

ICAM

INTERNATIONAL COMPANION
ANIMAL MANAGEMENT COALITION



Dog Population Management for Sustainable Development



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Contents

Foreword.....	6
Executive Summary.....	8
Introduction.....	10
11 Dog population dynamics	
12 Dog Population Management	
Sustainable Development Goals.....	13
13 SDGs and Dog Population Management	
• SDG 3: ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES	14
14 Dogs and public health	
15 Humane DPM - One health in action	
15 One Health Approach: A way forward	
16 Rabies	
17 How can DPM contribute to achieving universal health and well-being?	
• SDG 11: MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE	18
18 Dogs and urbanisation	
19 Waste in urban areas and dogs – is there any relation?	
20 How can DPM contribute to creating safe and sustainable cities?	

- **SDG 8: PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL 21**
 - 21 Employment opportunities through DPM System
 - 23 How can DPM contribute to creating productive formal employment and decent work?

- **SDG 15: PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEM, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS 24**
 - 24 Dogs and wildlife
 - 25 How can DPM contribute to protecting wildlife?

- **SDG 1: END POVERTY IN ALL ITS FORMS EVERYWHERE..... 26**
 - 26 Poverty, inequality and unmanaged dogs
 - 27 How can DPM contribute to poverty eradication?

- Global Partnership for dog population management – a way forward.....28**
 - 28 Campaign for humane DPM
- About ICAM.....29**
- References.....30**



Foreword

All around the world, dogs belong to the fabric of our communities in a close and complex companionship. Dog populations are intricately dependent on the society and the environment they live in. In many places, dog populations, whether owned, free roaming or stray, can be a concern and managing them remains a challenge that requires a multi-pronged approach with responsible dog ownership and welfare central to success.

FAO, OIE and WHO support ICAM's ambition to humanely effectively manage companion animal populations. The principles laid out in the report are foundational to our organizations' international standards and guidance developed on dog population management and to strengthen the veterinary services to promote companion animal health and welfare. Increasingly there is recognition that culling dogs is an ineffective tool to manage stray dogs and even less effective to combat rabies. Based on this, multiple countries have banned culling and moved towards humane dog population management. Cities that show leadership in adopting humane dog population management based on the five foundational pillars expanded herein, reap visible progress, and subsequently the needed support to initiate and maintain such programmes.

Good dog population management propels the progress of rabies elimination programmes, as has been evidenced in countries and regions who have been able to eliminate the disease. The United Against Rabies Forum will use this report to support complementary action on dog population management while advocating for rabies elimination. In addition, good dog population management will also contribute to controlling other zoonoses such as echinococcosis or leishmaniasis.

Previous reports focused on the building blocks for a comprehensive dog population management system, collecting and organizing data to drive programmes, the monitoring and evaluating dog population management interventions. Now this new report connects dog population management with sustainable development; linking between the goals of achieving universal health and well-being; creating safe and sustainable cities; creating productive employment opportunities; and reducing poverty.

The countdown to 2030 has begun: we know the destination. We have the tools. Now it is time to move.

Junxia Song

Gregorio Torres

Bernadette Abela-Ridder





Executive Summary

The Sustainable Development Goals (SDGs) are a set of 17 global goals intended to serve as a blueprint for moving the world toward greater peace, progress, and prosperity by 2030. Attaining these goals will be difficult, but it will be impossible without efficiently and humanely managing coexistence with our closest and globally ubiquitous domesticated species - dogs.

Dogs and human beings share a bond that is over 14,000 years old and continues to strengthen. They are the closest, most loved and most popular domesticated animal across the globe. There are estimated 700 – 950 million dogs globally and most are free-roaming; these are both unowned and owned dogs that roam freely without any human supervision. These free-roaming dogs face daily challenges to their welfare. These challenges are rooted in human attitudes and behaviours and socio-cultural, economic and political factors resulting in inadequate infrastructure and services to meet the basic needs and humane management of dogs.



Dog population Management (DPM) is a multi-faceted, multi-purpose system that aims to improve the welfare of dogs, humans, and the environment that they both share. Close inspection of the SDGs clearly demonstrates that DPM could play an important role in supporting the achievement of several goals. Despite this, the current global discourse on the SDGs completely ignores the valuable contribution that well-resourced and implemented humane DPM programs could make in accomplishing these goals.

This report highlights those linkages so that future policies and programs at the national level are shaped with DPM in mind where relevant. In particular, this report emphasises the linkage between the goals of achieving universal health and well-being; creating safe and sustainable cities; creating productive employment opportunities; and reducing poverty.

We conclude that civil society around the world must engage in advocacy that calls on governments to establish appropriate policies, programmes and adequate resources for DPM programme implementation at the national level. We demand global collaboration and cooperation to make necessary resources available for the implementation of DPM policies and programs in those low- and middle-income countries where DPM has the greatest role to play in supporting SDG achievement.

Introduction

Dogs have been a part of human culture and society for over 14,000 years and are one of the most popular and loved domesticated animals. There are estimated 700 – 950 million dogs globally and most are free-roaming, i.e. dogs that roam freely without any human supervision. The majority of these free-roaming dogs are owned, as in many low- and middle-income countries allowing your dog to roam freely is a common practice and most are in the developing and least developed countries of the world. Because of differing context and culture, there seems to be a widespread misconception in the developed world that these free-roaming dogs are unowned and unloved. The reality could not be more different. Dogs being allowed to roam freely without supervision does not indicate that a dog lacks value. Instead, most are valued as an inherent part of daily life and fulfil various roles including companions, watch dogs and protectors of crops and livestock, giving them significant socio-cultural value.

