ICAM

INTERNATIONAL COMPANION ANIMAL MANAGEMENT COALITION

HUMANE DOG POPULATION MANAGEMENT GUIDANCE

UPDATED 2019

ifaw International Fund for Animal Welfare

WORLD ANIMAL PROTECTION

Global Alliance for Rabies Control

FOUR PAWS

RSPCA

WSAVA Global Veterinary Community

HUMANE SOCIETY INTERNATIONAL

Humane Dog Population Management Guidance

Table of Contents

CHAPTER 3: THE DPM SYSTEM 31

Introduction & Executive Summary

Introduction

ICAM

The International Companion Animal Management (ICAM) Coalition is an inter-organisation group comprised of representatives from International Fund for Animal Welfare (Ifaw), Humane Society International (HSI), Royal Society for the Prevention of Cruelty to Animals (RSPCA) International, World Animal Protection, FOUR PAWS, World Small Animal Veterinary Association (WSAVA) and the Global Alliance for Rabies Control (GARC).

This coalition was formed to support the development and use of humane and effective companion animal population management worldwide. We share experiences, ideas and data on companion animal population dynamics and management to coordinate and improve our current recommendations and guidance. Each organisation has agreed it is important that we strive to improve our mutual understanding through collaboration. We have a responsibility as funding and advisory bodies to ensure we are offering the most accurate guidance, based on the latest available data and concepts, to those involved with population management in the field. We also believe that it is important to be transparent and to document our opinions and philosophy whenever possible. It is to this end that this document has been produced – it is an update of our previous Dog Population Management guidelines published in 2007; it represents our recommendations at the time of writing, based on the knowledge we have accrued to-date, and will be subject to further updates when required.

We are acutely aware of the lack of data in this field and will strive to both support the collection of new data and incorporate that data into our future discussions, assessments and guidelines. Our freely available companion guide *'Are we making a difference? A guide to monitoring and evaluating dog population management*' [http://www.icam-coalition.org/IndicatorsProject.html] is our principal contribution to increase the data available for evidence-based dog population management.

Who this guidance is for

This document is intended for use by Government bodies, Non-Governmental Organisations (NGOs) and Intergovernmental Organisations (IGOs) who are involved in dog population management.

ICAM believes that legal and fiscal responsibility for dog population management properly resides with local and central government. Animal welfare NGOs should not be encouraged or seek to take on the authority's overall responsibility for dog population management, other than through a contractual agreement with appropriate funding and resources. However, animal welfare NGOs play an important role in guiding and supporting the government's strategy and ensuring competent authorities are accountable, well-advised and trained, so it is important for such organisations to have an understanding of all of the components of a comprehensive strategy. This will enable them to target their support where it can be most effective and to make the best use of limited resources.

Aim

In our role as animal welfarists, ICAM believes that when dog population management is deemed necessary, it is essential that:

- This is achieved in a humane manner
- It ultimately leads to an improvement in dog welfare alongside benefits for public and environmental health.

As NGOs, we also believe it is important that dog population management is achieved as effectively as possible, leading to sustainable and positive change to ensure the best use of limited resources.

The aim of this document is to provide guidance on:

- How to assess dog population management needs based on an understanding of dog population dynamics and
- How to select and implement the most effective and resource-efficient approach to managing the population humanely.

We are aware that dog populations can vary significantly between and within countries, in response to variation in human attitudes and behaviour towards dogs, and hence there is no single intervention that will work for all situations. Following from this assumption, we advocate strongly the need for dog population assessments to allow for evidence-based programme design, ensuring the design of the intervention is appropriate to the location and fit for purpose (can meet its stated objectives), followed by monitoring and evaluation to track progress, learn, adapt and therefore improve impact.

The only concept we consider universal is the need to focus on root causes of problems in a comprehensive way; this means that we must identify and address the sources of those dogs that are experiencing or linked to problems, as opposed to dealing only with the current visible roaming dog population in a reactive way.

How to use this guidance

This guidance document is to be used with its companion guide; *Are we making a difference? A guide to monitoring and evaluating dog population management*' [http://www.icam-coalition.org/IndicatorsProject.html]. This current guide introduces how to design and implement humane dog population management, whilst '*Are we making a difference?*' outlines how the effectiveness of such management interventions can be measured.

The main content of this guide is structured as follows:

- Chapter 1 **introduces principles of humane dog population management and how interventions should aim to influence the dog population.**
- Chapter 2 **explains the importance of assessment to understand the actual situation and enable evidence-based design of interventions. It also provides guidance for how these assessments can be conducted.**
- Chapter 3 **outlines the elements of a dog population management system that should be implemented based on assessment results.**
- Chapter 4 **describes the role of responsible authorities in creating an enabling environment for humane DPM.**

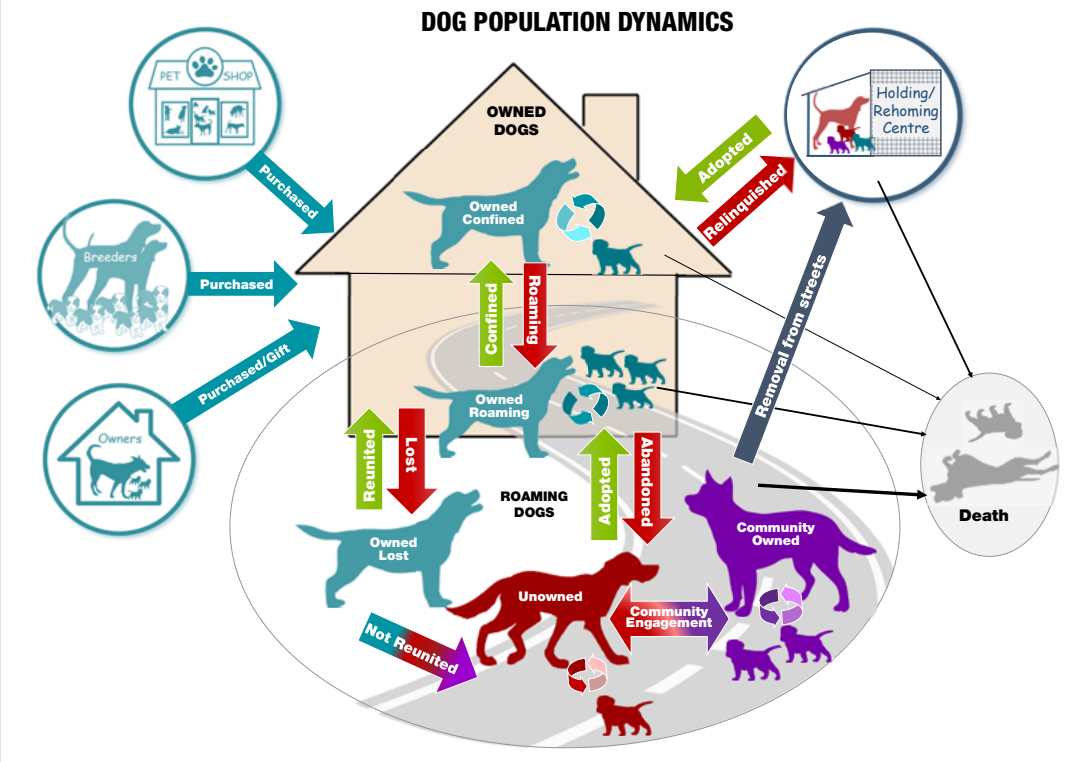
Executive summary

Chapter 1: Principles of Dog Population Management

Introduction to dog population dynamics and the principles of humane DPM

Dog Population Dynamics: How Dog Populations Work

Dog population dynamics is defined as the different sub-populations of dogs that interact to form the whole dog population. It takes into account the 'processes' of births, deaths and reproduction to account for how dogs enter and leave the population. It also takes into account how individual dogs move from one sub-population to another over their lifetime.



For full page diagram, see: https://www.icam-coalition.org/download/figure-1-dog-population-dynamics/

Dog Population Management

Dog population management (DPM) aims to have a sustained influence on the processes within dog population dynamics in order to change sub-populations in a targeted way.

Principles of DPM

Recognising our role as champions for animal welfare and striving for effective and efficient use of resources, ICAM believes the following principles must be adhered to in DPM:

1. **Humane and ethical.** DPM should be humane and ethical, minimising harm and maximising benefits for the dogs involved and the human communities. DPM cannot be considered humane if it includes indiscriminate killing of dogs, killing roaming dogs in the street or using killing as a sole measure of population management. It is unethical, unpopular, cruel when inhumane methods of killing are used and potentially dangerous for local communities. It is ultimately also ineffective as it focuses only on the current roaming dog population and does not address the sources of these dogs.
2. **Adapted to local dog population dynamics (no 'one size fits all' model).** Dog population dynamics differ between and within countries. DPM design should always be appropriate to the local conditions, and never replicated after a "model" that worked elsewhere. Important lessons can be learnt from DPM interventions in other locations, but they must be interpreted through the lens of the local situation.
3. **Sustained and adaptive.** DPM should be considered a *permanent community service*. While there will be times requiring greater activity or emphasis on certain activities, there will always be a need to manage dog populations. Ideally, management of dogs is integrated into mainstream society and the majority of management activities are carried out by dog owners. Dog population dynamics can be influenced by many factors in addition to the efforts of DPM interventions. DPM needs to adapt to work with changes in the wider context.
4. **Evidence-based design, monitoring and evaluation.** Following the 'no one size fits all' principle, and the abundance of assumptions about dogs, we emphasise the importance of using an evidence base when designing, monitoring and evaluating DPM interventions.
5. **Focus on root causes.** DPM will have limited effect if it addresses only those dogs currently experiencing or linked to problems and not their sources. For example, by only catching and killing dogs that are currently unowned, rather than tackling the motivations for the original abandonment of those dogs.
6. **Central role of human behaviour.** People have always managed their dog populations. DPM intervention is needed when this personal management leads to unhappy people, health risks and/or poor welfare for the dogs. Formal DPM interventions can provide access to alternative humane behaviours and create barriers to those behaviours that are inhumane or a risk to the community. Before taking action, you need to understand what people are already doing (or not doing) and identify what they would need to do differently in order for the DPM system to be more effective and humane. Taking time to engage with people to understand their reality, and work with them to ensure they can practice the right DPM behaviours.

See Chapter 1: Principles of Dog Population Management

CHAPTER 2: ASSESS, DESIGN AND EVALUATE

Using data to design and adapt a tailored and effective DPM system

Assess

To understand the dog population dynamics in a given community, several different methods may be used together. This dog population assessment can also expose the problems relating to dogs in the location, which will help when prioritizing key activities in the DPM system. The challenge is to invest enough in the dog population assessment to understand enough about dog population problems and dynamics to inform the DPM plan, without getting overwhelmed by too much research effort at the start. Monitoring as the intervention progresses can produce data to test remaining assumptions, allowing you to evaluate, learn and then adapt DPM to become more efficient and impactful.

Priority questions to address with a dog population assessment:

1. **Problems:** What are the problems related to dogs? Which dogs are involved in these problems?
2. **Population dynamics:** What are the key sub-populations and processes involved in your local dog population dynamics?

Example methods for dog population assessment:

- Key informant interviews
- Focus groups / participatory research
- Household questionnaire
- Street survey
- Holding facility / rehoming centre records
- Secondary sources of information
- Observation of roaming dogs

Design

So now you understand your dog population better, how will you influence their dynamics? Focus on those processes linked to sub-populations of dogs experiencing or linked to priority problems. What drives these processes? For each driver, ask why this exists so that you can drill down to root causes of processes. Look for particular groups of people with influence on root causes, specific human behaviours or barriers to services that you can influence through a DPM system.

This is neither simple nor an exact science. We provide three tools to help with this process. It requires a multi-stakeholder approach including representatives from the local community to bring greater understanding and ability to adapt to the local conditions.

Evaluate

Dog population assessment is likely to have left some questions about population dynamics unanswered. Dogs are also influenced by the external context, as society changes so too do dog population dynamics. Hence, once the intervention is set up, ongoing monitoring and evaluation is essential. Evaluation checks if DPM is working to achieve its impacts, tests assumptions about dynamics and exposes where DPM can be improved. See ICAM's (2015) *Are we making a difference?* guide for more guidance.

See Chapter 2: Assess, Design and Evaluate

Chapter 3: The DPM System

What you will do to manage dogs

A DPM system consists of *Foundations* that provide a legal basis as well as the political and social will to drive effective *DPM Services*. Altogether, these influence population dynamics to create the *Outcome* of positive human-dog relationships, which leads to change in one or more *Impacts*.

For full page infographic, see: https://www.icam-coalition.org/download/dpm-system-infographic/

Foundations

Effective dog population management is a permanent commitment, with interventions evolving over time rather than DPM coming to an end. This requires a combination of both a sustained governement system and political and social support, created by four Foundations: 1) Legislation and enforcement; 2) A Task force; 3) Concerted advocacy; and 4) Community engagement.

1. **Foundation 1: Legislation and enforcement**
    - Legislation relating to DPM occurs at two levels: central/federal/national legislation which provides a framework for DPM and secondary/bylaw legislation that details its implementation. Without enforcement, legislation will be ineffective.
2. **Foundation 2: Task Force**
    - Effective and sustained DPM requires sustained leadership from a task force, to drive the intervention in the long-term towards agreed impacts and through cycles of adaptive management. The task force must include multiple stakeholders. Humane Community Development provides an approach to creating such a task force.
3. **Foundation 3: Advocacy**
    - Advocacy in the context of DPM is a coordinated set of activities to influence the policy and practice of managing of dogs. It may need to start with building the case for DPM, using arguments from political, economic, health and ethical/social perspectives. Advocacy actions will need to be built on a foundation of research that has identified and analysed stakeholders and what they need to do differently.
4. **Foundation 4: Community engagement**
    - Community Engagement (CE) in DPM is a process of enabling conversations and building relationships between people who have a role or interest in improving the dog situation in their community. These people can collaborate as a community to assess the dog population and design and implement a locally suitable and sustainable DPM system. There are some general characteristics of good CE, such as being inclusive and maintaining good communications. There are also some DPM specific costs and benefits noted by organisations currently using CE in their DPM work.

See Chapter 3: DPM Foundations

DPM Services

DPM services are the DPM activities that when appropriately selected and combined for the location, should encourage and support positive human behaviours and provide a safety net for unmanaged dogs. The services influence the processes within population dynamics and therefore change dog sub-populations.

Not all services will be required for every location; they are presented as two categories of *fundamental services* that will be required in every location (although the emphasis and activities will differ between location and over time) and *context dependent services* that are not always required but there will be a time and place when population dynamics make them important to implement.

1. Fundamental services: Critical to all effective DPM systems

Promoting responsible behaviour

This section focuses on interventions that aim to change or reinforce specific behaviours in targeted individuals or groups of people. The *way* DPM services are implemented can influence how people behave. However, this section looks specifically at how communications can be used to change behaviour.

Outcomes:

- People's capability and motivation for targeted responsible and compassionate behaviour towards dogs is increased
- Social pressure and support for targeted responsible and compassionate behaviour is increased
- People recognise and value the role of DPM services and the professionals that deliver them

Strengthening DPM professional capacity

Provision of DPM services requires a range of skilled professionals. In many locations, these professionals lack the training, mentoring and support they need to be an effective part of a DPM intervention, and supplementary training will be needed along with improvements in foundation education of these professionals.

Outcomes:

- DPM services are accessible, good quality and meet demand.
- DPM professionals feel equipped and able to meet expectations and are motivated to be part of DPM interventions.
- DPM professionals are respected by the public and valued for their contribution to DPM

Reproduction control

Populations of animals are limited by survival, reproduction and immigration/emigration. Reducing reproduction is a humane way of limiting population growth, but for DPM this is not just about limiting population size and treating all dogs as equal targets for reproduction control, but rather managing reproduction as appropriate for individual dogs.

Outcomes:

- Reproduction control services are used in a targeted way to prevent unwanted litters, leading to a balance of 'supply and demand' where the number and type of dogs produced matches the number and type wanted by the community.
- Where community owned or unowned dog populations exist, reproduction control is used to stabilise or reduce their numbers to an acceptable level.

Veterinary care

Basic health care for dogs should include preventative care such as vaccination and deworming to protect the health and welfare of the dogs and to reduce the risk of zoonotic diseases. Rabies vaccination is the priority for preventive dog care in most countries. Veterinary care should also extend to treatment of health problems. Where the illness or

injury is incurable, or treatment is not viable due to cost or other limitations, euthanasia should be used promptly to end suffering.

Outcomes:

- Risks of transmission of zoonotic infections from dogs is controlled
- Dogs are maintained in a reasonable state of health and welfare
- Suffering is ended when treatment is not possible

See Chapter 3: Fundamental DPM Services

2. Context dependent services: Not essential to all DPM systems but are important when and where population dynamics demand them

Formal education of children

Formal education of children can have a role as part of a DPM intervention where the behaviour of children has been identified as something that needs to be changed. Education is usually focused on safety around dogs and providing care for dogs, as priority behaviours children can perform that influence DPM impacts.

Outcomes:

- Children behave safely with dogs leading to a reduction in bite incidence – in rabies endemic areas they also know how to respond after a bite, including immediate wound washing with soap and running water and promptly accessing medical care.
- Children understand priority health risks related to dogs and how good preventative care such as vaccination and deworming with dogs can reduce risks.
- Children understand how dogs communicate with their bodies and voices so they can identify when it is safe to interact with a dog and when they should stay away.
- Children understand dog needs and that if these needs are not met, dogs will suffer, hence developing the foundations of empathy towards animals.
- Children understand what good dog care is and how it matches the needs of dogs.

Holding facilities and rehoming

Shelters to provide permanent housing for roaming dogs are not a fundamental DPM service. The welfare of dogs in such facilities can be very poor and costs extremely high. Shelters fill to capacity quickly, while dogs are replaced on the street through migration and abandonment, thus creating an ineffective DPM service. Hence, shelters should not be used where there is a high number of roaming dogs and minimal adoption.

Holding facilities and rehoming systems providing *temporary* housing can play a part in DPM, when they are used alongside other DPM services that do address abandonment, and where there is a realistic potential for reuniting and adoption.

Outcomes:

- Reuniting of lost dogs with their owners is efficient and reliable
- Rehoming dogs in suitable homes as efficiently as possible to reduce financial and welfare costs of long-term kennelling

Identification and registration

Identification of a dog and registration of that dog with an owner in a national database provides an important tool for reuniting lost animals with owners. It can also be a foundation for enforcement of legislation and encourage a sense of responsibility in the owner as the animal becomes identifiable as his/her own.

Outcomes:

- Reuniting of lost dogs with their owners is efficient and reliable
- Registered owners of dogs can be linked to an identified dog, creating a sense of responsibility over the dog and proof of ownership
- Transparency of vaccination status for individual identifiable dogs (where health records are linked to registration)

Control of commercial breeding and sale

Poor standards of breeding and sale can cause significant dog welfare problems and is also a consumer protection issue and a potential cause of DPM problems. Controlling breeders and sellers can be done through legislation and enforcement; but also through education, support and peer pressure. Breeding and selling can also be influenced from the consumer end of the process.

Outcomes:

- Puppies are in the best possible health and welfare and are suitably socialised and habituated to cope with the life style and environment provided by their new owners.
- New owners are far less likely to experience unexpected or costly veterinary or dog training/behaviour consultation bills in period immediately after purchase.
- Breeders, sellers and consumers know what constitutes good breeding and selling practices and strive to achieve these.
- Breeders or sellers below standard and producing or selling dogs with poor health, welfare or behaviour are identifiable and penalised.

Managing access to resources

Reducing food resources accessible to roaming dogs, such as edible garbage, has significant negative welfare challenges where roaming dogs are relying on these food sources for their nutrition. Instead of *reducing* food resources, interventions should look to *manage access* to reduce conflict with people and other animals; restricting access to food in areas where roaming dogs are not tolerated whilst increasing access in more acceptable areas. Where the majority of the roaming dogs are owned roaming, the best alternative is improved access to resources in their own home.

Outcome:

- Reduced conflict with roaming dogs whilst maintaining resources essential for health.

See Chapter 3: Context Dependent DPM Services

Outcome: Positive Human-Dog Relationship

Within a DPM system, the foundations and DPM services should work together to achieve the following outcomes of positive human-dog relationships:

- **Dog owners should…**
  - Acquire dogs responsibly; when they have recognised capacity to provide care for the long term and avoiding breeders/sellers that do not protect dog welfare
  - Care for them to maintain good welfare according to the five welfare needs (environment, nutrition, social interactions, behaviour and health)
  - Manage breeding to ensure any puppies produced are wanted and rehomable
  - Manage dogs to limit risks, which may require humane confinement in countries where unsupervised roaming in public places is illegal or not tolerated by the local community
  - Keep dogs for life or rehome them responsibly.
- **Carers of community dogs should…**
  - Feed responsibly, avoiding potential conflict locations and times
  - Access services that control reproduction and provide basic veterinary services (principally sterilisation, vaccination and parasite control)
  - Act promptly to access veterinary care in the case of illness or injury, including euthanasia when treatment is not practically possible
- **Community (dog owners, carers and others) should...**
  - Feel safe with dogs in their community
  - Know who to go to when they have concerns about dogs in their community

Impact

One or more of the following list of eight desired impacts will be realised by the actions of the DPM system:

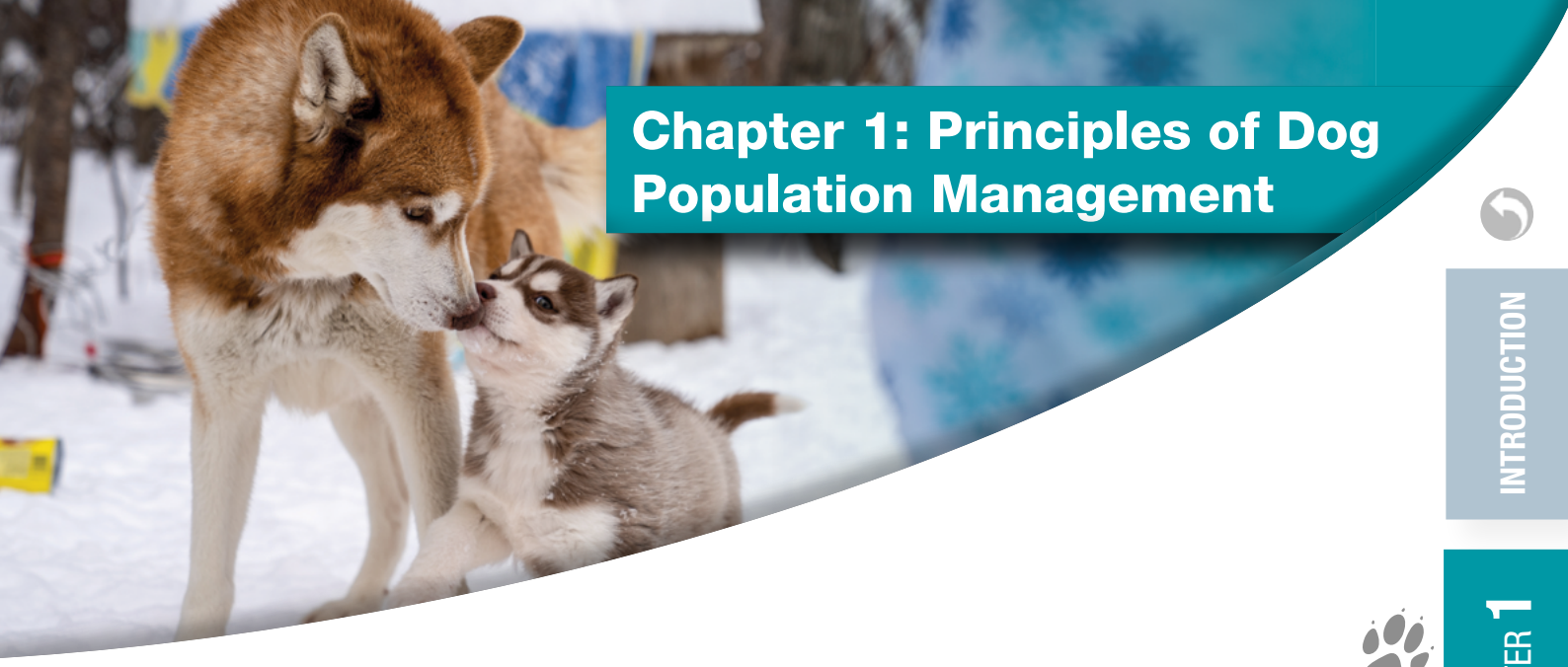
1. Improve dog welfare (animal based indicators)
2. Improve care provided to dogs (resource based indicators)
3. Reduce dog density/stabilise turnover
4. Reduce risks to public health
5. Improve public perception
6. Improve rehoming centre performance
7. Reduce negative impacts of dogs on wildlife
8. Reduce negative impacts of dogs on livestock.

CHAPTER 4: ENABLING HUMANE DPM

How competent/responsible authorities can support local DPM implementation

Implementation of the DPM system occurs at a local level however this requires a supportive and enabling environment created by the competent/responsible authority at the state, national and/or regional level. The components of this enabling environment are categorised into governance, politics, legislation and enforcement, funding, training and support and rabies control/elimination.

