

# The path towards a rabies-free future: National Action Plan and Dog Population Management (DPM) programmes impact on rabies control and animal welfare

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ICAM Director

23 April 2024  
Doha, Qatar



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for Animal  
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de la santé  
animale  
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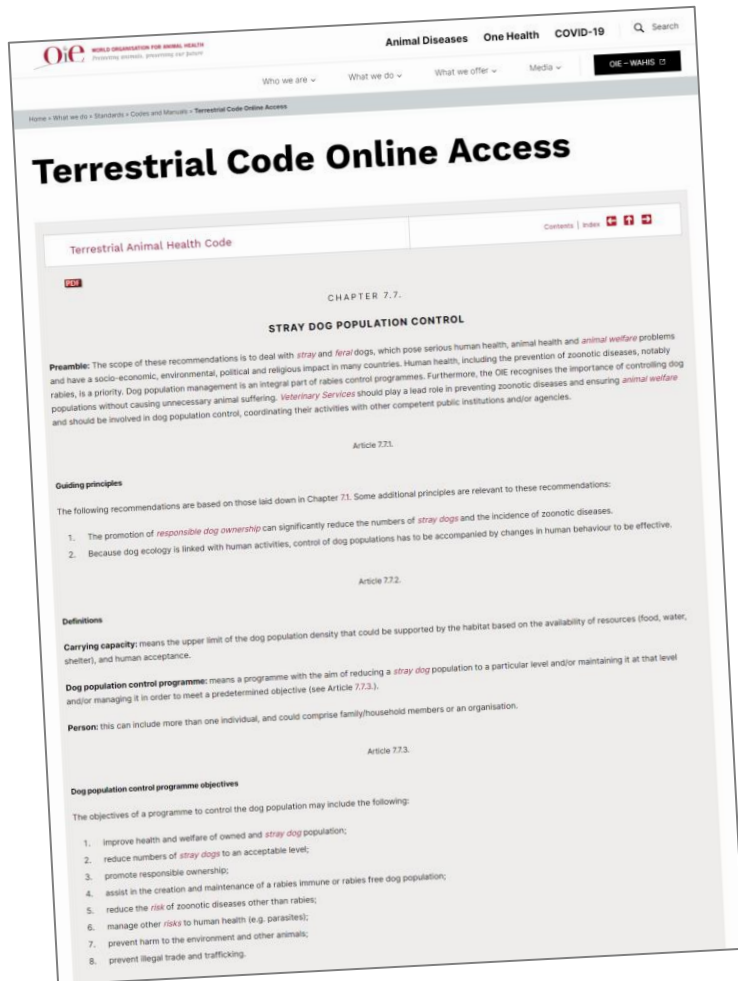
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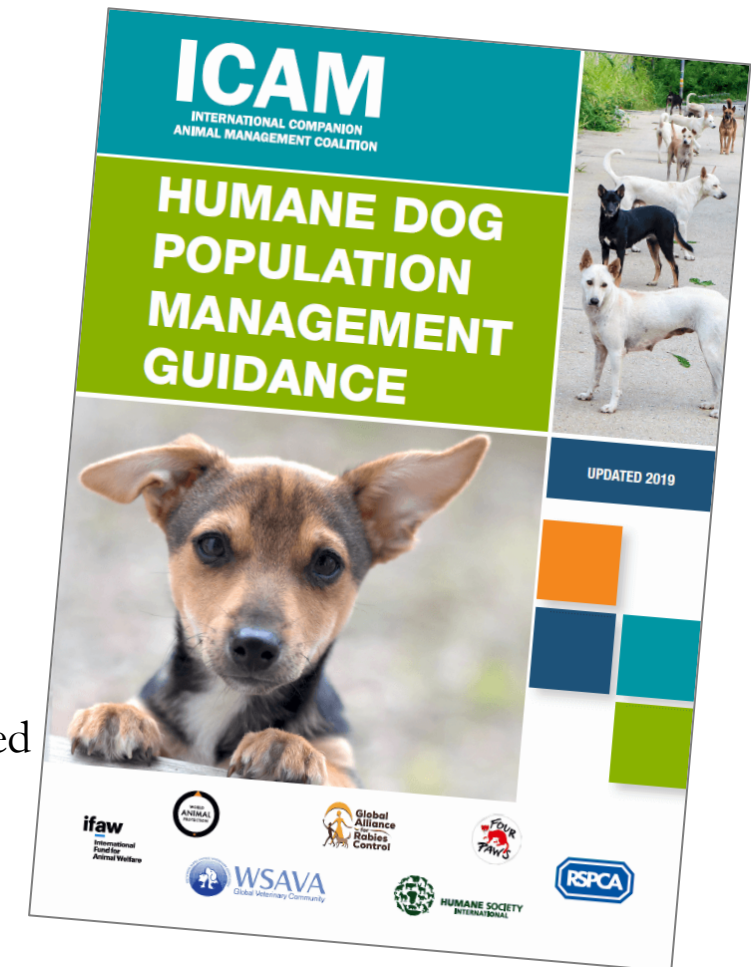
## WOAH Chapter 7.7 DPM



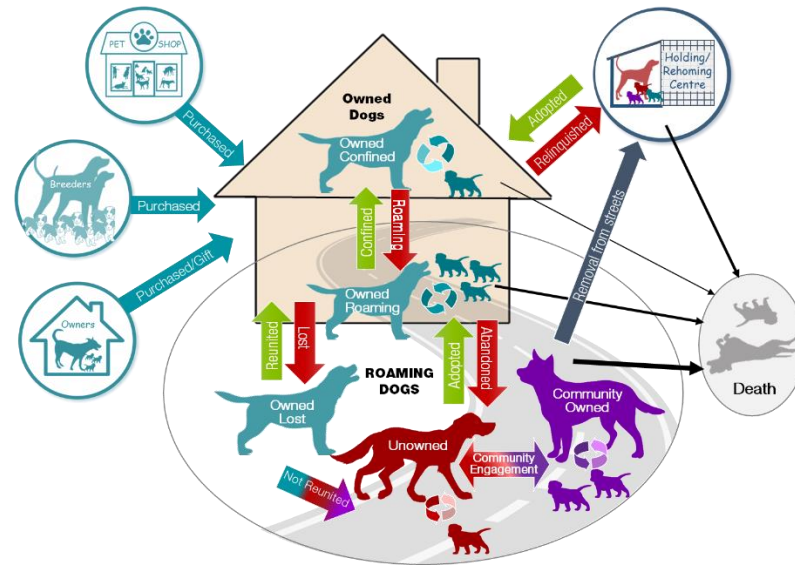
- Humane: “It is important to manage dog populations without compromising animal welfare, in accordance with Chapter 7.1”
- Evidence-based: “DPM programmes should include an initial assessment and ongoing adaptation based on continued monitoring and evaluation”
- No single ‘solution’: “Combination of ... measures should be used for a successful DPM programme...implemented in accordance with the national context and local circumstances”
- National and local government responsibilities: “A national action plan provides the details of actions which support the implementation of DPM programmes and coordinate with other action plans, such as those focused on dog-related zoonoses”

