IJASD
ISSN:2618-1193

Livestock Protection and Management Starategies

Taskeen Zahra[1*], Atika Saleem[2], Hafsah Batool[3]
[1,2,3]* F.C College Lahore
[*]**Email:** t.zahra@gmail.com

Citation | Taskeen Zahra, Atika Saleem and Hafsah Batool"Livestock Protection and Management Starategies", IJASD, vol. 4, no. 2, pp. 53-62, May 2022
Received | April 18, 2022; **Revised** | April 27, 2022; **Accepted** | May 10, 2022; **Published** | May 15, 2022.

Here, we review the literature and explain why collaborative, multi-stakeholder approaches are necessary for effective policy development in the area of animal welfare, which is a contentious and difficult topic for many people. We examine the inherent complexity of animal welfare through the lens of "wicked problems," drawing on governance literature on policy networks to highlight key factors for addressing this complexity. Two case studies are presented to illustrate policy network approaches to animal welfare and to demonstrate the importance of encouraging cooperation between diverse groups representing business, the community, academics, and government. We argue that as new forms of participatory governance become the norm, the power of stakeholder networks will grow. Leaders in the field of animal welfare can better engage with stakeholders and achieve sustainable improvements in animal welfare if they have a firm grasp of how collaborative stakeholder networks establish participatory governance, productive communication, and collective priorities.

Keywords: Prevention and Protection of Animals, Livestock, sustainable agriculture

Introduction

Animal production has risen dramatically over the past 50 years [1] to keep up with rising population needs. The world's population has grown by a factor of 2.4 since 1961, but the average American now eats 4.7 times as much meat as they did then. Animals raised in production systems today weigh 20-30% more on average than they did in the 1960s, and their numbers have increased by a factor of two to ten since the 1960s [2]. Concerns have been raised about the environmental impact of our current food system and the well-being of the animals used in it [3] in light of the dramatic rise in animal production in recent decades. The public discourse on animal welfare in the context of production has been driven by both consumers and nonconsumers of animal products, with a marked increase in public concern over the last two decades [4]. In response, many OECD member countries have revised their regulations regarding animal care. Government efforts to reach a consensus on animal welfare standards have proven particularly difficult because different groups' and individuals' value systems tend to dominate the discussion [5].

The term "animal welfare" is used in many different contexts, each of which gives rise to a slightly different understanding of the issue [6]. The "five freedoms" [7], the "five domains" [8], and "a life worth living" [9] are all conceptual frameworks used to describe animal welfare. Broom (1986) argues that an animal's well-being depends on how well it is able to adapt to its surroundings [10]. Physiological responses, behavioral responses, pathology (health) responses, and adaptive brain systems, such as pain, fear, and pleasure, are all used by

animals as coping mechanisms [11]. Animal sentience, defined as self-awareness, environmental responsiveness, and the capacity to feel positive and negative emotions, has been studied for decades [12]. Although the sentience of fish has been debated [13], anatomical, pharmacological, and behavioral data suggest that pain, fear, and stress are likely to be experienced by at least the vertebrate species. Evidence of sentience has been cited in numerous ethical debates, including those about whether or not animals should be used and to what extent humans have a responsibility to safeguard nonhuman animals. Animal welfare (also known as animal protection) refers to the broader social issue of human effort to protect and promote the well-being of animals and should not be confused with the biological concept of animal welfare, which refers to a property of a single animal [12]. The two ideas are distinct, but they are intertwined in ways that affect one another and both have policy implications.

The measures put in place to ensure the well-being of animals are constantly under scrutiny because of the emotionally charged nature of societal questions pertaining to animal welfare. Animal sentience has been codified in EU law [14], but this is not the case elsewhere [15]. Market forces can also be used to advance animal welfare, but until recently, there was little financial motivation to match the moral case for doing so [16]. Most consumers don't worry about animal welfare until after they've made a purchase, so producers probably won't get a big bump in price if they improve animal treatment [17]. Some sectors, however, see a substantial financial risk if animal welfare is not enhanced: the risk of losing their public reputation ('social license') [18]. Voter pressure on elected officials to alter legislation in response to public outcry about industry practices has the potential to immediately and dramatically reduce economic activity [19] [20]. Establishing laws and industry norms for animal welfare is obviously a difficult challenge to solve, with possibly substantial costs of adaptation and widespread social responsibilityThe wellbeing of animals is a complex social issue since it involves many people with varied viewpoints and goals. Due to the lack of agreement and clarity surrounding these issues, administrative or technocratic approaches to policy change are ineffective [21][22]. One could argue that the complexity of the issue in today's society necessitates a more nuanced approach if we are to craft effective policies for animal welfare. Thus, the 'wicked problems' framework proposed by Rittel and Webber in 1973 [23] may be applicable to the problem of animal welfare. When a problem's very nature makes it difficult to solve, we call it "wicked."both the problem itself and the preferred solution have been the subject of heated debate. For these societal issues, the causal relationships are intricate, the risks and consequences are unclear, and there is substantial disagreement over appropriate solutions [24] [25]. Solutions that come from on high and focus solely on technology often fail to address "wicked challenges" like these. When multiple groups of stakeholders are invested in a problem, it can be difficult to find a consensus on a single course of action. As an example, those who are morally opposed to eating meat may never see little enhancements to animal welfare in production as a reasonable compromise. Some farmers may also be unable to shake the beliefs and ideals that have been instilled in them by generations past [26] [27]. The persistent nature of attitudes around animal welfare makes it unlikely that further empirical evidence will affect the significant differences between social groupings [28]. Such strategies must be adaptable, participatory, and transdisciplinary (APT) [30]. We contend that an APT strategy, rather than the conventional top-down regulatory method, may allow policymakers to make substantial more headway on the social issue of animal welfare [31]. Stakeholder networks are commonly used to implement the APT approach because they promote open dialogue among a wide range of stakeholders [32].