See Chapter 4: Enabling Humane DPM



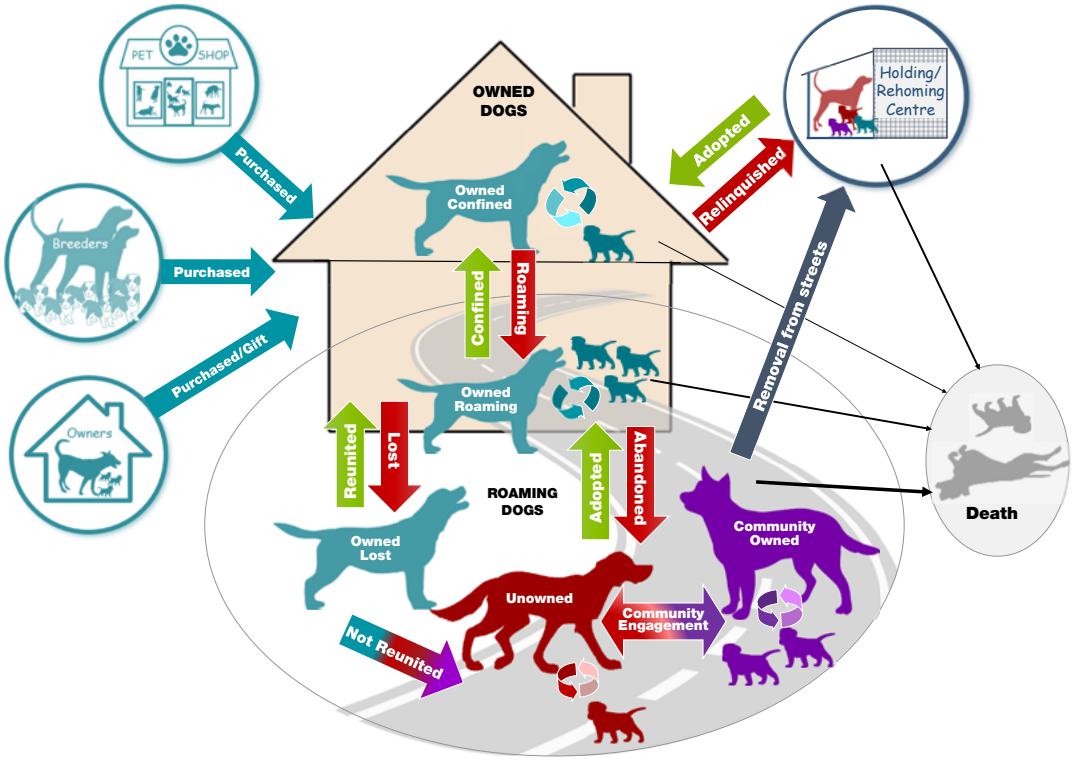
Chapter 1: Principles of Dog Population Management

Dog Population Dynamics: How Dog Populations Work

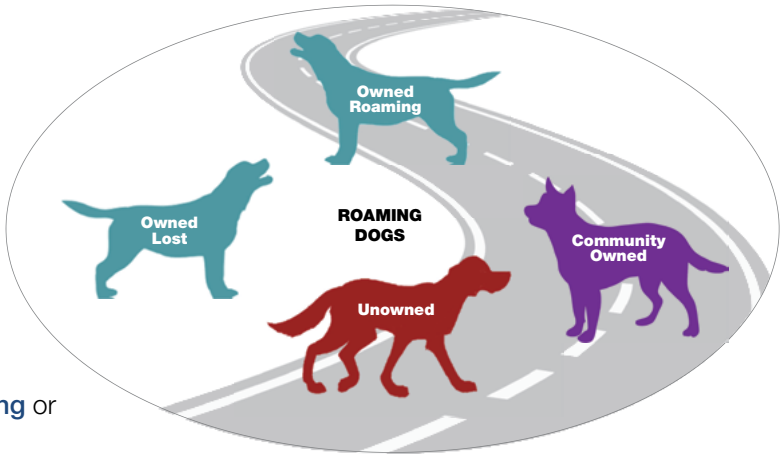
Dog population dynamics is defined as the different sub-populations of dogs that interact to form the whole dog population and the 'processes' of birth, death and reproduction, as well as how individual dogs move from one sub-population to another over their lifetime.

An example of a sub-population would be puppies born within households from owned female dogs. Through different processes, these puppies would move to other sub-populations; for example they may be given as gifts to friends and become owned dogs, or they may be abandoned and become unowned dogs roaming the streets. In **Figure 1** we can see a diagram illustrating the most commonly seen sub-populations and processes in dog population dynamics; sub-populations are represented by coloured dog icons and processes by the back, green and red arrows.

Figure 1: Dog Population Dynamics



For full page diagram, see: https://www.icam-coalition.org/download/figure-1-dog-population-dynamics/



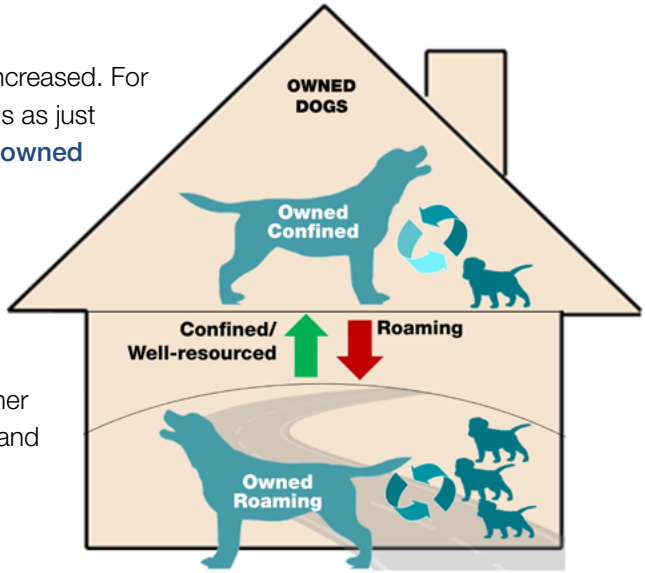
Note the sub-population of 'roaming dogs', represented by the road icon, is composed of four sub-populations; **owned roaming**, **owned lost**, **community** and **unowned** dogs. This is contrary to the commonly held misconception that all roaming dogs are unowned and unwanted; in many locations we find the majority to be **owned roaming** or **community** dogs.

The sub-populations of roaming dogs may not be clearly separated or immediately recognisable when seen on the streets. These sub-populations exist on a continuum from **unowned** dogs existing on the outskirts of human settlements and receiving no oversight or purposeful care from people; to **community** dogs benefiting from regular care and oversight from several community members who give these dogs names and know something about their individual histories; through to **owned** dogs with a referral household that claim ownership when asked, but either lose their dog or allow their dog to roam freely without their supervision for at least part of the day.

An individual dog may be in more than one sub-population within its lifetime. For example, it may:

1. be born as an **owned** dog,
2. be abandoned to the streets becoming an **unowned** dog,
3. charm its way into the **community** dog sub-population and
4. through the process of adoption, re-join the **owned** dog sub-population again.

The level of detail used in such models can be increased. For example, here we have represented **owned** dogs as just two sub-populations of **'owned confined'** and **'owned roaming'**.



However, **owned** dogs can be broken down into several smaller sub-populations based upon dog characteristics such as sex, role and breed type. For example, comparing guard dogs to pet dogs may reveal different owner motivations behind the processes of **acquisition** and **abandonment**.

Dog Population Management

Dog population management (DPM) aims to have a sustained influence on the processes within dog population dynamics in order to change sub-populations in a targeted way. For example, it can drive up adoption and reduce abandonment to reduce the number of dogs in the unowned dog sub-population.

PRINCIPLES OF DPM

In recognising our role as champions for animal welfare and striving for effective and efficient use of resources, ICAM believes the following principles must be adhered to in DPM:

1. Humane and ethical

- DPM should be humane and ethical, minimising harm and maximising benefits for the dogs involved and the human communities. It should avoid animal suffering and enhance dog welfare over their lifetime. For example, when catching and handling is required this should be done with compassion so that the dog perceives the human interaction as a positive and rewarding "learning experience" (see Annex D). Similarly, interventions that involve sterilisation must ensure high quality veterinary standards are maintained to minimise complications and associated suffering.
- DPM cannot be considered humane if it includes indiscriminate killing of dogs, killing roaming dogs in the street or using killing as a sole measure of population management. It is unethical, unpopular, cruel when inhumane methods of killing are used and potentially dangerous for local communities. It is ultimately also ineffective as it focuses only on the symptom of the current roaming dog population and does not address the sources of these dogs.

2. Adapted to local dog population dynamics (no 'one size fits all' model)

- Dog population dynamics differ between and within countries. Most variation occurs in how people behave with dogs, sources and motivations for dog acquisition, confinement/roaming, abandonment, tolerance and care of dogs on the street. DPM intervention design should always be appropriate to the local conditions, and never replicated after a "model" that worked elsewhere. Important lessons can be learnt from DPM interventions in other locations, but they must be interpreted through the lens of the local situation.

3. Sustained and adaptive

- DPM should be considered a **permanent community service**. While there will be times requiring greater activity or emphasis on certain activities (for example, sterilization or vaccination) there will always be a need to manage dog populations, as long as there are dogs owned in the community. This is not unlike other communal services such as road repair or education. Ideally, management of dogs is integrated into mainstream society and the majority of management activities are carried out by dog owners.

- Dog population dynamics can be influenced by many factors in addition to the efforts of DPM interventions. DPM needs to adapt to work with changes in the wider context. These may include, economic challenges, dog-related trends or migration of people, who may have differing relationships with dogs and ways of managing them.

4. Evidence-based design, monitoring and evaluation

- Following the 'no one size fits all' principle, and the abundance of assumptions about dogs (e.g. that all roaming dogs are unowned and unwanted), we emphasise the importance of using an evidence base when designing DPM interventions (see Chapter 2). We recognise that establishing a complete understanding of all aspects of dog population dynamics before intervention begins is beyond available resources in most cases. Hence we encourage the use of data collected through monitoring to evaluate the impact of DPM, allowing for regular adaptations of the intervention (see ICAM's '*Are we making a difference?*' guide).

5. Focus on root causes

- DPM will have limited effect if it addresses only those dogs currently experiencing or linked to problems and not their sources. For example, by only catching and killing dogs that are currently unowned, rather than tackling the motivations for the original abandonment of those dogs.

6. Central role of human behaviour

- Dogs are a domesticated species, reliant on humans for sufficient resources to thrive and breed successfully; feral populations are rare and usually not self-sustaining. This close relationship between people and dogs means the role that humans play in dog population dynamics cannot be ignored; human behaviour has a central role to play in DPM.
- People have always managed their dog populations, for example by confining dogs when they want to control their breeding, killing or abandoning unwanted dogs, rehoming dogs between friends and family when circumstances change, and providing preferential care to those dogs they want to keep whilst neglecting other less desirable dogs. DPM intervention is needed when personal management leads to unhappy people, health risks and/or poor welfare for the dogs. DPM systems provide access to alternatives (for example sterilisation to control breeding instead of abandonment of pregnant females or unwanted puppies) and create barriers to those behaviours that are inhumane or a risk to the community through legislation and social pressure.

Chapter 2: Assess, Design and Evaluate

Assess

In Figure 1 (page 17), we see the different sub-populations and processes that may be active within the dog population. In order to understand what is happening in a given community, several different methods may be used to assess dog population dynamics. This assessment can also expose the problems relating to dogs in the location, which will help when prioritizing key activities in the DPM system.

The challenge is to invest enough in the dog population assessment to understand enough about dog population problems and dynamics to inform the DPM plan, without getting overwhelmed by too much research effort at the start. Watching how a dog population changes over time, and in response to an intervention, will provide a deeper understanding of their population dynamics. For example, at baseline it takes a lot of effort to reliably measure the size of the roaming dog population and the different sub-populations of roaming dogs. However, the density of roaming dogs and some simple measures of their welfare and breeding can be fairly easily monitored using short and consistent surveys. This monitoring will provide data to test assumptions about population dynamics. You can learn from this data and then adapt DPM to become more efficient and impactful.

The following highlights priority questions to address with a dog population assessment:

PRIORITY QUESTIONS

1. Problems

- **What are the problems related to dogs? Which dogs are involved in these problems?**

2. Population dynamics

- **Sub-populations of dogs:**
    - What is the density of roaming dogs in problem locations? What proportion of these dogs are likely owned roaming, community or unowned dogs? (precise calculation of proportions will need substantial data collection effort usually beyond what is available)

- What is the total owned dog population? What proportion of these dogs roam freely at some point during the day or night?

Processes, in particular those processes related to dog sub-populations experiencing or linked to problems, for example:

- Where do roaming dogs come from?
- Where do owned dogs come from?
- What happens to owned dogs when they become sick or unwanted?
- What happens to puppies born to owned, community and unowned dogs?

PROBLEMS

What are the problems related to dogs?

Which dogs are involved in these problems?

Exploring problems related to dogs is an important first step in dog population assessment. It identifies which dogs are experiencing or linked to problems. Efforts to explore population dynamics can then focus on those priority dogs.

Identifying problems with input from other stakeholders is vital. Although many groups within the community may be tempted to assume they know what the problems are, their perception is not sufficient. Pursuing only the assumed problems according to a few vocal groups may mean that DPM does not address the underlying concerns of the whole community. Listening to people's perceptions of problems is ideally validated through objective data. Methods include:

- **Key informant interviews:** Listening to the views of those people that are likely to have an informed opinion on dogs; people who are responsible for DPM (e.g., local government), influence dog populations directly (e.g., vets and rehoming centre staff) or are experiencing problems linked to directly impacted by dogs (e.g., Health bite centre staff). Ask these people what problems they see in their community, whether there are particular dogs involved or particular locations where problems are most common. In addition to these perceptions, ask whether there is data available that measures these problems in terms of size or location. When more than one problem is described, ask which is the most important. Focus on priority problems may satisfy immediate stakeholder concerns, building confidence for tackling longer term problems. At the outset, the objective is to listen and gather perspectives rather than to challenge perceptions or try to reach common consensus.
- **Focus group:** A small number of citizens are invited to sit in small groups and share their perception of the problems related to dogs. Although the small number of participants makes focus groups unsuitable for establishing a reliable measure of the prevalence of problems, it does provide an opportunity to delve more deeply and identify which dogs are experiencing or linked to these. The groups should be inclusive to reflect a range of views, and selected to maximise openness and honesty in responses; the discussion requires careful facilitation. See page 62-66 of ICAM's *'Are we making a difference?'* guide for more information on how to implement participatory research.

- **Household questionnaire:** A sample of citizens can be asked for their perception of problems relating to dogs during a household questionnaire. Questions can explore the frequency with which they have experienced problems with dogs and also the type of problem involved (e.g., have you been concerned about roaming dogs in the past month? If yes, what was the concern?). Citizens can also be asked whether they feel the situation relating to dogs has changed over the period of an intervention (e.g., Have the number of roaming dogs increased, decreased or stayed the same over the past year?). See page 54-62 of ICAM's *'Are we making a difference?'* guide for more information on how to implement a household questionnaire.
- **Secondary sources of information:** These are any sources of information where you do not have to make a specific effort to collect the data yourself, this has already been done by somebody else, you just need to be able to access this information. This includes official or government-derived data such as number of dog bites reported to hospitals, records of dog-related complaints to municipalities or records of livestock or crop damage by dogs. See pageS 73-74 of ICAM's *'Are we making a difference?'* guide for more information on how to work with secondary sources of information.

Problems relating to dogs vary by location. Examples are provided below. This is not an exhaustive list:

Problems experienced by dogs

Dog welfare compromise (Animal-based measures): Dogs suffer a range of welfare problems that can be measured by looking at the dogs. These problems can be framed within the five animal welfare needs (Annex A):

- **Environment:** e.g., exposure to extremes of weather when living without shelter or stress caused by inappropriate housing and management. The dog experiences thermal and physical discomfort.
- **Nutrition:** e.g., malnutrition due to limited and unreliable sources of food and water. The dog experiences hunger and thirst.
- **Social:** e.g., aggressive interactions with people or being kennelled with many other dogs without opportunity to control social interactions. The dog experiences fear, frustration and pain related to physical injury.
- **Behaviour**: e.g., flight and fight in response to dog-dog aggression, perceived aggression from people or cruel methods of catching and handling. Confinement in kennels can include severe behavioural restriction, reducing the dog's choice and control over its environment. The dog experiences fear, distress and frustration.
- **Health:** e.g., infectious or metabolic disease, poisoning, injury through road traffic accidents and fighting, or inhumane death as part of population control. The dog experiences pain and distress.

Dog welfare compromise (Resource-based measures): Dogs experience welfare problems resulting from lack of suitable and reliable care provided by their owners and carers (neglect); leading to a failure to meet their basic needs e.g., nutrition, environment, health and behaviour, with associated mental suffering over their lifetime. Care is completely withdrawn when a dog is abandoned to the streets to join the unowned dog sub-population.

- **High rates of euthanasia in holding facilities and rehoming centres:** In locations with holding facilities and/or rehoming centres, rehoming can be slow or unsuccessful and rates of euthanasia unacceptably high.

Problems linked to dogs

- **Risks to public health.** Road traffic accidents and dog bites cause distress, injury and can transmit fatal and/or debilitating zoonotic diseases, of which rabies is the most feared. Other zoonotic diseases are transmitted via infected faeces (e.g., echinococcosis) or via vectors such as sand flies (e.g., leishmaniasis).
- **Public perception.** People may perceive dogs to be a nuisance or fear them, leading to aggressive interactions between people and dogs. Alternatively, they may feel distressed by seeing dogs suffer, in particular sick and dying puppies. Either perception may cause conflict within a community or lead people to avoid certain areas of their community. These concerns may also be reported to local authorities; dog-related complaints, whether expressed as concern for dogs or annoyance about them, can be a significant concern for officials.
- **Roaming dog density.** Some communities are comfortable with the presence of roaming dogs. But may feel the density is too high (e.g., too many in a given space) because dog-related problems are more intense at high density; such as noise, competition between dogs and welfare problems.
- **Negative impacts on wildlife.** Some locations will have local wildlife populations that can experience negative interactions with roaming dogs, through predation, stress or disease transmission.
- **Negative impacts on livestock.** In other locations, livestock are at risk of negative interactions with roaming dogs through predation, harassment or disease transmission, such as echinococcosis and rabies.

These eight categories of problems relating to dogs form the foundation of the eight categories of potential impact described in the monitoring and evaluation section of this chapter (page 29) and in more detail in ICAM's (2015) '*Are we making a difference?*' guide.

By describing the resolution of a **problem,** you create an **impact**, e.g., 'high prevalence of roaming dogs in poor welfare' can become 'improved roaming dog welfare'. In the early stages of dog population assessment, the full suite of problems can be outlined. However problems will usually need to be prioritised for DPM to target an achievable number of impacts.

POPULATION DYNAMICS

Figure 1 (page 17) breaks the dog population down by ownership and level of control into different sub-populations. For each sub-population, the characteristics of the dog population (demography) such as sex, age, breed type, welfare state and population size or density can be determined. This can be done with a combination of different methods. Understanding the whole system, not just one sub-population, allows us to identify all sources of those dogs experiencing or linked to problems. This encourages DPM interventions to act on **sources**, not just those dogs currently experiencing or linked to problems.

Here are some of the most common methods for assessing dog sub-populations and

CASE STUDY 1

Using multiple methods to assess the dog population in Kathmandu, Nepal

Knowledge gained from street surveys, questionnaires, focus groups and epidemiological data were combined to build a picture of Kathmandu's dog population dynamics. This included key learnings about dog welfare, roaming owned dogs, abandonment and community care; wisdom needed to create a customized DPM system to suit Kathmandu. **View full case study online at:** https://www.icam-coalition.org/assessing-the-dog-population-in-kathmandu-nepal/

dynamic processes. In Annex B we suggest questions, analysis and interpretation to help you learn more about dogs from these methods:

- Household questionnaires can help you explore the size, demographics, welfare and dynamic processes of the owned dog population. Including processes of acquisition, abandonment, roaming and breeding. See page 54-62 of ICAM's *"Are we making a difference?'* guide for more information on how to implement a household questionnaire.
- Street surveys can help you explore the density, welfare, breeding and geographical spread of roaming dogs. This includes owned roaming, community and unowned sub-populations of dogs and the processes of abandonment, roaming and breeding. See page 70-72 of ICAM's *'Are we making a difference?'* guide for more information on how to implement a street survey.
- Focus groups and Participatory research are a great way of exploring dynamic processes and the motivations and barriers behind them. Particularly for abandonment and control of reproduction as understanding the motivations and barriers behind these processes can be very useful when designing DPM and are not so easily explored using other methods. See page 62-66 of ICAM's *'Are we making a difference?'* guide for more information on how to implement participatory research.
- Holding facility / Rehoming centre records can be used to explore the sub-population of dogs that are housed in these facilities and the processes that lead them to arrive and leave the facilities. In particular, owner reported reasons for relinquishment and dog demography (sex, age, reproductive status and breed) can indicate the drivers behind the process of relinquishment and abandonment.
- Secondary sources of information for assessing dog populations can include a registration database of identified dogs, records of dog control activities by local authorities, numbers of licensed breeders or sales outlets, veterinary records and municipal records of complaints/concerns about dogs. See page 73-74 of ICAM's *'Are we making a difference?'* guide for more information on how to work with secondary

sources of information.

- Observation of roaming dogs can help you understand the dynamics of roaming dogs and explore the sub-populations of owned roaming, community and unowned dogs. This is a time consuming method but has the potential to deliver a deep understanding of roaming dogs. ICAM's *'Are we making a difference?'* guide (page 80-83) provides some advice on using a behavioural observation method to measure interactions between dogs and people; this may give you some ideas. However, innovation is welcome here, not least if this can involve community members noting and sharing their insights on the dogs that they observe in their local area.

Dog population assessment provides the data required for evidence-based design of a DPM system. Moving from assessment to design requires the following:

- **Interpret** data to develop your understanding of dog population dynamics in your location and to identify remaining assumptions
- **Prioritise** problems, identify which dogs are experiencing or linked to the majority of these problems and which people influence their dynamics; so the DPM system can be targeted
- **Match** these priority dogs, people and processes to a combination of DPM services (Chapter 3) that are most likely to be effective but are also feasible to deliver.

This is neither simple nor an exact science. In the next section and Annex C we provide tools to help with this stage; design tool 1: **Visualising data**, design tool 2a: **Problem tree** and 2b: **Objective tree**. It is at this stage that the principles of humane DPM should be actively used during decision making. Here are those principles again, reinterpreted for this design phase:

- **Humane and ethical:** Select only services that are humane, maximise opportunities to enhance dog welfare by making interaction with DPM services a positive experience for dogs and people.
- **Adapt to local conditions:** Learn from DPM systems in other locations, but note that dynamics and priorities in your location may be different, so you will need to adapt your plan accordingly.
- **Sustained and adaptive:** Develop and implement a plan for sustainability of services from the outset, know the context will change and make time for regular evaluation and adaptation.
- **Evidence-based design, monitoring and evaluation:** Use data to test assumptions and inform decision making, not just during initial design but through cycles of adaptive management.
- **Focus on root causes:** Recognise that dealing with dogs that are already experiencing or linked to problems is essential for both the dogs and the community, but don't work exclusively here. Where do these dogs come from? These are the root causes that you must also address.
- **Human behaviour:** People's behaviour influences all dog population dynamics. To be effective, the DPM system will need to change selected human behaviours. This may be with specific behaviour change tools (Chapter 3: Promoting responsible behaviour),

or by delivering DPM services in a thoughtful way that encourages responsible and humane behaviours. For example reproductive control of community dogs with informed consent for surgery from community representatives who also help to catch dogs and offer post-operative oversight and care after dogs are returned.

VISUALISING DATA

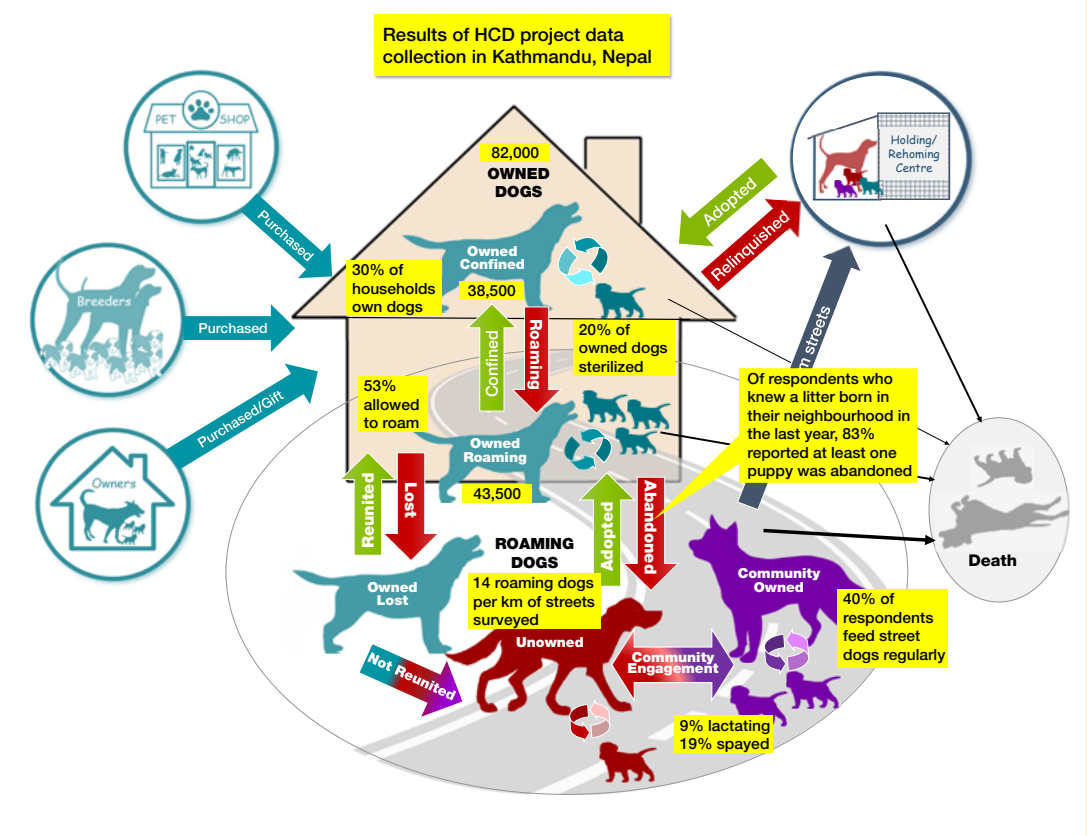
Dog population assessment can produce a lot of data. Visualising your data helps interpret what your data is telling you about your dog population. It can also flag up those areas where data is scarce; this is where remaining assumptions should be made clear. You may be able to test these assumptions in future using data collected through monitoring.

Design tool 1: Visualising data

Summary data can be overlaid on the dog population dynamics diagram (Figure 1) to highlight the processes that need to be considered when designing DPM. Figure 2, below, displays the data collected through the multiple methods described in Case Study 1: Dog population assessment using multiple methods in Kathmandu, Nepal, providing a visualisation of the size and charcter of subpopulations and processes within the Kathmandu dog population.

Figure 2: Example of Data Collection

Data associated with sub-populations and processes explored through multiple methods in Kathmandu, Nepal



In Kathmandu, not every process was explored:

- For example, there is no data on purchase of dogs.

Sometimes just an indicator is provided rather than an estimated total:

- For example, of those respondents who knew of a litter born in their neighbourhood in the last year, 83% reported at least one puppy was abandoned. This indicates abandonment is high but doesn't result in an estimate of the number of puppies abandoned per year.

This is an example of balancing the resources required for a full and detailed assessment with the need to fund actual implementation. This level of assessment provided sufficient evidence to explain particular DPM design decisions. For example, the opportunity to run DPM as a community driven project, capitalising on the support of the many households already regularly providing food to dogs on the street, expressing concern for their welfare and actively engaging in their care.