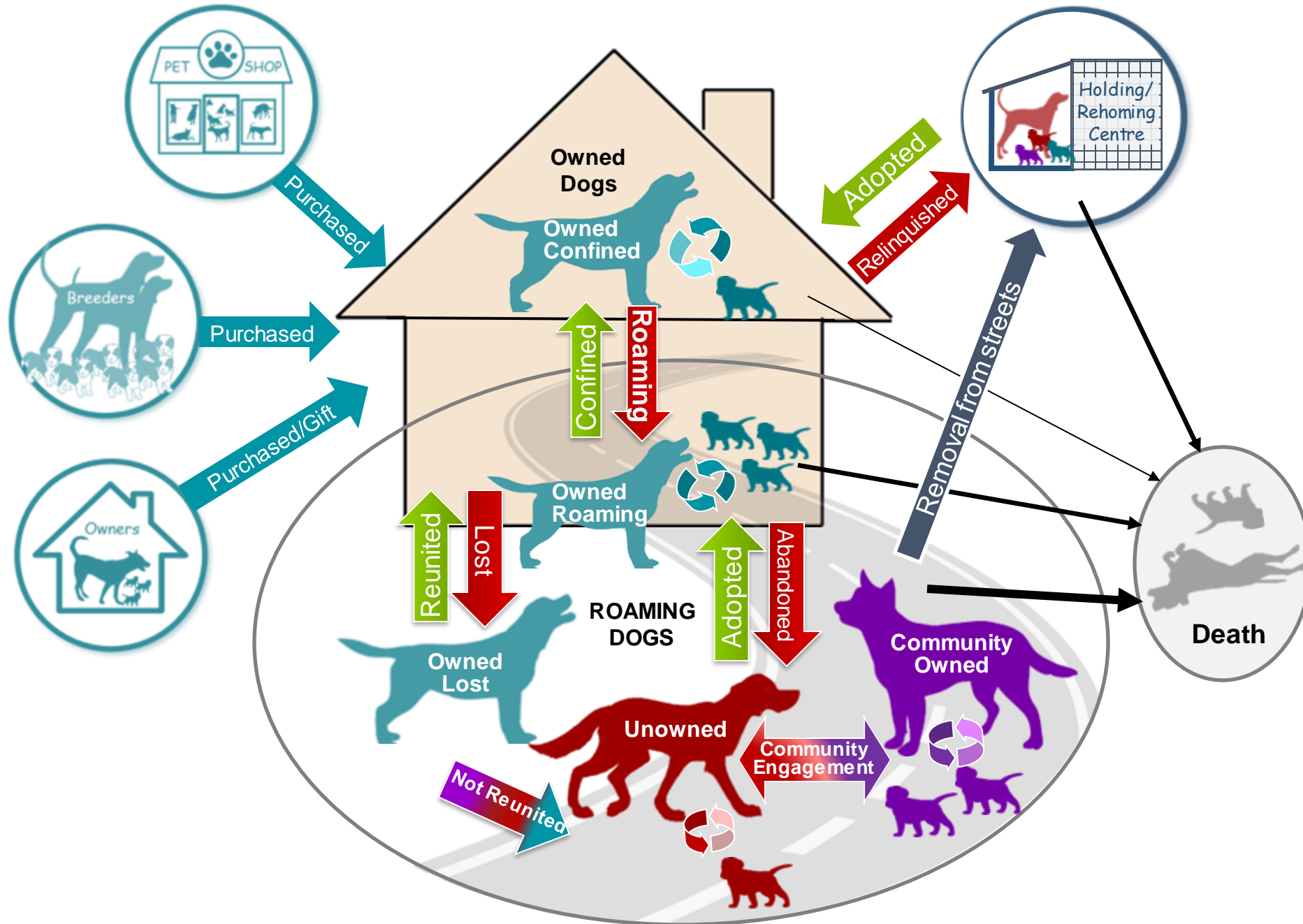
All quotes from WOAH Chapter 7.7

## ICAM DPM guide

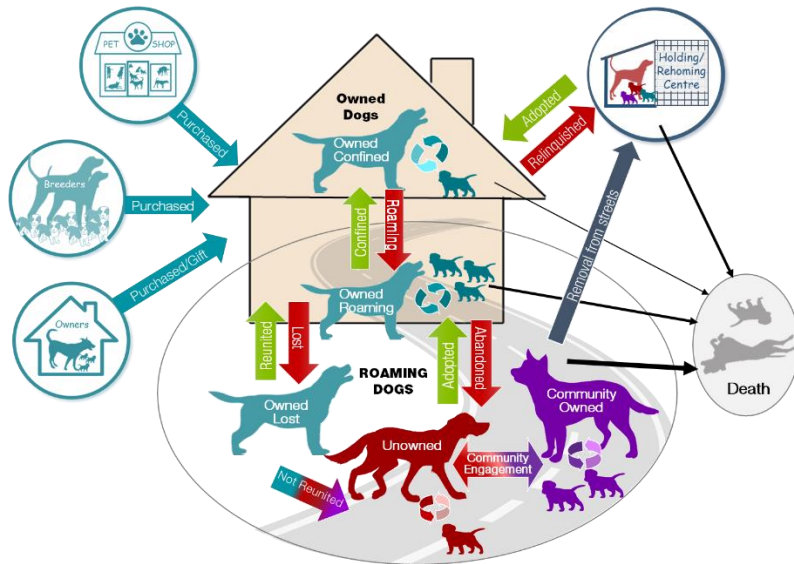


# Step 1 – Understand *your* dog population dynamics

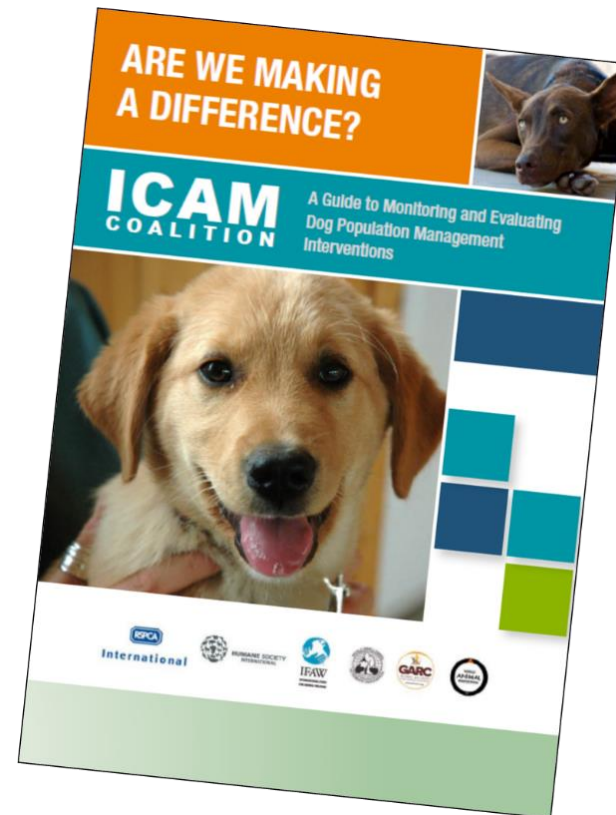




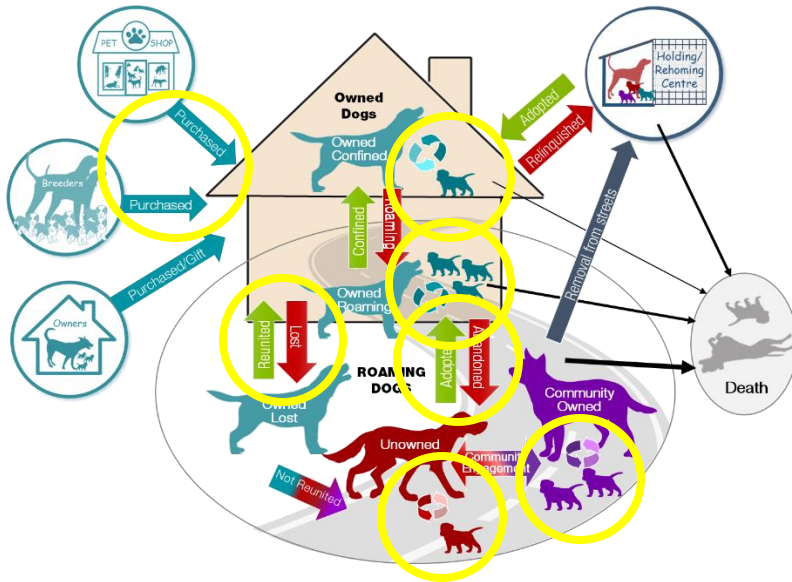
Dog population dynamics →  
DPM measures



- Assess to understand dynamics: Where are the free-roaming dogs coming from?
- Article 7.7.11 DPM programme assessment and planning



## Dog population dynamics → DPM measures

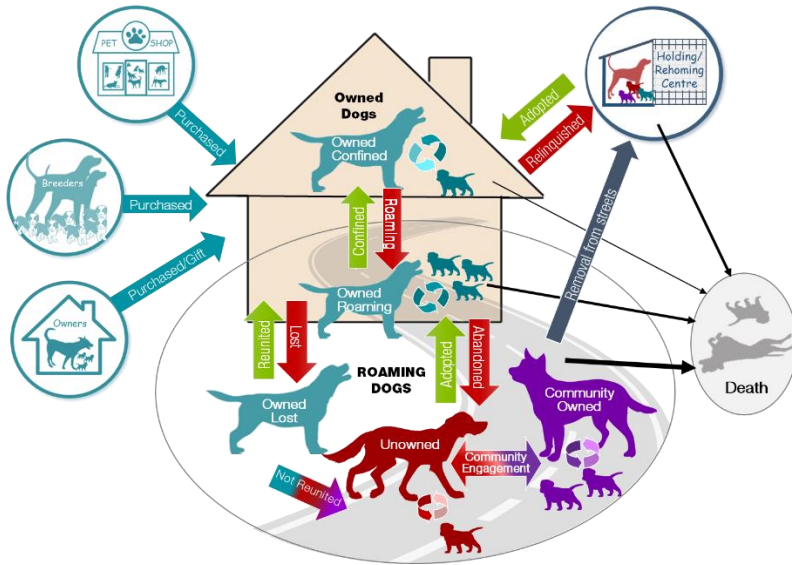


- Select measures to influence processes that are acting as sources

- Lost and failure to reunite → I&R article 7.7.14
- Impulse acquisition and abandonment → Commercial breeding controls article 7.7.15
- Unwanted births and abandonment of puppies → Reproduction control, but which dogs?
  - Owned dogs → subsidised neutering
  - Community dogs → community engagement in CNVR
  - Unowned dogs → expert handlers and CNVR