Involving a wide range of interested parties improves problem definition and solution development because each group brings unique assumptions, values, interests, and resources [33]. When stakeholders and decision-makers work together, they can develop a common understanding of the issues and the best way forward [34] [35]. Capturing Vital Personnel from Every Step of the Supply Chain Stakeholders from a wide range of fields should be included in the public discourse on animal welfare, as they can contribute unique insights that inform policy and help build a more robust framework within which to accomplish a number of goals [36] [37]. Below, we provide a quick overview of several key aspects of animal welfare stakeholder networks.

When it comes to stakeholder networks pertaining to animal welfare, the business sector stands out as the most visible and prominent sector.Whether the network's focus is on all animals or just one type of use case, like production animals, will determine the makeup of the stakeholders who represent this sector [38]. Concern for the well-being of producing animals is shared by a wide variety of stakeholders. This category includes business organisations, universities, and research institutions.

Those involved range from investors and advisors to veterinarians and meat manufacturers to exporters and merchants. To promote animal welfare, there must be widespread support from enterprises. Industry actors must be involved in the discussion and feel responsible for the outcome, as they are the ones who will put any improvements advocated by the stakeholder network into action. [39]. Due to the significant influence, they have on the agri-food system, retailers like supermarkets should be highly engaged in stakeholder networks [40]. Because of their close relationship with customers, retailers can provide valuable input into market-based responses. Being aware of the stakeholder network's power dynamics is essential if monetary contributions are expected from members of the industry at large. A stakeholder network's credibility is jeopardized if those who contribute to it in the industry are able to exert undue control over its operations, whether that control is real or perceived. If the public loses faith in the network, it will be difficult to attract new members [41].

NGOs

Due to the fact that any given society comprises a variety of "publics," identifying the community sector has always been a challenge. As a result, the public sector's perspective on animal welfare policy is often overlooked. Despite the fact that members of animal rights groups may hold more extreme views than the general public on animal welfare concerns, they frequently serve as community representatives in animal rights talks. There are a number of animal rights groups and individuals who speak out forcefully against animal cruelty [42]. We recommend inviting groups with a range of perspectives on animal use into stakeholder networks due to the significant impact they can have.

Research Industry

Animal welfare stakeholder networks can benefit in two ways from the involvement of academic and policy think tanks. The first and, probably, most important role they play is in disseminating information. Animal welfare is multifaceted, touching on several subdisciplines such as animal science, ecology, politics, psychology, neurology, and economics. Nonetheless, due to its restricted distribution, the scientific literature may be inaccessible to the general population. In a collaborative stakeholder network, academics may operate as "honest brokers" of information by clarifying and, in some situations, enlarging the set of evidence-based action alternatives [43]. Expertise in communicating scientific findings and the

ability to collaborate with partners outside of academia would be helpful. Here, think tanks are sometimes viewed as providing decision-makers with more timely and applicable options than universities. Think tank recommendations might be misunderstood as endorsements of a particular viewpoint [44], which isn't always helpful when trying to guide conversations among groups with widely divergent worldviews. Researchers receive money from both the government and commercial organisations, but this does not stop some people from thinking of them as politically and ideologically agnostic. Academics can be invaluable members of a stakeholder network because of the high regard in which they are held by many stakeholder groups, the confidence with which they can assume leadership roles when appropriate, and the ability to arbitrate conflicts when they emerge.

Public Sector Institutions

There is a lot of collaboration between different sectors, and governments often play a role in this or even act as a sponsor for such networks [45]. This is why it is so important for public servants in agriculture departments at the federal and regional levels to remain committed to improving animal welfare. While it's important to include government representatives, state-sponsored stakeholder networks often have cumbersome decision-making processes, excessive reporting requirements, and a lack of adaptability in the face of the network's evolving experience [39] [46]. If a new government takes power or if public agencies don't perceive immediate benefits, a state-sponsored network runs the risk of being quickly defunded and dissolved. Thus, we think that animal welfare stakeholder networks should include both public and private entities. Networks are more resilient to short-term setbacks and long-term success if they retain some degree of independence.