See Case Study 4: Manu Mitra, an example of community engagement in Kathmandu, Nepal

Designing the DPM System Solution

So now you understand your dog population better, how will you influence their dynamics? Focus on those processes linked to sub-populations of dogs experiencing or linked to priority problems. ***What drives these processes?***

For each driver, ask why this exists so that you can drill down to **root causes of processes**.

- For example, if abandonment of puppies appears to be a significant source, ask: *What drives people to abandon puppies?*
- If this is because the entire litter was unwanted, ask *why breeding is not controlled? Is this an issue of price, accessibility or confidence in vet procedures?*

Look for particular groups of **people with influence on root causes**, **specific human behaviours** or **barriers to services** that you can influence using the **Foundations** and **DPM Services** outlined in Chapter 3.

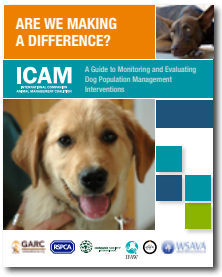
This should be done using a **multi-stakeholder approach** including representatives from the local community. Varied perspectives alongside the evidence gathered through the dog population assessment will bring greater understanding and ability to adapt to the local conditions. Using a **Task Force** to design DPM brings the benefit of multi-stakeholder perspectives (Chapter 3 Foundation 2).

Annex C describes a 2-part tool (**Problem** and **Objective Trees**) that can be used for prioritising dog related problems, identifying dynamic processes and their drivers, through to selecting DPM activities that will influence root causes.

There may be some processes and/or drivers that are not open to influence at this time due to limited resources or likely resistance from citizens. The decision to leave these unaddressed at this stage should be explicit, shared and agreed. Their impact on dog population dynamics should be reviewed over time and reconsidered for DPM attention if they appear to be significant in future.

Although the DPM system should be strategically designed to be as targeted and efficient as possible, in the early stages there may be a need to identify some 'quick wins'. You may, or may not, have evidence to suggest these activities are strategically focused on root causes. However, they are chosen because they will do no harm and can build community trust in the DPM system as well as staff skills and confidence. For example; rabies vaccination campaigns, sterilisation and treatment of highly visible community dogs, training for DPM professionals, education programmes for children in bite prevention and dog care and improvement to or closing a failing rehoming centre.

Evaluate



This section provides a brief overview to monitoring and evalution. A comprehensive guide is provided by ICAM's (2015) *'Are we making a difference?' A guide to monitoring and evaluating dog population management.*

Dog population assessment is likely to have left some questions about population dynamics unanswered. Dogs are also influenced by the external context, as society changes so too do dog population dynamics. Hence, once the intervention is set up, ongoing monitoring and evaluation is essential.

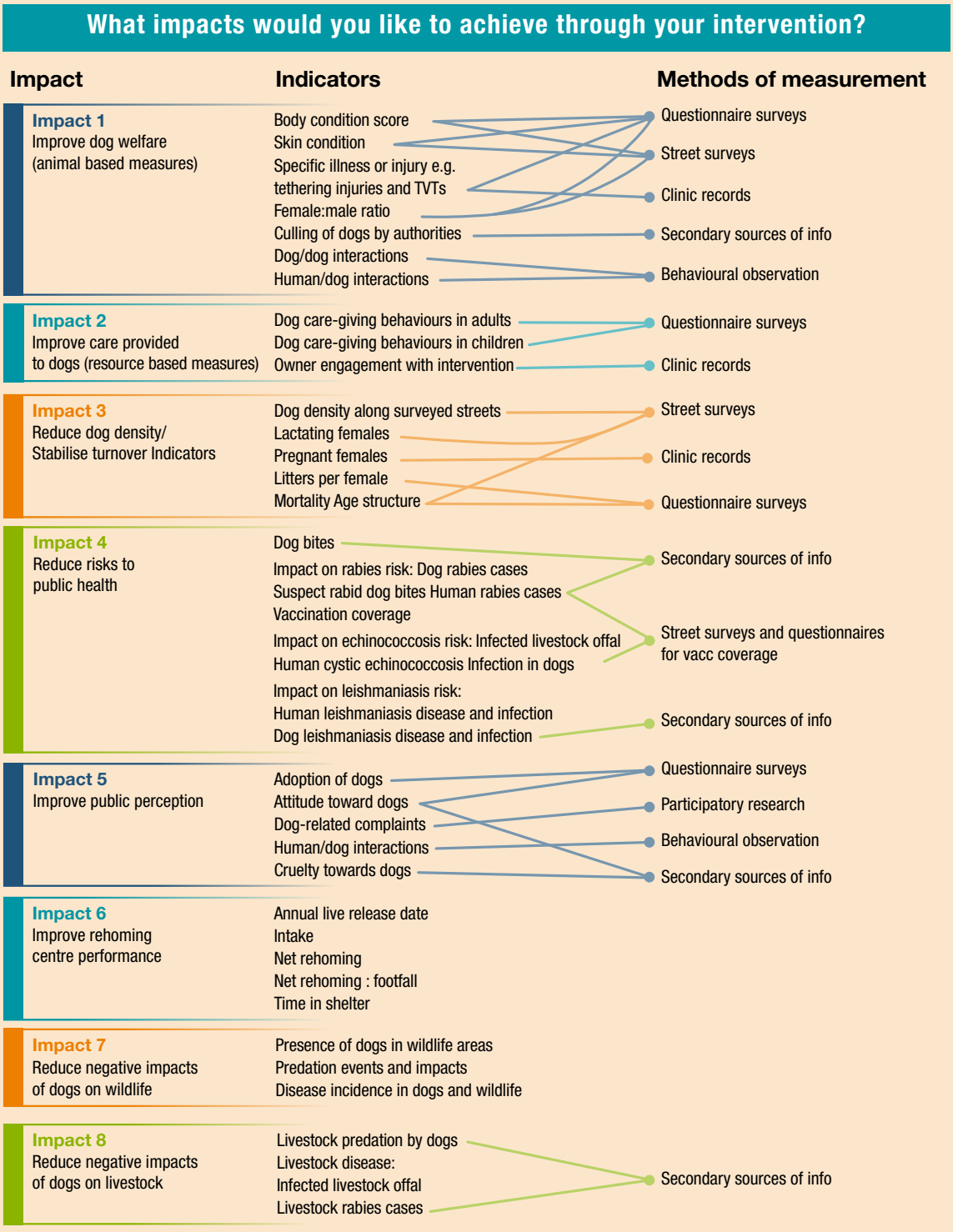
Evaluation checks if DPM is working to achieve its impacts, tests assumptions about dynamics and exposes where DPM can be improved. Monitoring requires measurable indicators. Indicators of activities tend to be straightforward expressions of the DPM effort made (for example, the number of dogs sterilised).

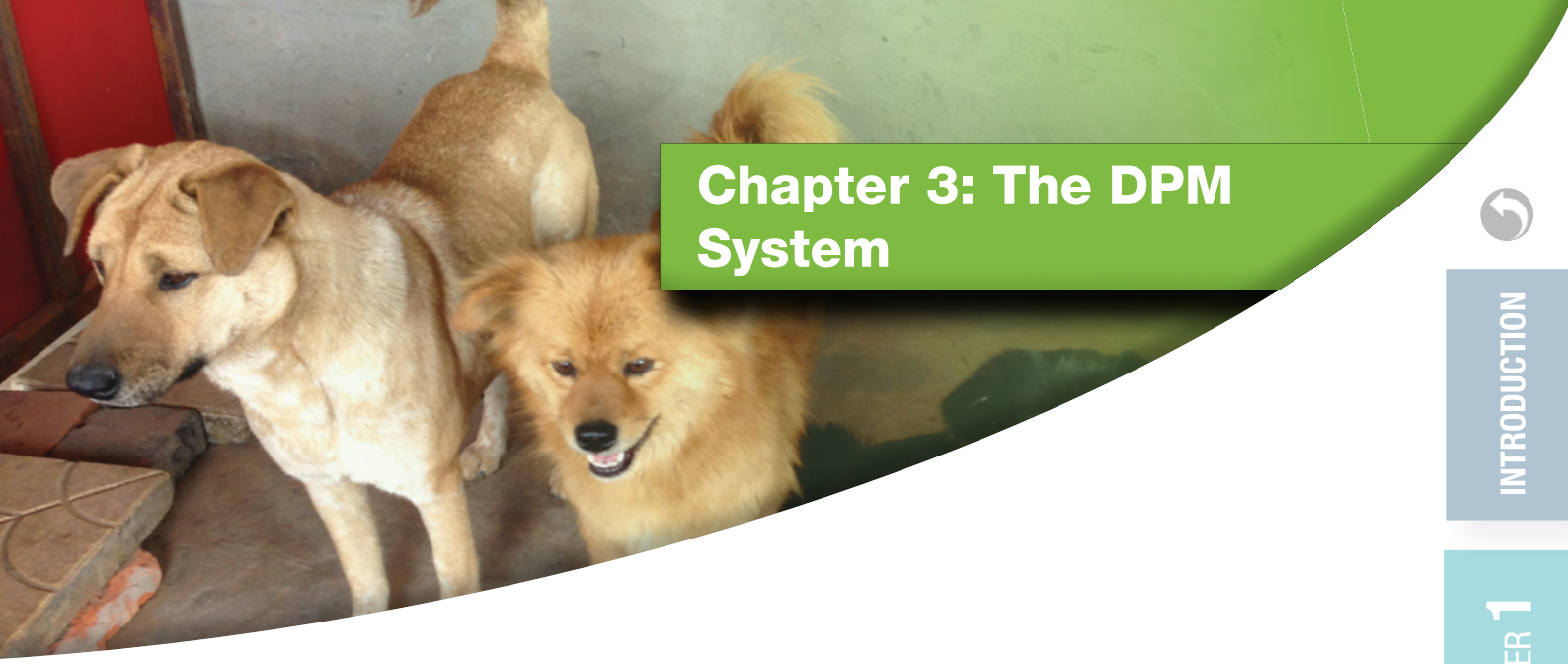
However, measuring indicators at the impact level can be more challenging. ICAM's (2015) *'Are we making a difference?* guide identifies eight impacts, and for each provides a list of potential indicators that could be used to measure changes. These indicators are the visible signs of an impact; e.g., the percent [%] of the roaming dog population that is emaciated is an indicator of roaming dog welfare. The guide also provides practical advice on the methods that can be used to objectively measure indicators.

Figure 3 (see next page) provides a diagram of the eight impacts, associated indicators to choose from and methods of measurement.

Figure 3: Impacts, indicators and methods of measurement

From ICAM's *'Are we making a difference: A guide to monitoring and evaluating dog population management'*





Chapter 3: The DPM System

Overview

This chapter outlines the DPM system, which includes all the interconnected foundations, services, outcomes and impacts for humane and effective dog population management.

The Foundations provide the legal basis, political will and social motivation to drive effective DPM Services. Together, these foundations and DPM services influence population dynamics to create the desired Outcome of positive human-dog relationships, which leads to one or more Impacts.

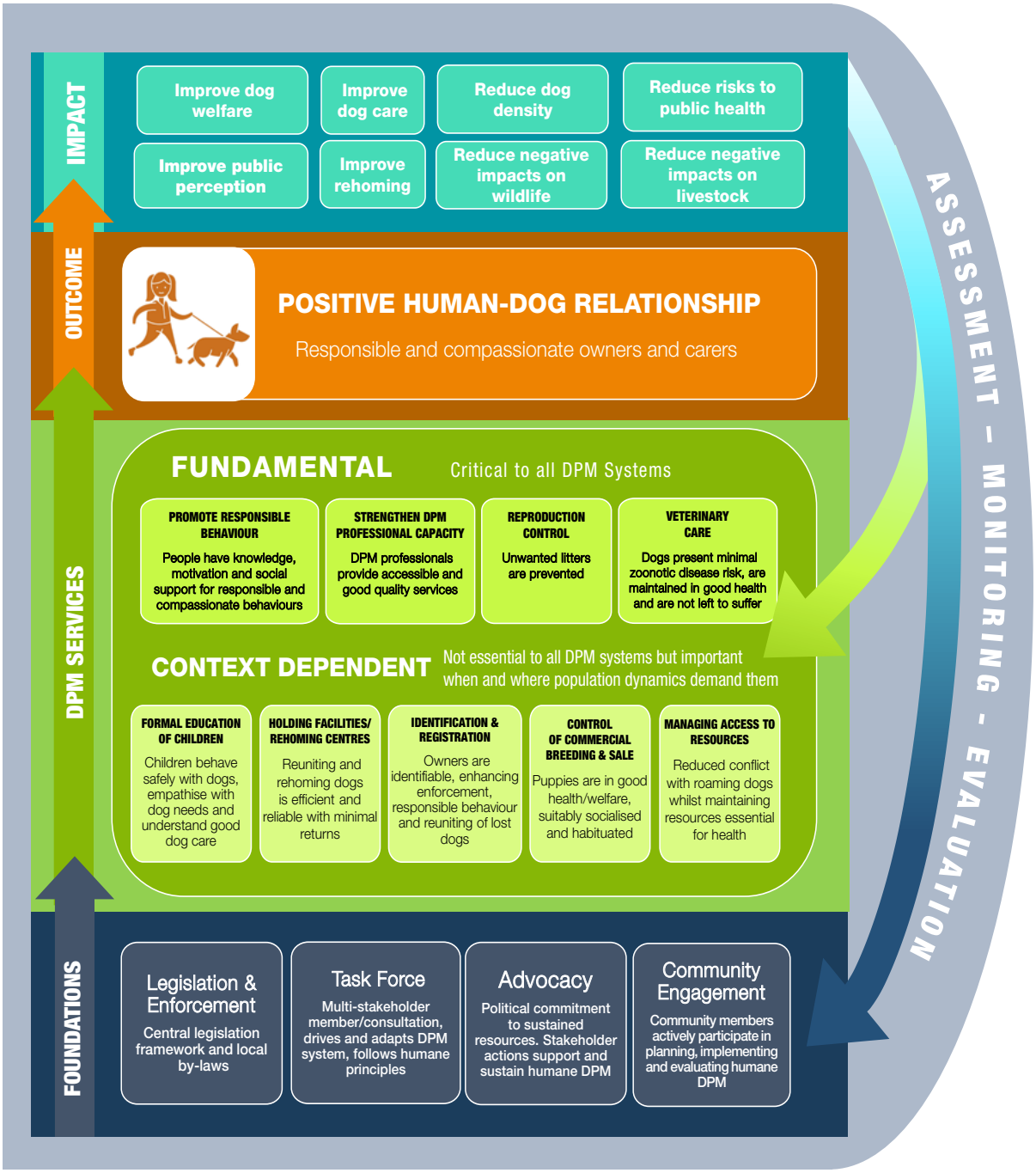
Figure 4 provides a visualization of the DPM system, highlighting the different foundations, services and impacts from which a community will choose to create a customized system for managing dogs in their community.

This overall system should be:

- built on evidence from local dog population assessment and
- adapted based on ongoing monitoring and evaluation (Chapter 2).

The DPM system is designed and implemented at the local level (e.g. municipal level), but also requires the support of an enabling environment at the state, national or regional level (Chapter 4).

FIGURE 4: VISUALISATION OF THE DPM SYSTEM



For full page diagram, see: https://www.icam-coalition.org/download/figure-4-dpm-system/

Foundations

Effective dog population management is a permanent commitment, with interventions evolving over time to integrate learnings from ongoing assessment, monitoring and evaluation. Sustaining effective DPM requires the support of an embedded system of DPM within government and professional stakeholders, such as vets, who help owners/carers manage their dogs humanely. In addition, since the behaviour of dog owners is a core principle of DPM, widespread social change may also be required.

There are four foundations to creating this necessary combination of sustainable government, professional systems and a supportive social and political environment:

1. Legislation and enforcement
2. Task force leadership
3. Advocacy
4. Community engagement

FOUNDATION 1: LEGISLATION AND ENFORCEMENT

Legislation relating to DPM occurs at two levels:

- Central/federal/national legislation which provides a framework for DPM
- Secondary/bylaw legislation that details its implementation.

To ensure it is suitable for evolving dog population dynamics and ownership practices, **legislation** at both levels must be reviewed, updated and expanded on a regular basis. Recognising that legislation can be adapted over time, initial legislative drafts should take note of what is both essential and currently realistic to enforce and what may currently be beyond dog owner/DPM professional capacity to comply with and therefore need to wait for future updates. For example, owner/keeper/carer provision of care to meet dogs' basic needs is essential, whilst mandatory identification and registration may require some years of DPM system investment before it becomes viable to enforce.

Central/federal/national legislation

DPM framework legislation usually sits within a central Animal Health/Welfare, Veterinary or Public Health Act and outlines the following:

- Who is responsible for implementing DPM
- Which DPM services should be provided. If a holding facility for roaming dogs is used, this is where the minimum period that a dog should be kept for reuniting with owners is usually stated. If there are any requirements (e.g. when a dog is showing signs of rabies) or restrictions (e.g. when a dog is physically and behaviourally healthy) on euthanasia, these are usually also noted here.

- Any legislation protecting animals from cruelty and neglect or requirements for owners/keepers to provide sufficient care, will apply to dog owners. You may also need to specify additional dog-specific requirements, such as: annual rabies vaccination, identification and registration in a specific database, prevention of unsupervised roaming or non-abandonment.

It is the role of responsible authorities to ensure a suitable and supportive legislative framework for DPM is created along with the necessary capacity for enforcement (see Chapter 4). This framework legislation can also be used to ensure there is a budget available for DPM at the local level.

Secondary/bylaw legislation

Secondary/bylaw legislation sits within local government regulations and can allow for some variation in how the framework legislation is implemented at the local level. This provides flexibility to reflect local conditions.

Although not ideal, where framework DPM legislation does not exist and cannot currently be developed, some progress can be made by focusing on introducing secondary/bylaw DPM legislation under a related but non-DPM specific framework legislation, such as agriculture, urban, environment or public health.

Enforcement

Without enforcement, legislation will be ineffective. DPM legislation enforcement may fall to different professionals, including local government officials, police and specialised Animal Welfare/Control Officers. Enforcement should primarily focus on ensuring owners and carers are aware of their responsibilities according to the legislation. This includes clarifying what dog owners/carers should and should not do, as well as identifying barriers to responsible behaviours and ensuring that DPM services help overcome these barriers. (For example, where microchipping and registration are mandatory, DPM law enforcement should ensure subsidised microchipping services are available to low-income or limited mobility owners). A minority of enforcement should be spent on identifying and penalising people who do not adhere to the legislation.

CASE STUDY 2

By-laws, enforcement and DPM interventions in Zagreb, Croatia

Zagreb City Council introduced DPM by-laws along with a range of interventions to help with owner compliance, to fulfil the municipal responsibilities outlined by the national animal welfare legislation in Croatia. **View full case study online at**: https://www.icam-coalition.org/by-laws-enforcement-and-dpm-interventions-in-zagreb-croatia/

Resources:

- World Animal Net model animal welfare law
  http://worldanimal.net/our-programs/model-law-project
- Council of Europe European Convention for the Protection of Pet Animals
  https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/125

FOUNDATION 2: TASK FORCE

Effective and sustained DPM requires motivation and political will to improve the dog situation; this can be built through advocacy (see Foundation 3: Concerted advocacy). It requires participation from a wide range of stakeholders to ensure it is appropriate and targeted; this can come directly from community engagement (see Foundation 4: Community Engagement). It also requires sustained leadership from a task force to drive the intervention in the long-term towards agreed impacts and to manage ongoing cycles of adaptive management. The task force is also responsible for adhering to the principles of humane DPM as outlined in Chapter 1.

The DPM task force should include a variety of stakeholders at different levels of society:

- Government officials and professionals, such as vets, to evolve and maintain policy and practice to support DPM on a wide geographical scale.
- Community level stakeholders to ensure interventions are participatory, implemented, appropriate and evaluated. Maintaining motivated leadership at the community level may be supported by establishing a recognisable DPM community group identity.

The Humane Community Development (HCD) process of engaging and empowering a community to develop their own evidence based DPM intervention (Box 3.1) implicitly creates a leadership team with representatives from a wide range of DPM-related stakeholders in the community (Box 3.2) for a list of DPM stakeholders). Where HCD is not possible, an

CASE STUDY 3

Humane Community Development process for designing and managing DPM in Kljuc, Bosnia

The Humane Community Development process gave Kljuc community the structure and mentoring they needed to come together to solve their dog problems themselves. Local stakeholders worked together to analyse their own data and appreciation of dog problems and dynamics. From this they developed a realistic plan they could resource locally and continue to develop with improved communication and leadership of DPM. **View full case study online at**: https://www.icam-coalition.org/designing-and-managing-dpm-in-kljuc-bosnia/

alternative is for a single agency to take the lead in driving DPM, but with a commitment to consult with DPM stakeholders along the way, ensuring their perspectives are included when planning and evaluating an intervention and their actions embedded as part of the DPM system.

BOX 3.1: HUMANE COMMUNITY DEVELOPMENT (HCD)

A process of engaging and empowering a community to develop their own evidence based DPM intervention.

IFAW's Humane Community Development (HCD) provides a participatory framework for communities to work together to find humane, sustainable solutions to dog issues that are having negative consequences for people and animals.

Because human-dog conflicts stem from many different causes and human-dog relationships differ community to community, HCD planning begins by engaging the community about their concerns, and helps them to identify and take ownership of their own solutions.

Community members live in the same place or have responsibilities for what happens in that place (e.g. local government representative). They work together to collect, interpret and manage data in order to inform the creation and implementation of their HCD action plans.

The result is a community-owned program that cultivates empowered participants and humane, sustainable change.

See https://www.icam-coalition.org/tool/humane-community-development-hcd/ to access e-learning modules on HCD.

BOX 3.2: DPM STAKEHOLDERS

Stakeholders for DPM are those that are part of any current DPM system (e.g. government veterinary departments and rehoming centre staff), exert influence on population dynamics processes (e.g. private veterinary profession) or are significantly impacted by roaming dog populations (e.g. doctors working with dog bite units and/or zoonotic disease centres). The OIE provides a list of key stakeholders in their Stray Dog Control standard (Terrestrial Animal Health Code Chapter 7.7); other stakeholders may also be relevant. The following is a list of possible stakeholders; those with * are considered essential.

- **Government** – usually local, but central will also be relevant for policy and statutes and the key stakeholder if the programme is national. Several departments are likely to be relevant, including agriculture/veterinary/animal health, health, environment (especially related to garbage collection), tourism, education and sanitation.**
- **Veterinary community** – national governing body, veterinary professional association, private and government practitioner groups and university veterinary department *
- **NGO community** – local, national and international in animal welfare, animal rights, public health and human development related fields*
- **Animal sheltering, fostering and rehoming community** – government/municipality run and private/NGOs*
- **Community Based Organisations (CBOs)** – may have been created to tackle other issues such as family health and environment but can expand to include DPM relevant material
- **Academic communities with relevant experience** – e.g. animal behaviour, veterinary science, sociology, ecology and epidemiology
- **Legislators** – departments relevant for both writing and enforcing legislation.*
- **Educators** – in schools and universities
- **Local media** – for education, publicity and local support
- **International bodies with relevant responsibilities** – World Health Organization (WHO), World Organisation for Animal Health (OIE) and worldwide veterinary associations
- **Local community leaders/representatives***
- **Local community** – both dog owners and non-owners

FOUNDATION 3: ADVOCACY

Advocacy in the context of DPM is a coordinated set of activities to influence the policy and practice of governments, non-governmental organisations, professionals (such as veterinarians), industry (such as dog sales outlets) and individuals, in order to create positive and sustained changes in the management of dogs. The term 'advocacy' in this context involves many tactics that we use in our daily lives, such as research, building alliances, communication, negotiation and compromise to find achievable and mutually-beneficial ways forward. One difference between the use of these tactics in our daily lives and advocacy in DPM is that DPM advocacy activities should have clearly stated targets and objectives (i.e. who are we advocating to, why we are advocating to them and what we want them to do).

Advocacy will be needed at the local level where implementation of the DPM system occurs as well as at the state, national or regional level where the enabling environment for humane DPM can be created (see Chapter 4).

Building the case for DPM

Advocacy begins with building the case for humane DPM, which will foster the political will needed for a community to invest time and money in humane DPM despite other competing issues. Below are existing frameworks in different thematic areas and at different geographic levels that combine to build the case for humane DPM. You can use choose the most relevant factors to create effective and engaging advocacy messaging that answers the following questions for your location:

- What compelling arguments can be used to advocate for DPM?
- Why should humane DPM matter to different target groups?

Political; Global

- The World Organisation for Animal Health (OIE) has included DPM within the Terrestrial Animal Health code (chapter 7.7), creating an international standard for humane DPM that should be implemented by the 180 OIE member countries and territories. Each member country/territory has representation at the OIE; hence the national veterinary authorities should be aware of this international standard. The OIE standard shares the principles and approaches outlined in this ICAM guide. In some regions, a Regional Animal Welfare Strategy has been developed by the OIE and other stakeholders to help with implementation of standards relating to animal welfare; where DPM is mentioned, there may be opportunity for added political pressure and support.
- The United Nations' Sustainable Development Goals (SDGs) for 2030 provide a focus for development efforts. The Declaration which introduces the SDGs states that the development approach to be used should be one "…in which humanity lives in harmony with nature and other living species are protected." There are also two SDGs that relate to DPM:
    - SDG3: Ensure healthy lives and promote well-being for all at all ages; includes goal 3.3 'By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and

other communicable diseases'. Rabies is one of the neglected tropical diseases to be targeted. Achieving progress of this indicator requires reducing/eliminating rabies in the dog population through mass canine vaccination. DPM is believed to contribute to vaccination coverage by reducing susceptible puppies and abandonment of dogs to the unowned and unmanaged population, instead creating a stable, healthy and long-lived population of vaccinated dogs. It should also reduce costs by increasing owners' efforts to vaccinate their dogs, and reducing the efforts vaccination teams need to reach and handle dogs for vaccination. Consistent with SDG3, the World Health Organization (WHO), the Food and Agriculture Organization of the UN (FAO), OIE and the Global Alliance for Rabies Control (GARC) launched the global strategic plan to end human rabies deaths from dog-mediated rabies by 2030. Their theory of change states 'responsible dog ownership drives progress' of the societal changes needed to reach this goal and the plan demands 'promotion of guidelines for effective dog population management'.

- SDG11: Make cities and human settlements inclusive, safe, resilient and sustainable. There are no specific targets or indicators that directly relate to dogs. However for a city to be considered safe by its citizens requires management of dogs to ensure they do not present an unacceptably high risk that makes people avoid or fear some areas of their community.

