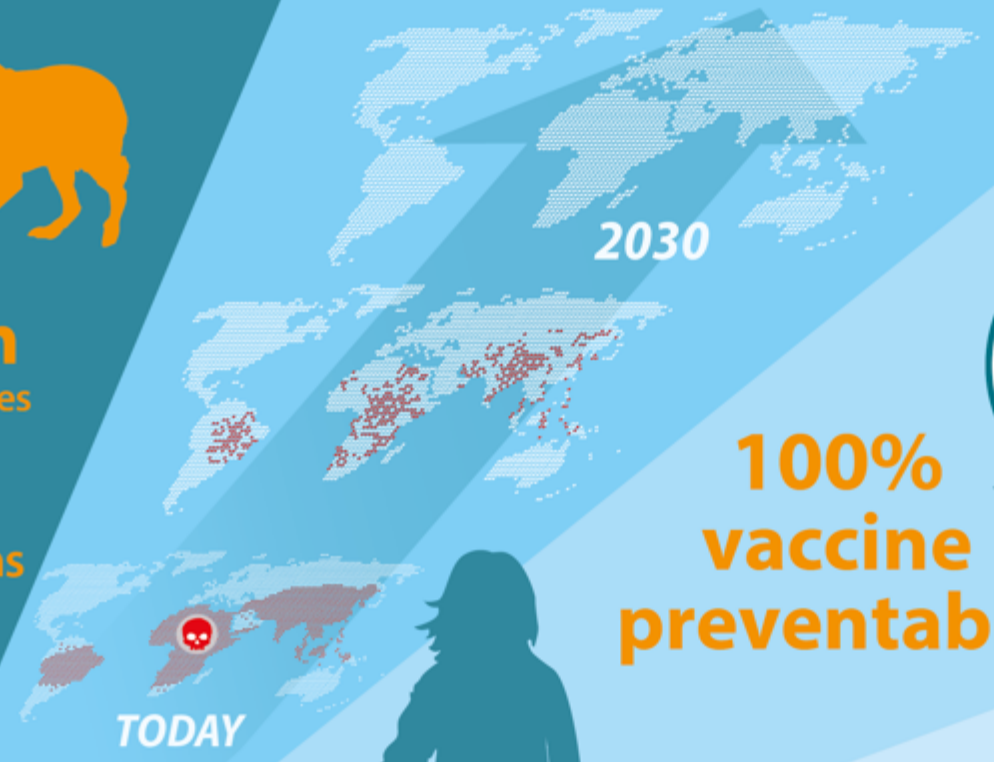
RABIES

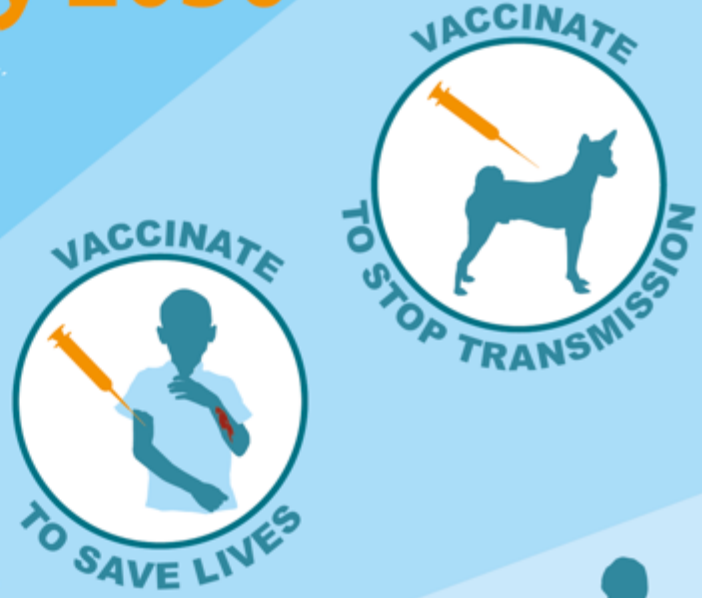
Zero deaths by 2030

99% human cases result from **dog bites**

One death every **15 minutes** worldwide

4 out of 10 deaths are in **children**





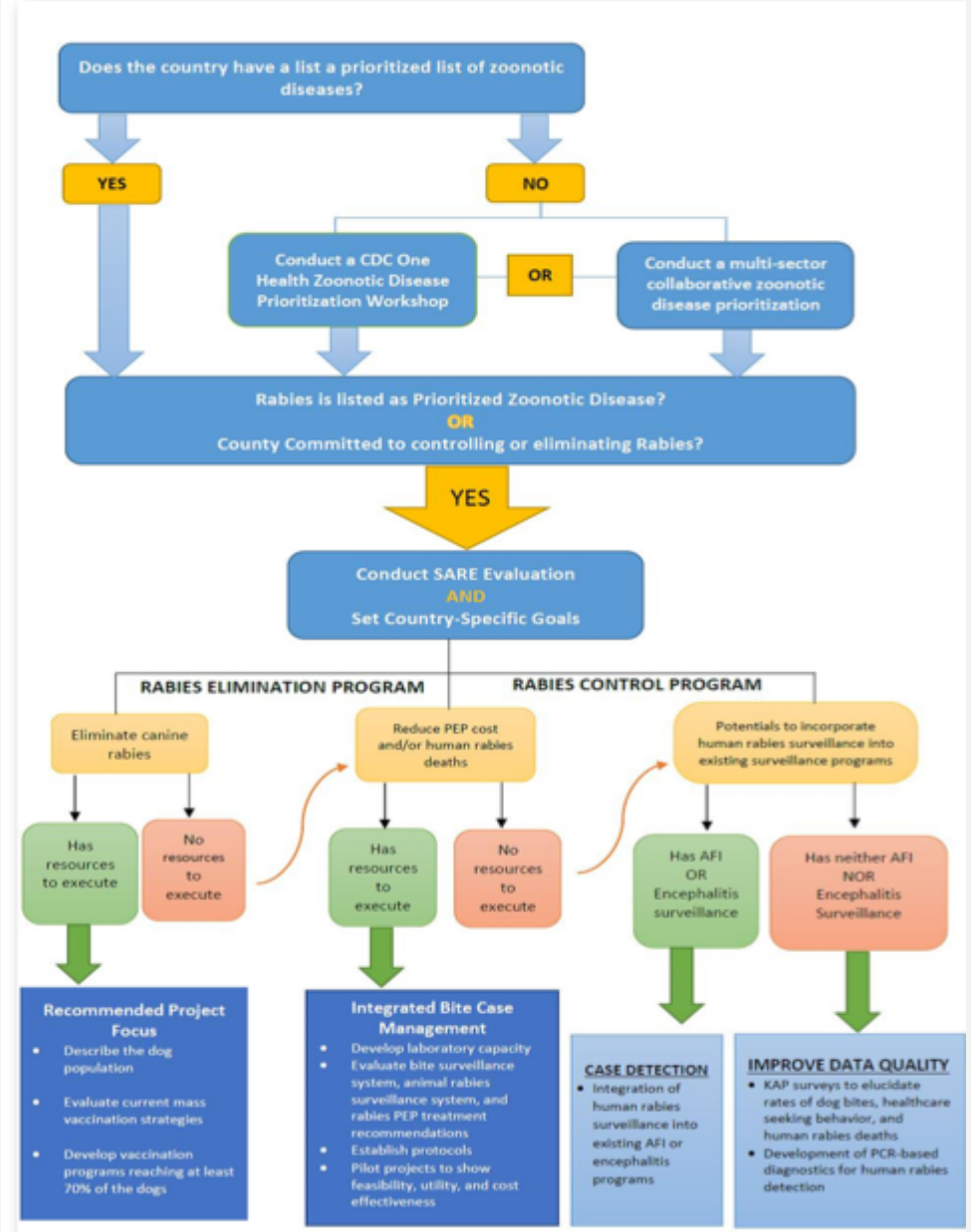
100% vaccine preventable

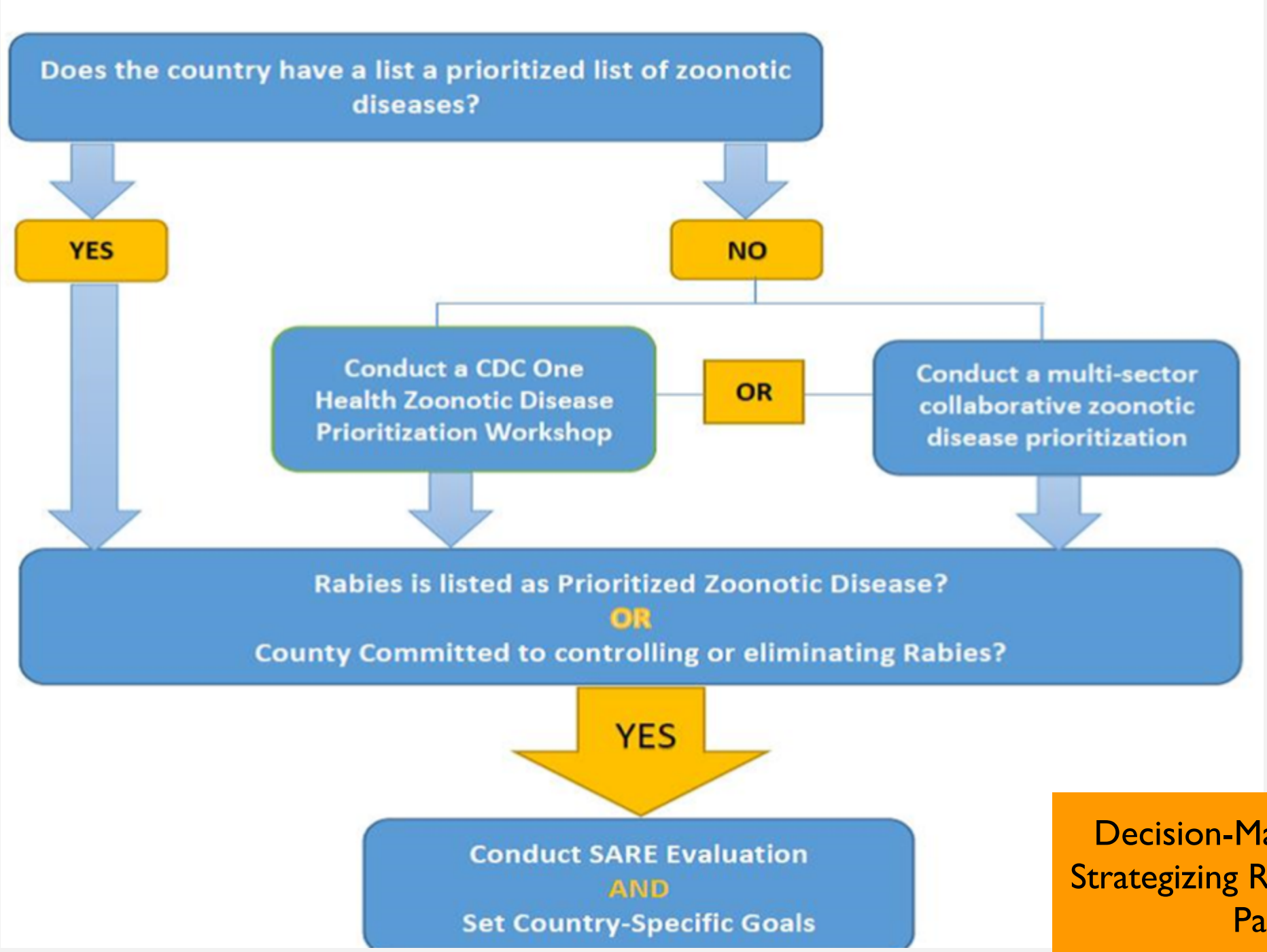
no bite no rabies

World Health Organization

#rabies
28 September
World Rabies Day
www.who.int/rabies/en

CDC DECISION TREE TO STRATEGIZE RABIES CONTROL





Decision-Making Tree for Strategizing Rabies Activities Part 1

ONE HEALTH ZOONOTIC DISEASE PRIORITIZATION WORKSHOP

For information and the latest resources, contact OneHealth@cdc.gov

Available at:

www.cdc.gov/onehealth/pdfs/zoonotic-disease-prioritization-workshop.pdf

One Health Zoonotic Disease Prioritization Workshop

One Health recognizes the connection between human, animal, and environmental health.

What is the purpose of the One Health Zoonotic Disease Prioritization Workshop?

Effective mitigation of the impact of endemic and emerging zoonotic diseases of public health importance requires multisectoral collaboration and interdisciplinary partnerships.

- Conducting this workshop allows a country to
  - Bring together multisectoral, One Health representatives to connect human, animal (both livestock and wildlife), and environmental health sectors
  - Prioritize endemic and emerging zoonoses of greatest national concern using equal input from all represented sectors
  - Support the creation of national One Health platforms to improve health outcomes for humans and animals
  - Focus the use of limited resources to build capacity and reduce the impact of prioritized zoonoses

Why conduct a One Health Zoonotic Disease Prioritization Workshop?

Workshop participation supports the creation of a national One Health platforms to strengthen multisectoral collaborations.

- Prioritized zoonoses can focus limited financial and personnel resources to