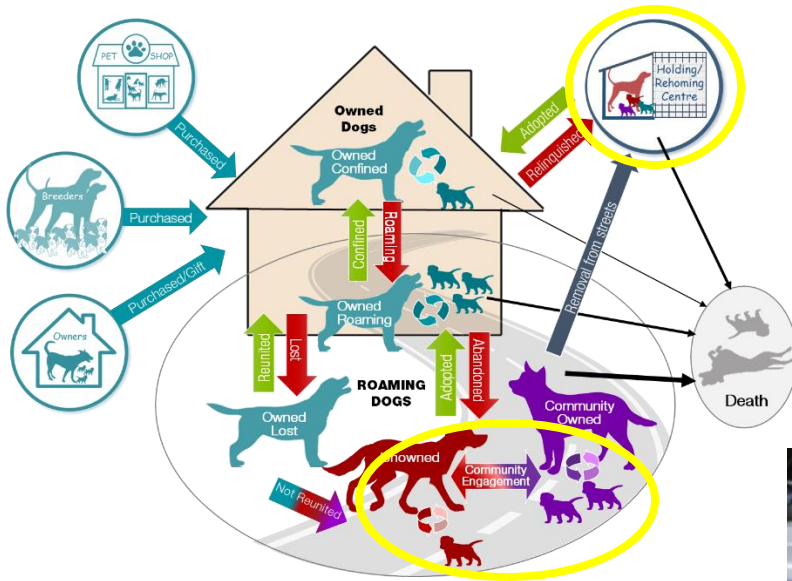
## Dog population dynamics → DPM measures



- Select measures to influence processes that are acting as sources
  - Lost and failure to reunite → I&R article 7.7.14
  - Impulse acquisition and abandonment → Commercial breeding controls article 7.7.15
  - Unwanted births and abandonment of puppies → Reproduction control, but which dogs?
  - Measures to address human behaviours that drive processes
  - Promoting responsible dog ownership article 7.7.17.



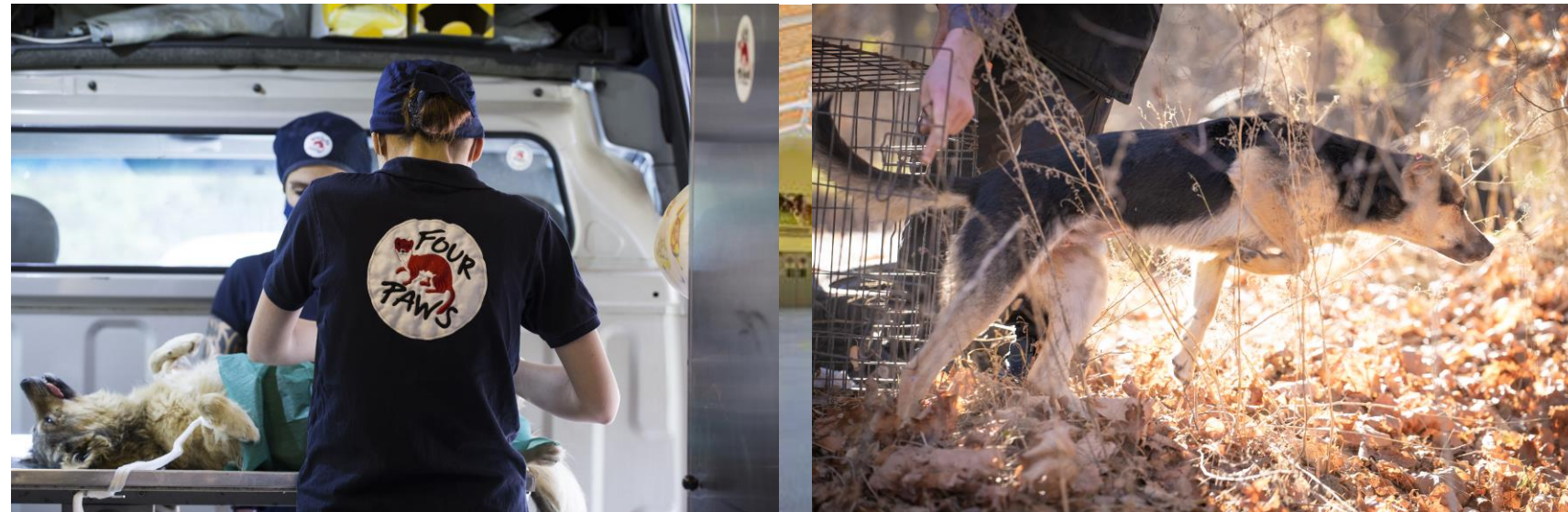
## Dog population dynamics → DPM measures



## • Manage the current free-roaming dogs

### • Shelters vs CNVR

- Realistic chance of rehoming?
- Financial resources and expertise to maintain high shelter standard?
- CNVR as option to manage dogs *in situ* by reducing density, risk and nuisance behaviours through sterilisation and vaccination.



## National Action Plan

- National level actions that enable local implementation
- Multi-stakeholder advisory group
- Principles that guide strategic intervention choices in DPM (article 7.7.4)

Article 7.7.4.

### Guiding principles

Building upon the guiding principles described in Chapter 7.1., the following apply:

- DPM has direct benefits to public health and safety, and to animal health and welfare.
- Dogs are a domesticated species and therefore dependent on human communities, thus there is an ethical responsibility to ensure their health and welfare even in the absence of ownership.
- Recognising the diversity of stakeholders in the management of dog populations, it is crucial to clarify roles and responsibilities.
- Dog ecology is linked with human activities. Therefore, effective management of dog populations should be accompanied by changes in human behaviour, including promotion of *responsible dog ownership*.
- Acknowledging that the *owned dog* population is a common source of *free-roaming dogs*, DPM programmes should consider all dogs.
- Understanding local dog population dynamics and community attitudes is a key element in determining whether and how DPM programmes might contribute to rabies control and which tools would be most successful.
- Considering that sources and drivers of *free-roaming dogs* and management goals differ across communities, DPM should be individually tailored to local and national contexts.
- DPM programmes should be designed to be sustainable, aligned with legislative requirements, evaluated and adaptable.

## National Action Plan

- Current DPM and gap analysis
- Goal and objectives
  - Strategic interventions; activities with allocated responsible authority, timeline and indicators/target
    1. Legislation and enforcement
    2. Training and support of DPM professionals
    3. Support assessment, monitoring and evaluation
    4. Cohesion with other policies and action plans; rabies control and elimination

## National Action Plan

### • Legislation and enforcement (article 7.7.9)

- DPM following principles, allows some flexibility at the local level
- Obligations of authorities, including use of humane methods
- Obligations of owners (article 7.7.17)
- Identification and registration (article 7.7.14)
  - Centralised database or interoperability between existing databases
- Registration and licensing of commercial breeders and sellers (article 7.7.15)
- Strategic intervention
  - Review and redraft?
  - Enable, educate and enforce? E.g. ZeroStrays Pawject

# National Action Plan • Legislation and enforcement

- ZeroStrays Pawject:
  - Greece
  - Academy programme for municipalities, policy and judiciary
  - ICAM conference 2023; Silja Schiller-Moumtzidis

Silja Schiller-Moumtzidis - Government leadership in population management - Zero Stray Pawject

Zero Stray Pawject's philosophy is to shift the focus towards prevention in Greece

PREVENTION – Focus on <u>BEFORE</u> a pet ends up on the street				STRAYS	TREATMENT*
1. Census of owned pets	2. Microchipping/ Registering of owned pets	3. Neutering of owned pets (DNA)	4. Policing	9. Recording of strays	11. Shelters
5. Analysis and KPIs	6. Municipal Administration	7. Marketing Communications	8. Education	10. Stray Management (TNR)	12. Adoptions
A. Legislation (Companion Animal Welfare, DNA, AW Committee, Ombudsman, etc), B. The Right Ministry?, C. Stakeholder alignment: Veterinarians, Breeders, Hunters, Pet Shops, etc.,					

\* Treatment is not cure, but rather treating a symptom. Treatment is expensive, time consuming and resource limited. It can't solve the problem on its own

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Silja Schiller-Moumtzidis - Government leadership in population management - Zero Stray Pawject

## Zero Stray Academy

founded 09/2021

- **First Academy to train municipalities** how to systematically reduce #stray cats and dogs
- **Basic Class: 5-week intensive course:**
  - 10 municipalities incl municipal employee in charge of companion animals + mayor/ vice mayor, 22 lectures, certification
- **35 professors**
- **Advanced Classes**
- **3 Municipal Account Managers** working with municipalities post-graduation to implement
- **105 municipalities, 894,398 pets & 3,420,240 people\* impacted**

SUPPORTED BY BATTERSEA

\* Status May 10 2023

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## National Action Plan • Increase reproduction control services

- Training: Foundational and CPD

- Standards

- [www.sheltervet.org/resources/spay-neuter-guidelines](http://www.sheltervet.org/resources/spay-neuter-guidelines)

- Training

- JMICAWE videos [www.ed.ac.uk/vet/jeanne-marchig-centre/cpd/dog-welfare/dog-welfare-videos](http://www.ed.ac.uk/vet/jeanne-marchig-centre/cpd/dog-welfare/dog-welfare-videos)

- Dogs Trust Worldwide Vet Training Programme

- Training based at vet school

- Essential for vets to complete training to enrol in neutering subsidy programme.