Political; Local

- The roaming dog population and its management is a priority issue that many citizens feel strongly about because of the close relationship between people and dogs and the high prevalence of dog ownership. It is a highly visible issue, played out on public streets. Local governments often cite dog issues as one of the most common subjects for complaints; this may relate to problems caused by the dogs, concerns about the suffering of dogs or complaints about inhumane control practices. Implementing a humane and effective approach to dog management is likely to receive positive support from local citizens; potentially representing valued voters in local democracy.

Economic

- The costs of an unmanaged dog population can be high. They can include dog bites, disease, road traffic accidents, faecal soiling, nuisance behaviours, tourists' complaints, and predation/worrying of livestock and wildlife. There may also be social costs: citizens may be anxious about walking or cycling in places where dogs roam leading to reduced 'walkability' of the streets.
- The costs of inhumane control can also be high. Inhumane control includes killing of dogs on the streets, inhumane handling during collection from the streets, housing in inappropriate conditions, killing (with inhumane methods) after a period of holding or long term kennelling with little or no chance of rehoming. Inhumane control tends to focus on the symptoms of the current roaming dog population and fails to address the root cause of the problem which is the source of roaming dogs. As a result, the costs of inhumane control efforts do not decrease over time, because control activities must be sustained as killed/removed dogs are replaced from the source.

- Humane and effective DPM should focus on the source of roaming dogs and create change in human behaviour, ultimately fostering greater responsibility for management of dogs by owners and carers. This has the potential to reduce DPM system costs to the community over time.

Health

- There are several zoonotic diseases and parasites shared between dogs and people, including leishmaniasis, echinococcosis and guinea worm, with rabies being typically the most feared. Effective DPM enhances dog owner/carer efforts to minimise the zoonotic disease risk presented by their own dog or community dog by ensuring they are vaccinated and de-wormed regularly. It can also increase understanding of necessary health seeking behaviours, such as the need for post-exposure treatment after a dog bite.
- Even when not associated with transmission of rabies, dog bites can be a significant public health concern. Bite prevention education can help people, especially children, avoid situations where dogs are more likely to bite. Increasing owner investment in dog socialisation and training can reduce the probability that dogs will bite by addressing the underlying motivations, which are most commonly related to fear.
- Where DPM reduces reproductive activity, it will also support disease control by reducing the birth of susceptible puppies and abandonment of unwanted litters or adults that would become unmanaged unowned dogs.
- People may also suffer psychologically if they witness inhumane control of dogs such as cruel handling or killing of dogs. Humane DPM activities should be a positive experience for both dogs and people.

Ethical/Social

- The desire for humane DPM may come from a place of altruism; wanting to protect a sentient animal with the capacity to suffer from inhumane treatment. This compassion for animals must be recognized, highlighted and validated as a core component to building the moral case for animal welfare, although it may need to be presented alongside other enabling arguments.
- Mahatma Gandhi is quoted as saying 'The greatness of a nation and its moral progress can be judged by the way its animals are treated.' Dogs are no different to other species in terms of their capacity to suffer and are therefore equally deserving of humane treatment. But because of the close relationship between people and dogs, and the visibility of the roaming dog population, the ethical questions relating to DPM may be very publicly debated. This makes the activities used as part of DPM very visible indicators of the moral progress of a country or city.
- Social capital is a form of economic and cultural currency in which social networks are central; it's about how citizens engage with each other in their community and how well the community is functioning for the citizens. In economic terms, it is a form of capital or currency that is in the business of public good. When we consider the

impact of dogs on social capital, we can see the potential for both positive and negative effects. Dogs can help people create social groups around dog ownership and care, and where walking dogs is part of the cultural norm, can contribute to good physical and mental health. However, roaming dogs can also present a barrier to people by creating anxiety when walking along public streets, not least for those people trying to walk their own dogs. Humane DPM may also act to increase social capital where community engagement is used as a central tool for DPM actions, for example neighbours helping to identify, handle and provide post-operative care for community dogs in need of sterilisation.

Each community may emphasise the mix of these factors differently, ideally drawing from local examples and evidence.

Advocacy planning and action

Advocacy is critical to launching, sustaining and evolving DPM. For example, advocacy actions can be used to:

- Establish a commitment to act humanely in DPM, which may take the form of a principle statement within a government policy on DPM.
- Allocate the specific responsibility for DPM to an individual/department within government; include the responsibility for building cross-sector actions for DPM.
- Establish and/or increase the budget available for DPM. Concurrently, set up a budget committee to track costs and benefits of DPM.
- Introduce or improve legislation to prevent cruelty and increase responsible dog ownership and care.

Advocacy research will be needed to ensure these actions are targeted and clear. This research will be focused on analysing stakeholders to determine:

- Who is responsible, influences or is impacted by DPM?
- Who is spending what on DPM and what other resources could be mobilised?
- Who needs to do what to make access to DPM services such as reproduction control easier?
- What legislation/regulation is relevant to DPM?

For more information on advocacy and tools for research ahead of planning advocacy actions, see World Animal Net's strategic advocacy course and associated toolkit. Campaigns are a type of advocacy focused on achieving a specific change (policy or practice). The actions undertaken to achieve such change could range from mobilising public action online and offline, to causing disruptions, to simply holding dialogues with target stakeholders. For example, asking your Mayor to pass a policy that endorses the clear humane guiding principles of a renewed DPM intervention or getting future dog owners to reconsider buying a puppy and instead visiting a rehoming centre to explore options for adoption. Example guidance on developing a campaign include module five of World Animal Net's strategic advocacy course or Amnesty International's campaigning manual.

FOUNDATION 4: COMMUNITY ENGAGEMENT

Community Engagement (CE) in DPM is a process of enabling conversations and building relationships between people who have a role or interest in improving the dog situation in their community. They are called a community because they live in the same place or share a common characteristic, such a profession (e.g. vets) or socio-economic status (e.g. rural farmers using working dogs). These people can collaborate as a community to assess the dog population and design/implement a locally suitable and sustainable DPM system. They can mobilize resources, influence human behaviour towards dogs and catalyse changes in DPM policy and practice. CE is not a one-time event, but an ongoing process that evolves as human behaviour towards dogs changes over time, using a process of evaluation and learning as a community.

CE has been undertaken intuitively within DPM interventions for many years. In some cases, this was because the actions of community members were needed to deliver DPM services due to limited resources; at other times, the engagement of community members was essential for effective management of DPM because it was recognized that their actions were the root cause of many DPM problems. However, CE is not currently employed in all DPM interventions and often needs to be strengthened where it exists; hence it has been explicitly included in this guide.

What does CE look like?

CE can use many different methods of engaging people in DPM. Table 1 provides examples of CE strategies in DPM, ranging from minimal to high levels of participation. While government will remain ultimately responsible for DPM, the greater the level of community participation, the greater their involvement and actions in DPM interventions and the higher the likelihood those intervention will be appropriate and sustained. However, there are barriers to increasing levels of participation, including: limited time, restricted budgets for specific activities with no room to manoeuvre, and differing social status between stakeholders that cannot be overcome. In recognition of these very real barriers, attempts to enable any level of participation in DPM should be applauded.

What does good CE look like?

CE comes in many forms and the most suitable approach will depend on the community. Some communities will have recognised community structures, often based on official local government roles and hierarchies, while others will have less formal networks; some will communicate in person while others principally engage through social media. However, effective CE approaches that result in sustainable change share some common characteristics[1]:

Inclusive

- People and groups who are affected by DPM are engaged at the earliest opportunity, including both ‘pro’ and ‘anti’ dog people. See Box 3.2 for a list of potential stakeholders in DPM.

[1] This list of characteristics was adapted from the Scottish Government National Standards for Community Engagement (2016)

- Measures are taken to involve people who may be disadvantaged from participation, such as those in rural areas or with low income.

Methods

- A variety of methods are used throughout the engagement to make sure that a wide range of voices are heard; these can include facilitated participatory methods, focus groups, semi-structured interviews and questionnaires.
- The methods used are evaluated and adapted, if necessary, in response to feedback from participants.

Participatory planning

- The community identifies which dog-related problems they want the DPM intervention to focus on.
- Community stakeholders define success as one or more explicit impacts plus measurable indicators; they also state how evidence will be gathered for these indicators, including who will do this and when.
- The resources available and planned timescales are sufficient to make the DPM plan realistic.

Communication

- Information on the engagement process, DPM plan, implementation and evaluation is clear and easy to access.
- Systems are in place to make sure the views of the wider community are captured and available to shape the intervention, as well flowing information back to keep the community informed; this will be particularly relevant if there are dog owners that are not well represented at community meetings.

CASE STUDY 4

Manu Mitra: An example of community engagement in Kathmandu, Nepal

Manu Mitra creates ward-based committees and team of volunteers to assess, monitor and implement DPM within each ward. Creating engaged and informed communities that are part of local government structures and therefore likely to be sustained. **View full case study online at**: https://www.icam-coalition.org/manu-mitra-an-example-of-community-engagement-in-kathmandu-nepal/

Impact

- The provision of DPM services improves and more community members are involved in service delivery.
- Partners are involved in monitoring and reviewing the quality of the engagement process and resulting impact on dog-related issues.
- Learning and evaluation help to further shape the DPM intervention.
- Participants have improved skills, confidence and ability to take part in community engagement in the future, beyond DPM.

Costs and benefits of Community Engagement

Costs of CE:

- **Time consuming.** At the outset of CE, a lot of time may be needed to build trust between community members. It also takes time to develop a shared understanding of dog problems and root causes, and to build a shared vision of success.
- **Quality of services.** Experts in service delivery may be concerned about the quality of services delivered with and by community members, particularly in the early days of implementation. The experts may feel they can provide a more efficient and higher quality service if they were doing it alone. Although services that cause harm to animals are not acceptable, a lower quality of service delivered with community involvement after a lengthier planning and training phase should be balanced out by the long-term benefits of CE.

Benefits of CE.

Though not an exhaustive list, here are some examples of benefits noted by organisations currently using CE in their DPM work:

- **Sustainability.** CE can make communities feel responsible for DPM and justified in demanding government action in DPM, avoiding dependency on external agencies and mobilising resources, such as local veterinary capacity.

CASE STUDY 5

Abhay Sankalp: A sustainable solution to human-dog conflict for improved human-dog relationships

Animal Birth Control in India has traditionally not included structured community engagement. However, Abhay Sankalp is a campaign involving local residents in assessing their local dog population and designing and implementing DPM. This has been implemented in Vadodara and Dehradun for the last two years and has shown evidence of reduced human-dog conflict. **View full case study online at:** https://www.icam-coalition.org/abhay-sankalp-a-sustainable-solution-to-human-dog-conflict-for-improved-human-dog-relationships/

- **Resilience**. CE helps the community become practised at evaluating their impact and evolving their DPM intervention in response to learning (also known as 'adaptive management'); this can help them be resilient to change.
- **Impact**. CE can improve perceived and actual impact of DPM by ensuring focus on the problems of greatest concern to the community and building their motivation and enthusiasm to see those problems solved.
- **Effectiveness.** CE can improve effectiveness of population management because communities understand their local dog population dynamics and human behaviour relating to DPM better than outsiders.
- **Financial**. CE can reduce costs by encouraging and enabling full community action and support; full community action will only occur with full participation; the more efforts made to engage people, the more action will occur in response.
- **Welfare**. CE has the opportunity to positively impact the lifetime experience and welfare of the dogs because communities are present in the long term, as opposed to the temporary interventions of outside agencies.
- **Influencers**. In many communities, there are people already playing an important but informal role in DPM. They naturally influence how people in the community interact and manage their dogs, possibly because these influencers are community leaders or perceived experts in dogs. Harnessing their influence to support DPM interventions can be very effective, while excluding them may lead to conflicting messages for the community.

CE is a widespread and effectively-used approach in health and development interventions. It can be worthwhile to explore what CE methods are already being effectively used in your community and adapting or 'piggy backing' on these for DPM.

TABLE 1: EXAMPLES OF COMMUNITY ENGAGEMENT STRATEGIES IN DPM

Level of participation: Non-participation / passive	
Definition	**DPM examples**
No members of the community are aware or involved	• NGO runs a catch, neuter and return intervention using expert catchers who are active in the early morning catching roaming dogs and transporting them back to a clinic for surgical sterilisation. The clinic has kennel facilities for post-operative care. The dogs are returned to the point of capture once recovered, also in the early morning. Although some community members notice the dogs leave and return, they do not know what happened to the dogs or what their ear notches/tags mean. • NGO staff create and distribute flyers promoting good dog care at markets, bus stops and other places in the community where people are gathered.
Level of participation: Co-option	
Definition	**DPM examples**
Token representatives chosen but have no real input or power	• Municipal vet office informs the ward representative that they will be arriving on a particular day to provide two hours of rabies vaccination for dogs brought to the ward office by their owners; ward representative must advertise that this service will be available to the local dog owners.
Level of participation: Compliance and informing	
Definition	**DPM examples**
Tasks assigned with incentives; outsiders decide the agenda and direct the process	• NGO offers to subsidise sterilisation of owned dogs using a local vet; they will provide 70% of the cost of spaying a female dog owned by people living in a particular location; the balance will be paid by the owners. • NGO offers to sterilise and vaccinate community dogs, but community members will need to help catch and handle the dogs as well as provide regular food, water and monitoring following surgery. • People with an interest in dogs are paid by an NGO to spend a few hours each week talking one-on-one to dog owners in their community about how best to care for their dogs to improve their welfare and reduce public health risks.
Level of participation: Consultation	
Definition	**DPM examples**
Local opinions are sought outsiders analyse and decide on a course of action	• A local NGO pays a facilitator to run focus groups with local dog owners to learn why they think some dogs are abandoned. The facilitator synthesizes the focus group transcripts, which are used by the NGO to select the services they will provide through their DPM intervention. • The municipal vet department is recognised as the lead agency for DPM within their geographical area. However, municipal officials are conscious that they are only one stakeholder in the DPM issue. They get support from an external NGO to consult with many other stakeholders in the municipality and use output from their discussions when planning their DPM intervention.

Level of participation: Cooperation	
Definition	**DPM examples**
Local people work together with outsiders to determine priorities; responsibility remains with the outsiders for directing the process	• NGO invites community members to attend workshops about dogs in a community meeting place. They use participatory exercises to get the community members to share their concerns about dogs and rank these in order of importance. The top three are used to set the desired impacts for the DPM intervention. • Local vet association notes an increase in dog rabies cases and asks an NGO to help them design a public relations campaign to increase the uptake of annual rabies vaccination at veterinary clinics.
Level of participation: Co-learning	
Definition	**DPM examples**
Local people and outsiders share their knowledge to create new understanding and work together to form action plans, with outsider facilitation	• During a series of workshops, a group of local people representing several community stakeholders (municipality, vet clinic, local NGO and dog owners) work with an international NGO to explore problems relating to dogs and root causes of those problems. Together, they design a DPM plan, which is implemented for 2 years by the local stakeholders using some seed funding from the NGO before a monitoring, evaluation and learning workshop is held to reflect and refine the DPM intervention. (See box 1 for IFAW's HCD process as an example of co-learning CE with the potential to become Collective Action).
Local people representing several stakeholders set their own agenda and mobilise to carry it out, in the absence of outside initiators and facilitators.	• The multi-stakeholder group that started a DPM intervention through co-learning participation with an external NGO continues to function after the NGO has exited. The community stakeholders hold regular evaluation meetings where they describe progress of their DPM activities and indicators of impact; they learn from these discussions and propose changes to activities as a result. • A small group of concerned citizens ask for support from the newly-elected Mayor to undertake a new, more humane DPM intervention. They are provided with municipal funding and, together with an Animal Welfare Officer from the local municipality office, initiate formation of a multi-stakeholder group to plan the new DPM intervention. The Animal Welfare Officer mentors the group through the process, resulting in a locally grown DPM intervention with municipal support and funding.

This table is adapted from Pretty (1995) in Cornwall, A. 1996. Towards Participatory Practice: Participatory Rural Appraisal (PRA) and the Participatory Process. In Participatory Research in Health: Issues and Experiences. de Koning, K. and M. Martin, eds. p. 96. London: Zed Books.

DPM Services

DPM services are the locally-relevant activities, that encourage and support positive human behaviours and provide a safety net for unmanaged dogs in a community. These services have impact by influencing the dog population dynamics within the community.

The services (Box 3.3) required for effectively managing the local dog population are selected during the DPM design stage. The selection is based on an understanding of dog population dynamics in the community reached through dog population assessment and aided by applying the **principles of humane DPM**. These principles also apply to implementation of DPM services, in particular:

- **Humane and ethical:** implement the services humanely. Maximise opportunities to go beyond humane to actually enhance dog welfare by making their interaction with services a positive experience.
- **Sustained and adaptive:** develop and action a plan for sustainability of all services from the outset, know the context will change and make time for regular evaluation and adaptation.
- **Human behaviour:** implementation of services can be done in different ways, where possible choose approaches that maximise opportunities to model, motivate and sustain responsible and humane behaviours.

DPM services may be implemented by different bodies, but should be coordinated by the DPM **task force** to ensure that all the activities work together as a system to achieve the following outcomes:

- Encourage and support responsible owner and carer behaviour as described in human-dog relationship outcome (see section Outcome: Positive human-dog relationship)
- Provide a safety net for dogs that are not successfully managed by owners or carers
- Minimise risks presented by dogs so they are accepted as part of the community

BOX 3.3 DPM SERVICES

Not all services will be required for every location; they are presented as two categories of fundamental services that will be required in every location (although the emphasis and activities will differ between location and over time) and context dependent services that are not always required but there will be a time and place when they become important to implement. DPM system design should select those services that match the priority problems, target dogs and people identified through assessment and design.

DPM services include:

- **Fundamental services**
  - **Promoting responsible behaviours**
  - **Strengthening DPM professional capacity**
  - **Reproduction control**
  - **Veterinary care (including rabies vaccination)**
- **Context dependent services**
  - **Education of children**
  - **Holding and rehoming centres**
  - **Identification and registration**
  - **Control of commercial breeding and sale**
  - **Managing access to resources**

FUNDAMENTAL DPM SERVICES

These are the DPM services considered essential in all effective DPM systems, regardless of location. However, the strategy focus and activities involved in these services will differ between locations and evolve over time in response to local conditions and needs.

1. Promoting responsible behaviour

We have already introduced the central role of human behaviour as a principle of effective DPM. Before taking action in a community, you need to learn what local people are already doing (or not doing) and to identify what they would need to do differently in order for the DPM system to be more effective and humane. The 'people' we are focusing here are primarily dog owners, carers and those living in the community alongside dogs; people with direct and daily influence on dog welfare and dynamics. However, these approaches to promoting responsible behaviour also extend to those people representing relevant stakeholders in DPM, such as: vets, enforcement agencies and politicians. You cannot assume you know the unique or perceived motivations and barriers to each stakeholder exhibiting behaviours targeted for change. You need to take time to engage with people to understand their reality, and work with them to ensure they are able and willing to practice the right DPM behaviours.

CASE STUDY 6

Changing the behaviour of slitting nostrils in donkeys working in Karachi, Pakistan

Yes, we know these are donkeys and not dogs! But this is a great example from Brooke (www.thebrooke.org) of changing human behaviour by first understanding the motivation underlying the behaviour and then working with both owners and local service providers to improve skills and animal welfare knowledge. **View full case study online at:** https://www.icam-coalition.org/changing-the-behaviour-of-slitting-nostrils-of-donkeys-working-in-karachi-pakistan/

CASE STUDY 7

Bali example of creating social groups to encourage good dog care and protection

Engagement with an NGO project empowered villagers to increase the health of their dogs through improved care. Pride in these dogs inspired 'dog clubs' which were able to spread knowledge about good dog care to others and protected vaccinated dogs from misguided culling attempts. **View full case study online at:** https://www.icam-coalition.org/creating-social-groups-to-encourage-good-dog-care-and-protection-in-bali-indonesia/URL.org

CASE STUDY 8

Increasing use of reproduction control services using painted murals in Lilongwe, Malawi

Painted murals on the outer walls of shops as an affordable and long-lasting method of communicating with local owners about where to access reproduction control and rabies vaccination for their dogs. **View full case studyonline at:** https://www.icam-coalition.org/increasing-use-of-reproduction-control-services-using-painted-murals-in-lilongwe-malawi/

FIGURE 5: THE COM-B MODEL OF BEHAVIOUR

Adapted from original figure in Michie S, Atkins L, West R. (2014) The Behaviour Change Wheel: A Guide to Designing Interventions www.behaviourchangewheel.com

There are many theories of how to change and maintain behaviour. One tool that synthesizes several of these theories is the Behaviour Change Wheel or COM-B model. This model outlines three components that drive behaviour change and maintenance: capability, opportunity and motivation. The foundations and services of the DPM system should work together to address these components (**Figure 5** provides a DPM example of the COM-B model).

The *way* DPM services are implemented can influence how people behave. For example by engaging community members in actively monitoring their community dog population or helping to handle dogs for reproduction control and vet care. However, the rest of this section looks specifically at how targeted *communications* can be used to change behaviour.

Behaviour Change Communications (BCC) aim to change or reinforce specific behaviours in targeted individuals or groups of people (including children). This can involve increasing knowledge, changing attitudes, building motivation and creating social norms. (See Box 3.4 for a brief step-by-step overview of the BCC process.)

NOTE: We have used the term Behaviour Change Communication as a 'catch-all' for any behaviour change activities. Alternative terms include Behaviour Change Campaigns, Information Education and Communication (IEC), Communication for Development (C4D) and Social and Behaviour Change Communication (SBCC). The Social aspect of SBCC recognises that what people do is influenced by social relationships and community norms and structures. So, SBCC not only speaks to the individual but also tries to explicitly target social change, inspiring dialogue and action as a community.

Outcomes:

- People's capability and motivation for targeted responsible, safe and compassionate behaviour towards dogs is increased
- Social pressure and support for targeted responsible and compassionate behaviour is increased
- People recognise and value the role of DPM services and the professionals that deliver them

Considerations:

- Children are a valid target for behaviour change communication. Often this involves increasing knowledge related to safe behaviours around dogs to avoid bites or how to care for dogs. The DPM service Education of children includes relevant guidance in addition to what is noted here.
- Communications to change behaviour are used extensively in the fields of public health and development. We recommend that you explore what methods appear to be working best for these fields locally and consider adapting those methods for communicating about dogs.
- Involving social scientists and professional communicators will benefit development, implementation and evaluation of behaviour change communications.

Resources:

- The Behaviour Change Wheel or COM-B model outlines three components that drive behaviour change; capability, opportunity and motivation. www.behaviourchangewheel.com
- Human Behaviour Change for Animals provides links to several further resources and training opportunities for learning about behaviour change in an animal welfare context. www.hbcforanimals.com
- The Canine rabies blueprint provides guidelines for developing and evaluating a communication plan for working with communities to increase understanding of how to prevent rabies. https://canineraviesblueprint.org/Communications-plan?lang=en
- The Health communication capacity collaborative provides an implementation kit on how to develop a communication strategy for social and behavior change communication (SBCC). https://sbccimplementationkits.org/courses/designing-a-social-and-behavior-change-communication-strategy/
- Impact by design are a consultancy providing training and capacity building, including in behaviour change. http://www.impactbydesigninc.org

BOX 3.4

Behaviour Change Communications: Step by step

The following is an outline of the basic steps of developing behaviour change communications:

1. Identify which behaviours you want to change. Communications are most likely to be effective if focused on specific behaviours rather than on group of behaviours such as 'caring for your dog'; examples of specific behaviours are keeping a dog for life or rehoming responsibly instead of abandonment, or investing in spaying of females when puppies are not wanted. Don't focus only on behaviours you want to stop but identify the positive opposing behaviour that you want people to perform instead – encourage this.
2. Identify your audience. Whose behaviour do you want to change? Reaching all dog owners with a single communication strategy may be unrealistic; is there a particular type of dog owner that is a priority? For example, when looking at abandonment, a priority target may be working dogs owned by farmers or hunters in rural areas; for spaying of female dogs, it may be low income owners in high density urban areas with limited space to accommodate unwanted litters.
3. Identify the capability, opportunity and motivation for these behaviours. These may require actions beyond only communication. For example, increasing opportunity may require the support of other DPM services, such as affordable and accessible sterilisation, veterinary treatment and humane euthanasia when treatment is not practical.
4. Craft your key behavioral messages. What behaviour do you want people to perform and what is the potential benefit to them of performing this behaviour?
5. Communication channels. Return to your priority audience and explore how they take on information, what communication channels would they naturally rely on to learn about their dogs? For example radio, social media, community leader, fellow dog owners (peers), local vet or animal health worker.
6. Design communication materials for different channels and pilot test these. Keep in mind that you are unlikely to be a member of the target audience and hence your perspective will be different. Note these do not have to be physical printed materials, they can be conversation points or phrases used during community engagement. Test and refine with members of the target audience:
    a. Comprehension: Are the messages clear and concise? Does the audience understand the key message of the material and what action they can take to follow up? How suitable are the words used?
    b. Attraction: What kind of feelings does the material generate? Is it engaging, does it shock in a powerful but positive way, or does it disgust or irritate people? Does it ignite motivation, appealing to values, emotion or pride?
    c. Acceptability: Is the material compatible with local culture or would it offend or put off the intended audience in any way? Are any depictions realistic and portraying appropriate people for the audience? What is its personal relevance? Can the audience see themselves carrying out the actions called for in the materials?
7. Maintaining behaviours. Once people have made a change, they need reinforcing and motivating to keep doing it. This is where social change that has embedded a behaviour into a community can really help an individual, as these positive behaviours may be modelled and rewarded by others in the community. Creating social groups related to dogs can provide peer support and social rewards to owners investing in good dog care, for example see Case Study 7 on a community engagement project in Bali which encouraged the creation of informal village-based dog clubs. Ensure all other aspects of the DPM services also reinforce and model these behaviours; for example staff working in DPM services should model humane and compassionate handling of dogs to encourage compassionate behaviours by owners and carers.

2. Strengthening DPM professional capacity

Provision of DPM services requires a range of skilled professionals: veterinarians, veterinary nurses/technicians, animal welfare officers, public health officials, educators and rehoming centre staff. In many locations, these professionals lack the training, mentoring and support they need to be an effective part of a DPM intervention so supplementary training and support will often be needed. Organisations/professionals may travel from other locations to deliver DPM services such as sterilisation, vaccination and education. Although this additional external capacity provides support in the short-term, they must also help build local professional capacity in order to have lasting impact. This ensures that DPM becomes the permanent community service required to maintain a healthy, safe and wanted dog population.