  - build laboratory capacity
  - conduct efficient and effective surveillance
  - develop joint outbreak response plans
  - create prevention and control strategies for both human and animal health
- Zoonotic diseases can be prioritized even in the absence of reliable prevalence data
- Provide outcomes in a timely manner so that participants may give immediate feedback and capitalize on collaborations built during the prioritization process

Who are the recommended workshop participants?

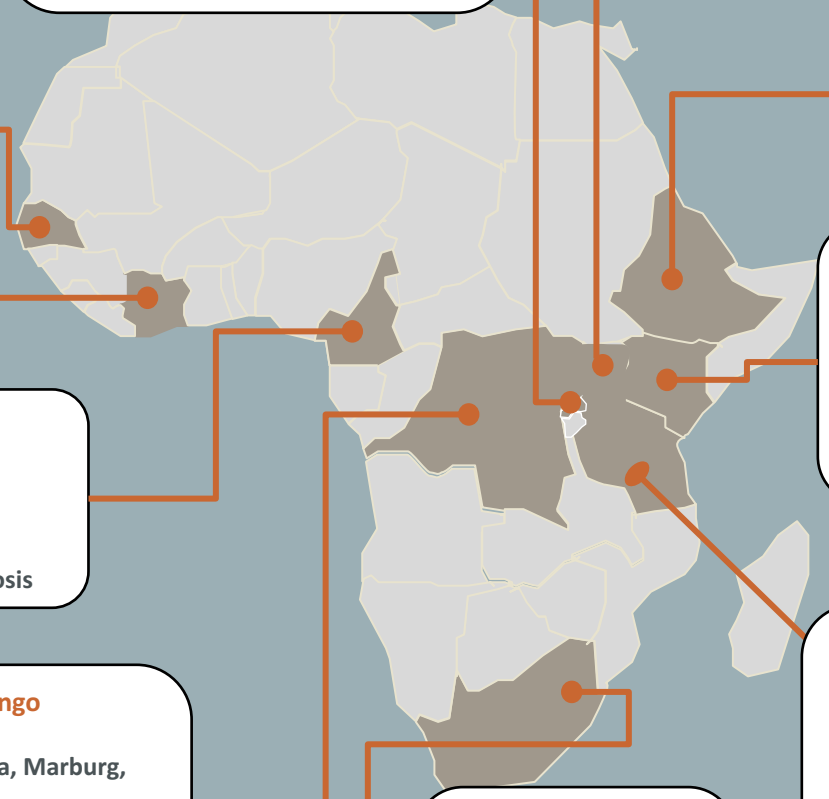
Creating an interdisciplinary response requires contributions from all sectors and identification of common priorities.

- Two core voting members representing each of the following sectors (typically 8 to 12 stakeholders)
  - Ministry of Health
  - Ministry of Agriculture, Livestock, and Fisheries (or similar agency)
  - Ministry of Wildlife (or similar agency)
  - Ministry of Environment (or similar agency)
  - Other government agencies active in zoonotic disease work
- Observers representing CDC, WHO, FAO, USAID, key academic partners, and non-governmental institutions working in the area of zoonotic diseases (typically 10 to 15 observers)

National Center for Emerging and Zoonotic Infectious Diseases
One Health Office

CS269895A

AFRICA OHZDP WORKSHOPS (N=10) 2014 – AUGUST 1, 2017



Rwanda
- Viral Hemorrhagic fevers (Ebola, Yellow Fever, Yellow Fever & Marburg)
- Highly Pathogenic Avian Influenza
- Rift Valley Fever
- Brucellosis
- Sleeping sickness
- Rabies

Uganda
- Anthrax
- Zoonotic Influenza Viruses
- Viral Hemorrhagic Fevers
- Brucellosis
- Trypanosomiasis
- Plague
- Rabies

Senegal
- Rabies
- Avian Influenza
- Zoonotic Tuberculosis
- Hemorrhagic Fevers (Ebola/Marburg)
- Anthrax
- Rift Valley Fever

Ethiopia
- Rabies
- Anthrax
- Brucellosis
- Leptospirosis
- Echinococcosis

Côte d'Ivoire
- Mycobacterium spp,
- Brucella spp,
- Rabies, Viral
- Hemorrhagic Fevers and Arboviruses,
- Highly Pathogenic Avian Influenza, SARS CoV and MERS CoV