There is normally a harmonious coexistence and cohabitation between these free-roaming dogs and people. Bringing benefit to both and the local environment. However, when the population of these free-roaming dogs is perceived by communities to be too large or uncontrolled, they are exposed to potential cruelty and neglect. A significant proportion of them face severe welfare compromise with daily challenges to their five freedoms.¹

These welfare compromises are rooted in human attitudes and behaviours, and the socio-cultural, economic and political factors that result in inadequate infrastructure and services to fulfil the basic needs and management of dogs.

There have been several humane initiatives introduced around the world, mostly by Non-Governmental Organisations (NGOs) but also by governments, to manage their dog population. However, these initiatives have lacked the required scale, magnitude and resources to sustain and expand the humane management achieved beyond their limited geographical focus. Governments in particular have failed to treat this issue with the seriousness it deserves and, as a result, have been known to resort to knee-jerk, ad-hoc, ineffective and unethical culling.

The situation needs to change. Especially when there is a proven better way to manage the dog population in a humane manner that accrues multiple benefits not only for dogs, the beloved companions of many people, but for society as a whole.

The sustainable development goals (SDGs) – 17 global goals to be achieved by 2030 – currently act as a blueprint for achieving sustainable development across the globe. These goals are believed to be a necessity for peace and prosperity of people and planet and there is an ongoing global movement and commitment to make progress towards these goals.

However, there are a multitude of challenges for achieving these goals and one such challenge is a complete disregard for the intricate, and at times, complex bond between humans and animals. A village, city or a country cannot make progress without also taking care of the species that coexist with humans – and dogs have been coexisting with us for over 14 millennia. Implementation of well-resourced and implemented humane Dog Population Management (DPM) programs at national level will not only improve the harmonious coexistence between dogs and humans but we argue that it also makes a valuable contribution to achieve many of the SDGs.

■ Dog population dynamics

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 birth, death and reproduction to account for how dogs enter and leave the population. Also, how individual dogs move from one sub-population to another over their lifetime.