- Impacts:

- Increase in vet clinics offering small animal services; during funded programme and maintained since it ended.
- Increase in percentage of sterilised owned and free-roaming dogs

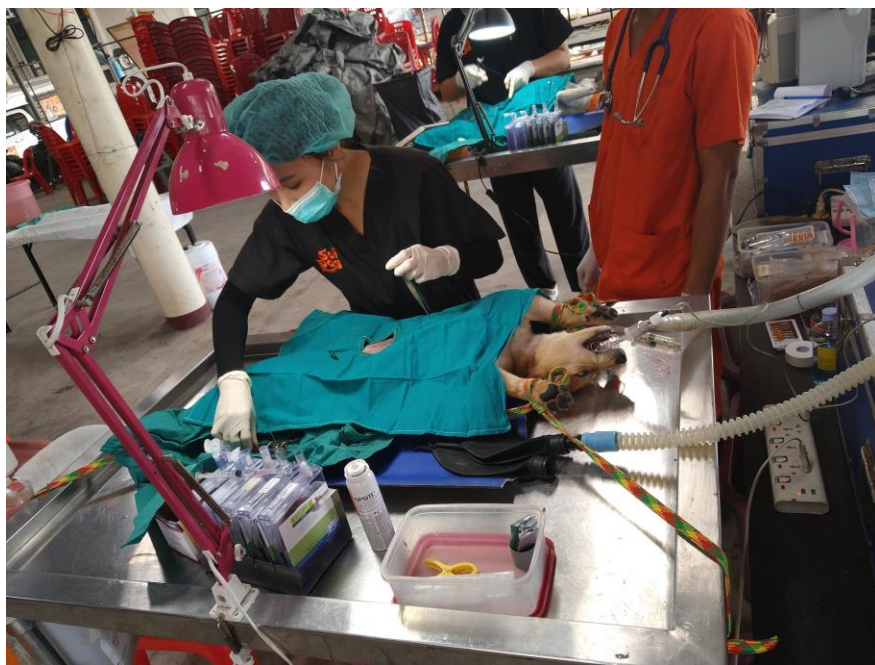
- Also training for vet techs and animal handlers



## National Action Plan

### • Increase reproduction control services

- Access to essential medicines for safe surgical spay and neuter
  - Anaesthetics, multiple analgesic medications, surgical equipment
  - Aligned with training programmes
  - WSAVA essentials medicines list covers those medicines required in addition to surgical needs.



#### The 2023 World Small Animal Veterinary Association (WSAVA)

#### List of essential medicines for cats and dogs

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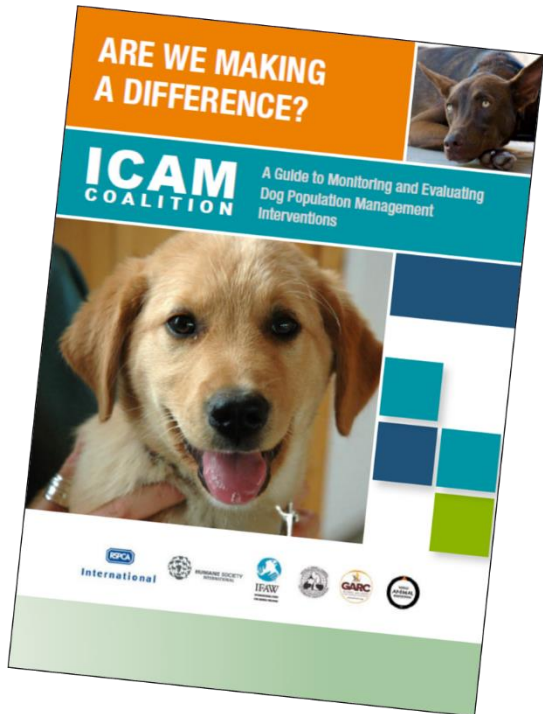
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## National Action Plan

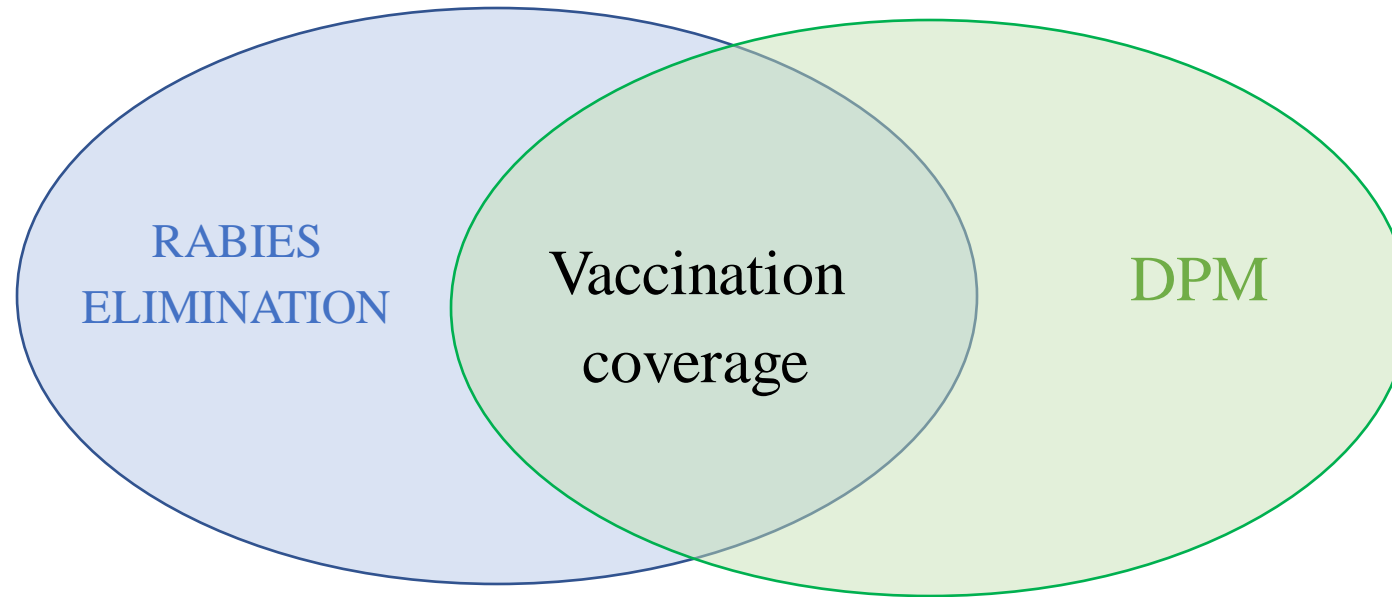
- Support assessment, monitoring and evaluation

- Funding
- Method guidance and analysis support
- Core indicators to allow for comparison across locations and learning events to enable peer-to-peer learning
- Article 7.7.12



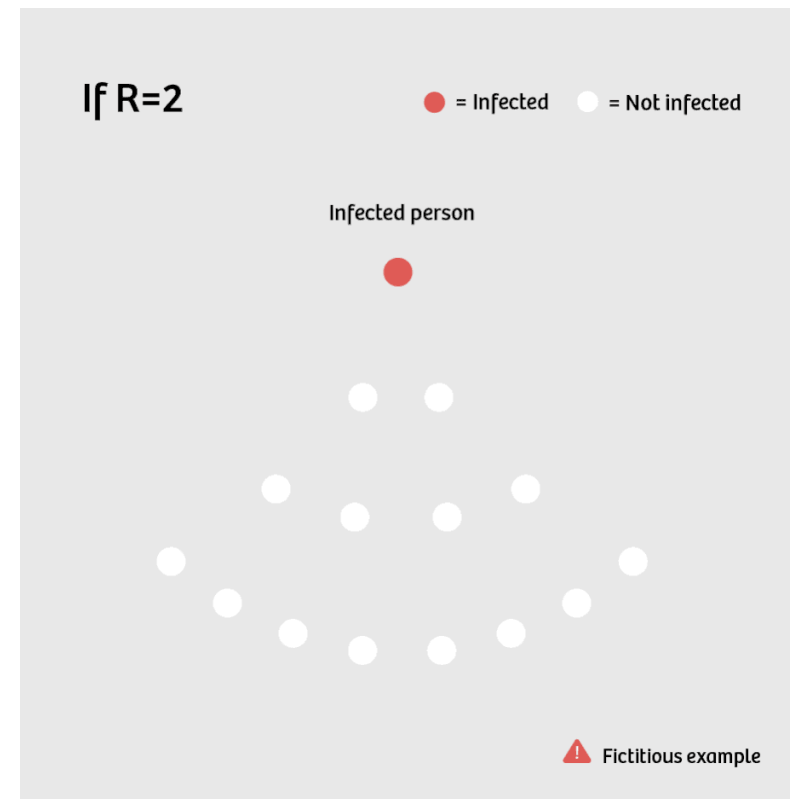


National Action Plan • Cohesion and contribution to rabies control and elimination