Kenya
- Anthrax
- Trypanosomiasis
- Rabies
- Brucellosis
- Rift Valley Fever

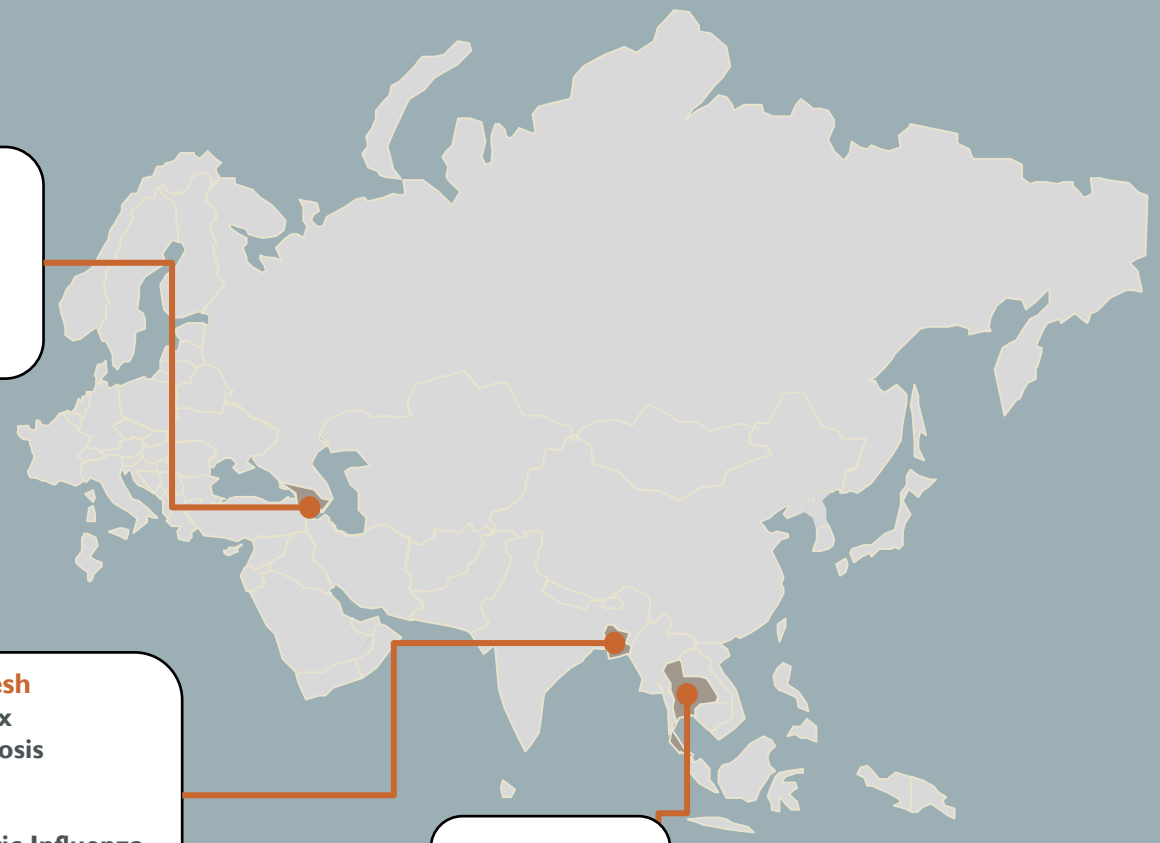
Cameroon
- Rabies
- Anthrax
- Avian Influenza
- Ebola/Marburg
- Bovine Tuberculosis

Tanzania
- Rabies
- Rift Valley Fever and other viral hemorrhagic fevers
- Zoonotic influenza viruses
- Anthrax
- Trypanosomiasis
- Brucellosis

Democratic Republic of Congo
- Rabies
- Hemorrhagic fevers (Ebola, Marburg, Rift Valley fever)
- Avian Influenza
- Salmonellosis
- Monkeypox
- Arboviruses (Yellow fever, West Nile Virus, Chikungunya, Zika)

South Africa
- M. bovis
- *Salmonella*
- *Brucella abortus*
- *Brucella melitensis*
- Zoonotic Avian Influenza

EUROPE/ASIA OHZDP WORKSHOPS (N=3) 2014 – 2017



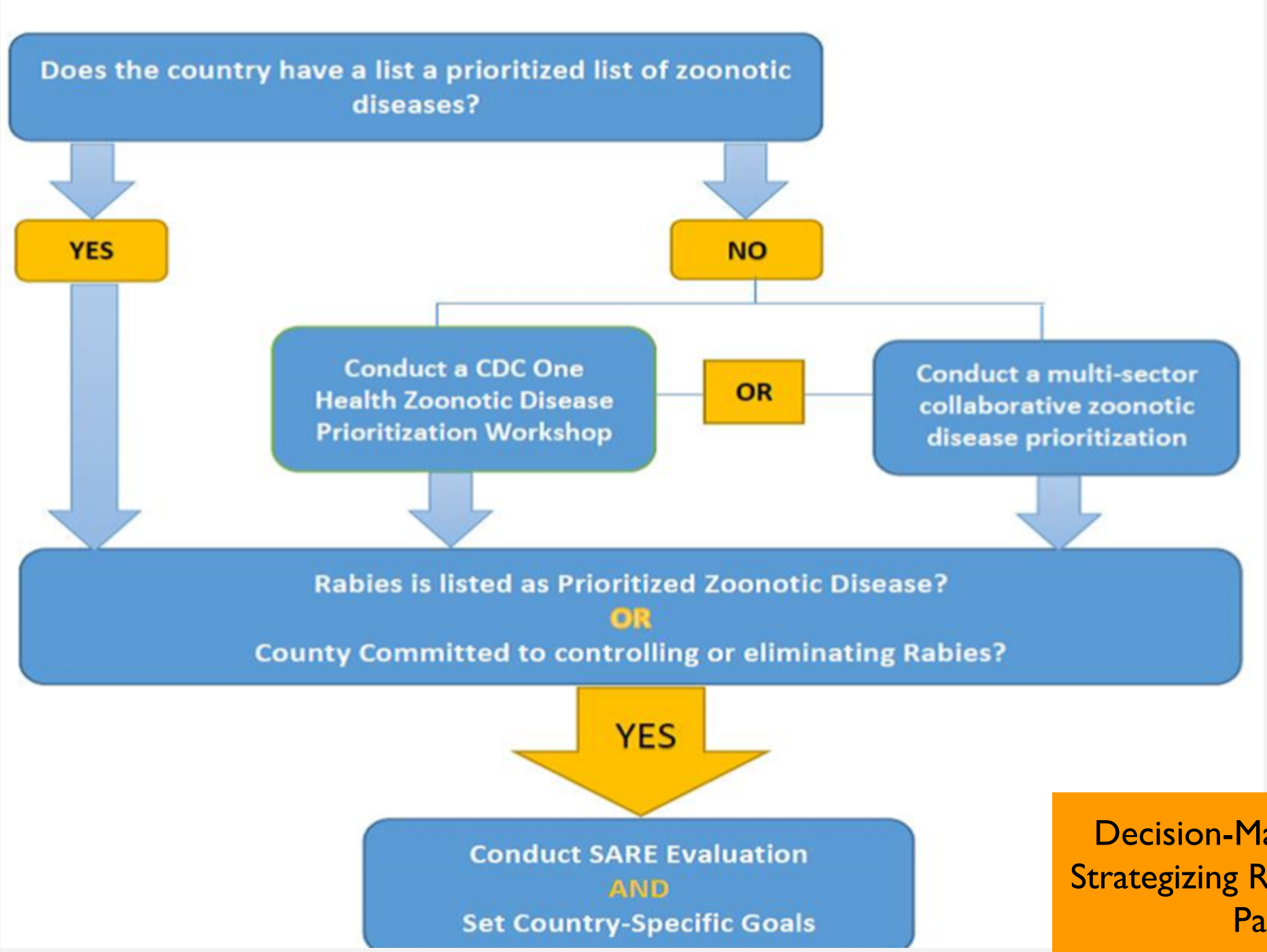
Azerbaijan
- Anthrax
- Brucellosis
- Rabies
- CCHF virus
- Influenza (zoonotic)

Bangladesh
- Anthrax
- Brucellosis
- Nipah
- Rabies
- Zoonotic Influenza
- Zoonotic Tuberculosis