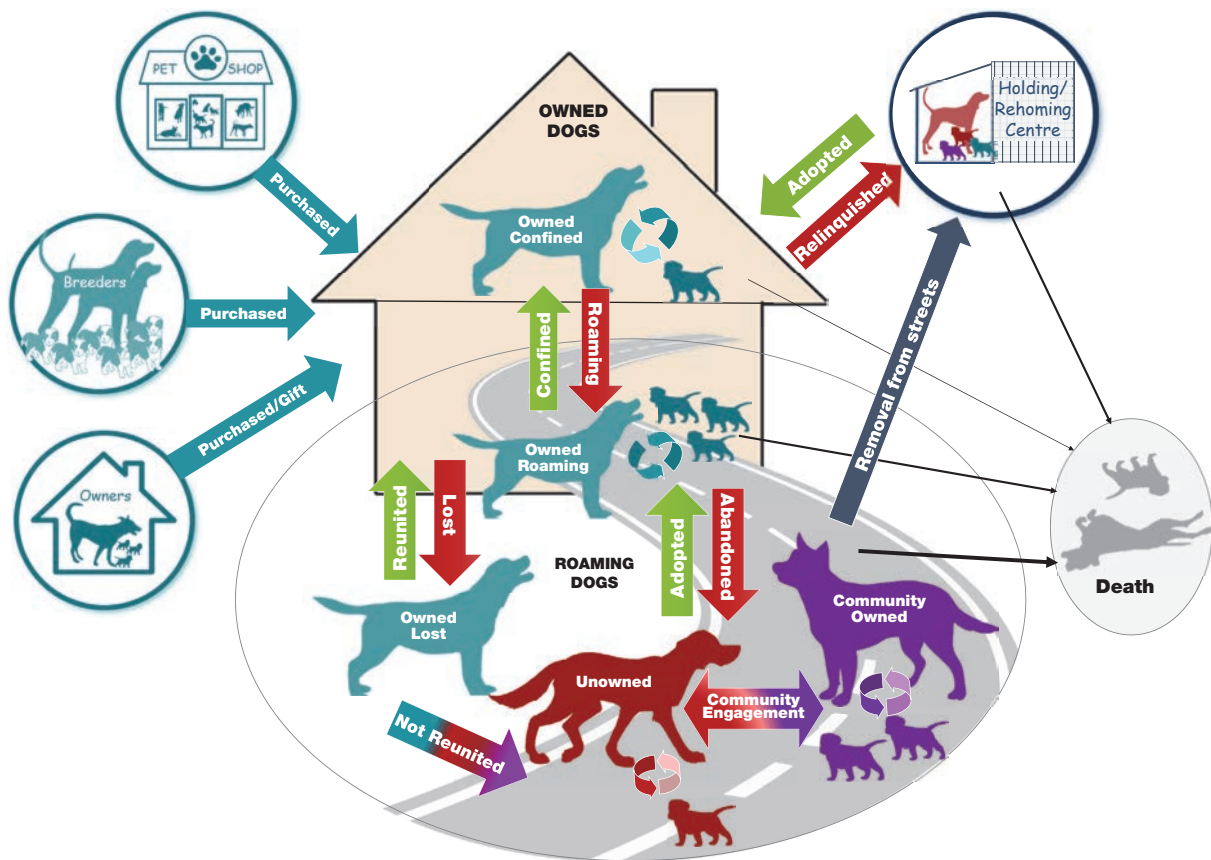


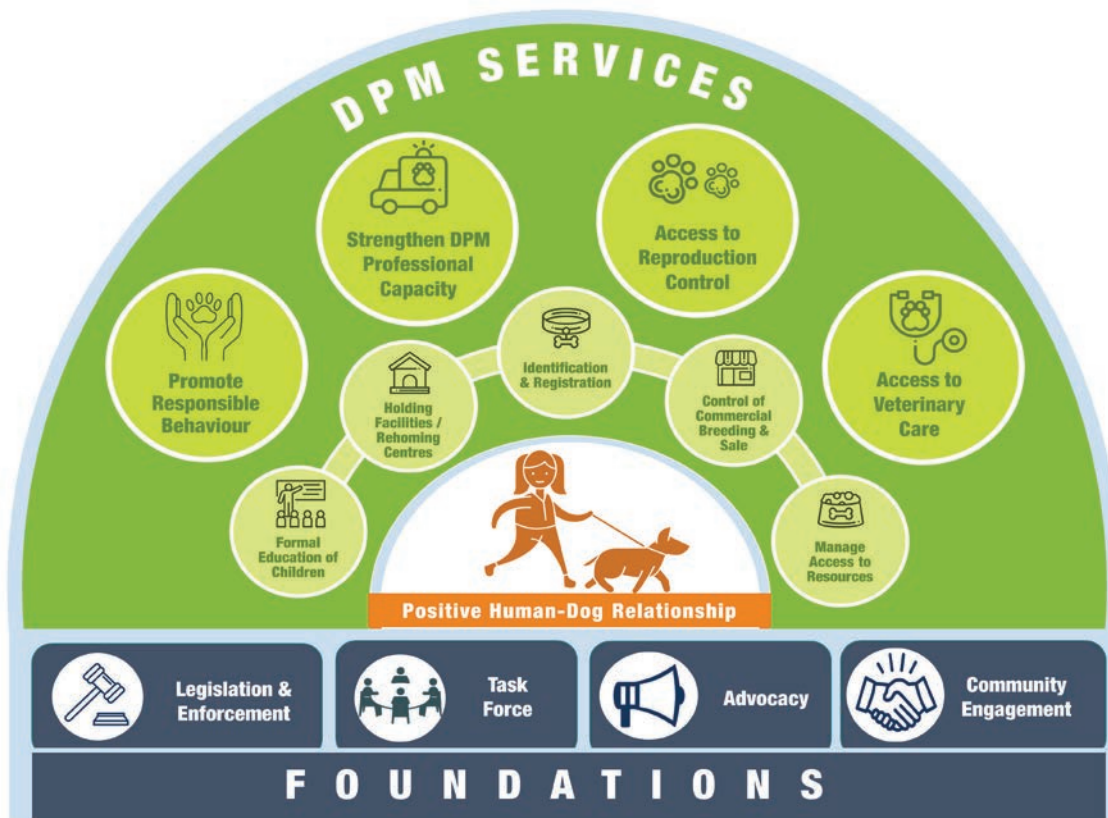
Figure 1 - Dog population dynamics - ICAM (icam-coalition.org)

■ Dog Population Management

Humane Dog Population Management (DPM) is a multi-faceted and multi-purpose system that aims to improve the welfare of dogs, humans, and the environment that they both share. DPM aims to have a sustained influence on the processes within dog population dynamics in order to change sub-populations in a targeted way. Humane DPM typically relies on holistic and context appropriate solutions to improve the dog-human interactions within a particular community. It is an example of the One Health concept in action, in that it combines the actions of multiple sectors responsible for human and animal health. It requires a systematic approach that not only establishes a robust knowledge of local dog population dynamics, but it also proposes bespoke solutions to address the most pressing local issues in relation to improving dog-human relationships in a community.

One of the key measures of DPM is the promotion of responsible dog ownership (RDO). The widespread practice of RDO at the community level addresses multiple issues that may otherwise result in dog-human conflict.

DPM is most commonly linked to benefits relating to public health, including rabies control as part of SDG 3 (universal health and well-being). However, the impacts and benefits of DPM goes beyond simply reducing the risks to public health. Effective DPM also leads to improved dog welfare, reduced negative impacts of dogs on wildlife and livestock, improved public perception of dogs and reduced free-roaming dog density. Furthermore, through this report we demonstrate that DPM makes valuable contributions to achieving other SDGs. Specifically, the goals of reducing poverty; achieving universal health and well-being; creating productive employment opportunities; and creating safe and sustainable cities.



[DPM System Infographic - ICAM \(icam-coalition.org\)](https://icam-coalition.org/)



Sustainable Development Goals

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for dignity, peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - regardless of their level of income - in a global partnership.

Under each of these goals there are several targets and indicators.²

■ SDGs and Dog Population Management

There are no SDGs that bear direct relation to the welfare of dogs or, for that matter, with the intent of protecting wider animal welfare. ICAM believes this is a missed opportunity. The peace and prosperity of people and the planet is not possible without giving serious consideration to animal welfare. The recent global COVID-19 pandemic is a prime example of how human, animal and environmental health are closely interconnected. The inhumane and unjustifiable trade in wild animals bringing people in contact with stressed and therefore immunocompromised animals resulted in the crisis we are facing right now. This could have been avoidable by consideration of animal welfare and a strong animal health system.