CASE STUDY 9

Creating affordable, long-lasting and quality-driven spay/neuter programs for owned dogs and cats in Bolivia

Training for veterinarians and technicians in high-quality, efficient and minimally invasive surgery reduced surgery time and cut costs whilst maintaining safety and care. These cost savings were passed onto dog and cat owners, increasing the accessibility of reproduction control services. View full case study online at: https://www.icam-coalition.org/creating-affordable-spay-neuter-programs-for-owned-dogs-and-cats-in-bolivia/

CASE STUDY 10

Enabling environment through training professionals and building local capacity in Bhutan

The Bhutanese government supported an international NGO to provide training for government vets in high quality and minimally invasive sterilisation surgery. This enabled district governments to effectively and humanely implement DPM across Bhutan. **View full case study online at:** https://www.icam-coalition.org/enabling-environment-through-training-professionals-and-building-local-capacity-in-bhutan/

Outcomes:

- DPM services are accessible, good quality and meet demand.
- DPM professionals feel equipped and able to meet expectations and are motivated to be part of DPM interventions.
- DPM professionals are respected by the public and valued for their contribution to DPM

Considerations:

- Explore opportunities for integrating the skills and knowledge needed for effective DPM into undergraduate/foundation courses required to graduate for professionals.
- Uptake and success of training depends upon the interest of professionals to engage in DPM services; advocacy may be needed to build up motivation and belief in the important role professionals have to play. Incentives may also be needed, such as guarantees that their newly trained skills will be engaged in DPM work, should they successfully complete their training. Their role is not just tackling the current unowned dog population but providing accessible DPM services over the long term to owned dogs, which act as the principal source of future unowned dogs.
- Training can occur at an external site where a DPM intervention is already in place and services are working well. This can provide both training in specific professional skills as well as exposure to the full process involved in delivering a good quality DPM system and inspiration for what can be achieved. Alternatively, a trainer can provide on-site training where the professional is based. This allows a trainer to note any real life limitations and opportunities for delivering DPM services and creates a bespoke training experience. Ideally, professionals should experience both.
- Consider the option of a train-the-trainers approach by engaging select individuals with the necessary capacity and skills to provide training and mentorship to others in their location. Provide a structure/syllabus and training tools, as well as support for ongoing training opportunities.

CASE STUDY 11

Example of community engagement and veterinary professional support in Eastern Europe

Training and mentoring of a pivotal veterinary professional allowed a community led DPM intervention to progress and flourish. **View full case study online at:** https://www.icam-coalition.org/example-of-community-engagement-and-veterinary-professional-support-in-eastern-europe/

- Trainers need to be well-prepared and ready to adapt to the realities of their trainees' place of work. For example, when training vets in different countries, the accessibility of drugs for surgery should be well-researched and protocols adapted before training takes place so that vets can implement what they have learnt.
- The interdependency of professionals should be considered. Ideally, training is provided to all relevant professionals. For example, delivering reproduction control services will require not only a vet but also a vet technician/nurse, who may also require training. If trained in conjunction with the vet, there is the potential to create an efficient and collaborative team. In addition, another professional may be needed to conduct community outreach and engagement so dog owners and carers are ready and able to access reproduction control services.
- Consider charging a fee for training to ensure trainees value the training experience. Ensure there is an alternative/subsidised route for motivated trainees that cannot afford the fees.
- When training veterinarians in sterilisation surgery, include the full process from owner consent/ community engagement and consent through initial clinical examination of the dog, preparation for surgery, anaesthesia and analgesia, surgical aseptic technique, post-operative care, dealing with complications and record keeping throughout. Instil the importance of post-operative care, monitoring and record-keeping to allow vets to evaluate their own surgical performance based on how well dogs recover from surgery.
- In some countries, Continuing Professional Development (CPD) is a recognised part of a professional's career and they may be required to complete a minimum number of hours or receive pay incentives for completing CPD. However, for training provided on DPM services to be considered part of this CPD process, it may require recognition/approval of the training course by an official body within that country.
- Trainees are likely to value certificates that show they have taken part in the training course. Wording used on the certificates must be accurate; is this a 'certificate of completion' or has the trainee fulfiled a set of transparent criteria leading to a 'recommendation' or 'accreditation'?
- There is a role within DPM that often receives minimal training and support but can be critical to success; these are the people that handle dogs, including unowned dogs, both in public areas and in clinics and holding/rehoming centres. They can have a profound impact on the dog's experience of DPM services and are very visible to the public. In some countries their role is termed 'dog catchers', but they may have roles well beyond catching, including enforcement and community engagement. In this guide, we refer to them as Animal Welfare Officers (AWOs). Because they have direct contact with dogs, they need to be skilled not just in humane handling, but also strive to achieve positive handling where the dog finds the interaction rewarding (see Annex D: Humane Handling). In addition, because they are visible and interacting with the public, their behaviour with dogs can be considered as modelling desired behaviour, giving further emphasis to the need for humane handling. Depending on their role and responsibilities, training for AWOs may need to cover a range of skills and knowledge, including humane handling, dog needs and welfare, dog care, communication skills, relevant legislation and dog-related public

health. Access to such training can help employers make being an AWO attractive to more people and increase employee retention.

Resources:

- The Jeanne Marchig International Centre for Animal Welfare Education has developed resources to support professionals engaged in Catch Neuter and Return (Catch Neuter and Return is described in more detail in the Reproduction control section): http://edin.ac/dog-welfare
- IFAW field manual of veterinary standards https://www.icam-coalition.org/download/ifaw-field-manual-of-veterinary-standards/
- GARC Education Platform is a set of free, online courses developed to improve the skills and knowledge of people working in rabies awareness and prevention, including courses on community coordination, animal handling and vaccination and human patient care: https://rabiesalliance.org/capacity-building/gep.
- ASPCA Pro training materials and videos on running a surgical sterilisation service and spay neuter surgery; search for 'Spay/Neuter' in Tools and Tips on this webpage: https://www.aspcapro.org/resource-library
- The Association of Shelter Veterinarians' 2016 Veterinary Medical Care Guidelines for Spay-Neuter Programs. https://avmajournals.avma.org/doi/pdf/10.2460/javma.249.2.165
- Book: Field Manual for Small Animal Medicine (2018) Eds Polak and Kommedal

3. Reproduction control

Populations of animals are limited by survival, reproduction and immigration/emigration. Therefore, reducing reproduction is a humane way of limiting dog population growth. However, effective and humane DPM focuses not just on limiting overall dog population size and treating all dogs as equal targets for reproduction control, but rather managing reproduction as appropriate for individual dogs. Some puppies are valued by owners and the community, while others are unwanted; hence the primary role of DPM reproduction control services is to be well-known, trusted and accessible so that owners and communities use these services for the right dogs at the right time to prevent unwanted litters.

CASE STUDY 12

CNVR in Dehradun, India: Female dog-focused CNVR implemented with community engagement

CNVR of roaming dogs in Dehradun with a focus on female dogs, implemented with local communities using the Abhay Sankalp approach. Achieved high female sterilisation coverage followed by a decrease in roaming dog density within 2.5 years. **View full case study online at:** https://www.icam-coalition.org/cnvr-in-dehradun-female-dog-focused-cnvr-implemented-with-community-engagement/

CASE STUDY 13

Training In-Country Veterinarians in Latin America to Create Sustainable Spay/Neuter Programs

Training of vets and technicians high quality and high volume spay/neuter surgery allows them to reduce costs. Making reproduction control more accessible to dog owners and improves the experience of surgery and recovery for the dogs.
View full case study online at: https://www.icam-coalition.org/strengthening-veterinary-capacity-to-create-sustainable-spay-neuter-programmes-in-latin-america/

Outcomes:

- Reproduction control services are used in a targeted way to prevent unwanted litters, leading to a balance of 'supply and demand' where the number and type of dogs produced matches the number and type wanted by the community.
- Where community owned or unowned dog populations exist, reproduction control is used to stabilise or reduce their numbers to an acceptable level.

Considerations:

- Surgical sterilisation involves the removal of reproductive organs under general anaesthetic. It ensures permanent sterilisation and can reduce sexual behaviour (especially if performed early in an animal's sexual development). Surgical techniques must be carried out correctly. A good standard of asepsis (the practice of reducing or eliminating the risk of contamination) and proactive, multimodal pain management must be maintained throughout and adjusted to the individual animal as needed, requiring monitoring both during and post-operatively for the whole recovery period. It requires trained veterinarians, animal technicians, appropriate medication and suitable infrastructure/equipment.
- Although this is an active area of research, current options for non-surgical fertility control have some challenges that limit their suitability to DPM. These challenges differ according to non-surgical product, but include high cost, temporary effect and potential adverse events that require owner vigilance and quick action making them unsuitable for unowned dogs or owned dogs without confinement and close supervision. Refer to the Alliance for the Contraception of Cats and Dogs (http://www.acc-d.org/) for current information on non-surgical fertility control options.
- Because of the high costs involved, targeting dogs for sterilisation is advised. This target should be selected based on dog population assessment (see Chapter 2) to focus on the source of dogs experiencing or linked to problems. The following are likely to be **targets** (but will vary from one location to another):

  a. The puppies of community or unowned dogs are likely to have poor survival and limited rehoming potential; hence community and unowned dogs may be a

priority for sterilisation, whether this is followed by release or rehoming (see Box 3.5).

b. Owned dogs whose offspring are most likely to be abandoned or allowed to roam. This may be related to the role of the dog in the household (e.g. the puppies of guard dogs may be less desired than of pet dogs) or socio-economics of the owner which may limit their capacity to care for puppies.

c. Female dogs are the limiting factor in the reproductive capacity of the overall dog population and it is owners of female dogs that have to deal with unwanted litters. Hence, access to services for spaying female dogs is likely to have the greatest impact on unwanted litters, as compared to neutering males.

d. However, the sexual behaviour of entire male dogs may be problematic, especially when females are in oestrus. These behaviours can include roaming, grouping around a female in oestrus, fighting between males, mounting and mating. The impact of sterilisation on adult male behaviour is difficult to predict and will depend on the role of testosterone in triggering/maintaining behaviours in individual dogs. Adult males may not change their sexual behaviour as significantly following castration as young males who have not yet developed their sexual behaviour, although this is relatively untested. Hence young males may be considered the next priority group for sterilisation.

- Dog population management is an ongoing challenge, so it is vital that sustainability of reproduction control services is considered. Providing free or low-cost services with no explanation of the full costs may give dog owners an unrealistic perception of the true cost.
- A local veterinary infrastructure is a requirement for the general health and welfare of animals (see basic veterinary care services). Building up and incorporating the local veterinary capacity to provide sterilisation services and general veterinary care is preferable, rather than relying on visiting veterinary capacity.
- There are health benefits of reproduction control. For both males and females, this includes avoidance of canine transmissible venereal tumours (TVTs), which are tumours formed of living cancer cells transferred between dogs, usually during mating. For females, the additional benefits of sterilisation include avoiding pyometra (potentially life threatening womb infection) and potentially lower risk of mammary tumours. There may also be behavioural benefits, such as reduced urine marking, roaming and avoiding hormone-related behavioural changes in females coming into oestrus ("heat"). However, most behaviours are the result of a combination of genetics and learning, so they may not be greatly affected by sterilisation.
- Paediatric (early-age) neutering involves the surgical neutering of puppies from eight weeks of age, with a minimum body weight of 1kg. Studies suggest the procedure is medically sound and offers many advantages for both patients and surgeons. However, as with all medical procedures, vets should exercise discretion regarding patient selection. There should be a clear protocol for selecting puppies for paediatric neutering including criteria relating to the health of the puppy, necessity (unlikely to be able to access the puppy when it is older), availability of experienced staff and post-operative care in a comfortable environment without extremes of temperature.

CASE STUDY 14

National Dog Population Management and Rabies Control project, Bhutan

Bhutan implemented a nationwide CNVR intervention to replace inhumane methods of dog control. This included developing sterilisation capacity in all districts (see Case Study 10: Enabling environment through training professionals and building local capacity in Bhutan). Sterilisation coverage of roaming dogs is now high, the next phase of DPM aims to address abandonment of owned dogs. **View full case study online at:** https://www.icam-coalition.org/national-dpm-and-rabies-control-bhutan/

- Humane handling is very relevant when delivering reproduction control services; see Annex D.

Potential activities:

- Voucher schemes that provide access to sterilisation services at a subsidised cost for both community and owned dogs. Vouchers can be provided to specific owners dependent on their socio-economic status.
- Where static clinic facilities are limited, mobile clinics or temporary clinics can be used to outreach reproduction control services to where they are currently inaccessible. However, aseptic conditions during surgery and systems/motivation for full post-operative monitoring and reporting of any problems by owners and the community needs to be ensured.
- Due to economies of scale, high volume sterilisation events can offer sterilisation services at a reduced cost. These may use mobile or temporary clinic facilities set up specifically for these events. Note this requires specialist training for the vets involved as high volume must not lead to reduced standards; this is a possible entry point for suitably qualified and well-prepared volunteer vets to contribute to DPM in collaboration with local vet services.
- Where conditions allow some unowned dogs to survive, the roaming dog population will consist of community, unowned dogs and owned dogs roaming outside their household. For these community and unowned dogs Catch Neuter and Return CNR (also known as Animal Birth Control ABC, Catch Neuter Vaccinate and Return CNVR or Trap Neuter Release TNR) may be an appropriate approach. This is sterilisation plus rabies vaccination (may also include vaccination for other diseases and treatment for parasites) for community or unowned dog populations. It requires capturing these dogs, transport to a clinic facility for sterilisation (and permanent marking/identification to show sterilisation has been done), a period of recovery and then release at the point of capture. Hence CNR provides a way of managing the current roaming dog population in situ. (See Box 3.5 for important considerations specific to CNR.)

BOX 3.5: CONSIDERATIONS SPECIFIC TO CATCH NEUTER RETURN (CNR)

CNR has been misunderstood as a stand-alone solution suitable for a national comprehensive approach to DPM. However, CNR is one approach for delivering reproduction control and, as with every other DPM service, must be used in combination with other services to form an adequately functioning DPM system.

- CNR is not suitable in all locations; it requires a tolerant community that accepts roaming dogs and a suitable environment to support a reasonable level of welfare. It is also essential that there is full authority approval for CNR and it is integrated into the wider DPM system. There are significant risks to the dogs where this is not achieved; an extreme example is where a 'catch and kill' approach and CNR have been implemented in the same location, leading to the killing of sterilised and vaccinated dogs.
- CNR is not suitable for all dogs; it should be applied on an individual basis. For example rehoming may be more appropriate for some dogs, such as well socialised puppies, while dogs that are causing conflict through aggressive behaviour towards community members may also not be suitable for return.
- CNR will reduce the number of puppies born which is beneficial as community/unowned puppy mortality tends to be high, with significant suffering before they die and associated distress for the community. Where puppy mortality is high, the community/unowned population is not sustained by breeding but instead through abandonments and migration; CNR does not address abandonment and migration, so it needs to be combined with other DPM services to have an impact on the adult population size.
- Where there is successful breeding by the current community/unowned dogs, it is sometimes assumed that 70% of the females need to be sterilised. It may make logistic sense to aim for 70% if that is also the target for rabies vaccination coverage (and sterilisation and vaccination can be carried out in the same dogs). Otherwise, there is nothing special about that figure. The percentage of females that needs to be sterilised per year depends on the potential population growth rate (the number of dogs that will be in the population after one year, compared to the original number of dogs). Annex E provides more detail on the factors that influence the dog population growth rate, including changes in the density of dogs and what this means for sterilisation targets.
- The more dogs that are sterilised per year, the faster the rate of decline and the lower the density will be. Most CNR clinics are designed to sterilise a consistent number of dogs. However, if logistically possible, sterilising a greater number of dogs through the CNR intervention in the early months/years (can be termed 'front loading') and then reducing to a maintenance level of sterilisation as the population stabilises at its new lower level, will help reach the lower stable population size faster.
- To maintain a population at a reduced density by culling requires killing far more dogs than would need to be sterilised to maintain the same reduced density. To prevent population growth, the same percentage of females capable of producing puppies need to be killed or sterilised; but in a population maintained by culling that is a percentage of *all* females. With sterilisation that is only the percentage of the *remaining unsterilised* females. Hence culling is both less effective than sterilisation and inhumane.
- Dogs must be returned to where they were captured and not released in other locations**.** Maintaining dogs in their original territories ensures they have access to the same resources as they had prior to catching, avoids the risk of dog-dog aggression resulting from release into unfamiliar territories and is particularly important when CNR involves paediatric neutering, as puppies must be returned to their mother.
- Mistakenly catching and sterilising owned dogs without owner consent is a risk of CNR; hence it should be implemented with full community engagement to identify appropriate dogs. This also provides the opportunity for community members to engage fully with the intervention, for example by helping to handle dogs (following basic training and supervision) and providing post-operative oversight.
- Throughout this process humane handling must be emphasised to maintain good dog welfare and model positive human-dog interactions for the community (see Annex D humane handling).

Resources:

- HSI mobile application for managing CNVR projects https://www.hsi.org/issues/dog-cat-welfare/
- The Jeanne Marchig International Centre for Animal Welfare Education has developed resources to support professionals engaged in Catch Neuter and Return http://edin.ac/dog-welfare
- IFAW field manual of veterinary standards https://www.icam-coalition.org/download/ifaw-field-manual-of-veterinary-standards/
- ASPCA Pro training materials and videos on running a surgical sterilisation service and spay neuter surgery; search for 'Spay/Neuter' in Tools and Tips on this webpage https://www.aspcapro.org/resource-library
- The Association of Shelter Veterinarians' 2016 Veterinary Medical Care Guidelines for Spay-Neuter Programs. https://avmajournals.avma.org/doi/pdf/10.2460/javma.249.2.165
- Book: Field Manual for Small Animal Medicine (2018) Eds Polak and Kommedal

4. Veterinary care

Basic health care for dogs should include preventative care, such as vaccination and deworming to promote good dog health and reduce the risk of zoonotic diseases. Rabies vaccination is the priority in most countries.

Veterinary care should also extend to treatment of health problems. Where the illness or injury is incurable, or treatment is not viable due to cost or other limitations, euthanasia should be used promptly to end suffering.

Outcomes:

- Risks of transmission of zoonotic infections from dogs is controlled
- Dogs are maintained in a reasonable state of health and welfare
- Suffering is ended when treatment is not possible

Considerations:

- As with reproduction control, veterinary care is required in the long-term for effective DPM and each dog will need access to this care on a regular basis throughout its life to protect health and welfare. Hence local veterinary infrastructure should deliver DPM services in a sustainable way, allowing owners to access affordable preventative care and treatment for their dogs.
- The provision of veterinary care for free should be done with care and according to the local economic situation and urgency for disease control. There is a risk of devaluing general veterinary services and causing conflict with private vets if treatment is provided without cost or understanding of the extent of cost subsidies. Owners and carers need to understand the importance of veterinary care and its true costs to ensure they engage and sustain this service in the long-term.
- Mass vaccination for rabies control; the Canine Rabies Blueprint (https://canineraviesblueprint.org/) provides guidance on planning and implementing canine rabies vaccination campaigns in order to control the disease and ultimately

eliminate this virus from dog populations, which also protects human health.

- In addition to providing vet care through established clinics, vaccinations, parasite control and other treatments can be provided via 'camps' (temporary, high-volume treatment sites), which can be very effective at drawing owners' attention to the importance of preventative treatments and other population management tools. However, the risk of aggressive interactions and disease transmission between dogs needs to be mitigated by organising access and exits carefully, using a sterile needle for each dog and quarantining sick animals. Such camps will require adequate advertising through community engagement. There is also a limit to the distance that the general public will travel for such a service so there needs to be a sufficient number of carefully spaced camps to reach the desired coverage. This is particularly relevant for rabies vaccination coverage as pockets of unvaccinated dogs can provide a reservoir for the virus.
- An alternative to using camps for vet care outreach is to use a door-to-door method. This may be more time consuming, but has the potential to achieve high coverage. This is also increases the reach to community and unowned dogs who may not all be brought to camps.
- Where vet care for community dogs includes treatment, you made need to collaborate with local community members, a CNR surgical facility, foster network or holding/rehoming facility in order to provide temporary care for animals that cannot be returned to the street right away. Such treatment should be combined with CNR.
- Humane handling is very relevant when delivering vet care services (See Annex D).

Resources:

- The GARC Data Logger for monitoring mass vaccination campaigns https://rabiesalliance.org/capacity-building/gdl
- HSI rabies vaccination management app https://www.hsi.org/issues/dog-cat-welfare/

CONTEXT-DEPENDENT DPM SERVICES

Context-dependent services are not always essential to effective DPM systems. Depending on the local context, there may be a time and place when local dog population dynamics demand implementation of these services to influence dynamic processes.

1. Formal education of children

Education of children has a role in DPM where the knowledge, attitudes and/or behaviour of children has been identified as an important issue related to dogs in the community. Rather than teaching children about general DPM concepts, education is usually focused increasing understanding about dog behaviour and needs, safety around dogs and providing care for dogs. These are priority behaviours children can perform that influence DPM impacts. Establishing a theory of change for the education programme will inform its design and increase the chance it will effectively change targeted behaviours. Start with the desired change in childrens' behaviour and work backwards through clear steps to the lesson. Note steps that require knowledge building, attitudinal change, motivation to change behaviour

and skills the children might need, such as critical thinking to tackle conflicts between what they have learnt and what they see or hear in their home or community about dogs. This may highlight where the education programme needs to work in collaboration with other services, such as Behaviour Change Communication targeted at parents, educators or provision of veterinary care services, to allow improved knowledge, attitudes and skills built through lessons to transfer to behaviour change with dogs.

Outcomes:

- Children behave safely with dogs leading to a reduction in bite incidence – in rabies endemic areas they also know how to respond after a bite, including immediate wound washing with soap and running water and promptly accessing medical care.
- Children understand priority health risks related to dogs and how good preventative care such as vaccination and deworming with dogs can reduce risks.
- Children understand how dogs communicate with their bodies and voices so they can identify when it is safe to interact with a dog and when they should stay away.
- Children understand dog needs and that if these needs are not met, dogs will suffer, hence developing the foundations of empathy towards animals.
- Children understand what good dog care is and how it matches the needs of dogs.

General considerations:

- Consider convenient opportunities to reach children during/around DPM activities, such as when they attend rabies vaccination campaigns and other veterinary events; reaching children through schools requires significant preparation and administration and there may be other less resource-intensive opportunities to reach this target audience.
- Education resources should avoid any shocking images, even when addressing issues such as rabies and dog bites; creating anxiety reduces student learning and teachers are unlikely to welcome controversial materials.
- Children between eight and twelve are developmentally more able to develop empathy and consider consequences of behaviour, such as how vaccinating dogs can protect family and community health. However, if dog bites are a concern, younger age groups may also be valid targets for education about staying safe with dogs; this may be best focused on ‘rules’ about how to behave around dogs rather than learning dog behaviour which is likely too complex for younger children. Ideally, children benefit from education about dogs on a regular but infrequent basis throughout their school years, using age-appropriate materials.
- Children may have an opportunity to educate other family members and encourage good dog care at home. However, there are many factors influencing the steps between a child learning new information at school and a change in parents’ behaviour. Hence, education outcomes are best focused on children and ‘spill-over’ outcomes to parent behaviours considered an added bonus.
- Talking to children about dogs and other companion animals may provide a good entry point to teaching empathy towards all animals and an introduction to the concept of animal welfare.

CASE STUDY 15

Introducing rabies and dog bite prevention lessons into the national curriculum in the Philippines

The Philippines government have integrated rabies prevention into the national curriculum for all public schools across the country. This initiative will reach more than 24 million children between the ages of 4 to 15 years. Children will learn how to behave safely around dogs, what to do if they're bitten, and how to be responsible and caring dog owners. View full case study online at: https://www.icam-coalition.org/introducing-rabies-and-dog-bite-prevention-lessons-into-the-national-curriculum-in-the-philippines/

Considerations relating specifically to school education:

- Which is better: a school visit by a DPM implementer or supporting schoolteachers by providing lessons about dogs? When a DPM implementer delivers the lesson themselves during a school visit, they have more control over content and have the opportunity to evaluate uptake of information. It also doesn't add to teachers' workloads so may be more welcomed. Alternatively, if teachers are provided with dog-related teaching materials that they like and use regularly, more children will benefit from repeated exposure to the key learning points, making this a more efficient and sustainable approach. However, the cost of developing teaching materials that are effective for influencing DPM behaviours, and linked to the school curriculum, is high; followed by advocacy, dissemination and advertising of teaching materials. Training on how to deliver dog-related lesson content may also be needed at the beginning and ongoing, to refresh memory and to counter teacher turnover. Hence, resources may dictate which approach is used to deliver lessons. Geographical scale may also be relevant; DPM interventions with local scope may opt to deliver lessons through DPM staff visits to schools, whilst DPM with regional or national scope may be more suited to investing in teaching materials/training. The education system in the country will also influence which approach is most suitable and preferences may also vary between schools/districts.
- Teaching materials must be developed by people with expertise in education and knowledge of the curriculum in that region or country. The materials should not only present key DPM learning points but also fit within the school curriculum and feed into learning objectives/goals for the class. Dog-related material can be designed to deliver learning objectives within different subjects such as literacy, science, health or social studies.
- Establishing support and endorsement from official educational bodies is likely to increase acceptability of educational resources and/or schools visits. Consider using official government educational channels to introduce education on dogs. At an individual school level, consider establishing support from school administrators/officials so that they support teachers to deliver the materials/welcome visits.

- NGO's or municipal officials (police, firemen, public health officials, etc.) may already be conducting school visits around issues such as the environment, safety and health. Explore whether it is suitable to combine these visits with dog-related education.

Resources:

- IFAW's 'Cats, Dogs and Us' educational materials have been designed for several different countries, using local languages and fitting with the curriculum requirements at different ages. Watch the educational video at: https://www.youtube.com/watch?v=BaEcK09XY2U
- The Global Alliance for Rabies Control maintains a resource library of rabies and dog bite prevention education materials https://rabiesalliance.org/resources/search?type=55.
- World Animal Protection, GARC and the WHO have developed a set of education materials on dog bite prevention https://www.globalanimalnetwork.org/five-tips-prevent-dog-bites

2. Holding facilities and rehoming

Shelters to provide permanent housing for roaming dogs are not a fundamental DPM service. The welfare of dogs in such facilities can be very poor and financial costs extremely high, including large capital expenditure, high ongoing financial costs and staff management/training challenges. Further, shelters address only the ***symptom*** of the community's current roaming dog population and not the ***source*** of these dogs. Shelters fill to capacity quickly, while dogs are replaced on the street through migration and abandonment, thus creating an ineffective DPM service. Hence, shelters should not be used where there is a high number of roaming dogs and minimal adoption. Unfortunately, the incorrect assumption that shelters or 'sanctuaries' can help 'clean the streets' of dogs is common and may be particularly attractive to politicians looking for quick wins; this will need to be robustly challenged through advocacy (see Foundation 3: Advocacy).