Thailand
- Influenza
- Rabies
- Ebola

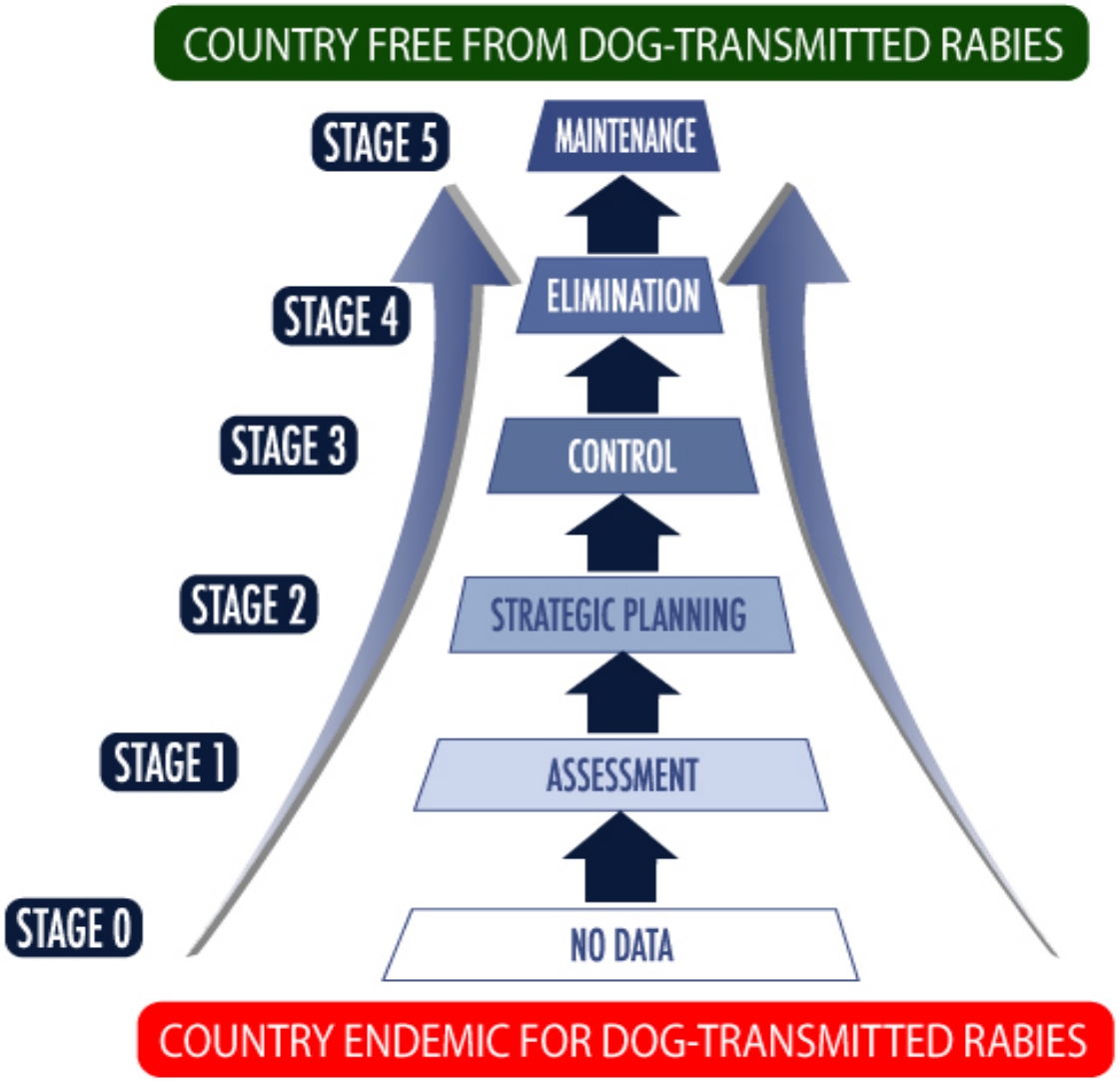
COMMONLY PRIORITIZED ZOONOTIC PATHOGENS:

Disease	Percent of Countries that Prioritized	# of Countries (n=13)
Rabies	**92%**	**12**
Avian Influenza	82%	9
Ebola	73%	8
Anthrax	64%	7
Brucellosis	64%	7
Marburg	64%	7

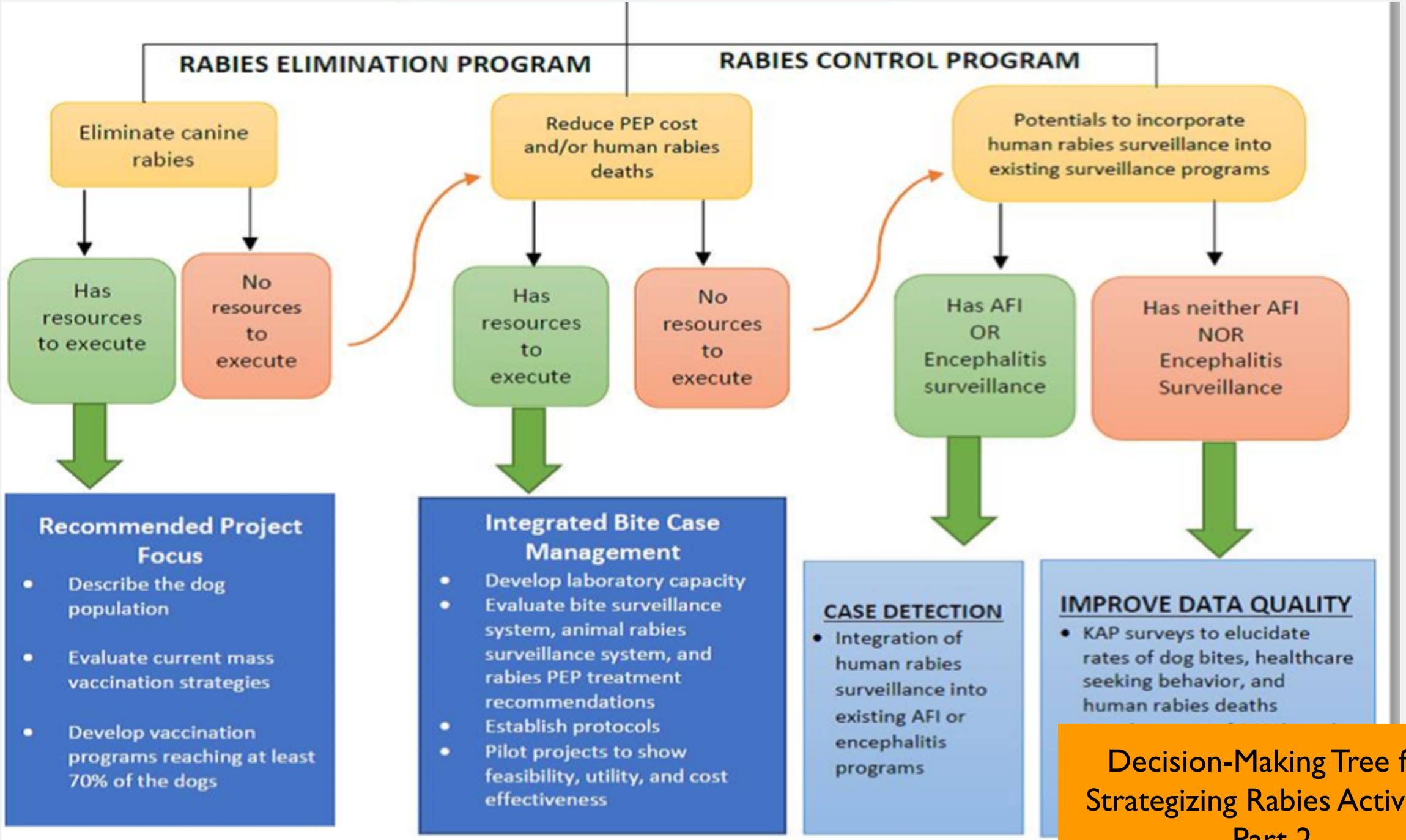


Decision-Making Tree for Strategizing Rabies Activities Part 1

STEPWISE APPROACH TOWARD RABIES ELIMINATION (SARE)



Global Alliance for Rabies Control



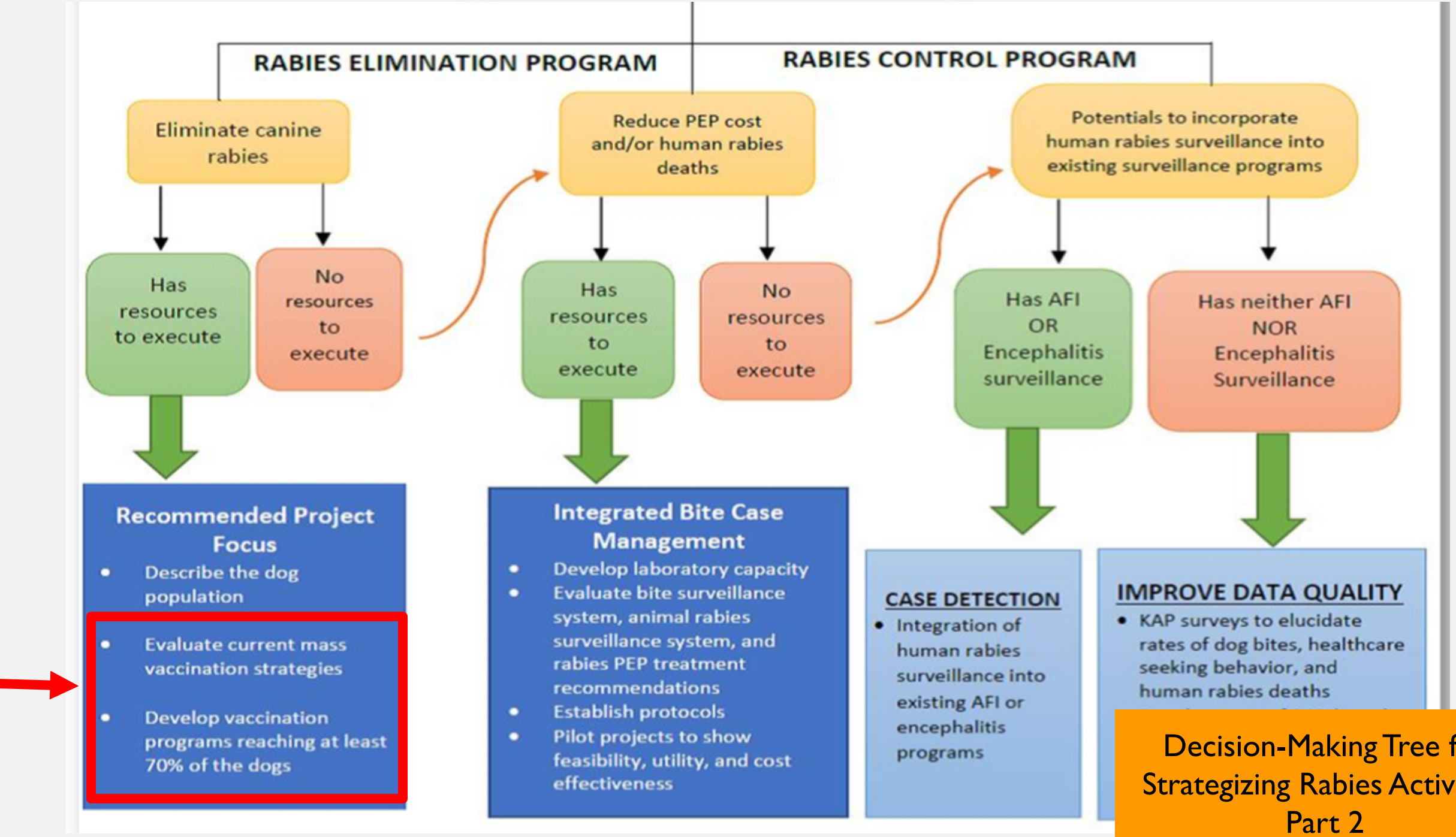
Decision-Making Tree for Strategizing Rabies Activities Part 2