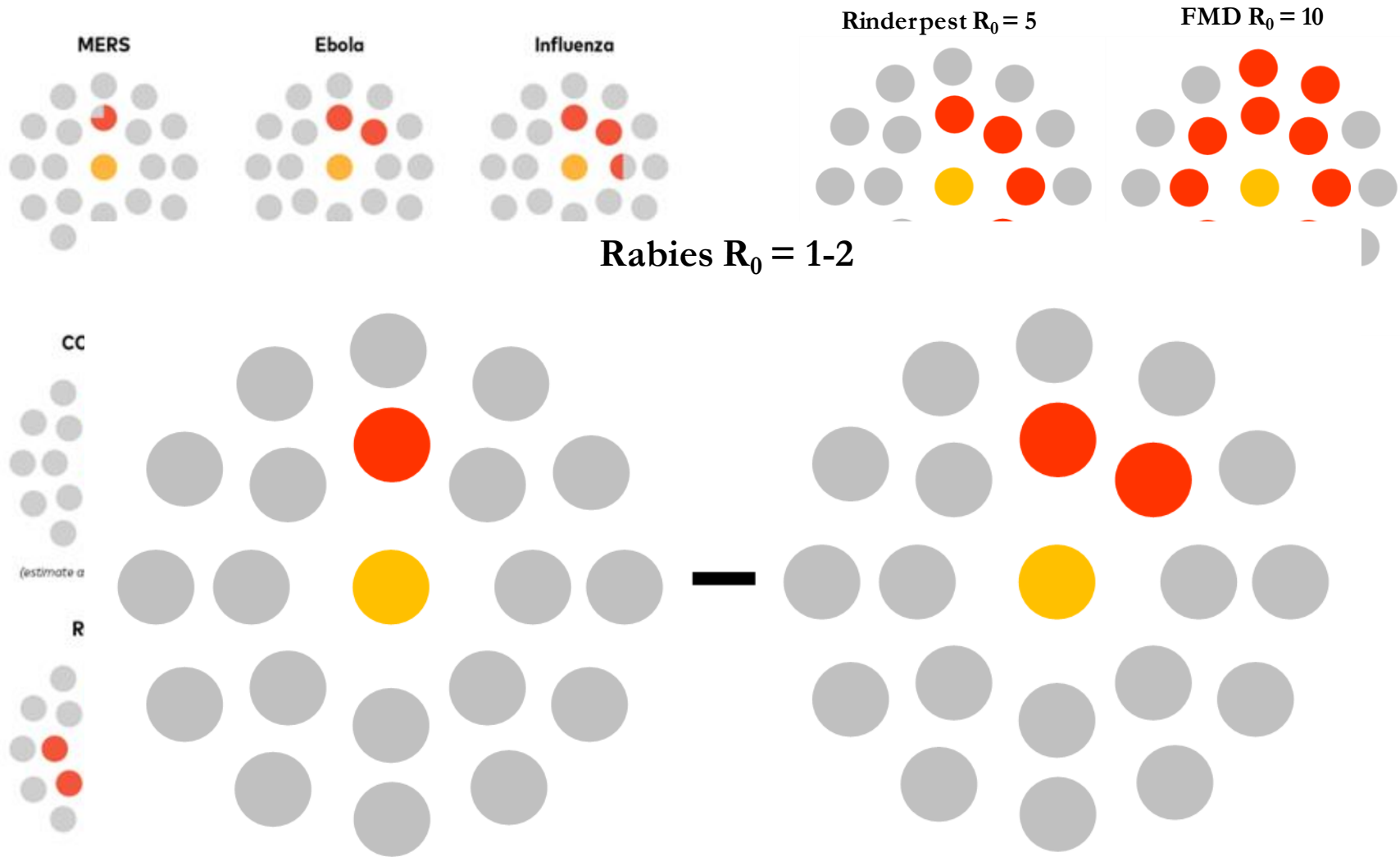


# Epidemiology of vaccination

- $R_0$  basic reproduction number = expected number of secondary infections resulting from one single infection in a completely susceptible population
- $R_0 > 1 \rightarrow$  infection increases
- $R_0 = 1 \rightarrow$  infection stable
- $R_0 < 1 \rightarrow$  infection decreases



Credit – [www.thecorrespondent.com](http://www.thecorrespondent.com)



# Factors influencing $R_0$

$$R_0 \propto$$

- Transmissibility (infections / contact)
- Contact rate (contacts / time)
- Duration of infection (time / infection)

$R$  effective reproduction number = expected number of cases in a population under intervention

Closer  $R$  is to 0, faster to elimination

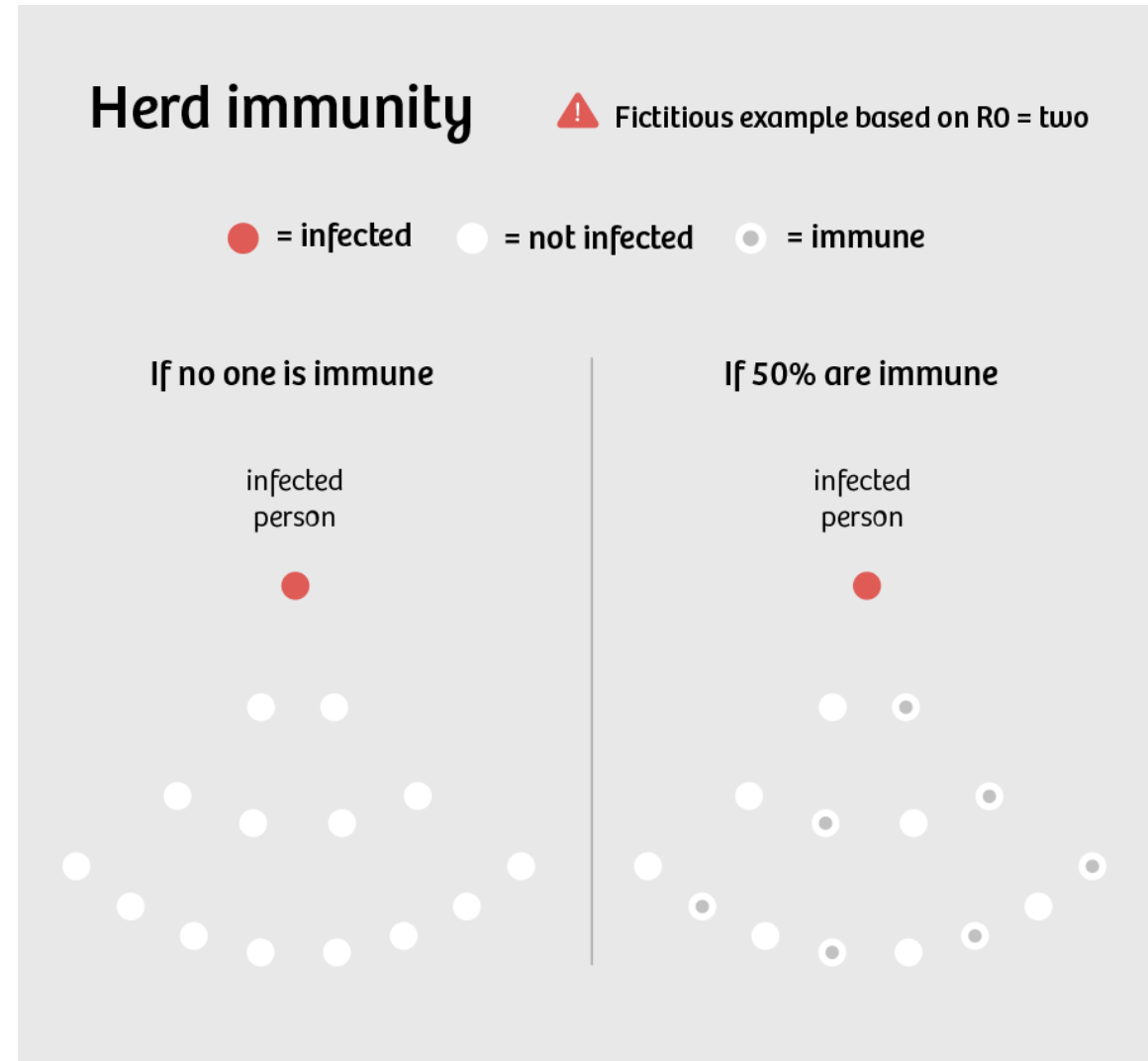
## How to decrease R in rabies with tools focused on dogs?