However, holding facilities and rehoming systems providing *temporary* housing can play a part in DPM if used alongside other services that address abandonment, and where there is a realistic potential for reuniting and adoption.

As opposed to a permanent shelter, holding facilities are used to house dogs in the short term for reuniting with owners and for quarantine during disease monitoring and control. If a healthy dog is not reunited with its owner within the statutory period, it may be suitable for rehoming. Holding and rehoming can occur at a single site, or they may be at separate locations.

Outcomes:

- Reuniting lost dogs with their owners is efficient and reliable
- Rehoming dogs in suitable homes is as efficient as possible to reduce financial and welfare costs of long-term kennelling

Alternatives to building new facilities:

- Foster networks that use people's homes to house dogs whilst they are waiting for adoption may be more welfare-friendly for the dog and more cost-effective for the

community.

- Improving the functioning of already existing centres may be a more cost-effective approach than building new facilities.
- Establishing collaborations between centres can support transfer of dogs to locations where they have a better chance of rehoming.
- Adoption rates can be increased through community adoption events, collaborations with locations where potential adoptees gather (e.g. vet clinics and pet food stores) and social media advertising of dogs available for rehoming.

Considerations within a centre:

- Finances for rehoming centres are extremely important, as centres are hard to close once dogs have arrived. Budgets needed for both capital expenditure and running costs should be established before commitment to building a centre is made. Veterinary services will be essential and require a large portion of the running costs so establishing sufficient in-house capacity and/or effective relationships with external veterinary services must be part of financial planning.
- Policies are required for several issues, including sterilisation, assessment of dog health and behaviour, rehoming, capacity (how many animals per kennel, and in total, and what will be done once the capacity is reached) and euthanasia. These policies should prioritise the welfare of individual animals, but also consider cost implications and the role(s) and responsibilities of the facility/centre to the DPM system. These policies should be clear and agreed to by all staff and developed/reviewed with staff involvement.
- The euthanasia policy is of particular importance as it has a direct impact on animal welfare and is an emotive issue for staff and public. ICAM's guide to developing a euthanasia policy with an animal welfare basis provides support for participatory and objective policy development with animal welfare as the priority consideration, taking note of rehoming potential and the resources required to maintain good welfare. In some countries, the policy will also need to follow legislation relating to when euthanasia should or should not be performed. The goal is that euthanasia is only used for those dogs that are suffering from an incurable illness, injury or unmanageable behavioural problem that prevents them being rehomed, or are not coping with the facilities to maintain a reasonable level of welfare. For communities with limited rehoming potential and limited resources, this narrowly-defined use of euthanasia may not be achieved immediately, but is the goal to work towards.
- Protocols should be designed for each stage of the process; from quarantine on arrival and vaccination against rabies and other diseases, to daily routines such as cleaning, feeding and exercise, to record keeping and rehoming.
- In-depth health and behavioural assessment of each dog, followed by training/socialisation, maximises the chances of successful adoption.
- In order to be a functional part of the DPM system, the centre must only house each dog on a temporary basis. This highlights the vital role of rehoming. Effective rehoming will require outreach to the community, potentially relying on the support of other agencies to advertise dogs and promote the concept of rehoming (see Behaviour Change Communications).

- The design of the centre should consider the welfare needs of dogs (see Annex A: Five Welfare Needs of Dogs**)**. Rehoming centres also need to consider potential adopters by creating adoption-friendly areas for visitors to meet dogs. The site selection should consider public access, physical infrastructure and services (such as drainage and water sources), potential noise disturbance, planning permission and future expansion.
- Licensing and inspection of rehoming centres should be considered to protect the welfare of dogs in these facilities. Controlling intake to rehoming centres can be difficult; overcrowding and an associated fall in standards is a significant risk. Where regulations already exist for breeding establishments, an expansion and potential amendment of these criteria for rehoming centres may be an efficient route for regulating these facilities. Animal 'hoarding' is an unfortunate reality; hoarders may claim to be running a rehoming or rescue service but actually provide no, or very limited, rehoming. Licensing and inspection may help to control and respond to premises where hoarding appears to be occuring, but psychological intervention may be needed to help stop hoarding behaviors.
- Humane handling of dogs is critical to the daily running of holding facilities and rehoming; See Annex D.

Further resources:

- 'Guidelines for the design and management of animal shelters' (2006) from RSPCA International https://www.rspca.org.uk/whatwedo/endcruelty/international/reports/details/-/articleName/INT_ReportsAndResourcesCompanionAnimals
- 'Minimum Welfare and Operating Standards' (2015) and 'Standard Operating Procedures' from the Association of Dog and Cats Homes, ADCH in the UK http://www.adch.org.uk/about-adch/minimum-welfare-operational-standards/
- 'Guidelines for Standards of Care in Animal Shelters' (2007) from the Association of Shelter Veterinarians, USA https://www.sheltervet.org/guidelines-for-standards-of-care-in-animal-shelters

3. Identification and registration

Identification of a dog and registration of that dog with an owner in a national database provides an important tool for reuniting lost animals with owners. It can be a foundation for enforcement of legislation, including abandonment legislation and mandatory regular rabies vaccinations (although it should be noted that owners that don't register their animals are likely to also not obey other dog-related legislation). This should also encourage a sense of responsibility in the owner as the animal becomes identifiable as his/her own. Registration systems can also be used to communicate with owners, for example to send out vaccination reminders.

Outcomes:

- Reuniting lost dogs with their owners is efficient and reliable
- Registered dog owners can be linked to an identified dog, creating a sense of responsibility over the dog and proof of ownership
- Transparency of vaccination status for individual identifiable dogs (where health records are linked to registration)

CASE STUDY 16

Identification with alphanumeric tattoo La Paz, Bolivia

Until microchipping becomes more widely available, veterinary clinics in La Paz, Boliva are using alphanumeric ear tattoos to identify dogs and record their owner's contact details at the time of surgical sterilization. This has led to reuniting several dogs with their owners, for example after separation of families from their dogs during landslides in 2019. **View full case study online at:** https://www.icam-coalition.org/identification-with-alphanumeric-tattoo-la-paz-bolivia/

Considerations:

- There are several methods of animal identification available, which can be used either separately or in combination. They differ in three important ways: permanence; visibility; and application (whether an animal has to be anaesthetised when identification is applied). Microchips, tattoos and collars/tags are the three most common methods; the most suitable will depend partly on local conditions and partly on the reasons for identification. Regardless of method chosen, application and carrying the identifier must be humane.
- If permanent identification of a large dog population is required, the microchip currently offers the best option since the number of combinations of digits in the code is sufficient to identify all dogs, while human errors (transposing numbers and incorrect reading of the numbers) are less likely as a digital scanner is used to read the chip. Microchipping has the potential of being a global system, so animals moving from one area (or country) to another can continue to have their microchips read, however recalling owner details requires access to a database that covers both areas. In Europe, Europetnet (www.europetnet.com) is a database that links to national databases, allowing microchip numbers to return owner details regardless of which national database was used to register the animal. Before instituting a microchip system, it is advisable to check that the chips and readers used conform to ISO standards, and that there is sufficient training capacity available, as application needs to be done by a trained person.
- It is important that registration and identification information stored on a central database (or that separate databases are linked in some way) is accessible to all relevant people (e.g. the veterinary profession, police, local government officials, Animal Welfare/Control officers and holding facilities). It may require the support of central government to ensure a single unified system is used.
- Dogs should be registered from the first owner onwards, starting with the person that owned the dog when it was born, including if this was a commercial breeder.

Continuing with updates to the registration information in the database with any and all transfers of ownership. See Controlling commercial breeders.

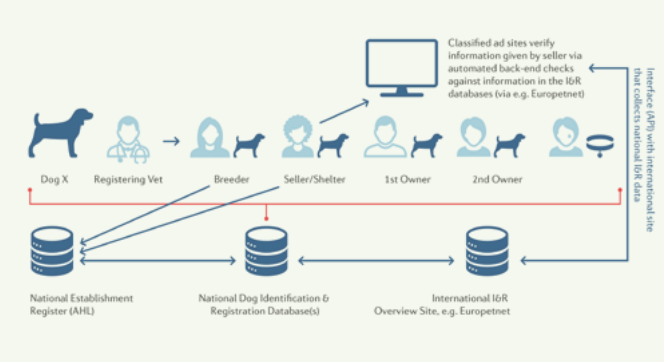
- Mandatory identification and registration can help the functioning of holding facilities. When a dog that has been identified and registered is brought to a facility, it can be returned to its owner without delay (avoiding welfare compromise for the dog and reducing stress to the owner). If not identified, it is by definition 'unowned', so the shelter can implement its policies without the delay of waiting for an owner to come forward. Both scenarios will free up valuable kennel space, which will potentially increase capacity.
- Reuniting a dog with an owner can potentially involve charging the owner a fee for catching/housing the dog. However, if the fee is set too high, there is a risk that owners will relinquish the dog to avoid payment.
- Registration fees can be charged (usually a single registration fee) in order to provide funds for other areas of the management programme. Care needs to be taken to balance potential income against enforcement; if fees are too high, owners may try to avoid registration. Differential fee scales can be used as an incentive for sterilisation, encouraging owners to keep only a small number of animals and discouraging breeding of dogs.
- Licensing may used in addition to registration; licensing may be applied annually whilst registration tends to occur just once for each dog (unless it moves to a location with a different database). Licensing may also include a fee to help support DPM costs; as with registration fees, there are risks when this is set too high. Licensing may also require owners to fulfil certain criteria, such as those that wish to breed dogs or own regulated dog breeds. It could also be used to encourage responsible ownership by requesting that people complete a training to gain their 'certificate in dog ownership' before they are granted a licence to own a dog.
- Launching registration, and maintaining use of the system, will need concerted effort to achieve majority owner compliance (see Behaviour Change Communication). This will need to emphasise the benefits to owners and their dogs. In locations with a recent history of culling, owner compliance may be low due to lack of trust in authorities; some period of humane management may be required to build trust.
- In theory, identification and registration can provide a foundation for enforcement of many aspects of legislation, as it provides proof of ownership. However, this requires mandatory implementation across all dogs, and the types of owners likely to ignore or evade the requirement to identify and register their dogs may also be the same people who don't comply with other legislation. Hence, its effectiveness for enforcement may be diminished.

4. Control of commercial breeding and sale

Poor standards of breeding and sale can cause significant problems for dog welfare, health and behaviour. While this is clearly an animal welfare issue, it is also a consumer protection issue and a potential cause of DPM problems. Puppies produced through poor breeding standards may have health and behaviour problems that lead to increased risk of abandonment to the streets or relinquishment to rehoming centres.

CASE STUDY 17

Tracing the Trade: Model Solution for Full Traceability across the EU Online Puppy Trade



FOUR PAWS proposed solution to combat illegal puppy trade and achieve full pet and seller traceability by linking classified ads to registration numbers of breeders/ seller establishments and individual pet identification and registration numbers. **View full case study online at:** https://www.icam-coalition.org/tracing-the-trade-model-solution-for-full-traceability-across-the-eu-online-puppy-trade/

Controlling breeders and sellers can be done through legislation and enforcement, as well as through education, support and peer pressure from veterinarians, breeding associations, breed clubs and NGOs. Breeding and selling can also be influenced through consumer education and campaigns to ensure owners know what to look for when purchasing a dog and what to do if there are problems with their new dog.

Many of the strategies listed as considerations below have the potential to be evaded by unscrupulous breeders or sellers. Using a range of strategies in combination makes evasion more difficult and high penalties make evasion less attractive. However, much of the impact of these strategies is in increasing the standards of breeding and selling by people who want to do a good job of producing puppies.

Outcomes:

- Puppies are in the best possible health and welfare, and are suitably socialised and habituated to cope with the lifestyle and environment provided by their new owners.
- New owners are less likely to experience unexpected or costly veterinary or dog training/behaviour consultation bills in the period immediately after purchase.
- Breeders, sellers and consumers know what constitutes good breeding and selling practices, and strive to achieve them.
- Breeders or sellers below standard and producing or selling dogs with poor health, welfare or behaviour are identified and penalised.

Considerations:

- Breeders are defined in different ways in national legislation. One definition is: someone who breeds dogs for sale as a business; they breed and sell at least three litters per year or have five or more litters born in one year (that are not necessarily sold within that year). However, breeders can be defined more broadly as anyone that breeds and sells a dog. Differing regulations can be applied for different levels of breeding and selling. For example, a requirement for those who sell just one dog to register with the competent authorities, while someone who sells three or more litters is required to be both registered and licenced by

competent authorities as a commercial breeder. This ensures transparency on all dog sales, while keeping the number of premises to be licensed, and therefore inspected, manageable.

- From April 2021, the introduction of the EU Animal Health Law will require all EU breeders, sellers, assembly centres and transporters of dogs, cats and ferrets to register their establishments with their national government. See Case Study 17: Tracing the Trade: Model Solution for Full Traceability across the EU Online Puppy Trade
- **Controls at the stage of breeding:**

  a. Licensing of breeders allows for enforcement of regulations. Note that local authorities need to be adequately supported and resourced by national governments to carry out this enforcement. At a minimum, these regulations should cover the following:

     1. Breeding limitations, including no mating before one year of age, no more than one litter every 12 months and no more than six litters in a lifetime. In addition, the requirement for the bitch to be functionally, clinically and behaviourally healthy before mating. For example, functionally healthy includes no extreme physical traits that impinge normal function, such as a face so flat that breathing is obstructed; clinically healthy includes no infectious diseases; and behavioural healthy includes no unmanageable aggression towards other dogs or people.
     2. Physical environment and care requirements, including vaccinations and health records to ensure both adults and puppies experience good welfare by meeting the five welfare needs (See Annex A for the five welfare needs).
     3. Requirements for socialisation and habituation to prepare puppies for life in their new home.
     4. Avoidance of selective breeding practices that lead to inherited diseases, reduced genetic diversity and extreme physical traits with the potential to cause suffering (e.g. bulging eyes, wrinkled skin, very flat faces).
     5. Staff training to ensure they have the knowledge and skills to meet all the requirements.
     6. Microchipping and registering of puppies before sale, plus additional record keeping requirements, to allow traceability of puppies and exploration of parentage and history of any health concerns.

  b. Application for a breeder's licence should be followed by an inspection before a licence is given. This licence should be renewed annually (although see England example that follows) and should carry a fee to cover the cost of inspecting the breeding establishment.

  c. The authority inspecting breeding establishments should also have the power to inspect establishments that are unlicensed, but are suspected to be breeding dogs unlawfully.

  d. See http://www.cfsg.org.uk/_layouts/15/start.aspx#/SitePages/Legislation%20and%20Guidance.aspx for The Animal Welfare (Licensing of Activities Involving Animals) Regulations 2018 used in England and the Procedural Guidance for Local

Authorities on the same webpage for how this is to be enforced. These regulations include a 'star rating' where breeders are encouraged to go beyond the required criteria and achieve optional higher standards to be rewarded with a higher star rating; those with a higher rating are not required to be inspected as frequently (just once every 3 years for the highest star rating), so the licensing cost to the breeder becomes lower as their standards get higher.

- **Controls at the time of advertising and selling:**

  a. In some countries (e.g. Belgium), breeders are legally required to display their registration number on any adverts selling puppies (and other pets). This encourages breeders to comply with registration and therefore licencing standards (if they fulfil the 'breeder' criteria), increases transparency and supports enforcement. In France, anybody selling any number of dogs must declare this to the Tax Services to receive a unique tax number; this number must then be displayed in any adverts. Advertising platforms must have a system in place for validating tax numbers and buyers can look up the tax number to access details about the seller.

  b. Advertising platforms (online or offline) can be encouraged to follow minimum standards for advertising the sale of pets. These can include minimum age at the time of sale, recent photographs of the exact dog for sale and screening for banned breeds or misleading adverts; see paag.org.uk/about-paag/minimum-standards/ for the recommended voluntary standards used in the UK.

  c. 'Puppy contracts' are a tool for encouraging responsible breeding and buying of puppies. This is a written document that provides details of the puppy and its parents, including health, socialisation experience and information about any relevant inherited conditions. This forms a legal document between the breeder and buyer and, perhaps more importantly, acts as an educational tool that highlights aspects of good breeding and buying standards to all parties involved. It can be used in any sale of dogs, not just for licenced breeders. See puppycontract.org.uk/ for the contract used in the UK.

  d. Third-party sellers (e.g. individual sellers, pet shops and markets) should also be required to register with competent authorities, comply with regulations and hold a licence after passing inspection. The regulations for third-party sellers are similar to those for breeders, with the function of protecting the health and welfare of dogs and the people caring for them. Selling should only be allowed from the breeder's premises or the premises of licenced third-party sellers; selling from exhibitions or the street should be banned.

  e. The UK government has proposed a ban on selling puppies and kittens through third-party sellers in England, requiring all sales to be conducted directly by the breeder or rehoming centre. This will increase new owner awareness of the conditions in which their potential puppy has been raised and provide an opportunity to meet the parent dogs. This applies additional pressure on the breeder to comply with regulations and limits the welfare risks associated with additional transport to, and housing at, sales outlets.

  f. In many countries, buying a dog is considered trading of 'goods' and hence comes under consumer protection laws, which include regulations on the clarity

and honesty of advertising and the right to recourse if something goes wrong. This also highlights consumer protection organisations (e.g. local government Trading Standards service) as a potential source of support where a buyer has concerns about a purchased puppy.

g. Cross border trade in dogs can introduce problems in disease control and differing standards of breeding and selling between countries. Each country needs to specify the requirements for a dog crossing a border, including microchipping, vaccination and parasite control, which should be detailed in a unique individual 'passport'. In cases where cross-border movement is for the purpose of sale or rehoming, additional requirements may be needed as this is considered a commercial activity. These additional requirements can include registration of the dog's microchip number with the competent authority to trace its movement and regulations relating to transport. However, these controls on cross- border movement will be ineffective without enforcement; actions at ports of exit and entry are essential to reduce illegal import.

- Enforcement of breeding and sale controls is supported by mandatory permanent identification and registration with competent authorities before the age at which dogs can be sold (minimum eight weeks to allow for appropriate weaning and behavioural development).
- Pedigree dog breeding can cause significant health and welfare problems where the desired physical traits are functionally unhealthy, for example a face so flat that breathing is obstructed. Amending breed standards and working with dog show judges to mark down excessive physical traits may help reduce problems in the pedigree breeding community. However, breeding of specific dog breeds for the pet market, as opposed to the show ring, will be less influenced by such measures. For these breeders, pressure may need to come from other sources, including: regulations for licensing as a breeder that clearly state the need for breeding dogs to be functionally healthy, strong advice from veterinary surgeons against breeding for such extreme traits, and pressure from informed consumers who are concerned about their future puppy's welfare.

Resources:

- The Animal Welfare (Licensing of Activities Involving Animals) Regulations 2018 used in England and the Procedural Guidance for Local Authorities which explains how the regulations are to be enforced http://www.cfsg.org.uk/_layouts/15/start.aspx#/SitePages/Legislation%20and%20Guidance.aspx
- Minimum standards for advertising the sale of pets; Pet Advertising Advisory Group, UK paag.org.uk/about-paag/minimum-standards/
- Puppy contract for buyers and sellers of puppies, UK puppycontract.org.uk/
- The EU Dog and Cat Alliance report 'The welfare of dogs and cats involved in commercial practices' for a review of the legislation across EU countries and recommendations for control of dog and cat breeding and sale. https://www.dogandcatwelfare.eu/publications/
- Four Paws Model Solution for full lifespan traceability of dogs across Europe https://www.four-paws.org/campaigns-topics/topics/companion-animals/model-solution-traceability

5. Managing access to resources

Reducing food resources, such as edible garbage, accessible to roaming dogs, is sometimes listed as an appropriate measure for DPM; however it has significant negative welfare challenges. Where roaming dogs are relying on these food sources for their nutrition, any reduction will lead to malnutrition and potentially starvation. This may be associated with increased competition and aggression between dogs for limited resources, with the potential for negative interactions with people over food. Controlling dog populations through a reduction in food resources is therefore unethical and inhumane as well as a public safety risk.

Instead of *reducing* food resources, interventions should look to *manage access* to reduce conflict with people and other animals; restricting access to food in areas where roaming dogs are not tolerated, whilst increasing access in more acceptable areas. For example, if foraging by roaming dogs is creating conflict in a particular location, such as a public park, consider dog-proof bins in the area of conflict, while providing recognised feeding locations for edible waste in other nearby locations. This strategy should include a transition period when dogs are encouraged to forage at the new locations; hence maintaining food resources for the current dog population, but physically moving them to low conflict areas. Where most roaming dogs are owned, the best alternative is improved access to resources in their own home.

Outcome:

- Reduced conflict with roaming dogs, whilst maintaining resources essential for health.

Considerations:

- Unowned and community dogs will be relying on edible waste and feeding by people for their nutrition. Any changes to food resources must be done carefully, ensuring any decrease is balanced by an increase in other food resources, or in step with reduction in population size.
- Owned dogs that are allowed to roam will opportunistically forage on edible waste, even when food resources provided by their owners are sufficient; concerns about reducing access to resources will not be relevant for these dogs. However, some owned dogs may be relying on edible waste to supplement their nutrition. Interventions that reduce access, such as dog-proof bins for household waste, should be combined with behaviour change communication targeting owners to feed their dogs a nutritious diet.
- Feeding of roaming dogs is a recognised part of some cultures. However, not everybody is welcoming of roaming dogs; so responsible feeding should be encouraged, using a similar principle of moving feeding to locations where potential conflict is minimised.
- Providing food in just one location has the potential to cause competition and aggression between dogs. Providing food in more locations than the number of dogs can decrease competition.
- Waste from slaughter and meat processing (either at commercial facilities or at home) will require careful management. Such waste can risk infections of Echinococcus granulosus (hydatid) cysts for dogs, and subsequently, their faeces are a transmission risk to people, potentially leading to human cystic echinococcosis disease. Potentially infected offal can be buried to avoid dogs eating it, or it can be fed to dogs after sufficient treatment to destroy any hydatid cysts (sufficient treatment includes cooking to a core temperature of 100 degrees Celsius for at least one minute or being frozen solid to a core temperature of minus 20 degrees Celsius for at least 48 hours).

Outcome: Positive Human-Dog Relationship

Dogs are a domestic species with almost complete reliance on people for their welfare, breeding and survival. How people treat dogs has the greatest influence on the dynamics of dog populations; hence human behaviour is core to DPM. Feral dogs that live independently of people are rare and their survival and breeding success is low, relying instead on immigration to maintain population numbers.

The relationship between people and dogs differs between locations, including the role that owned dogs play within the household (for example, as pets versus working dog roles) and the concept of what dog 'ownership' means. In some countries, ownership is clear: dogs are either owned by a single household or unowned (usually temporarily following

abandonment before ownership moves to an organisation responsible for reuniting/rehoming). However, in other countries, the perception of ownership can exist on a sliding scale, including a loose form of guardianship by many households over free-roaming community dogs.

Within a DPM system, the Foundations and DPM Services should work together to achieve the following outcomes of positive human-dog relationships:

Dog owners should…

- acquire dogs responsibly; when they have recognised capacity to provide care for the long term and avoiding breeders/sellers that do not protect dog welfare
- care for their dogs to maintain good welfare according to the five welfare needs (environment, nutrition, social interactions, behaviour and health)
- manage breeding to ensure any puppies produced are wanted and rehomable
- manage dogs to limit risks, which may require humane confinement in countries where unsupervised roaming in public places is illegal or not tolerated by the local community
- keep dogs for life or rehome them responsibly

Carers of community dogs should…

- feed responsibly, avoiding potential conflict locations and times
- access services that control reproduction and provide basic veterinary services (principally sterilisation, vaccination and parasite control)
- act promptly to access veterinary care in the case of illness or injury, including euthanasia when treatment is not practically possible

Community (dog owners, carers and others) should...

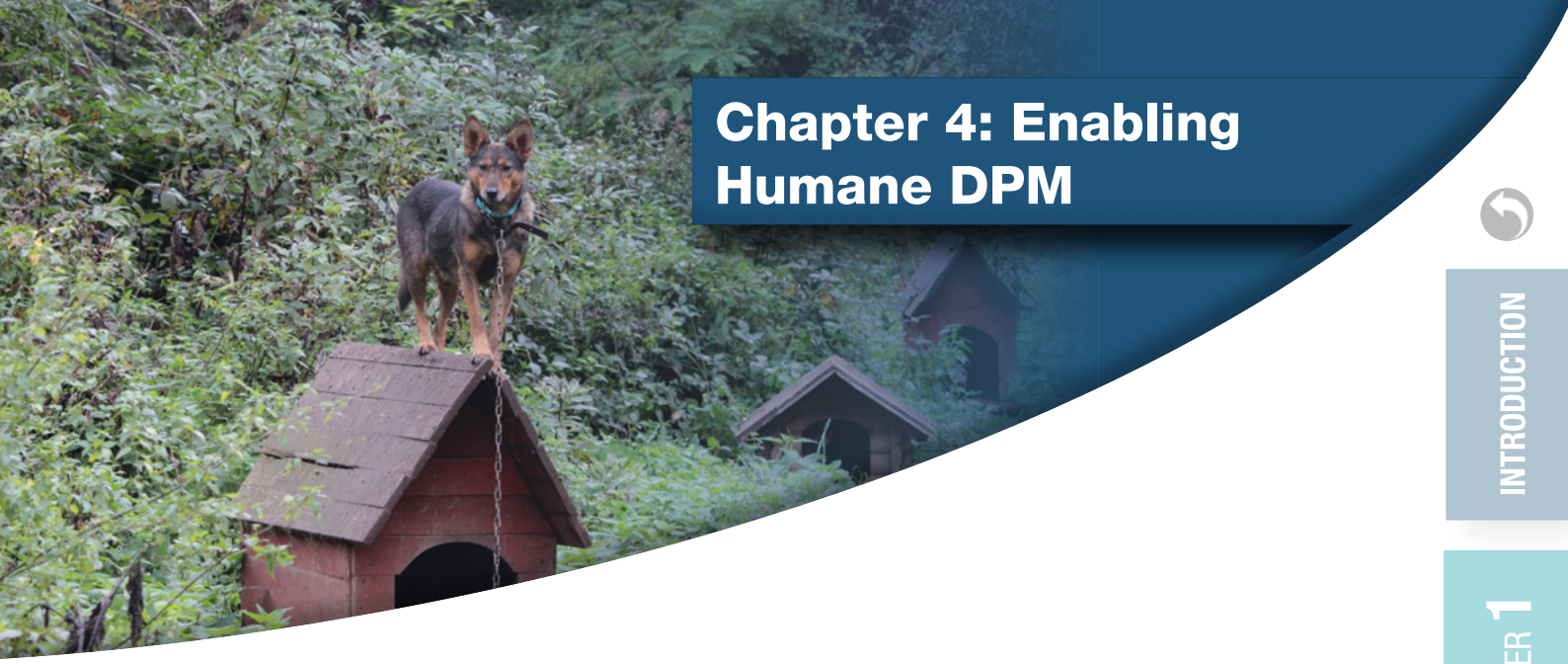
- feel safe with dogs in their community
- know who to go to when they have concerns about dogs in their community

Impact

Most DPM systems will have identified one or more of the following list of eight desired impacts:

1. **Improve dog welfare (animal based indicators)**
2. **Improve care provided to dogs (resource based indicators)**
3. **Reduce dog density/stabilise turnover**
4. **Reduce risks to public health**
5. **Improve public perception**
6. **Improve rehoming centre performance**
7. **Reduce negative impacts of dogs on wildlife**
8. **Reduce negative impacts of dogs on livestock.**

These impacts will be realised by the actions of the DPM system. ICAM's (2015) 'Are we making a difference? provides practical guidance on monitoring the progress of these impacts using measurable indicators.