EXAMPLE- ETHIOPIA

- 2015 SARE workshop
- Began workforce training, capacity building and data collection
  - Small scale vaccination campaigns and dog population studies focused on training local staff and collecting baseline data
- Began building laboratory diagnostic capacity
  - Establish relationship with international reference laboratory
- Began working to phase out nerve tissue vaccine
- Established Rabies Technical Working group
  - Developing national rabies control guidelines
  - Intersectoral collaboration

EXAMPLE-GEORGIA

- 2014-2016 Wildlife rabies focused
- 2016 CDC lab confirmed canine variant circulating in dogs, cattle and jackal in Georgia
- 2017 Georgia requested SARE assessment to restructure current rabies program to focus on canine rabies elimination
- 2017 SARE workshop
  - Formed Intersectoral Rabies Task Force
    - Draft SOP's for canine rabies control and elimination
    - Expand training for local healthcare staff
  - Plan dog population study
    - Refine current vaccination strategies based on results



Decision-Making Tree for Strategizing Rabies Activities Part 2

GLOBAL DOG RABIES ELIMINATION PATHWAY (GDREP)

- Macro-costing tool
- Emphasizes long-term sustainability
- Used at national level or higher
- Provides estimates of resources needed to eliminate canine-mediated human rabies deaths by 2030
  - Infrastructure
  - Dog population estimates
  - Vaccines
  - Vaccinators

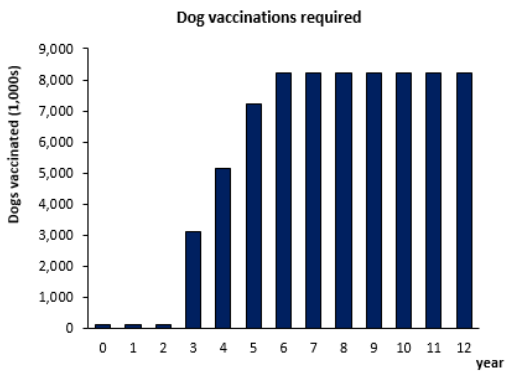
Customizable GDREP Tool

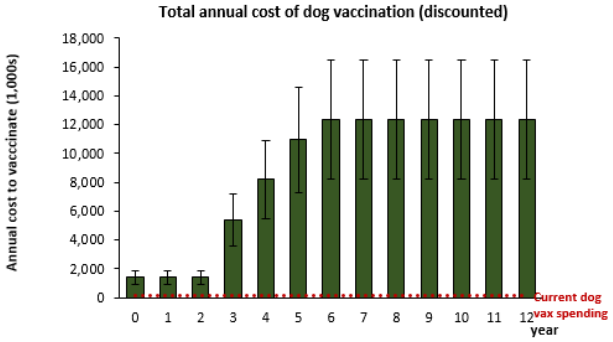
Demographic, epidemiological, and cost input variables

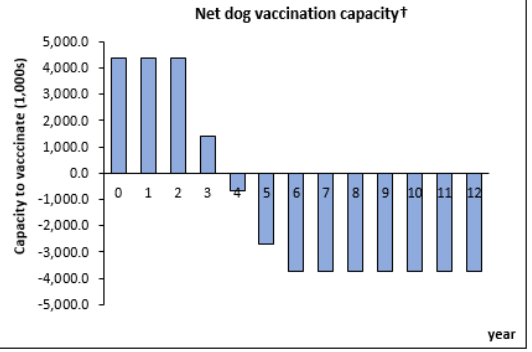
Model Variable	Input values	Default values
Select country (Clear)	Ethiopia	ETH
Discount rate (health outcomes & costs)	0%	
Demographics		
Human population	99,390,750	99,390,750
Percent urban	19%	19%
Urban population	18,884,243	19,353,367
Rural population	80,506,508	80,037,383
Number of humans per dog, urban areas	21.2	21.2
Number of humans per dog, rural areas	7.4	7.4
Total dog population	11,770,024	11,728,757
Dog vaccination		
Current dog rabies vaccination coverage (%)	1.0%	0.5%
Goal: annual coverage of dog population (%)	70.0%	70.0%
Total dogs currently vaccinated per year	117,700	58,644
Dogs to reach vaccination goal	8,121,317	8,151,486
Vaccination campaign logistics		
Vaccinators available	2,500	2,494
Dogs vaccinated per vaccinator per day (rate)	20	100
Campaign vaccination days	90	25
Estimated dogs vaccinated during campaign	4,500,000	6,235,000
Additional vaccinators needed to reach goal	2,077	790
Vaccination rate needed to reach goal	37	132
Vaccination campaign costs per vaccinated dog*		
Average cost per dog vaccinated	(Estimate value)	

Summary of results from the analysis: dog vaccination campaign

Resources needed (annual)	
Total dog population	11,770,024
Dogs vaccinated	117,700
Dogs unvaccinated	11,652,324
Number of additional vaccinated dogs required	8,121,317
Average cost per dog vaccinated	$1.50
Estimated years until elimination	13
Vaccinators employed annually for a month	2,500
Total costs to eliminate	
Net present value (NPV) Phase I	$4,184,244
Net present value Phase II	$24,562,569
Net present value Phase III	$86,509,676
NPV of dog rabies elimination (average)	$115,256,488
NPV of dog rabies elimination (lower-upper)	($76,837,659 - $153,675,317)
Additional costs to government	$112,961,333
Range (lower-upper)	($75,307,556 - $150,615,111)







- **INPUT**
  - Country-specific parameters
  - Direct comparison to values used in GDREP
- **OUTPUT**
  - Time to elimination
  - Vaccination personnel needed
  - Cost to eliminate

GDREP Audience and Goals

- Who is the intended audience?
  - High-level stakeholders, policy-makers, national rabies control programs

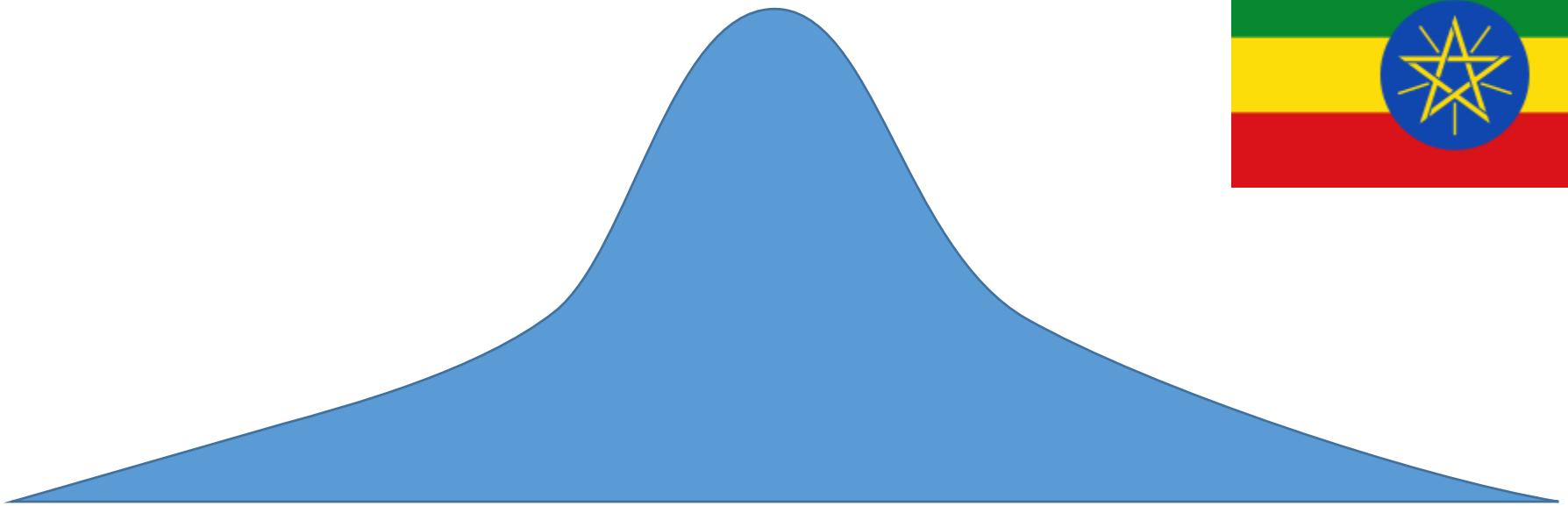
- What are the goals?
  - Highlight the monetary and fiscal commitment that are required for rabies elimination
  - Initiate discussions about funding continuity
  - Establish a strong foundation for multi-year government commitment