No country can claim progress without putting in place appropriate policies and programs to protect the welfare of those species that live together with people. And no other species is closer to people than dogs – one of the few species that is considered part of the family by billions of people around the world. DPM programs are designed for this purpose, i.e. to improve the welfare of our closest companion animal, mitigate risks and improve harmonious coexistence. The close inspection of SDGs clearly demonstrates that DPM could play an important role in facilitating the achievement of some SDGs. This report highlights those linkages so that future policies and programs at the national level are shaped with DPM in mind where relevant.



SDG 3: ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

The health sector has made huge progress globally. However, this progress has been highly unequal. The poorest, marginalised and most vulnerable communities in low- and middle-income countries are still deprived of the most basic of health care provisions. If the goal of universal health and well-being is to be realised by 2030, many areas of significant improvement still remain to be achieved. Furthermore, these improvements need to happen at an accelerated rate.

The coronavirus pandemic has clearly demonstrated the interconnectedness between animal, human and environmental health. This pandemic needs to serve as a wakeup call – in our highly globalised and interconnected world, humanity is only as strong as its weakest health system.³ Universal health and well-being cannot be a reality unless animal and human health systems are strengthened globally.

■ Dogs and public health

Dogs and human beings have been cohabiting for at least 14,000 years, which means dogs have significant impact on human health and vice versa. This impact is in both mental and physical health, and in both positive and negative (but mitigatable) directions.

Mental health

It's tough not to smile when you see a dog – it's an instinctive and reflexive human reaction to seeing a dog. Similarly, watching a dog in agony and misery makes us sad and affects us negatively. Companion animals have been reported to alleviate feelings of loneliness, isolation, and depression, to increase resilience and buffer the negative effects of stressful life events by mitigating feelings of stress and anxiety.⁴ Furthermore, pet dogs have also been found to improve family functioning and reduce anxiety in children with autism spectrum disorder.⁵

Many studies have now established the positive impact of dogs on mental health and well-being. A UK study found that pet ownership among homeless people accrued multiple health and social benefits, including amelioration of loneliness, isolation and depression and reduction in suicidal thoughts, substance misuse and criminal activity.⁶ Dogs have been found to act as a catalyst for social interaction. They make it easier for us to have social connections and expand and strengthen our social networks.⁷ Given we are social creatures that require social interactions to thrive, dogs can have a significant positive impact on our well-being.

Anecdotal evidence from low- and middle-income countries around the world also shows that positive interaction with free-roaming dogs in the community helps people forget about their daily stressors and offers them temporary joy and contentment which leads to improved well-being in the long term.

There can be no doubt that improving the welfare of dogs can only benefit us. Happy dogs means happier people, happier communities and a happier country.

Dog-mediated zoonotic diseases

It is understood that there are more than 60 dog-mediated zoonotic diseases transmitted to humans, including those of primary concern for public health such as rabies, leishmaniasis and echinococcosis.⁸ The presence of unmanaged dogs has been found to contribute to the spread of these diseases. Furthermore, dog faeces may also contain several types of microorganisms potentially pathogenic to humans.⁹

However, these dog-mediated zoonotic diseases can be mitigated or entirely prevented through dog health measures such as vaccination and deworming. Unhealthy dogs with poor welfare can lead to public health risks, but healthy and well managed dogs can support the positive health of families and communities.

■ Humane DPM One health in action

Humane management of dogs is One Health¹⁰ in action. DPM recognises the interdependency between dog health and human health. At its core, DPM is essentially a multi-disciplinary collaborative approach that improves dog well-being, human well-being and the local environment shared by both.

Our experience from around the world suggests that unmanaged dog populations have negative health consequences for dogs, humans and their shared environment including disease, injuries and trauma from dog bites and zoonotic diseases.

DPM policies and well-resourced programs lead to strengthening of the small animal veterinary sector. This not only leads to improvement in dog



One Health: A way forward

One Health¹⁰ is an integrated, unifying approach that aims to sustainably balance and optimise the health of people, animals and ecosystems.

It recognises the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent.

The approach mobilises multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development.

The COVID-19 pandemic has brought greater recognition to the importance of the One Health approach.

welfare but also has clear positive impacts for human health that are noted by the health sector. In return, the public health sector highlights the importance of veterinary action to prevent and contain zoonotic disease outbreaks and recognises the positive health effects of dogs on people.

■ Rabies

Rabies is of particular concern because of its geographic spread, magnitude and its near 100% fatality rate once the symptoms appear. While a variety of animal species can host rabies, dog-mediated rabies is responsible for nearly all human rabies deaths globally (99%) and thus has the largest public health impact. It is a deadly disease that causes 59,000 deaths annually.¹² That's one person dying from rabies every 9 minutes.

Rabies is one of the Neglected Tropical Diseases (NTD) as defined by World Health Organisation. It is present in over 150 countries with an average Human Development Index of 0.6.¹¹ Rabies clearly disproportionately impacts the world's poorest. Approximately 40% of all dog-mediated human rabies deaths concern children under the age of 15.¹² Africa and Asia bear the highest burden, with 36.4% and 59.6% of cases respectively.¹³ In terms of the number of dog fatalities, World Animal Protection estimates that over 10 million dogs lose their lives cruelly every year¹⁴ – not only from the disease itself, but also because they are killed cruelly due to fear of the disease spreading to humans.