Chapter 4: Enabling Humane DPM

Components of an Enabling Environment

Although implementation of the DPM system occurs at a local level, its success requires a supportive and enabling environment created by the competent/responsible authority at the state, national and/or regional level. In this chapter, the components of this enabling environment are described, categorised into: governance; politics; legislation and enforcement; funding; training and support; and rabies control/elimination.

GOVERNANCE

- **Clear responsibility for DPM.** DPM should be a clear responsibility under an identifiable government department (although implementation of legislation and DPM Services will require action from other departments), including clear roles and chain of command; this is most commonly the Veterinary Services. In this chapter, this is referred to as the 'responsible authority'.
- **Principled leadership.** Chapter 1 outlines six principles of DPM: to act humanely and ethically; to adapt DPM to local conditions; to recognise that DPM must be sustained and adaptive, to base design, monitoring and evaluation in evidence; to focus on root causes; and to focus on the central role that human behaviour plays in DPM. Responsible authorities must follow these principles in their own DPM actions and hold local implementers to account for also following these principles in their DPM actions. Responsible authorities must also advocate upwards for political support for these same principles in implementing DPM**.**
- **Multi-stakeholder leadership**. The problems relating to dogs, and the interventions required to solve them, will need action and governance by a number of government departments. Hence, establishment of a multi-stakeholder DPM advisory group at the responsible authority level is required; this may include veterinary services, public health, local government and education, among other government departments, as well as non-government representatives, such as NGOs, private vets and academia. National representatives of these stakeholders should support replication of this multi-stakeholder approach to DPM by encouraging involvement in any DPM Task Force (Chapter 3 Foundation 2: Task Force) by their local counterparts.

- **Assessment, monitoring and evaluation**. The most effective DPM systems are built upon knowledge of the local dog population dynamics and regular evidence-based evaluation and learning. Although implementation of assessment, monitoring and evaluation is done at the local level, responsible authorities should provide support in the following ways: build capacity with training in relevant methods; financially support the costs of data collection; where suitable, devise a core set of indicators that are common across the country/region while encouraging additional localised indicators; inspire the use of data by supporting local evaluation and learning events; collate and compare assessments and resulting DPM design; and collate and compare DPM evaluations to report DPM achievements and learnings across the country/region.

POLITICS

- **Political support for humane DPM.** The responsible authority needs to build the case for investing in humane DPM. This involves establishing the costs of dog-related problems, potential benefits of effective DPM and related policy that reflects the importance of DPM. It requires concerted advocacy by responsible authorities and other stakeholders affected by dogs to establish investment in DPM and commitment to the principles of humane DPM (see Chapter 3 Foundation 3: Advocacy).
- **Multi-sectoral support**. In recognition of the relevance of DPM to many government departments and the need for multi-stakeholder leadership, political support for DPM must be established across sectors. The One Health concept can support such multi-sectoral approaches.

LEGISLATION AND ENFORCEMENT

- **Legal frameworks.** Implementation of humane DPM must be supported by suitable central/federal/national legislation relating to dogs and zoonoses control. This central/federal/national framework should ensure DPM can be enacted following the principles of humane DPM, while allowing secondary/bylaw/local legislation to be adapted as needed for the local dog population context (see Chapter 3 Foundation 1: Legislation and enforcement). Responsible authorities should establish this suitable central/federal/national legislation and sufficient capacity for enforcement; this may require review, consultation, redrafting and adoption of updated legislation, all reliant on the political support established through advocacy.
- **Enforcement of legislation.** Responsible authorities can support enforcement of both central and secondary legislation through funding and training of enforcement agencies. This may include publishing written procedural guidelines for enforcement agencies.
- **Dog registration**. Where identification and registration are appropriate and achievable for the dog owning community (see Chapter 3 Identification and registration), the responsible authority should establish a centralised database for dog registration to ensure reuniting of identified dogs with registered owners can occur across local authority boundaries. Ideally, this centralised database is linked to other national databases using regional database tools (e.g. Europetnet is a database linking database information from several national and local associations across Europe, facilitating the return of dogs to their owners despite moving across borders).

CASE STUDY 18

Creating an enabling environment for DPM in Costa Rica

The Costa Rican government appointed a National Animal Welfare Coordinator and funded a national pilot project to provide training to municipalities in DPM related skills and knowledge. The networks and capacity built through the pilot project inspired various DPM actions tailored by municipalities to suit to their local communities, which persisted after the pilot ended. **View full case study online at:** https://www.icam-coalition.org/creating-an-enabling-environment-for-dpm-in-costa-rica/

FUNDING

- **Establish costs relating to DPM.** Government spending on dogs occurs both in tackling dog-related problems (e.g. zoonoses and dog bites) and in implementing interventions as part of the DPM system. These costs are rarely reported or collated, which means real costs often remain obscured. The responsible authority can establish where these costs lie across government departments and begin a project to collate and monitor these costs over time. The results of such cost monitoring can support both establishing political will for DPM and assessing impact of DPM over time.
- **Financial support for DPM.** Establishing sufficient budget for a DPM system at both the national and local level requires both political support and, for many countries, a legislative basis to justify government budget for DPM. The responsible authority should establish budget required for both enabling work at the national level and implementation at the local level, with some budget flexibility to support whatever interventions are best suited to local dog population dynamics. Responsible authorities may have an opportunity to reduce costs by buying supplies (e.g. rabies vaccines) on a large scale to provide to several local DPM interventions .

TRAINING AND SUPPORT

- **Veterinary drug access.** Good veterinary care requires access to suitable drugs for anaesthesia, analgesia, treatment and euthanasia. In some countries, access to these veterinary drugs is extremely difficult causing unnecessary barriers to effective DPM. Responsible authorities have a role in identifying these gaps in drug accessibility and increasing affordable access where required.
- **Basic veterinary training.** Responsible authorities should ensure the veterinary core curriculum contains sufficient provisions to graduate veterinarians ready and able to implement DPM.

- **Education system**. Where education of children in dog bite prevention and/or dog (and other pets) care is required across the country/region, these subjects can be included in the curriculum. This must be alongside providing teacher training/teaching materials in these subjects (see Chapter 3 Formal education of children).
- **Professional training.** Implementation of humane DPM requires the involvement of several professions; including veterinarians, veterinary nurses/technicians, animal welfare officers, public health officials, teachers and rehoming centre staff. These professions do not always have the competencies required for effective DPM. Training may occur at the local level, however responsible authorities should look for opportunities to support by providing training at a national or regional level (see Chapter 3 Strengthening DPM professional capacity).
- **Professional development.** In addition to basic training, responsible authorities can look for opportunities to support career development in DPM through a programme of continuing professional development (CPD), which could potentially involve a series of trainings, relevant experience and mentoring.
- **Peer-to-peer learning.** Implementation of DPM at the local level should reflect local conditions; however, there will be similarities in interventions across countries. The responsible authority can support peer-to-peer learning between DPM systems using workshops and peer-learning visits.
- **Communication strategies.** Although there may be specific behaviour changes needed at the local level, there are core human behaviours common across the country/region that can support humane DPM. Responsible authorities have an opportunity to create efficiencies by developing behaviour change communications that can be used across locations. A consultation process will be needed to ensure these communications support, and do not conflict with, local messaging. Initiatives, such as World Rabies Day and World Animal Day, can be capitalised upon for specific communication campaigns.

RABIES CONTROL AND ELIMINATION

- The control and eventual elimination of dog mediated rabies is a strong motivator for DPM. Although potentially not essential in all locations, effective DPM should contribute to rabies control by increasing vaccination coverage, principally through two mechanisms: decreasing population turnover by reducing unwanted litters while increasing life span due to improved welfare; and increasing access of dogs to vaccination by increasing the proportion of dogs enjoying responsible oversight from owners/carers. Although effective DPM should contribute to rabies control, it is not sufficient as an isolated intervention because as rabies control and elimination require a holistic approach driven by multi-sectoral leadership.
- The **Stepwise Approach towards Rabies Elimination (SARE) tool** is a self-assessment tool that consists of two components: the SARE assessment component and the Practical Workplan towards Achieving Rabies Elimination (PWARE) component. The SARE component has been developed as a way of assessing the progress of rabies control from stage 0 (no information on rabies burden) to stage 5 (freedom from dog-transmitted rabies).

- To this end, the SARE component defines activities, arranged in a logical progression from general activities (Stage 0) to highly specific activities for dog rabies elimination (Stage 5), under seven broader components:

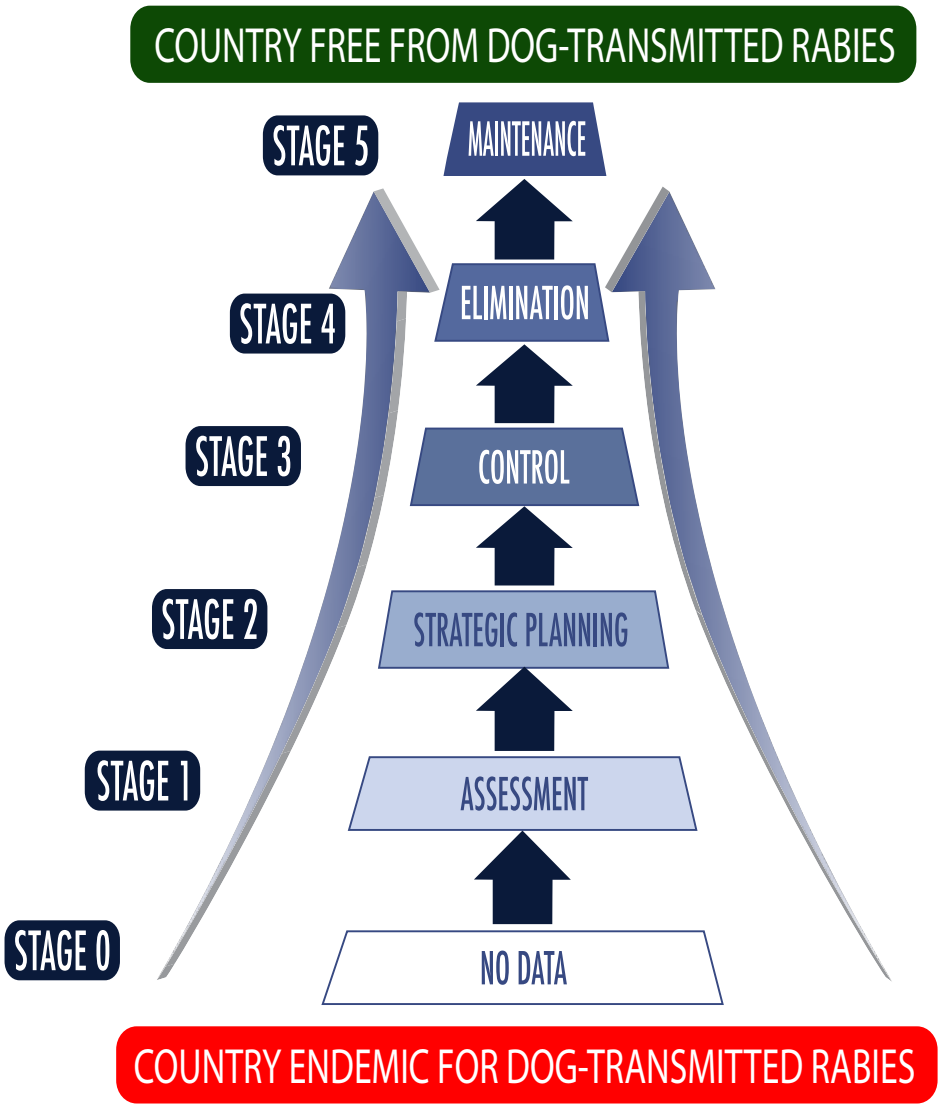
    1. **Prevention and control**
    2. **Data collection and analysis**
    3. **Laboratory diagnosis**
    4. **DPM**
    5. **Information, education and communication**
    6. **Legislation**
    7. **Cross-cutting issues**

- During the SARE assessment, rabies stakeholders review each activity within each component, marking activities as either accomplished or pending. The outputs of the SARE assessment are a list of pending activities and an objective 'SARE Score' relating to the stage of government efforts towards achieving dog rabies elimination.

- The second component of the SARE tool is the PWARE component. This component enables governments to prioritise pending activities and develop a short-, medium-, or long-term workplan to address these pending activities in a logical, efficient way. The PWARE provides stakeholders with a default workplan template that can be fully customized and adapted to the specific country's situation. This enables governments to develop a comprehensive, detailed workplan within a few days, as opposed to several weeks.

- The SARE tool has been implemented in more than 40 countries globally and can be implemented at the regional, national or local level. As such, responsible authorities can utilise this tool for both national rabies control planning and/or support its use at the local level.

- Where rabies control/elimination is the principal motivating factor, governments are encouraged to use the SARE tool to ensure their actions are sufficient to progress through the stages of increasing control to eventual elimination. The SARE tool has an entire component dedicated to helping governments address specific DPM challenges in the context of rabies control and elimination.
- The SARE-PWARE tool, and a comprehensive SARE-PWARE Toolbox that contains information on planning and implementing workshops, can be requested on the Canine Rabies Blueprint website https://caninerabiesblueprint.org/A-stepwise-approach-to-planning.
- The fundamental stages of the SARE are outlined below[1]:



1 SARE stages diagram source: Global Alliance for Rabies Control

Annexes

This section includes five annexes with supporting material and resources:

- Annex A: **Five Welfare Needs of Dogs**
- Annex B: **Methods of Exploring Dog Population Dynamics**
- Annex C: **Problem and Objective Trees**
- Annex D: **Humane Handling**
- Annex E: **Sterilization Targets in CNR**

Annex A: Five Welfare Needs of Dogs

In order to experience good welfare, dogs must have the opportunity to meet all their needs and someone (owner or carer) to ensure those opportunities persist.

The five welfare needs is a framework for considering the needs of any animal and has been used in legislation aiming to protect animal welfare (e.g. Animal Welfare Act 2006, UK).

It outlines that animals need the following:

1. **A suitable environment**
2. **A suitable diet**
3. **To be housed with, or apart from, other animals**
4. **To be able to exhibit normal behaviour patterns**
5. **To be protected from pain, suffering, injury and disease.**

For dogs, these welfare needs can be further defined in terms of their species-specific needs (adapted from Code of practice for the welfare of dogs, Defra, UK):

1. A suitable environment

- A safe environment with adequate protection from hazards, including fast moving traffic.
- Access to comfortable, dry, quiet and draught-free rest area.
- Access to a quiet area in which to avoid things that frighten them.
- Access to an appropriate area for toileting, away from their rest area.
- If kennelled or tethered, for this to be for only part of the day or temporarily.
- A big enough area with adequate shade and shelter to allow a dog to move around to avoid becoming too hot or too cold.

2. A suitable diet

- Access at all times to pathogen free water.
- A balanced diet that is suitable for a dog's age, activity, health status, gender and breed; resulting in a stable healthy weight. This will vary between dogs and over their lifetime.
- Access to food at least twice per day.

3. To be housed with, or apart from, other animals

- For dogs, social interactions with people are also important. These interactions should be consistent, kind and gentle and should not cause stress or danger. Neither should these interactions encourage aggressive or anti-social behaviour.
- Dogs need several opportunities each day to socialise with friendly dogs and people so they don't become lonely or bored or distressed (may be expressed by barking, howling, pacing and over-excitement when social events do occur).
- When dogs live together, there should be enough of each valuable resource (e.g. beds, food bowls, water) to prevent competition and fighting. They should also have the opportunity to get away from each other when they want to.
- Puppies must have regular opportunities to learn how to interact with objects in their environment as well as other dogs, animals and people.
- Some dogs are fearful or aggressive towards other dogs or people. Avoid situations that lead to this and seek advice from an appropriately trained person on how to use reward-based training methods to encourage appropriate behaviours instead.

4. To be able to exhibit normal behaviour patterns

- These are in addition to the normal social behaviours described above.
- Opportunity for regular exercise and play.
- Opportunity to rest undisturbed.
- Access to toys, suitable objects to chew and places to explore, smell and dig.
- Use reward based training – using food, play and praise – to encourage acceptable/ preferred behaviours that dogs are willing to perform.

- Behaviour signals a dog's emotional and physical state; they will show if they are afraid, angry, happy, excited, etc. These behaviours are normal, although they may be expressed at inappropriate times/places from the perspective of people. As far as possible, allow opportunity to express these normal behaviours.
- Some normal behaviours will need to be avoided, including predation and breeding (when litters are unwanted). The priority is to reduce motivation to perform these behaviours, through feeding an appropriate and interesting diet to avoid predation and sterilisation to avoid breeding behaviours. It's also important to reduce the opportunity to perform these behaviours, however using only avoidance of the opportunity to perform highly-motivated behaviours will lead to frustration.

5. To be protected from pain, suffering, injury and disease.

- Sensible precautions to avoid hazards such as fast-moving traffic and access to poisonous food, animals and chemicals.
- Routine preventative healthcare, including vaccination and parasite control.
- Where sterilisation is used to control reproduction, it should be performed by a suitably qualified vet to a good standard. Avoidance of unwanted litters is not a sufficient benefit to outweigh avoidable post-operative complications that cause pain and suffering, based on the veterinary principle of "first do no harm".
- Monitoring on a daily basis for any signs of injury, disease or illness followed by prompt action to treat any problems according to veterinary advice.
- Prompt euthanasia with humane methods to end suffering when treatment is not possible.
- Dogs can roam/be lost, leading to potential injury and suffering. Where registration and identification systems exist, dogs should be identified and registered to allow for prompt reuniting with owners.

Resources:

Code of practice for the welfare of dogs, Defra, UK http://www.cfsg.org.uk/The%20Welfare%20Codes%202018/Code%20of%20Practice%20for%20the%20Welfare%20of%20Dogs.pdf

Annex B: Methods of Exploring Dog Population Dynamics

Insight into dog population dynamics can be explored through questions, analysis and interpretation of information gained from a variety of methods, including questionnaires, street surveys, focus groups and participatory research, secondary sources of information and observation of roaming dogs.

Household questionnaires

Questionnaires can help you explore the size, demographics, welfare and dynamic processes of the owned dog population. (See page 54-62 of ICAM's *Are we making a difference?* for more information on how to implement a household questionnaire.)

Suggested questions, analysis and interpretation to help you learn more about owned dogs from questionnaires include:

Exploring owned confined and owned roaming sub-populations

- **Categorising dogs into their sub-population**
  - ❒ Ask owners about an average day with their dog: is their dog allowed to roam freely without their supervision? If no (e.g. the dog is reportedly confined at all times or walked under supervision), then this dog is defined as an owned confined dog. If the dog is usually (on a normal day) allowed to roam outside the owner's house/yard (even if only for part of the day), then it is defined as an owned roaming dog.
- **Population size estimate**
  - ❒ Estimated total number of owned dogs = n/h X H. Where n = number of owned dogs in questionnaire sample, h = number of households interviewed and H = total number of households. Apply the proportion of dogs reported to be allowed to roam to the total estimate of owned dogs to get the estimated total number of owned roaming; the remainder are the owned confined dogs.
- **Demographics**
  - ❒ Ask owners for their dog's(s') sex, age and sterilisation status. Extreme gender skew suggests preference for one gender (usually males) and neglect, killing or abandonment of the other (usually females due to unwanted births).
  - ❒ Plot age distribution; what proportion makes it to old age (7+ years)?
- **Welfare**
  - ❒ If dog(s) is visible, score for body condition and skin condition.
  - ❒ Ask owner about vet care including vaccination status, and how their dog is confined. If tethered or kennelled, ask for how long each day; more than a few hours is likely to compromise welfare.

Exploring dynamic processes

- **Acquisition of owned dogs (including adoption):**
  - ❒ Ask owners how they acquired their dog(s), where from and for what purpose? Was this a 'local' source, from within the area targeted by your DPM intervention, or an

'imported' dog, from outside your area?

- ❒ If dog was adopted, ask if this was in the last 12 months (to estimate the number of dogs adopted per year)? Direct from the street or a rehoming centre?
- ❒ Do dogs from different sources differ in their welfare or confinement?

Abandonment

- ❒ Ask people if they know of puppies born in their neighbourhood/community in the last 12 months, what was the fate of these puppies? This won't provide a number of abandoned puppies, but it will give an indication of whether abandonment is a significant process in your location. You can also use this as a baseline for monitoring and evaluation by asking the same question again at a later date.
- ❒ Ask specifically about the fate of litters born into the household in the last 12 months and adult dogs that left the household in last 12 months. This has the potential to estimate number of dogs abandoned per year, but will very likely be an underestimate because owners may lie about abandonment to the street.
- ❒ What is the ratio of females to males in owned dogs? A skewed ratio suggests one gender is being abandoned or killed. How does this compare to the ratio of females to males on the streets?

Roaming

- ❒ Ask owners if their dog is allowed to roam freely without their supervision on an average day. This can be categorised into allowed to roam for less than 2 hours, 2-12 hours, more than 12 hours or all the time/never confined. Does the estimate of the number of owned roaming suggest that these dogs comprise a significant source/ proportion of the total population of roaming dogs?

Reproduction

- ❒ Ask owners if their dog is sterilised; if not, ask why not? If yes, ask why did they choose to sterilise?
- ❒ If dog is female, is she lactating? Also ask the owner if she is currently pregnant or has had puppies in the last 12 months? What was the fate of puppies born in the last 12 months?
- ❒ Are owned roaming dogs breeding more often than confined dogs?

Community care

- ❒ Ask people if they offer care to street dogs on a regular basis (at least once per week)?
- ❒ What care do they provide? Food, water, shelter, vet care or other?

Death

- ❒ Ask owners the age of their dogs. Age structure (can be plotted as a histogram with one-year age ranges for each bar) will indicate mortality rates.

Household questionnaires also provide an opportunity to ask people about their perceptions of dogs. For example, do they experience any problems with dogs and, if so, what kind? Have they been troubled by roaming dogs in the past month? Have the number of dogs increased, decreased or stayed the same over the past year?

Street surveys

Street surveys can help you explore the density, welfare, breeding and geographical spread of roaming dogs. This includes owned roaming, community and unowned sub-populations of dogs. The following questions, analysis and interpretation will help you learn more about roaming dogs from street surveys. (See page 70-72 of ICAM's *Are we making a difference?* for more information on how to implement a street survey.)

Exploring owned roaming, community and unowned sub-populations of dogs.

- **Categorising dogs into their sub-population.**
  Note that the following descriptions of each sub-population are not definitive, they only give an indication.
  - ❒ Owned roaming dogs may be wearing a collar. They may behave confidently and remain located within, and potentially show defence of, a specific territory around their household.
  - ❒ Community dogs are those that receive some form of regular care (food, water, shelter, etc) from one (or more) members of the community. Often community dogs have one or more names given by community members but no one states 'that is my dog'. They may appear friendly towards people but may also be defensive of their territory with other dogs.
  - ❒ Unowned dogs receive no regular care from community members. These dogs are likely to have poor body condition, unless there is a regular supply of quality food resources, such as refuse from a slaughterhouse. They may appear nervous or 'flighty'.
- **Population density**
  - ❒ Density of roaming dogs is measured as dogs per km of street surveyed. Repeated street surveys provide an indicator of how roaming dogs are changing over time, and in response to DPM.
  - ❒ Although behaviour, condition or the presence of a collar may suggest which subpopulation a roaming dog belongs to, in many cases this will not be obvious and so the roaming population is treated as one population during the survey.
  - ❒ There are additional (more resource consuming) methods for estimating roaming dog population size in Annex D (page 112) of ICAM's Are we making a difference?
- **Demographics**
  - ❒ Dogs seen on the street survey are recorded for sex, age (limited to adult versus pup) and for vaccination and sterilisation status in locations where vaccinated or sterilised dogs are marked in some way (e.g. paint spray or collars for vaccination and ear notches or tags for sterilisation).
- **Welfare**
  - ❒ Dogs seen on the survey are recorded for visible body condition (5 point scale) and the presence of visible skin problems.

Exploring dynamic processes

- **Abandonment**
  - What is the ratio of females to males on the streets? A skewed ratio suggests one sex is being abandoned or there is preferential adoption from the streets. How does this compare to the sex ratio of owned dogs reached through the household questionnaire?
  - If there is a skew towards males in both the household and street populations, this suggests females are neglected or abandoned and the roaming dog population is majority owned roaming. If the owned population is skewed towards males but the street population is equal or skewed towards females, this suggests females are abandoned but are surviving on the streets, hence a significant proportion of roaming dogs are unowned (this may still be a minority compared to owned roaming).
- **Roaming**
  - Compare the gender composition and welfare of the owned roaming dogs measured during the household questionnaire to the composition and welfare of the roaming dogs measured through the street survey; are they vastly different? If so, this suggests there are sub-populations of community owned and unowned in addition to owned roaming.
- **Reproduction**
  - For each female seen on the street survey, observe and record if she is currently lactating. Also record the presence of puppies seen on the survey. However puppies are difficult to see and appear in clusters with their litter mates and so are an unreliable indicator of breeding activity – the proportion of females that are visibly lactating is likely to be more reliable.
  - If dogs are marked as sterilised in some visible way (e.g. ear notch) record whether each dog observed is sterilised or not. How does this change with delivery of DPM sterilisation services? Are you sterilising the right dogs? Or is the roaming dog population still showing breeding activity?
- **Death**
  - Record the body condition of every dog observed. Dogs in an emaciated body condition are suffering and at high risk of mortality.