$R_0 \propto$	Transmissibility	Contact rate	Duration of infection
Stamping out	No change	↓	No change
'Usual' Culling	No change	Transient, no change or ↑	No change
Vaccination	↓	No change	↓
Sterilisation	No change	↓	No change
Rapid response to suspect dogs	No change	No change	↓

# Vaccination

- ✓ Efficacious vaccine with long-lasting immunity
- ✓ Affordable and available

Herd immunity = sufficient proportion of the population is immune to prevent spread



Credit – [www.thecorrespondent.com](http://www.thecorrespondent.com)

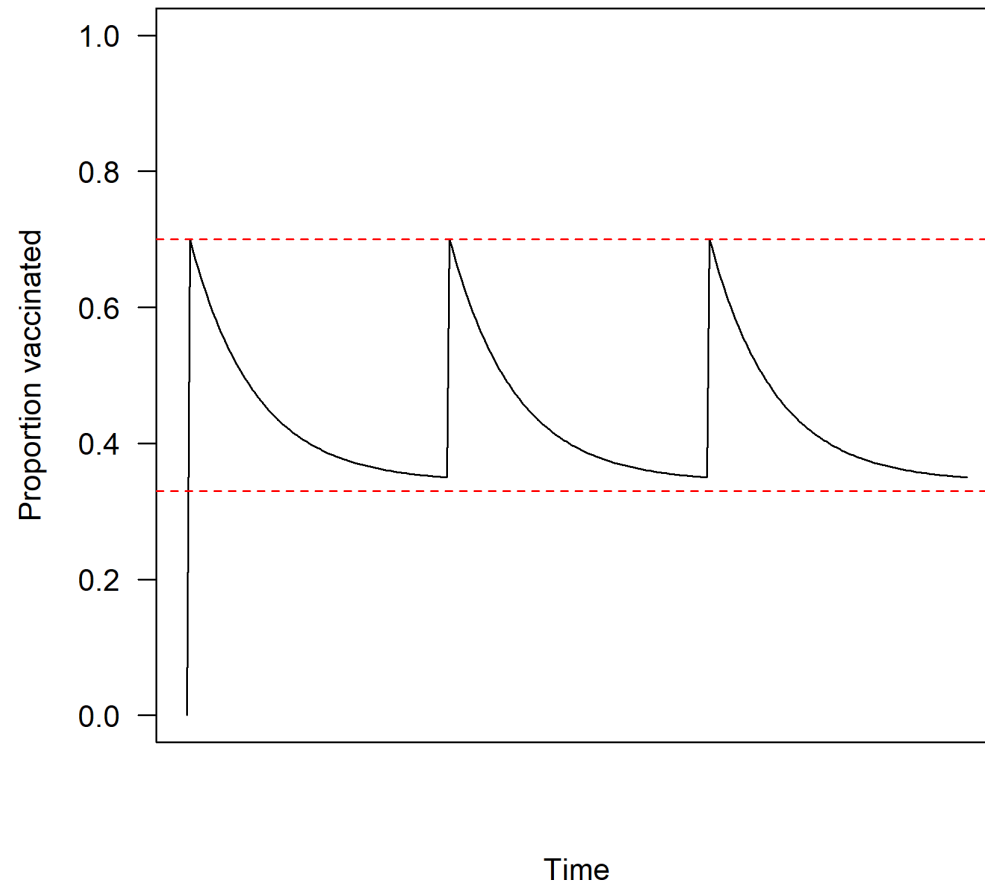
# Vaccination for rabies

- Herd immunity =  $1 - (1/R_0)$ 
  - The lower the  $R_0$ , the lower the herd immunity required
- Herd immunity for rabies =  $1 - (1/1.5) = 33\%$ 
  - Range from Hampson et al 2009 is 20-45%
- Herd immunity for measles =  $1 - (1/15) = 93\%$
- Herd immunity for Rinderpest =  $1 - (1/5) = 80\%$

So why has rabies not been eradicated? Not enough focus on vaccinating dogs

## “But what about 70%?”

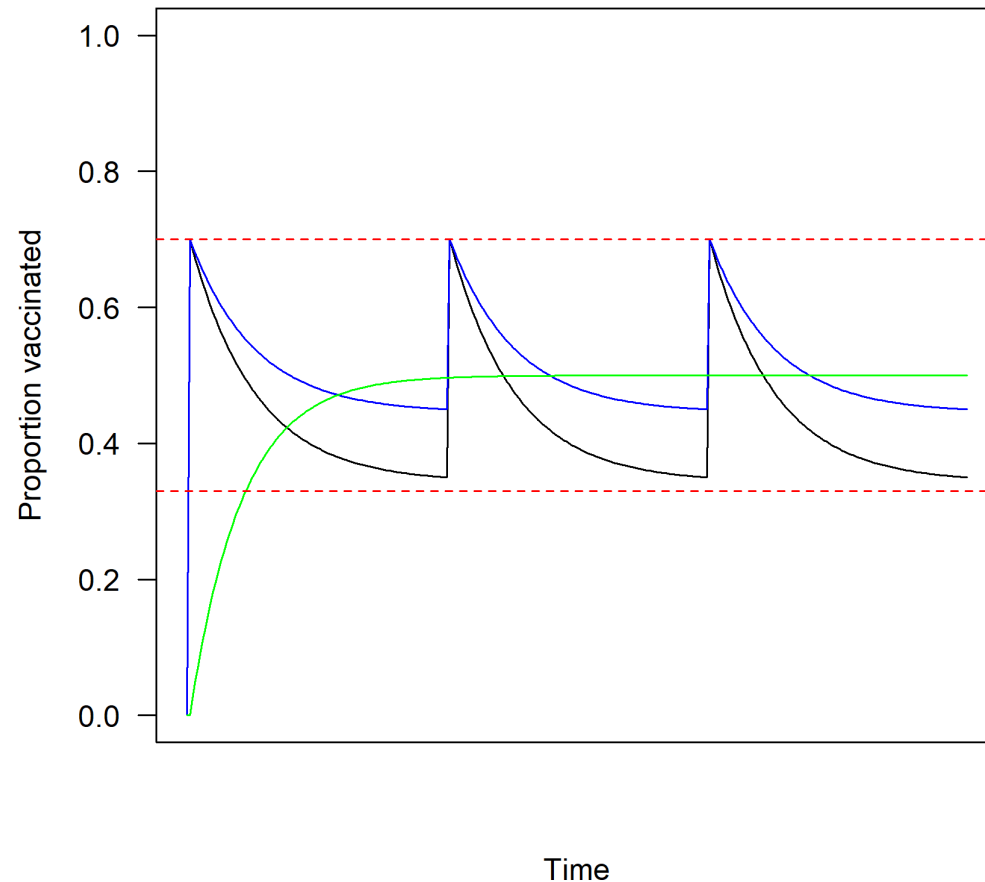
Target for an annual vaccination campaign allowing for population turnover





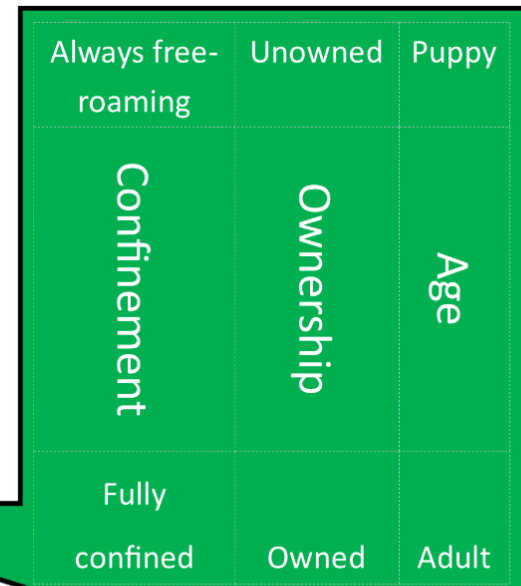
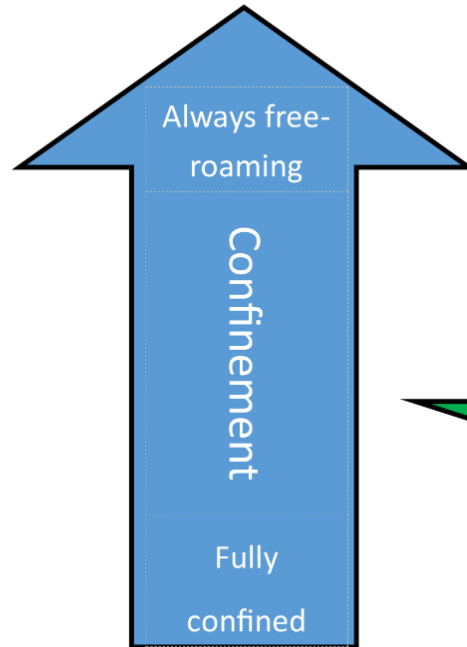
# Vaccination with DPM