Rabies control, prevention and elimination

Target 3 of the universal health and well-being goal calls for elimination of all NTDs including rabies by 2030 and the only way to achieve this is through focus on dogs. They are our allies in the fight against rabies.

Human deaths from rabies are preventable through timely treatment of the victim with post-exposure prophylaxis (PEP). However, this is a curative measure that does nothing to eliminate the virus and more importantly, the cost of PEP is on average USD 108 per patient in rabies endemic countries.¹⁵ This represents more than a month's salary in many rabies endemic countries, so the victim faces the fear of dying from the disease if they are not able to secure funding for the post-exposure treatment. A study in Cameroon found that increased wealth and knowledge were significantly associated with increased likelihood that a respondent would seek medical care and post-exposure prophylaxis.¹⁶ This is a clear example of inequality in healthcare access and the situation will be similar across other rabies endemic countries.

Rabies in dog populations is 100% preventable through mass dog vaccination (MDV). Vaccinated dogs stop virus transmission and (re)introduction of the virus into other dog populations, hence eliminating the virus from the population. MDV is the proven cost-effective way to save human lives by stopping transmission of rabies at its source.¹⁷ No virus means no rabies.

Mass dog vaccination is clearly critical for rabies elimination but progressive implementation of holistic DPM and responsible dog ownership practices contributes significantly to ensuring vaccination sustainability and effectiveness. DPM programmes, with a strong element of RDO, result in a reduction in the number of unmanaged dogs and improves human-animal interactions. They further increase community buy-in, an important component of successful MDV programs, as the MDV campaign can benefit from active

engagement and delivery of dogs for vaccination by owners and carers, reducing the need for expensive dog catching efforts. Furthermore, active and positive engagement from the community will increase vaccination rates, as they no longer seek to hide their dogs from the vaccination campaign, a risk where there is limited community buy-in for the initiative, often driven by past dog culling efforts.

DPM can also reduce the number of dog bites and associated treatment costs borne by the primary health infrastructure. Reproduction control as part of DPM can reduce dogs' motivations for biting (e.g., maternal aggression and competition over mates) whilst community education on dog bite prevention can reduce human behaviours that may provoke a dog to bite (and increase appropriate health seeking behaviour). Together, these reduce dog bites resulting from causes other than rabies. In an abundance of caution, such bites would usually have been treated as rabies exposures and received post-exposure treatment. Hence, DPM and dog bite prevention education avoid wastage of PEP and associated costs.

How can DPM contribute to achieving universal health and well-being?

DPM includes ensuring all dogs have access to primary health care – including rabies vaccination. This maintains good health of the dog population and directly contributes to prevention, control and elimination of dog-mediated zoonotic diseases.

A robust surveillance system with the ability to rapidly identify and respond to suspect cases of dog-mediated zoonotic diseases, followed by laboratory confirmation and reliable, high-quality data reporting is essential for disease control and elimination. The majority of countries with high prevalence of dog-mediated zoonotic diseases lack such a system. However, with DPM in place – in particular access to veterinary and animal health professional care for dogs – quick identification of zoonotic diseases in dogs, followed by testing, reporting and appropriate response becomes possible.

DPM implementation results in a considerable reduction in the number of dog bites, through bite prevention education changing the behaviour of people and reproduction control of dogs changing breeding and maternal protective behaviours. This directly contributes to better public health by reducing the trauma and cost of injuries.





SDG 11: MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

55% of the world's population lived in urban areas in 2018 and this proportion is expected to increase to 68% by 2050 - an addition of over 2.5 billion people to urban areas. This is equivalent to approximately 236,000 people moving to an urban area every day, and over 90% of this increase is predicted to take place in Asia and Africa.¹⁸

■ Dogs and urbanisation

Studies exploring the relationship between dog populations and urbanisation are almost non-existent and further research is recommended.

Asia and Africa already have high numbers of unmanaged dogs, the highest prevalence of dog-mediated zoonotic diseases and experience continuous disturbance to dog-human harmonious coexistence. The predicted rapid increase in urban populations means we can expect increasing human and dog density and undoubtedly exacerbation of these issues. Contributing to making cities unsafe, non-inclusive and unsustainable.

The following challenges arise on a regular basis, particularly in impoverished city neighbourhoods across the world where unmanaged dog populations exist:

- **Dirty streets and environmental contamination with dog faeces:** The presence of unowned and unmanaged dogs, lack of regulation and widespread social acceptance of not picking up dog faeces leads to environmental contamination with dog faeces across the low- and middle-income countries of the world. Dog faeces in public areas are a common sight and presents both a risk of parasite transmission from dog to dog and a public health issue.¹⁹ In addition, the disturbance of garbage by foraging free-roaming dogs adds to already dirty streets and contaminated environments.
- **Dog bites:** Dog bites are common in communities with unmanaged dogs. Some studies estimate that dogs account for 76 – 94% of animal bite injuries in low- and middle-income countries.²⁰ In South East Asia alone, 19.1 million dog bites are estimated to occur every year.²¹ The injuries, some of them fatal, and trauma associated with these dog bites are part and parcel of living in poorer communities of low- and middle-income countries. Every time a dog bite occurs, particularly when a child is bitten, an otherwise harmonious coexistence is severely disrupted. The children and adults who were previously comfortable with the free-roaming dogs on their street may suddenly become wary and look to create distance from the dogs. These children may become scared to walk the street and parents are perennially concerned about their children being bitten.
- **Noise pollution from dog barking:** Dogs will bark, and expecting anything otherwise is akin to expecting an infant to not cry. However, it becomes an issue when barking is frequent or constant, especially during night. This is



the situation in many urban communities with free-roaming dogs around the world. The impact of noise pollution on mental and physical health includes stress, anxiety, insomnia, fatigue and persistent headache.²²

■ Waste in urban areas and dogs – is there any relation?