Focus groups

Focus groups and participatory research are a great way of exploring dynamic processes and the motivations and barriers behind them. We suggest the following questions, analysis and interpretation to help you learn more about dynamic processes from focus groups and participatory research. (See page 63-66 of ICAM's *Are we making a difference?* for more information on how to implement Focus groups and participatory research.)

Exploring dynamic processes

- **Acquisition of owned dogs (including adoption)**
  - ❒ Ask groups to discuss and rank the motivations and barriers to adoption of dogs (separately for adoption from rehoming centres and from the street). Repeat for purchase of dogs to reveal opportunities to replace purchase with adoption.
- **Abandonment**
  - ❒ Ask groups to discuss and rank the motivations and deterrents to abandonment of dogs to the street; can split into different dog type if you suspect there are different motivations at play.
- **Reproduction**
  - ❒ Ask groups to discuss and rank the motivations and barriers to sterilisation of dogs.

Holding facility / Rehoming centre records

These records can be used to explore the sub-population of dogs that are housed in these facilities and the processes that lead them to arrive and leave the facilities.

Exploring dogs held at a physical centre or foster home for adoption to a new home

- **Population size estimate**
  - ❒ Population size will be influenced by physical capacity and throughput, as a single kennel may be home to more than one dog in year. Establish both capacity and average intake per year.
- **Demographics**
  - ❒ Record sex, age, breed type and sterilisation status of dogs at intake; and if available, the source and reason for relinquishment. If a waiting list is in place, look at dog demography here too. This information may suggest a source/owner motivation for unwanted dogs.

Exploring dynamic processes

- **Relinquishment and removal from the streets**
  - ❒ What proportion/number of dogs are relinquished by owners each year? What reasons do they give for relinquishment? Are there particular dog types/ages that are relinquished more often?
  - ❒ How many dogs are caught by the centre or brought by authorities/public from the streets?
- **Roaming and abandonment**
  - ❒ If dogs are caught/brought from the streets, what proportion appears to be owned (marked in some way)? What proportion/number of dogs are reunited with their owners and via what route (e.g. checking owner details in microchip registry)?
- **Community care**
  - ❒ Are dogs ever ‘claimed’ by citizens as community dogs that they wish to be returned

to the community? Is the centre in contact with citizens that care for community dogs? Do they request assistance?

- **Reproduction**
  - ❒ What proportion/number of the dogs coming into the centre are already sterilised? What proportion are pregnant/lactating/puppies?
- **Adoption**
  - ❒ What proportion/number of dogs are rehomed each year? What proportion /number are returned? Are there particular dog types that are easier/harder to rehome? Are there particular demographics of owners that make good adopters (i.e. take on a high proportion of adoptees and low return rates)?
- **Death**
  - ❒ What proportion/number of dogs die in the centre each year and what is the cause of this mortality? If euthanasia, what was the reason?

Secondary sources of information

Secondary sources are any sources of information where you do not have to make a specific effort to collect the data yourself, this has already been done by somebody else. You just need to be able to access this information. For assessing dog populations this could include a registration database of identified dogs, records of dog control activities by local authorities, numbers of licensed breeders or sales outlets, veterinary records and municipal records of complaints/concerns about dogs. Guidance on using secondary sources of information is on page 73-74 of ICAM's *Are we making a difference?*

Exploring sub-populations

- ❒ Registration databases and veterinary records (held by private or government vets) can be used to explore owned dog demographics
- ❒ Records of dog control activities and complaints/concerns about dogs will mostly be related to roaming dogs.
- ❒ Records relating to licensed breeders and sales outlets report on breeder owned dogs.

Exploring dynamic processes

- **Acquisition**
  - ❒ If regulations exist for breeders/sales outlets, ask the authority in charge of these regulations how many of these exist and what number of dogs are they dealing with? Has this number changed over time?
- **Reproduction**
  - ❒ Veterinary authorities or associations of veterinary clinics may keep records on the number of sterilisations performed or reproductive status of their animal clients. There may be available research on pet animals available; conducted by pharma, NGOs or academics.

- **Removal from the streets**
  - ❒ How many dogs are caught by authorities from the streets? What triggers catching efforts? Complaints or is this done on a schedule?
- **Roaming**
  - ❒ If dogs are caught from the streets, what proportion appears to be owned (marked in some way)? What proportion/ number of dogs are reunited with their owners and via what route (e.g. checking owner details in microchip registry)?
- **Death**
  - ❒ If dogs are killed outside of the facility, how many dogs does this involve and by what method? Note it may be difficult to get reliable estimates on this figure as authorities may be reluctant to share such data.

Observation of roaming dogs

Observation of roaming dogs can help you understand the dynamics of roaming dogs and explore the sub-populations of owned roaming, community and unowned dogs. This is a time consuming method but has the potential to deliver a deep understanding of roaming dogs. ICAM's *Are we making a difference? (page 80-83) provides some guidance on using a behavioural observation method to measure interactions between dogs and people; this may give you some ideas. However, innovation is welcome here, not least if this can involve community members noting and sharing their insights on the dogs that they observe in their local area.*

Exploring sub-populations of roaming dogs

- ❒ Observe the behaviour of roaming dogs in response to you – do they appear nervous and slink away or are they confident and protective of their area, as if it was their home territory? Do they ever enter private property, as if going 'home'?
- ❒ How do roaming dogs behave around people in their community? Do they appear comfortable (e.g. resting in a relaxed manner in busy areas) and anticipating food/ petting? Or are they avoiding people?
- ❒ Ask local people about roaming dogs that you observe (at the time of observation or take photos); do they know if they have an owner or carer?

Exploring dynamic processes

- ❒ Ask people about roaming dogs that you observe (not whilst conducting street surveys, as these should be conducted at a consistent speed), do they know where they came from and why?
- ❒ Observe litters born to roaming dogs. Follow lactating females to the den (carefully!). Are these dens in households or public places? Return to the litters over time, do these puppies make it adulthood?

Annex C: Problem and Objective Trees

This two-part tool can be used for prioritising dog related problems, identifying dynamic processes and recognizing their drivers as well as selecting DPM activities that will influence root causes.

Problem tree

The information gathered through assessment can be visualised using tools that help to conceptualise the dog population and reveal opportunities for targeting interventions at the processes that could reduce problems. In Figure 6 (see next page), the problems, sub-populations and processes from the dog population assessment of a hypothetical location have been used to create a 'problem tree'. This should be conducted by a multi-stakeholder group that can use their varied perspectives, alongside the evidence gathered through the dog population assessment, to display their concept of dog population dynamics with explicit and evidence-based logic. (You can work together to develop a problem tree using a clear wall space or large board and writing on sticky notes that can be moved around as needed)::

Trunk = system you want to change.

- Start with the trunk of your tree; this can be as broad as the current dog population management intervention that you want to improve. Alternatively, this can be narrowed to a specific issue, such as management of community owned dogs or the functioning of a rehoming centre.

Branches = problems.

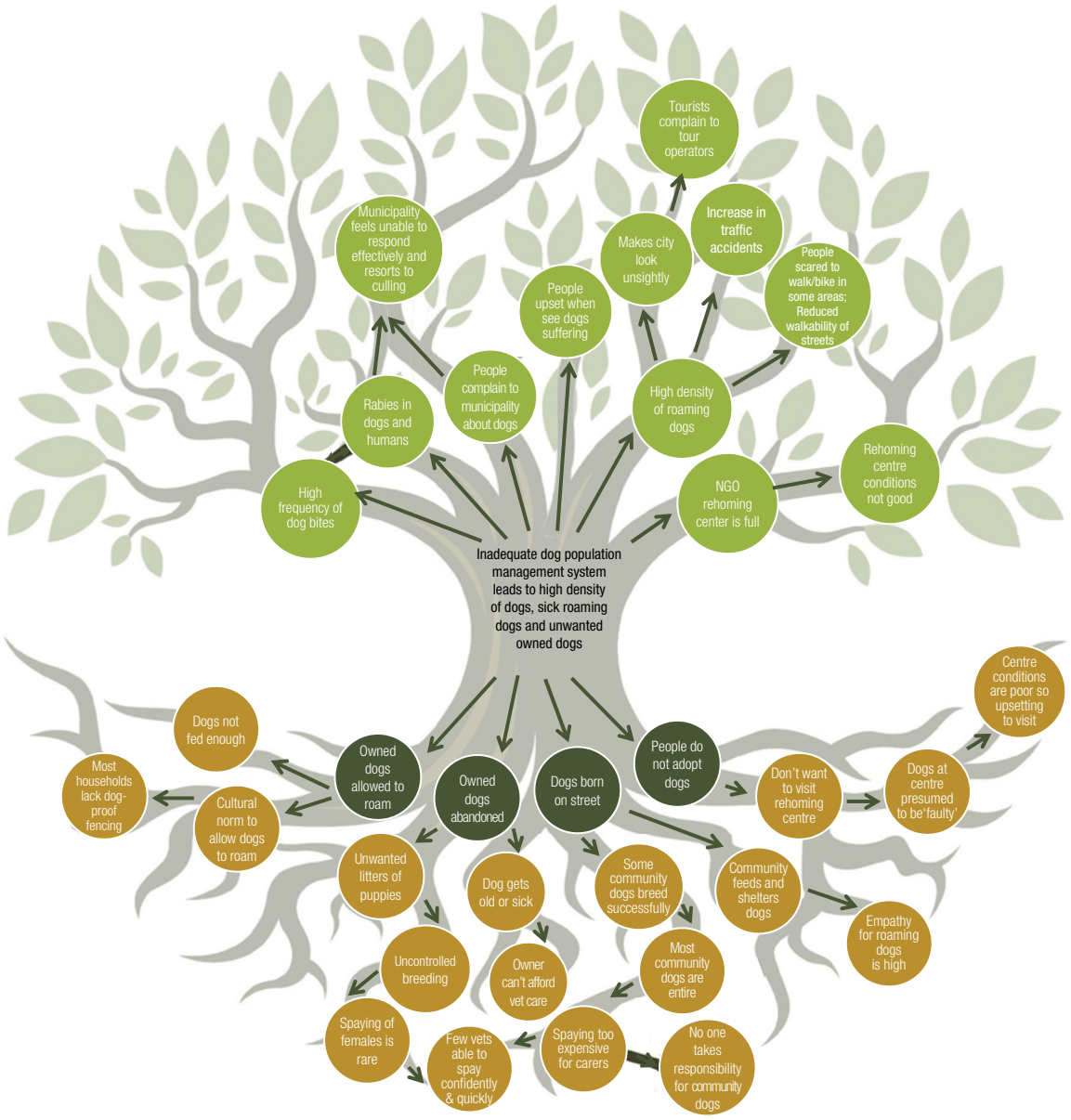
- The branches of the tree are the problems: if you have already prioritised problems, include only those, or display all the problems and go through a prioritisation process once the problem tree is complete. You may find that these problems are linked to each other. At this stage, the problems can be simple statements; later these will be quantified with measurable indicators.

Roots = processes and underlying drivers.

- Consider the dogs experiencing or linked to problems come from: what processes are acting as the source of these dogs? Review the process relating to each relevant sub-population in turn: owned, community, unowned, rehoming centre and breeder/pet shop dogs. Which processes are prevalent in your location? These are the primary roots (e.g. owned dogs abandoned).
- For each process ask: *why does this occur? Drill further by asking 'why' again, creating causal threads down to root causes or underlying drivers. These root causes will be comprised of human behaviours, attitudes, policy barriers, infrastructure challenges and dog behaviour or population dynamics.*

Figure 6: Problem Tree

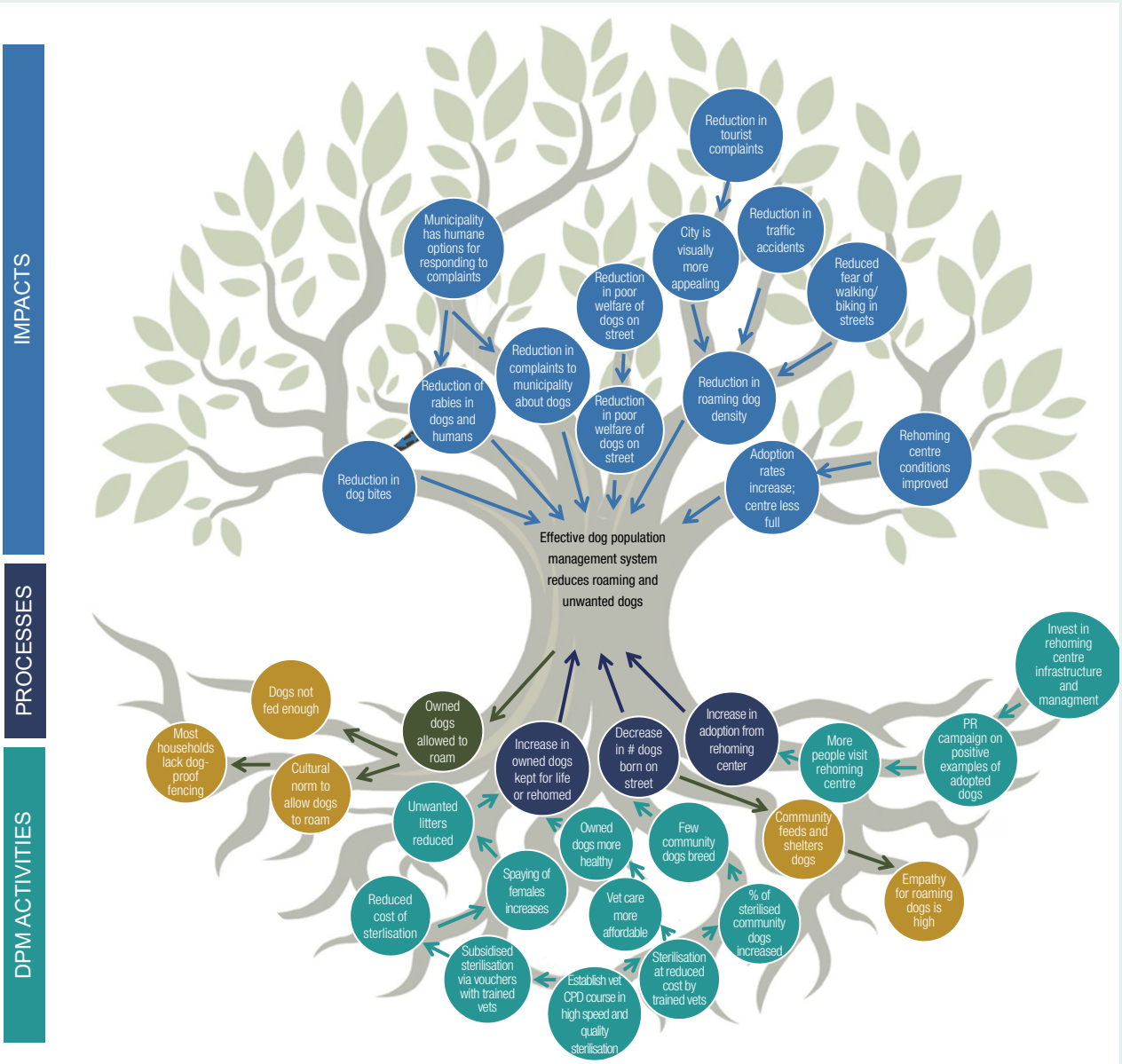
This problem tree for a hypothetical location displays the problems relating to dogs as the branches; the processes leading to the appearance of dogs experiencing or linked to these problems as the primary roots; the root causes or underlying drivers of these processes as the tips of the tree roots.



A problem tree makes the concept of dog population dynamics within your location explicit, visual and shared between your stakeholders. It is then possible to identify within the roots—especially at the level of root causes—opportunities for DPM interventions (see Chapter 3) to influence dynamic processes.

Figure 7: Objective Tree

This objective tree was developed from problem tree in Figure 3; displaying the DPM activities at the tips of tree roots, then logical steps following from those activities up to the primary roots where changes in dog population dynamics processes are expressed, and then onto impacts as the branches of the tree.



Objective trees can be built alongside your problem tree, or on top of it, using sticky notes or pens of a different colour. Identify the problems that must be prioritised and the root causes that could viably be addressed through your DPM system, as described in the problem tree.

Objective tree

If roots from the problem tree are expressed in positive terms with consequences leading up to impacts, the diagram will illustrate one or more theories of change, as outlined below. These can be displayed in a similar way using an objective tree (see Figure 7 on previous page):

Roots = DPM intervention to address root causes.

- Replace the text describing each root cause with the specific DPM service/ legislation that will address this cause. Then ask, if this is successful what will be the consequence? If that consequence occurs, what then? Keep building the chain until it reaches the process you first started with, which can now be expressed as a reduction or the opposite process (e.g. 'owned dogs are abandoned' can become 'owned dogs are kept for life or rehomed responsibly')

Trunk = DPM system.

- The trunk of your tree becomes the system of DPM that reduces those dogs identified to be experiencing or linked to problems, usually roaming and unwanted dogs.

Branches = Impacts.

- Complete the chains by connecting them to the problems they are targeting but reversing these problems into positive statements; these are now your impacts.

The chains from impacts, down through changes in population dynamic processes, to DPM services/legislation addressing root causes are considered '**theories of change**'. These theories of change describe the logical steps from DPM intervention up to the changes you want to make; each step should be justifiable and any assumptions in linking between steps should be made explicit. There may be more than one theory of change working together in a DPM intervention.

As with a problem tree, the objective tree makes the DPM intervention design explicit and shared between stakeholders. There may be causes that you are not able to address immediately through your DPM intervention, due to limited resources or potential resistance from citizens (e.g. dog-proof fencing around households may be considered unfriendly and not socially acceptable). Keep these causes visible in your objective tree, as the decision to leave these causes unaddressed at this stage should also be explicit, shared and agreed (e.g. in the hypothetical objective tree in **Figure 7,** the cause of not having dog-proof fencing has been left visibly unchallenged). Their impact on dog population dynamics should be reviewed over time and reconsidered for including in the DPM system if they appear to be significant in future.

Annex D: Humane Handling

The provision of DPM services often requires direct dog handling by DPM implementers and/or owners/carers. This can include catching and handling for vaccination or sterilisation, whilst in a holding/rehoming centre or during training of DPM professionals. It is a core principle of DPM to ensure that this handling is carried out humanely.

Three factors dictate whether or not handling is humane:

1. **A dog's perception of the experience**: did they find it aversive or positive?
    - The goal of humane handling should not be just to minimise harm or discomfort but strive to make the handling experience as positive as possible. Explore how a dog could find the experience rewarding, such as food and petting, use calm movements and a gentle voice, and minimise restraint to allow the dog an element of choice and control over the interaction.
2. **Was the handling justified and necessary**; what was the purpose of handling the dogs? Was there an intended benefit for the dog and/or people that necessitated handling?
    - The intention to 'do good' is required, but not sufficient; for example, the outcome of an immune response to rabies does not justify rough handling during vaccination.
3. **The availability of alternatives**: was there a less aversive/more positive way to handle the dog whilst achieving the same outcome?
    - Humane handling is not static. Alternative, more positive ways of handling may develop over time. Refinement of handling should be an ongoing process of reflection from the dog's point of view and proactive changes to maximise positive experience for the dog and minimise or avoid negative impacts.
    - Refinement of handling can be achieved by adopting a 'road-mapping' approach, so that each step within the handling process is identified, examined and explored for how it can be improved. For example, catching a dog can be broken down into a series of steps:

        Step 1: Attracting the dogs attention

        Step 2: Initial approach

        Step 3: Gaining trust through first touch

        Step 4: Restraint through gently restricting their movement and lifting by fully supporting their body weight when carrying

CASE STUDY 19

Humane handling of dogs involved in CNR in Jamshedpur, India

A CNR project developed infrastructure, protocols and a trained team of staff to ensure their handling was a humane and positive experience for the dogs involved, at every step of the CNR process. This protected dog welfare during CNR activities and encouraged compassionate behaviour towards dogs by the wider community, who were inspired by watching the Animal Welfare Officers at work on their streets.
View full case study online at: https://www.icam-coalition.org/humane-handling-of-dogs-involved-in-cnr-in-jamshedpur-india/

- Innovative methods of handling that maximise positive experiences and exceed previous humane approaches can be developed even in the most resource poor settings. The guiding principle should be a permanent commitment to being reflective and proactive; to doing things better the next time around.

Why invest in humane handling?

Achieving humane handling requires knowledge of dog behaviour, practice and attention to the individual characteristics of the dog. Resources and time are needed to follow the road-mapping approach described above and the associated training and monitoring of staff, owners and carers to refine handling techniques. So, what are the benefits of this investment?

- Achievement of good dog welfare by maximising positive experiences and minimising harm.
- Reduction of the harmful physiological and behavioural effects of Inhumane handling, which may lead to reduced immunity and slower recovery from veterinary interventions.
- Improved safety for DPM implementors and owners/carers: Stressed and fearful dogs are more likely to respond aggressively, conversely those that have been handled humanely are more likely to respond positively in future handling events.
- Easier handling of dogs in future. Dogs are proficient learners and for most DPM interventions the future behaviour of the dog is very relevant. For example, consider monitoring post-operative recovery and revaccination; if handling during sterilisation and vaccination is aversive, the dog forms a negative association with the DPM implementers and is likely to avoid any future interactions and become more difficult and potentially risky to handle. Humane handling that is positive for the dog is likely to lead to easier handling in future.

- More accurate diagnosis and treatment as a result of clinical examination facilitated by humane handling.
- Modelling positive behaviour for other dog owners/carers. How people handle dogs can have a profound and lasting impact on dog welfare, not just at the point of handling; we are striving to promote the welfare of dogs over their lifetime, and both positive and negative experiences can build on one another. DPM implementers are often watched in their interactions with dogs by owners/carers, providing an opportunity to model humane handling and teach compassion in action and reward-based techniques; in contrast, inhumane handling by DPM implementers can justify similar negative behaviour towards dogs by owner/carers.
- Improved mental and emotional welfare of handlers. Repeated aversive handling of dogs can also affect the handler; leading to a loss of compassion and desensitisation to animal suffering over time.

Resources

- The GARC education platform (GEP) provides free online courses developed to improve the skills and knowledge of people working in rabies awareness and prevention. This includes the foundational Rabies Educator Certificate and the Animal Handling and Vaccination Certificate which is an introduction to effective and humane dog handling and vaccination. https://rabiesalliance.org/capacity-building/gep
- The Brooke have published guiding principles on compassionate handling for life of equine animals. These principles translate well to other domestic species including dogs. https://www.thebrooke.org/our-work/we-work-animals/compassionate-handling

Annex E: Sterilisation Targets in CNR

The percentage of female dogs that needs to be sterilised per year in order to stabilise or reduce the population depends on the potential population growth rate (the number of dogs that will be in the population after one year, compared to the original number of dogs).

Potential dog population growth rate $\lambda = S + F\ Sj\ L\ /\ 2$

Where ***S*** *= Adult survival; the proportion of mature females that survive from one breeding season to the next*

F *= Fecundity; the proportion of mature females that have a litter each breeding season*

Sj *= Juvenile survival; the proportion of female pups that survive to become sexually mature*

L *= Number of pups in a litter*

How quickly a population of dogs will grow depends on the number of fertile females that survive each breeding season, the proportion of them that have puppies and the number of female pups from each new litter that survive to become fertile themselves. This can also be expressed as a female projecting a fraction ***S*** of herself plus ***F Sj L / 2*** female pups one year into the future.

Prior to any intervention, dog population density will be limited by the availability of resources (e.g. edible refuse, deliberate feeding, shelter and safe denning spots) and/or intolerance of roaming dogs; this can be termed ***carrying capacity***.

- In terms of density, the population will be approximately stable, i.e. $\lambda = 1$ (although there may be fluctuations year to year around a stable mid-point). A dog population limited by carrying capacity will have a high percentage of emaciated and diseased individuals.
- Assuming a population of annually breeding females that reach sexual maturity at one year of age (which approximates the situation for community dogs in northern India), the percentage of unsterilized females that need to be sterilised each year to maintain the population at a desired level is given by: $100(1 - \frac{1}{FLS_j + S})$
- Leading to the percentage of sterilised females in the population given by: $100(1 - \frac{1-S}{FLS_j})$

However, what happens after CNR starts?

If this results in density reduction, the population falls below carrying capacity and more resources will be available, leading to better dog welfare. Dogs doing better is a good thing: fewer dogs in poor welfare conditions provide benefits for both dogs and people in the community. However, for the remaining unsterilized females and their pups, this improved welfare can also lead to improved ***F***, ***Sj*** and/or ***S*** and therefore a new potential population growth rate at this lower density, **λ'.** We don't know how ***F, Sj*** or ***S*** depend on density, but where resources become abundant **λ'** may be large. In that case, a large proportion of the remaining unsterilized females will need to be sterilized each year to maintain the new reduced density.

For example, if $\lambda' = 1.5$ (a potential population growth of 50% per year), the percentage of unsterilized females that need to be sterilised each year to maintain the reduced density is $1 - 1/\lambda' = 0.33$.
This would lead to the overall percentage of sterilised females in the population to be $(\lambda' - 1) / (\lambda' - S)$; for example, if $\lambda' = 1.5$ and $S = 0.7$, the resulting percentage of sterilised females in the population would be 62.5%.

Estimating F, Sj, S or λ accurately is difficult and time consuming. In practice, veterinary capacity will limit the number of females sterilised per year; if this is sufficiently high to result in density reduction (which can be measured using street surveys as dogs per km of street), this could eventually eliminate the community/unowned roaming population.

However, this will only occur if the rate of sterilisation is high enough to counter any increase in reproductive success in unsterilized females at reduced competition for resources and if migration and abandonment does not occur.

Abandonment of owned dogs and migration of new dogs from surrounding areas is an active process in every location, counteracting population decline. The population stabilises at a lower density only so long as CNR is maintained. The extent of abandonment and migration and how it is influenced by CNR is difficult to quantify, hence this lower density is difficult to predict.

ICAM

INTERNATIONAL COMPANION ANIMAL MANAGEMENT COALITION

The International Companion Animal Management (ICAM) Coalition is an inter-organisation group formed to support the development and use of humane and effective companion animal population management worldwide. The coalition is comprised of representatives from International Fund for Animal Welfare (ifaw), Humane Society International (HSI), Royal Society for the Prevention of Cruelty to Animals (RSPCA) International, World Animal Protection, FOUR PAWS, World Small Animal Veterinary Association (WSAVA) and the Global Alliance for Rabies Control (GARC).

http://www.icam-coalition.org