Vaccine Calculator

- GDREP is a ***broad*** estimate
- How do you make it easier to plan a successful ***local*** campaign?
- **Dog populations** differ between communities
- **Vaccination methods** are more appropriate in certain settings
- **Costs** vary between programs

Different Dog Populations

Different Dog Populations



Never Confined

Semi-Confined

Confined

Vaccine accessibility by dog population

Ownership	Confinement Status	Contribution to Enzootic Rabies Transmission	Vaccination Strategy Accessibility			
			Central Point	Door-to-Door	CVR	ORV
Family Owned	Always Confined	LOW	HIGH	HIGH	LOW	HIGH
	Sometimes Confined	MEDIUM	HIGH	MEDIUM	MEDIUM	HIGH
	Never Confined	HIGH	LOW	LOW	HIGH	HIGH
Community Owned	Sometimes Confined	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH
	Never Confined	HIGH	LOW	LOW	HIGH	HIGH
Feral	Never Confined	HIGH	LOW	LOW	HIGH	MEDIUM

Mass Vaccination Calculator: a planning aid

Central Point

Door to Door

Capture/Vaccinate/Release

Oral Vaccination

Vaccination Program Calculator

Required input

Dog population		
Number of dogs in program area (n, %)	100,000	100.0%
Confined dogs (n, %)	20,000	20.0%
Sometimes confined dogs (n, %)	50,000	50.0%
Never confined dogs (n, %)	30,000	30.0%

Dog vaccination campaign		
Parenteral vaccines procured (number)	55,000	100.0%
Oral vaccines procured (number)	15,000	
Vaccination strategy (doses)		
CP Central Point	50,000	71.4%
DD Door to Door	0	0.0%
CVR Capture, Vaccinate, Release	5,000	7.1%
ORV Oral Vaccine Handouts	15,000	21.4%

Expected Vaccination Coverage by Method †

	Vaccination strategy*			
	CP	DD	CVR	ORV
Confined	60%	60%	20%	20%
Sometimes Confined	40%	80%	60%	40%
Never Confined	20%	20%	40%	60%

How confident are you in your responses to the probability table? 6

Suggested values for probability table

Current country vaccination coverage (%)	55%
GDREP§ phase:	Phase II

Suggested values:	CP	DD	CVR	ORV
Confined	80%	80%	20%	20%
Sometimes Confined	60%	60%	80%	60%
Never Confined	20%	20%	60%	80%

Vaccination campaign costs per vaccinated dog†

Average cost per dog vaccinated — Estimate value

Results: calculated values

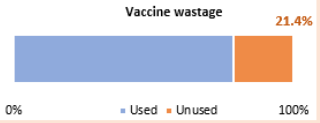
Vaccination Doses by Strategy		Procured	Used	Unused
Central Point	CP	50,000	38,000	12,000
Door to Door	DD	-	-	-
Capture, Vaccinate, Release	CVR	5,000	5,000	-
Oral Vaccine Handouts	ORV	15,000	12,000	3,000

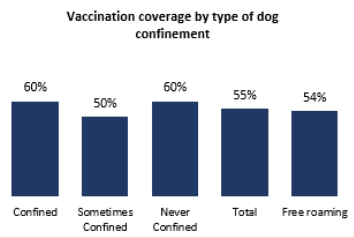
Vaccination doses by Dog Type	Vaccinated	Unvaccinated	Percent	Confidence Lower	Confidence Upper
Confined	12,000	8,000	60.0%	56.0%	64.0%
Sometimes Confined	25,000	25,000	50.0%	46.0%	54.0%
Never Confined	18,000	12,000	60.0%	56.0%	64.0%

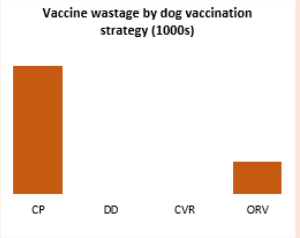
Results	Dogs	Vaccinated	Percent	Lower	Upper
Total	100,000	55,000	55.0%	51.0%	59.0%
Free roaming	80,000	43,000	53.8%	49.7%	57.8%

	Procured	Used	Unused	Lower	Upper
Vaccine utilization	70,000	78.6%	21.4%	15.6%	27.2%

Economic costs	Total ($)
Cost per dog vaccinated	$ 4.15
Total Campaign Cost	$ 228,365
Lower bound	$ 164,188
Upper bound	$ 293,810







INPUT: Design your campaign:

Required input

Dog population

Number of dogs in program area (n, %)	140,000	100.0%
Confined dogs (n, %)	29,400	21.0%
Sometimes confined dogs (n, %)	75,600	54.0%
Never confined dogs (n, %)	35,000	25.0%

Dog vaccination campaign

Parenteral vaccines procured (number)	15,000	100.0%
Oral vaccines procured (number)	0	

Vaccination strategy (doses)

CP Central Point	3,750	25.0%
DD Door to Door	9,750	65.0%
CVR Capture, Vaccinate, Release	1,500	10.0%
ORV Oral Vaccine Handouts	0	0.0%

Expected Vaccination Coverage by Method †

Vaccination strategy*

CP	DD	CVR	ORV

Suggested values for probability table

Current country vaccination coverage (%)	5%
GDREP§ phase:	Phase I

Suggested values:

	CP	DD	CVR	ORV
Confined	20%	20%	5%	5%
Sometimes Confined	20%	20%	20%	20%
Never Confined	5%	5%	20%	20%

Vaccination campaign costs per vaccinated dog†

Average cost per dog vaccinated

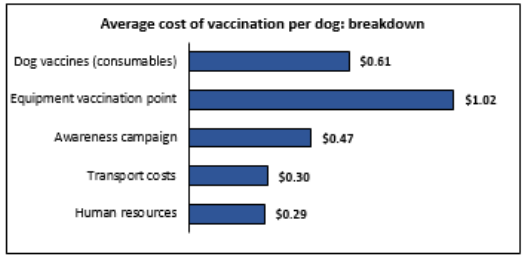
Estimate value

- Design your own campaign
- Enter your dog population
- Enter the vaccines you will procure
- Enter the vaccine methods you choose
- Estimate the success of those methods

INPUT: Estimate your costs

Estimated economic costs of a dog vaccination campaign

Vaccination Campaign Duration (Days)	
Duration of campaign	24
Vaccinator Capacity (dogs/person/day)	
Central Point: Dogs/person/day	40
Door to Door: Dogs/person/day	40
CVR: Dogs/person/day	30
Oral Vaccination: Dogs/person/day	80
Personnel required for each vaccination strategy	
Central Point	4
Door to Door	11
CVR	2
Oral Vaccination	0



Economic costs		
Cost per Dog Vaccinated		
Estimated cost	$	2.68
Lower bound	$	1.69
Upper bound	$	3.56
Vaccination campaign costs		
Estimated cost	$	40,181
Lower bound	$	25,377
Upper bound	$	53,329

Costs per dog vaccination campaign	Total		
Summary of dog vaccination costs (per dog vaccinated)	Lower bound	Average	Upper bound
Average cost per dog vaccinated (calculated using worksheet)	$ 1.69	$ 2.68	$ 3.56
Total dogs vaccinated in pilot campaign			15,000
Human resources	$ 0.19	$ 0.29	$ 0.38
Transport costs	$ 0.07	$ 0.30	$ 0.40
Awareness campaign	$ 0.28	$ 0.47	$ 0.65
Equipment vaccination point	$ 0.69	$ 1.02	$ 1.35
Dog vaccines (consumables)	$ 0.46	$ 0.61	$ 0.77