One of the issues particularly relevant for urban areas is the waste that a city produces and how the local free-roaming dogs might interact with such waste. With rapid population growth and urbanisation, annual waste generation is expected to increase by 70% from 2016 levels to 3.40 billion tonnes in 2050.²³ Efficient and sustainable management of solid waste remains a big challenge for low- and middle-income countries, particularly in cities. Disposal of waste in unregulated dumps in the middle of busy streets is a common sight across urban areas in low- and middle-income countries.

Most of this waste will have minimal nutritional value and will simply provide dogs with an opportunity to express highly motivated foraging behaviour. However, in a small number of instances, waste may be of high nutritional value and could act as a source of food and nutrients for the free-roaming dog population. In such instances, 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.²⁴ One result of such negative interactions could be an increase in dog bite incidence.

It is the role of DPM to prepare the free-roaming dog population for the evolution of waste management practices. As cities transition from the current state of unregulated street waste disposal to a more efficient waste management, we believe DPM will play a critical role in ensuring that dogs are no longer reliant on waste for their nutrition. Instead, these dogs should be accessing essential nutrition from responsible feeding by owners and/or caring members of the community. In the meantime, we recommend a careful approach to controlling access to resources (including waste) for dogs. Using interventions that seek to reduce conflict with people and other animals; by restricting access to food in areas where roaming dogs are not tolerated, whilst allowing access in more acceptable areas.

How can DPM contribute to creating safe and sustainable cities?

Local governments must consider the management of other species that coexist with humans in order to create safe and sustainable cities. Dogs are one such species that has lived alongside humans for over 14000 years and it is imperative that cities across the world adopt humane approaches to managing our oldest companion animal.

Some of the ways in which DPM approaches can help in creating sustainable cities are as follows:

- Effective design and implementation of DPM programs will reduce unmanaged dogs, reduce unwanted breeding of dogs, reduce dog bites and support the elimination of dog-mediated zoonotic diseases like rabies.
- One of the key outcomes of DPM is responsible ownership of dogs, this is critical to reducing abandonment of dogs to already crowded urban streets.
- Responsible ownership and care of community dogs also includes ensuring dogs are appropriately fed, avoiding the need to forage in waste for their nutrition.

These programs will create better cities for both humans and dogs.

Ultimately, DPM strengthens a harmonious coexistence and bonding between humans and dogs.



SDG 8: PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

8 DECENT WORK AND ECONOMIC GROWTH



The availability of productive formal employment and decent work is a significant challenge in most low- and middle-income countries. This has been exacerbated by the COVID-19 pandemic which has caused global economic recession leading to mass unemployment around the world – particularly for youth and women. Global unemployment increased by 33 million in 2020, with the unemployment rate increasing by 1.1 percentage points to 6.5%. A further 81 million people became inactive as they perceived no opportunity for successful job searching, or they were simply unable to do so owing to COVID-19 restrictions.²⁵

Given such dire circumstances, any ethical and legal means that creates productive and decent work needs to be explored and will undoubtedly be welcomed by countries around the world. We argue that DPM programs are one such sector that has potential to create formal, productive and decent employment for many.

■ Employment opportunities through DPM System

In low- and middle-income countries, DPM policies and initiatives have the potential to bring in much-needed productive employment at the local level.

Identification and registration of dogs

Identification of a dog and registration of that dog in a national (or interoperable regional) database is one of the context-dependent services within a DPM system. This service not only allows for reuniting lost animals with owners but it also serves as a foundation for enforcement of policies and legislations in relation to abandonment, vaccination and dog welfare.

Depending on the local context and scale, the introduction and maintenance of robust identification and registration systems involves setting up and managing a dog registration database, marking dogs with microchips and recording the details of the owner. All of these require trained and skilled human resources and will lead to creation of local businesses and employment in the country.

Holding facilities and rehoming centres

Another context dependent service within a DPM system is building, maintaining and running holding facilities and rehoming centres that provide temporary housing before reuniting and rehoming dogs. Building and running such a centre is akin to running a successful ethical business - with greater responsibility than most, as running this facility involves protecting animal welfare and ensuring a good quality of life for the sentient beings in the care of the facility.

As countries transition from low income to higher income, we observe a general



reduction in the tolerance of citizens and governments towards free-roaming dogs. In many countries around the world, there are already some form of rescue centre in existence, playing a unique role; They provide care to unwanted and free-roaming animals and encourage a dog adoption culture, something that may be new to countries with high numbers of free-roaming dogs.

These rescue centres are born out of love and compassion for dogs (and other animals) and in most cases are operated through nominal funding from external agencies. In many instances, these rescue centres lack sufficient resources to provide high standards of care and ensure their sustainability.