- Reduce population turnover
  - Decrease death rate of vaccinated dogs
    - Don't cull dogs
    - Owners providing better care (food, water and parasite control)
  - Decrease birth rates
    - Sterilisation to decrease unwanted births, puppies
- Reduce turnover to maintain  $>$  critical  $P_{Vacc}$



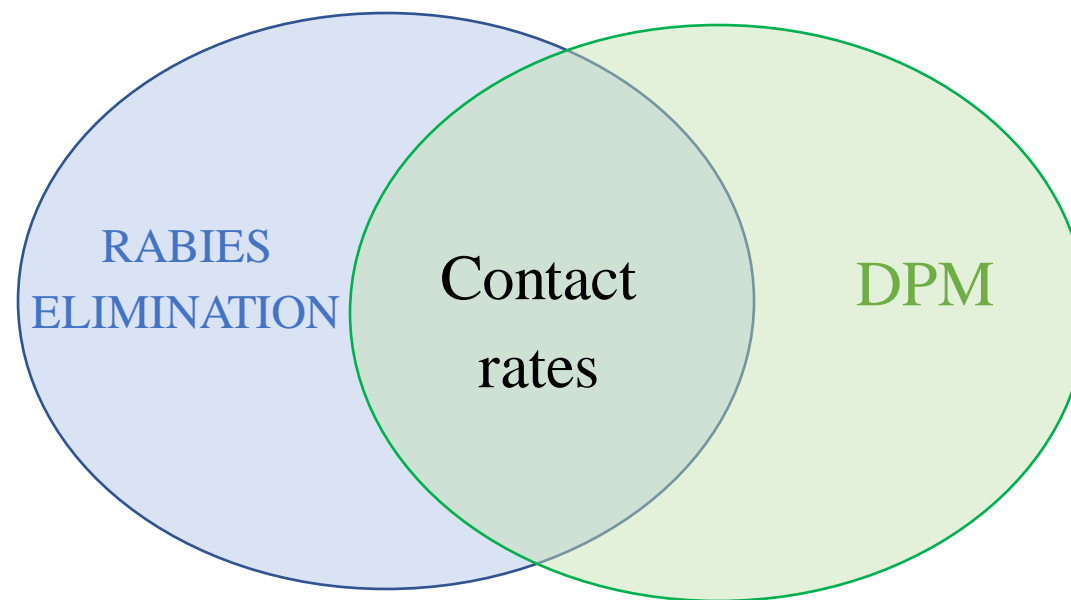
# Epidemiologically relevant dogs

Increasing likelihood of being involved in transmission

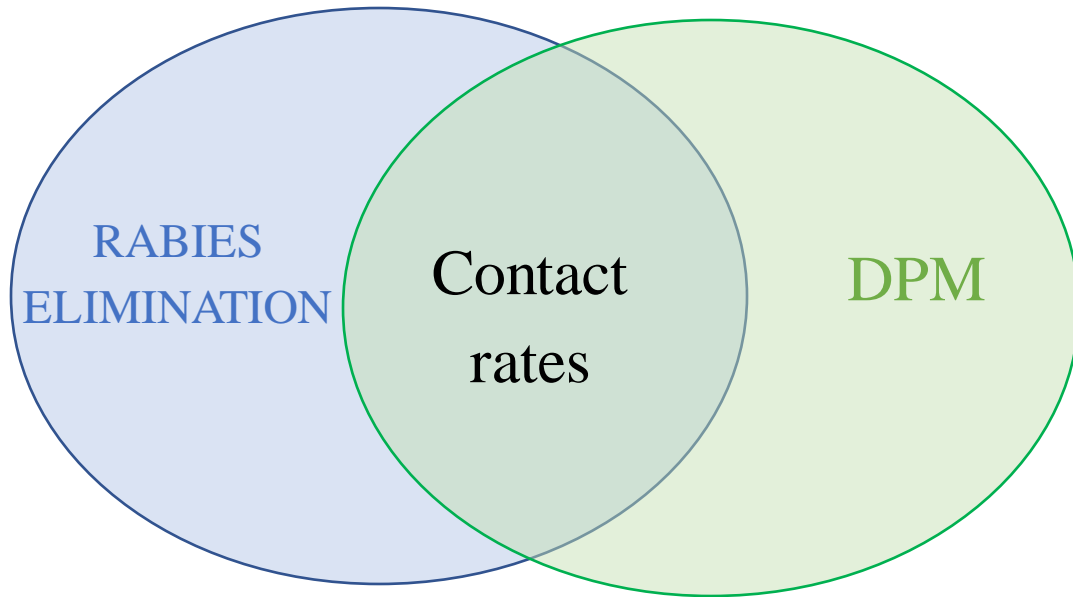


Increasing likelihood of being vaccinated

## Rabies – DPM intersection

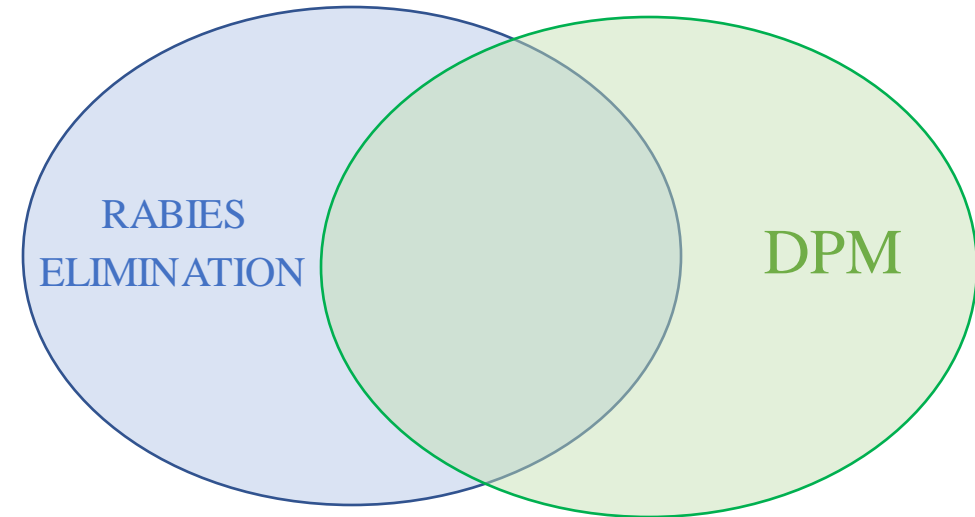


# Rabies – DPM intersection



- Reduce population perturbation
  - Don't cull
  - Don't relocate
- Reduce motivation to move
  - Sterilise to prevent breeding behaviours
  - Owners providing better resources to reduce the need to scavenge