Item	Units	Work days	Price/Unit Lower	Price/Unit Average	Price/Unit Upper	Total cost Lower bound	Total cost Average	Total cost Upper bound
Workers participating in campaign (per diem)						$ 2,919	$ 4,300	$ 5,680
Program manager	1	24	$12.00	$18.00	$24.00	$ 288	$ 432	$ 576
Informational supervisor	1	24	$12.00	$18.00	$24.00	$ 288	$ 432	$ 576
Vaccination supervisor	1	24	$8.00	$10.00	$12.00	$ 192	$ 240	$ 288
Central Point technician	4	24	$4.00	$6.00	$8.00	$ 413	$ 619	$ 825
Door to Door technician	11	24	$4.00	$6.00	$8.00	$ 1,073	$ 1,609	$ 2,145
Capture/Vax/Releas technician	2	24	$6.00	$8.00	$10.00	$ 330	$ 440	$ 550
Driver	2	24	$4.00	$6.00	$8.00	$ 192	$ 288	$ 384
Other Personnel	2	24	$3.00	$5.00	$7.00	$ 144	$ 240	$ 336
Transportation						$ 1,063	$ 4,478	$ 5,998
Pick up (including gasoline)	0	24	$10.00	$15.00	$20.00	$ -	$ -	$ -
Vehicle (ie rental, purchase, other)	2	24	$10.00	$15.00	$20.00	$ 480	$ 3,600	$ 4,800
Gasoline	2	24	$10.00	$15.00	$20.00	$ 480	$ 720	$ 960
Maintenance vehicle	1	24	$3.00	$5.00	$8.00	$ 72	$ 120	$ 192
Public transport	1	24	$1.30	$1.60	$1.90	$ 31	$ 38	$ 46
Awareness campaign						$ 4,180	$ 7,000	$ 9,820
Media (e.g. posters)	1000	N/A	$0.48	$0.60	$0.72	480	600	720
Air time (radio, car with speakers, etc.)	4	10	$30.00	$35.00	$40.00	1,200	1,400	1,600
Other costs	1	N/A	$2,500.00	$5,000.00	$7,500.00	2,500	5,000	7,500

- Estimate the cost to run your campaign!
- Change costs to improve efficiency
- Change duration of your campaign
- Customizable
- Identifies where bulk of costs are allocated

OUTPUT: Will this be a successful campaign?

Results: calculated values

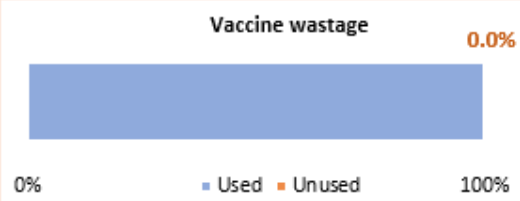
Vaccination Doses by Strategy		Procured	Used	Unused
Central Point	CP	3,750	3,750	-
Door to Door	DD	9,750	9,750	-
Capture, Vaccinate, Release	CVR	1,500	1,500	-
Oral Vaccine Handouts	ORV	-	-	-

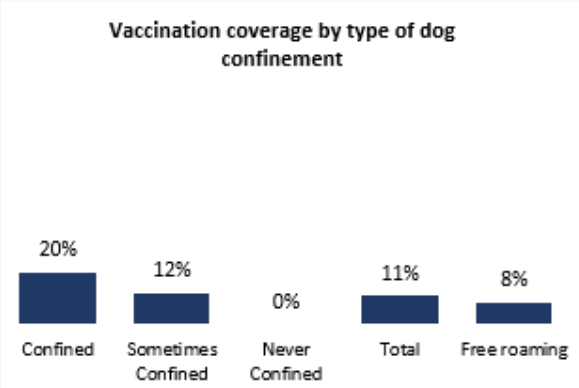
Vaccination doses by Dog Type	Vaccinated	Unvaccinated	Percent	Confidence Lower	Confidence Upper
Confined	5,880	23,520	20.0%	13.9%	26.1%
Sometimes Confined	9,120	66,480	12.1%	6.0%	18.1%
Never Confined	0	35,000	0.0%	0.0%	0.0%

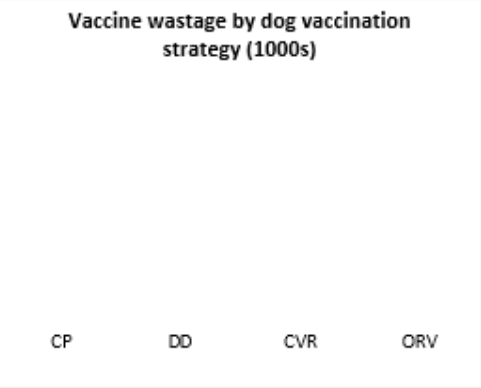
Results	Dogs	Vaccinated	Percent	Lower	Upper
Total	140,000	15,000	10.7%	6.2%	15.3%
Free roaming	110,600	9,120	8.2%	4.1%	12.4%

	Procured	Used	Unused	Lower	Upper
Vaccine utilization	15,000	100.0%	0.0%	0.0%	42.5%

Economic costs	Total ($)
Cost per dog vaccinated	$ 2.68
Total Campaign Cost	$ 40,181
Lower bound	$ 25,377
Upper bound	$ 53,329





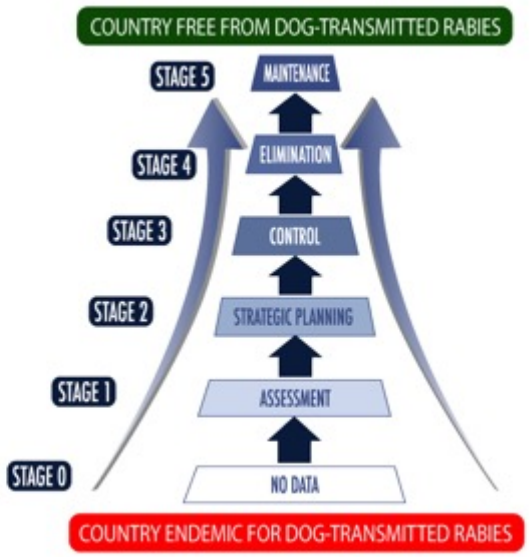


- Predicts:
  - Utilization of vaccine doses by vaccination method
  - Expected vaccine wastage
  - Vaccination coverage in Confined and Free-Roaming dogs
  - Total vaccination coverage
  - Cost per dog Vaccinated
  - Total Campaign Cost

GDREP and Vaccine Calculator Tools: How can they be used?

- **WORKSHOPS**

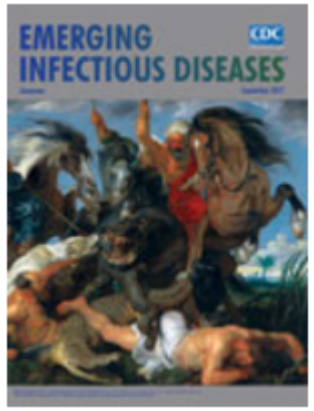
- **SARE**



- **ONLINE?**

caninerabies**blueprint.org**

a blueprint for the control of rabies
in dog populations



Conclusions

- Multiple tools that should be used together for rabies control and elimination activities
- We need to start discussing rabies control in terms of multiple years of commitment
- We need to use available tools to engage governments and enable them to advocate

Thank you!

- Government Partners
  - Haiti Ministry of Agriculture
  - Haiti Ministry of Health
  - Ethiopia Public Health Institute
  - Ethiopia Ministry of Livestock and Fisheries
  - Vietnam Department of Animal Health
  - Kenya ZDU
- Universities
  - University of the Valley – Guatemala
  - Ohio State University
  - Georgia State University
- Partners
  - GARC
  - Christian Veterinary Mission
  - Mission Rabies
  - Humane Society International
  - World Health Organization
  - OIE
  - PAHO

ADDITIONAL RABIES RESOURCES

- Kenya Strategic Plan for The Elimination of Human Rabies in Kenya 2014-2030 Available online in http://www.rr-africa.oie.int/docspdf/en/2015/Kenya-National-Rabies-Elimination-Strategy.pdf
- For protocol of Haiti Animal Rabies Surveillance Program and other Activities for Rabies Control in Animals, please contact Ryan Wallace in CDC Poxvirus and Rabies Branch (euk5@cdc.gov)
- Challenges and Needs for China to Eliminate Rabies Yin et al.: Challenges and needs for China to eliminate rabies. Infectious Diseases of poverty 2013 2:23.
- The Stepwise Approach towards Rabies Elimination: A Planning and Evaluation Tool (2014 version): http://canineraabiesblueprint.org/IMG/pdf/stepwise_approach_toward_rabies_elimination_sept_2014.pdf
- SARE One-Pager: http://www.oie.int/fr/RABIES2015/presentation/Poster/2015-posterRabies.pdf
- PLOS NTD paper: Hampson K, Coudeville L, Lembo T, Sambo M, Kieffer A, et al. (2015) Correction: Estimating the Global Burden of Endemic Canine Rabies. doi: info:doi/10.1371/

Experiences with the SARE tool - Mozambique -

Dr Chongo and Dr Chilengue

Overview of last SARE workshop

- Current SARE Score: 0.5 (Oct 2016)
- Setting: GARC-WAP Joint Rabies Elimination Planning Workshop

Past experience

- SARE tool has given a broader picture of the real situation of rabies in Mozambique as well as the steps to follow to fill the identified gaps.
- The tool has been used as a guide to improve the approach in eliminating the transmission of rabies from animal to humans.
- It help focus on:
  - IEC - Awareness campaigns messages
  - Dog populations management – design of a plan
  - Data collection and analyses – conduct field investigation and laboratory confirmation.