The humane approach to address this is to promote the culture of dog adoption alongside responsible ownership to prevent relinquishment, and to create an enabling environment for effective operation of rehoming centres where dogs receive the highest possible standard of care and highest possible chance of adoption. Setting up and running these facilities will ultimately lead to creation of many highly skilled, skilled and unskilled employment opportunities across the country. A recent survey by Association of Dogs and Cats Homes found that the rehoming and rescue sector alone employs over 6,200 full-time and 2,100 part time roles in the UK and Republic of Ireland.²⁶

Building up of veterinary services and capacity

Veterinary services ensure the good health and welfare of animals. They also make a vital contribution to global health security in areas such as emerging zoonoses, antimicrobial resistance and food safety, as they address “risk at source” for most major infectious threats, including those with potential to become pandemics. Despite this, veterinary services are chronically under-resourced, lacking financial resources and adequate staffing.²⁷ The situation is even more dire in small animal veterinary services. In many low- and middle-income countries with a high number of unmanaged dogs, these animals are not considered of any economic value to society. As such, the small animal veterinary services are ignored, underdeveloped and often close to non-existent.

However, countries like Costa Rica²⁸ and the Philippines (Pankaj KC *pers comm*) have shown that as a country progresses economically, the trend of responsible ownership also progresses and the demand for small animal veterinary services significantly increases. There is significant scope for governments and the international community to invest in

developing overall veterinary capacity across Africa, South Asia and South-East Asia. This investment will not only create a highly skilled labour force but will also result in wider social and economic benefits through greater control of zoonotic diseases and reductions in unmanaged dog populations.

Tourism and DPM

The tourism sector is one of the biggest employers globally. High densities of free-roaming dogs and inhumane management methods result in negative reporting of holiday experiences. Posts expressing fear of unmanaged free-roaming dogs are found in Trip Advisor and Lonely planet posts from tourists in South-East Asia, and in countries like Mauritius and India, expressing fear of unmanaged free-roaming dogs.²⁹ In a study of tourists in Samoa, the majority, who also described themselves as dog lovers, reported that the presence of unmanaged dogs made their holidays worse. The same study also reaffirmed the strong support of tourists for humane dog population management.³⁰ Investment by governments in humane DPM practices could provide a strong return through a boost in tourism from ethical and dog-loving tourists. This inevitably would further contribute to the creation of decent employment opportunities in the tourism sector.

How can DPM contribute to creating productive formal employment and decent work?

Low- and middle-income countries have the highest densities of free-roaming dogs and face some of the greatest challenges with creating productive formal employment and decent work. A contribution to solving both these challenges is investment in dog management services. Services such as identification and registration, running facilities for housing and rehoming dogs and small animal veterinary services could provide decent employment opportunities for a range of skills.

These employment opportunities are for the long-term as dog population management must be sustained and adapted on an ongoing basis. Developing dog population management services also has the potential to return on investment through improvement in tourists' experiences and reductions in public health costs.





SDG 15: PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEM, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

Humanity's expansion means that, today, human activity has altered almost 75% of the earth's surface, squeezing wildlife and nature into an ever-smaller corner of the planet.³¹ According to the 2019 Global Assessment Report on Biodiversity and Ecosystem Services, around one million animal and plant species are threatened with extinction – many within decades. The increasing human encroachment into fragile ecosystems also plays a role in the emergence and spread of zoonotic diseases.

■ Dogs and wildlife

Historical evidence suggests that dogs follow people – wherever humanity extends, dogs also reach. Humanity's expansion and squeezing of space for wildlife means increased interaction between wildlife and humans, but also dogs.

There are many ways for free-roaming dogs to interact with wildlife and, if not managed well, this interaction could compromise wildlife conservation and disrupt local ecosystems. The results of these interactions include disturbance, disease transmission, dogs as predators, dogs as prey, competition over resources, and hybridisation.

High free-roaming dog density and the absence of adequate management measures increases the likelihood of dog-wildlife interactions. This may include an increase in the encroachment of predator species like jaguars or leopards into

human habitations where dogs live, which in turn may increase human–wildlife conflicts.³² One study estimated that domestic dogs have played a role in the extinction of 11 vertebrate species and threaten at least 188 endangered species worldwide with SE Asia, Central America and the Caribbean, and South America being the hotspots.³³

How can DPM contribute to protecting wildlife?

Examples of dog population management that protects wildlife includes dog vaccination against rabies and distemper; preventing transmission of these diseases from dogs to wildlife.³⁴ Direct vaccination of wildlife may also be needed to ensure protection of endangered species, especially when other species in addition to dogs can carry the same diseases.³⁵

More research is needed to fully comprehend the scale of dog-wildlife conflicts and impacts of dog management on wildlife. However, there can be no doubt that wherever wildlife conservation identifies a free-roaming dog risk, dog population management interventions designed and implemented in collaboration with local communities provides a strong framework for mitigating the impacts of free-roaming dogs on wildlife.





SDG 1: END POVERTY IN ALL ITS FORMS EVERYWHERE

The pace of global poverty reduction is decelerating, and the projection is that the global target of ending poverty by 2030 will be missed. The COVID-19 pandemic has made it even more unlikely this target will be met unless radical actions are taken globally. COVID-19 has severely impacted the informal economy in particular, where most working poor are employed.³⁶ At the current rate, it is projected that around 600 million people will still live in extreme poverty in 2030.