## National Action Plan

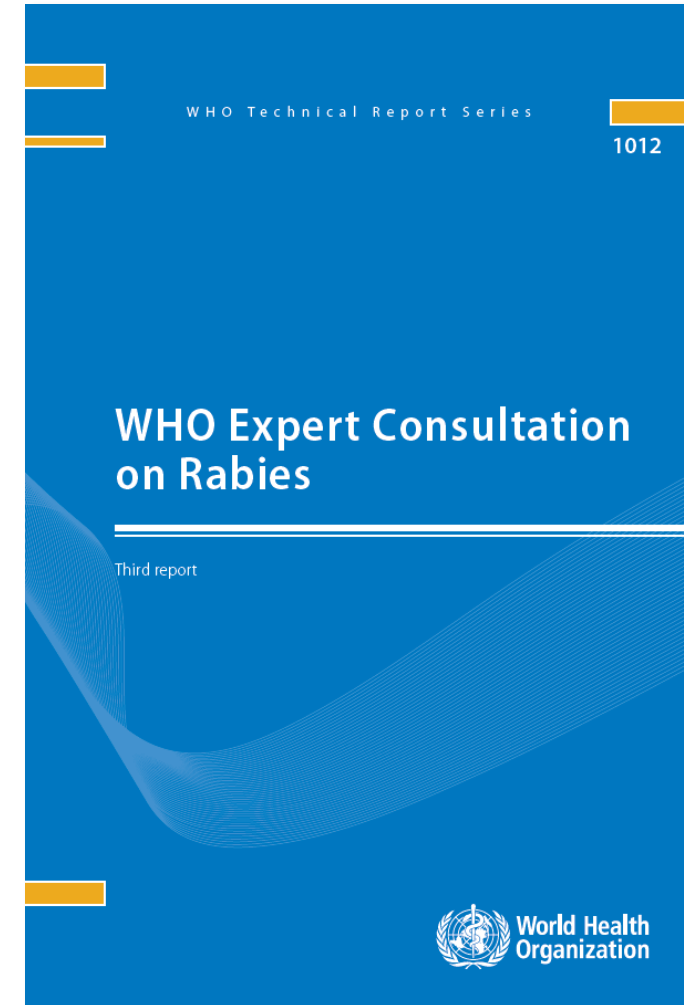


- **DPM objective article 7.7.5:**

- Promote and establish responsible dog ownership, in accordance with Article 7.7.17.
- Improve health and welfare of dog population
- Reduce the number of free-roaming dogs
- Stabilise the dog population by reducing turnover
- Reduce risks to public health and safety including dog bites, traffic accidents, and zoonotic diseases such as rabies, leishmaniosis and echinococcosis
- Contribute towards eradicating dog-mediated human rabies;
- Reduce nuisance caused by free-roaming dogs
- Prevent harm to livestock and other animals
- Prevent illegal trade and trafficking of dogs.

## National Action Plan: How to address culling?

- “Mass dog vaccination has repeatedly been shown to be effective for controlling dog-mediated rabies, whereas removal of dogs does not decrease dog density or control rabies in the long run. **Mass culling** of dogs should therefore not be a part of a rabies control strategy: it is **ineffective** and may be **counterproductive** to vaccination programmes, particularly when they **target free-roaming dogs.**”  
WHO 2018



## National Action Plan: How to address culling?

- “It is important to manage dog populations without compromising *animal welfare*,”
- “Euthanasia of dogs, used alone, is not effective for DPM. If used, it should be done in accordance with Article 7.6.1., and should be implemented in combination with other measures as part of a DPM programme to achieve effective long-term management. Reducing dog population size is not an effective means of reducing the number of rabies cases.”

### Euthanasia

*Euthanasia* of dogs, used alone, is not effective for DPM. If used, it should be done in accordance with Article 7.6.1., and should be implemented in combination with other measures as part of a DPM programme to achieve effective long-term management. Reducing dog population size is not an effective means of reducing the number of rabies cases.

As a process, *euthanasia* involves pre-*euthanasia* and handling procedures, *euthanasia* methods and agents, confirmation of *death*, and disposal of dead animals. When *euthanasia* is practised, the general principles in the *Terrestrial Code* should be applied, with the emphasis on using practical methods which achieve the most rapid, painless and distress-free-*death* possible while ensuring operator safety. *Euthanasia* should be conducted under the supervision of a *veterinarian*. To ensure *animal welfare* and operator safety, the personnel conducting *euthanasia* should have a complete understanding of, and proficiency in, the *euthanasia* method to be used.

#### 1. Restraint

When a dog needs to be restrained for any procedure, including *euthanasia*, this should always be done with full regard for operator safety and *animal welfare*. Animal handling should also minimise distress experienced by the dog prior to loss of consciousness. Some *euthanasia* methods should be used with prior sedation or anaesthesia. Regardless of the *euthanasia* method used, it is advisable to perform pre-*euthanasia* sedation or anaesthesia to minimise anxiety or facilitate safe *restraint*.

### Chapter 7.7.- Dog population management

#### 2. Euthanasia methods

The following are recommended methods of canine *euthanasia*:

- intravenous barbiturates;
- intraperitoneal barbiturates in small dogs or puppies, to be used only if the intravenous route is not feasible;
- intravenous anaesthetic overdose;
- inhaled anaesthetic overdose in small dogs (not neonates).

If anaesthetised:

- administration of barbiturates by alternative routes (intracardiac, intrarenal, intrahepatic, intraosseous).

If sedated:

- intravenous *euthanasia*-specific formulation of embutramide, chloroquine and lidocaine;
- intravenous *euthanasia*-specific formulation of embutramide, mebezonium and tetracaine.

Methods, procedures and practices that are unacceptable as primary methods of *euthanasia* on *animal welfare* grounds include air embolism, asphyxiation, burning, chloral hydrate, chloroform, cyanide, decompression, drowning, exsanguination, formalin, household products and solvents, pesticides and herbicides, hypothermia, insulin, neuromuscular blocking agents (magnesium sulphate, potassium chloride, nicotine and all curariform agents), manually applied blunt force trauma to the head, rapid freezing, thoracic compression, strychnine, nitrous oxide, ether, kill-trapping, CO from engine fumes, (CO<sub>2</sub>) if the required concentration and flow rates are not regulated and monitored, free-bullet without proper anatomical placement at close range by highly trained personnel, penetrating captive bolt followed by pithing, electrocution and *stunning* without a secondary kill method and any other method that could compromise the welfare of the animal.

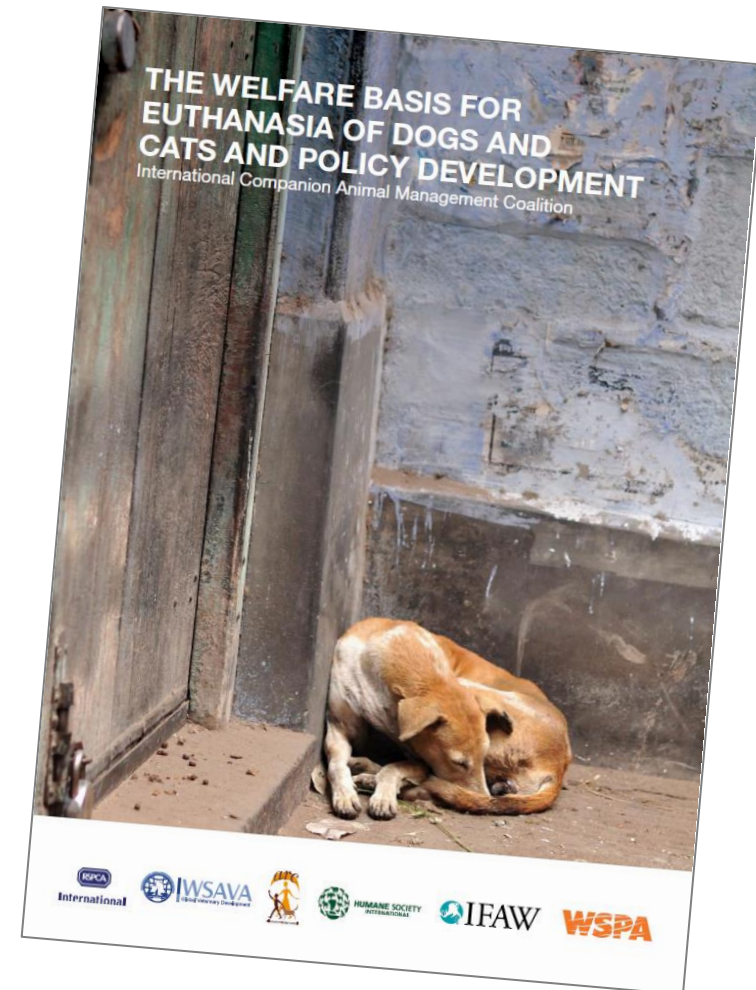
#### 3. Confirmation of death

For all methods of *euthanasia* used, *death* should be confirmed before animals are disposed of or left unattended. A combination of criteria is most reliable in confirming *death*, including lack of pulse, breathing and corneal reflex, and response to firm toe pinch; inability to hear respiratory sounds and heartbeat by use of a stethoscope; greying of the mucous membranes; and rigor mortis. None of these signs alone, except rigor mortis, confirms *death*. If an animal is not dead, another method of *euthanasia* should be performed.

#### 4. Disposal of dead animals

Dead animals should be disposed of in a manner that complies with legislation. Attention should be paid to the *risk* of residues occurring in the dead animal. Incineration is generally the safest means of disposing of dead animals (see Chapter 4.13.).

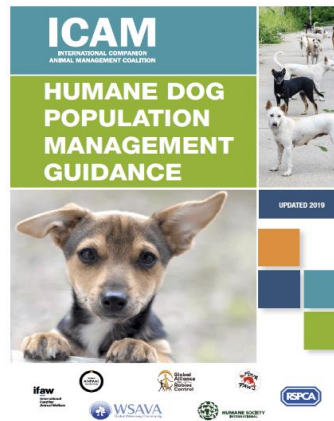
## National Action Plan: Humane and ethical





# Thank you

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