PARACON 2017

- We intend to acquire more subsidies to better plan the activities to be developed in order to achieve better results

This work is made possible by the generous support of World Animal Protection. The contents, however, is the responsibility of the Global Alliance for Rabies Control and the Ministry of Agriculture, Natural Resources, Livestock and Fisheries (Zanzibar) and do not necessarily reflect the views of World Animal Protection.

Experiences with the SARE tool - Zimbabwe -

Dr P. Manangazira Ministry of Health

Mr L. Gwenhure Ministry of Agriculture

Overview of last SARE workshop

- Current SARE Score: 1.5 (Oct 2016)
  - Failing to implement proven effective control measures of yesteryear
    - Responsible dog (pet) ownership
    - Enforcement of municipal by-laws (Public Health Act)
    - Control of garbage
    - Tattooing of vaccinated dogs (human rabies vaccine)
    - Collaboration between vet and health on management and follow up of dog bite cases
      - Reporting zoonotic cases on DHIS in order to view both animal and human rabies cases
- Setting: GARC-WAP Joint Rabies Elimination Planning Workshop

Past experience

- The exposure to Paracon (GARC) has opened us to the huge gap in the prevention and management animal and human rabies;
  - *Key messages for advocacy and community mobilization on rabies*
  - *The possibility of moving towards rabies elimination*
  - *SARE tool to start measuring progress as well as compare ourselves with more progressive countries in the management, control and elimination trajectory for rabies*
  - *Stimulate the one health approach within government and nation, and integrated approach within Agriculture and Health Ministries, (Epidemiology, pharmacy, laboratory, data and surveillance)*

  How has the SARE tool been used since the last workshop?
  - Used to stimulate the dialogue within Health and Agriculture Ministries to appreciate the magnitude of the rabies problem in Zimbabwe
  - To review past practices on dog control, rabies reporting in animals and humans and to address the current challenges
  - To develop joint reporting indicators and start marking the milestones towards rabies elimination

  Did it help you focus on specific activities?
  - Yes indeed. To ensure national and sub-national commemorations of the World Rabies Day annually and use it as a platform to raise awareness on One Health, and stimulate the relevant actions for rabies elimination especially responsible dog ownership, management and vaccination
  - Maintained dialogue on rabies within animal and human health, not yet with local authorities
  - Enforcement of legislation remains elusive, commitment remains low

PARACON 2017

Take aways from the SARE workshop at the current PARACON workshop;

- The urgent need for strategies for improving surveillance, data and reporting for rabies under one health in government and private sectors of animal and human health
  - Coordinated reporting platform
  - Joint publication/bulleting on rabies prevention, management, control actions
- Strategies for addressing the disease burden in animals and humans and move towards elimination
  - Central, Local government, technical and funding partners, communities
  - Joint implementation, management and control guidelines
  - Affordability of anti-rabies vaccination for population coverage

Thank you

This work is made possible by the generous support of World Animal Protection. The contents, however, is the responsibility of the Global Alliance for Rabies Control and the Ministry of Agriculture, Natural Resources, Livestock and Fisheries (Zanzibar) and do not necessarily reflect the views of World Animal Protection.

Experiences with the SARE tool
- Sierra Leone -

Mohamed S. BAH and Mrs. Amba R. M. COKER

MILE STONES AND DATES 1: (FUNDING AGENCY–WAP)

DATE	MILE STONE	OUTPUT AND / OR OUTCOME
30th July 2014	National Livestock Animal Welfare and Rabies Control Consultative workshop held at Hill Valley, Freetown	NLAWRCT established
Septembe r 2015	National Livestock Animal Welfare & Rabies Control Taskforce (NLAWRCT) was formalized.	DLAWRCT and (RCWG) were established established
4th July 2016	The NLAWRCT was commissioned and the National Rabies Elimination and DPM project launched.	The need to eliminate rabies throughout Sierra Leone was recognized by government and other key stakeholder institutions viz; FAO, WHO. KAP Survey and DDC Conducted and reports produced in pilot wards of F/T.

MILE STONES AND DATES 2: (FUNDING AGENCY–WAP)

DATE	MILE STONE	OUTPUT AND / OR OUTCOME
30th June – 1st July 2017	1. Planning workshop held by the NLAWRCT for setting up of systems and structures within FCC for the implementation of the pilot project. 2. Training conducted for vaccinators and animal handlers. Also Two staff trained as human resource.	1. Systems and structure set up - DPM Unit established and it is embedded within the Environment and Social Department of FCC. 2. Two staff designated to the unit (human resource)
10th August 2017	National stakeholders` workshop conducted to share work plan and World Rabies Day (WRD) activity plan and budget 2017 to get national consensus.	National consensus of the documents enhanced. FAO committed to supports 16% of the total budget for the WRD celebration which include launching of the National Rabies elimination Strategy – scheduled for 26th September 2017
17th August 2017	National Consensus workshop held at the Conference Hall of the Ministry of Agriculture, Forestry and Food Security (MAFFS) to validate the National Rabies Elimination Strategy	The National Rabies Elimination Strategy validated to be endorsed by both Directors of the Veterinary and Medical Services. The strategic document is due to be launched on 26th September 2017

Overview of last SARE workshop

- Current SARE Score: 0 (Feb 2017) = analysis in table below;
- Setting: In-country workshop with rabies task force members

✓NLAWRCT = National Livestock, Animal Welfare and Rabies Control Taskforce

✓Multi- sectoral Taskforce {MAFFS, MoHS, SLAWS, MEST, Local Council (FCC), MIC, MLGRD, MIA, Academic institutions (NU & MMCET), FAO, WHO and the Media}

✓DLAWRCT = District Livestock, Animal Welfare and Rabies Control Taskforce

✓RCWG = Rabies Control Working Groups

SARE ACTIVITY SUMMARY (SL) REVIEW

SARE Assessment Requirement	Total Number of Targeted Activities	Number of Activities Accomplished	Number of Pending Activities	Comments / Progress made over the Months since Assessment
Information, education and communication	21	11	10	To Commenced AW & RC Education in FCC Controlled schools
Dog population management	12	2	10	AWP & B developed to pilot
Prevention and control	25	5	20	
Data collection and analysis	21	6	15	
Laboratory diagnosis	12	2	10	Agreement reached with GARC to establish diagnosis
Cross cutting issues	12	5	7	NRES & DPM proposal developed and validated
legislation	15	11	4	AD & AWP Bills with LO for p

SARE STAGE SUMMARY

STAGE	TOTAL NUMBER OF ACTIVITIES	ACCOMPLISHED ACTIVITIES	CRITICAL ACTIVITIES ACCOMPLISHED	PENDING ACTIVITIES	STAGE COMMENTRY
0 0.5	6	3	1 +	3	No data
1 1.5	42	30	8 +	12	Assessment
2 2.5	33	9	1 +	24	Development of rabies elimination strategy
3 3.5	20	0	0	20	Implementation of the strategy in pilot areas
4 4.5	11	0	0	11	Large scale national implementation
5	7	0	0	7	Maintenance and freedom from rabies

Past experience

Benefits of the SARE tool to our Country

- Willingness to adopt the tool by all stakeholders in the country to follow the guide lines for the development of the national rabies elimination strategy

- It has enhanced systematic planning and consistent progress in the rabies elimination process for the country

- Before the SARE tool we had wanted to do all at the same time, but with the tool, we have learned that we start a small pilot project, reports successes, take note of lessons learned and scale up later to replicate best practices

Use of the SARE tool since the last workshop (assessment)

The tool has been use to develop activities for the strategic document and at the same time, it is use to identify gaps and assess progress in the rabies elimination programme

The tool has served as self assessment measure which has kept us on track and consistently made progress over the past few months since the last country assessment by GARC

It helped us with the next relevant steps based on priority

Specific Activities undertook since last Assessment

•The tool helped us focus on key activities along the SARE six stages that were accomplished; progress from stage 0.5, from our last assessment to now stage 1/2, based on the current score, these activities include:

1. A finalized national rabies elimination strategy

2. Developed activity plan to pre-test the strategic model in pilot areas

3. Expedite facilitation of animal disease, animal welfare and protection legal instruments review and enactment

PARACON 2017

What to take back home from the current PARACON workshop

- Key to take back home is the effective use of the SARE score sheet by acquiring knowledge of using and applying the software.
- The tool is very good, I will thus like to encourage all delegate present here, that are not familiar with the tool to adopt it today and apply it when back home. It is a very good tool.
- On behalf of the NLAWRCT, the LVSD (MAFFS), MOHS and our country (S/L), we will like to express our sincere appreciation for introducing us to such a good tool.

Thank you

This work is made possible by the generous support of World Animal Protection. The contents, however, is the responsibility of the Global Alliance for Rabies Control and the Sierra Leone governemnt and do not necessarily reflect the views of World Animal Protection.