■ Poverty, inequality and unmanaged dogs

The link between unmanaged dogs and poverty cannot be ignored – poorer nations are more likely to have unmanaged dogs and all the socio-economic constraints that it entails. Furthermore, within countries, larger numbers of unmanaged dogs are more likely to occur in impoverished areas.

The majority of the time, there is harmonious coexistence between dogs and people in these communities. However, these people are more exposed to dog bites, dog-mediated zoonotic diseases and nuisances associated with an unmanaged dog population. For example, this report describes how rabies is truly a disease of poverty and inequality that mostly kills people and dogs in poorer communities within the poor countries of the world. Poorer people in these low- and middle-income countries are already under considerable economic pressure. They tend to live on daily wages, hold debt and have no savings.

- **Dog bites:** An estimated 76-94% of animal bite injuries in low- and middle-income countries are caused by dogs³⁷ and dog bite fatality rates are also higher in these countries. Due to the high cost of quality healthcare in these countries, billions of people could be a dog bite away from falling further in the vicious trap of poverty. DPM policies and programs could lead to significant reduction in these dog bites contributing directly to poverty reduction through savings in treatment costs and lives saved.
- **Dog-mediated zoonosis elimination:** More than 60 zoonotic diseases transmitted to humans are dog mediated including those of significant concerns such as rabies, leishmaniasis and echinococcosis. Total economic losses attributed to rabies alone are estimated at \$8.6 billion per year³⁸ with Africa and Asia sharing the highest burden. Most of these losses are as a direct result of loss of life (both humans and livestock), followed by the cost of post-exposure prophylaxis and income lost whilst seeking out treatment. There are significant financial gains from eliminating rabies alone, and similar from reducing and eliminating 60 or more other zoonotic diseases.
- **Employment opportunities:** Implementation of the DPM system in its totality, or individual elements within it, could result in thousands of employment opportunities. Whether it be improving veterinary services, conducting mass dog vaccination or sterilisation campaigns; introducing nationally suitable registration and identification systems or building and running holding centres

and rehoming facilities – all of these require highly skilled, skilled and unskilled labour across the country. The employment opportunities thus created have the potential to lift families out of poverty and directly contribute to the economic well-being of the individuals and the country.

How can DPM contribute to poverty eradication?

DPM may make a valuable contribution to ending poverty and, vice versa, poverty eradication measures may lead to dog population management programs being introduced and implemented at local level. This is clearly evidenced from the fact that around the world DPM is absent where extreme poverty is present. In other words, a world with comparatively happier, healthier dogs and communities is also a world free of extreme poverty.

This report has explored how dogs are an integral and inseparable part of the fabric of societies across the developing world; and the contribution that DPM could make in creating employment; eliminating rabies; boosting physical and mental health; creating safe and sustainable cities; and protecting wildlife. The individual and cumulative effect of these will undoubtedly contribute to eradication of extreme poverty.



Global Partnership for dog population management – a way forward

The SDGs can only be accomplished via partnerships and cooperation among many stakeholders at all levels, from corporations to civil society organisations to national and international government agencies.

We've demonstrated that DPM can make a substantial contribution to attaining the SDGs, and that the majority of nations in need of DPM are those with little financial and professional resources. Despite the critical role that DPM plays in establishing better societies for dogs and people, it is either ignored or given a low priority in many situations.

This needs to change. This can change.

■ Campaign for humane DPM

The harmonious coexistence between dogs and people is a hallmark of any healthy, peaceful and prosperous community. Humane Dog Population Management policies and programs are the only way to achieve and maintain such a harmonious coexistence. Governments across the world must acknowledge the vital role of DPM in sustainable development and in achieving SDGs by 2030 - it is clear that SDGs simply cannot be realised without national level policies and programs for humane management of the species we have been coexisting with for thousands of years.

There must be collaboration and cooperation to make the necessary resources available for implementation of DPM policies and programs at national level. We call on governments throughout the world to establish appropriate policies and programs, as well as provide adequate resources for implementation of DPM programs at national level.

Civil societies also play an important role in ensuring that humane DPM programs are introduced and implemented by governments. So far, Non Governmental Organisations (NGOs) within the animal welfare sector have been spearheading the implementation of projects and programs to improve the welfare of dogs globally. This must continue, but it is insufficient on its own. Civil society, both within and beyond the companion animal welfare sector, must continue to push for governments to fulfil their responsibilities.

We invite civil society organisations from throughout the world to join our campaign, which demands that:

1. Governments introduce and enforce DPM policies and laws at the national level.
2. Governments establish necessary institutions and appropriate structures; and allocate sufficient resources to implement DPM initiatives.
3. Governments foster an enabling environment for the implementation of DPM programmes by civil society, local government and other stakeholders.
4. Governments invest in improving the companion animal veterinary sector.
5. Donor agencies recognise the importance of DPM in achieving sustainable development and provide more funds to support the implementation of DPM initiatives across the world.



About ICAM

[ICAM](#) supports the development and use of humane and effective companion animal population management worldwide. The coalition was formed in 2006 as a forum for discussion on global dog and cat management issues and is a registered charity (CIO Association) with the Charity Commission of England and Wales (Charity number 1192921).

The motivation to form a coalition came from the realisation that several of the main organisations working on companion animal management had similar views and ways of working, but no forum where arising issues could be discussed.

Our key goals are to:

- Share ideas and data
- Discuss issues relevant to population management and welfare
- Agree definitions and hence improve understanding
- Provide guidance as a collegial and cohesive group

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