Stakeholder networks must be carefully designed to prevent any one interest group from controlling the network's resources and decision-making. Once a stakeholder network's credibility is called into question because of accusations of being "bought," that network ceases to exist. However, a stakeholder network with insufficient resources will be unable to effectively carry out its goals[39].

Researchers have identified four abilities—reflexivity, rejuvenation, resilience, and responsiveness—that are essential for handling wicked challenges intelligently. Reflexivity includes regularly reassessing the problem definition and potential solutions in light of the numerous perspectives that have been applied to it. Stakeholder networks in animal welfare must revolve around the acceptance of competing perspectives given the contentious nature of the subject. It is essential that all parties involved understand that their perspective on the situation is just one of many possible perspectives and that they make an effort to consider alternative points of view when offering solutions. In order to revitalize, stakeholders must be able to recognize when conflicts and counterproductive patterns arise within the stakeholder network. inspire the group's dormant members to take action. Taking into account the potential for conflicts among participants is crucial for effective stakeholder networks in animal care, as seen above. If you want to mediate a conflict and get the parties to the, you need strong leadership. When stakeholders are at odds, a good leader will step in to protect the validity of the group's work together and reignite interest in the mission at hand. This would guarantee that conflicts are settled in a fashion that is acceptable to all parties.

To be resilient is to be able to deal successfully with the chaos and uncertainty that come with solving wicked problems. It is important for a stakeholder network to be resilient because it means the group can respond to new information and circumstances without compromising its core values or mission. More connections between seemingly unrelated

groups, like animal rights activists and journalists, increase the likelihood that networks will learn, adapt to shocks, and minimise uncertainty.

For a stakeholder network to be considered responsive, it must be able to adapt intelligently to the shifting needs of its constituents without betraying their confidence or making assurances that it cannot keep. When there is a crisis involving animal welfare, the media usually pays close attention, and experts in the field are often sought out for comment. Stakeholders can help keep the network together by choosing not to comment at all if they so choose. It is also possible for the relevant parties to agree in advance that they will issue a joint statement outlining their plans to coordinate their response to the crisis. This strategy has two goals: first, to reduce social tension in the aftermath of the event; and second, to keep the stakeholder network's reputation for unity intact by stressing that "we are all on the same team." Stakeholder networks should proactively plan for such shocking events and the consequent uptick in public interest since these constitute "policy windows" during which major change can be effected in a short period of time. If the stakeholder network is prepared for the crisis, any response will serve to further the network's overarching objectives. The success or failure of a stakeholder network rests on the strength of its relational capital, defined as the capacity to create and maintain trustworthy relationships and networks of collaboration among various stakeholders. Building relationships is the most important part of stakeholder networks because it motivates groups to take action together. Building trust through interpersonal connections is the most important factor in ensuring the success of collaboration. Therefore, productive stakeholder networks allow for numerous channels of communication and trust development [39]. The foundation is unquestionably laid by consistent, high-quality communication. Others have argued that "small wins," or quick successes that prove the network's worth, are helpful in establishing rapport.key players [39]. There has been some muddle in recent discussions about trust in the agricultural sector, with the assumption that trust can be gained in the sector by merely increasing transparency. Although it is true that increased openness can improve the industries' credibility or trustworthiness, actually constructing trust calls for more focus on social capital than any of the other dimensions. Other factors that contribute to trust are a shared vision and the length and quality of past social interactions.

The aforementioned "five Rs" are fundamental to the success of cooperative endeavors. Head described the various degrees of interaction possible in online communities. The vast majority of stakeholder networks are cooperative, meaning that their members never feel compelled to compromise their individual identities or work towards a common goalWe believe that in order for animal welfare stakeholder networks to be successful, they must prioritize collaboration.

Only a handful of regional stakeholder networks have ever tried to improve animal welfare. Two examples of effective stakeholder collaboration and the risks associated with networks of this type are presented below. We think these networks' approaches to stakeholder engagement and coordinating their efforts to improve animal welfare can serve as a model for other groups to follow.

Instance 1 Plan for the Health and Happiness of Animals in Australia (AAWS), 2004-2013. Animal welfare advocates from various points in the value chain came together to create the AAWS and are now working to put it into practise. The committee had 17 members in total (AVA).Members of the Advisory Council were reimbursed by the Australian government for their time and expenses in order to attend quarterly in-person meetings, and the

government also paid a per diem sitting fee to non-governmental members. Each technical working group was founded with input from representatives of government, business, and sector-specific organisations, as well as animal welfare groups. In addition, three interdepartmental working groups were formed to address broad concerns in the areas of communication, R&D, and education and training [44].

Since there are over 400 groups in Australia that care deeply about animal welfare, the AAWS set out to serve as a hub for and coordinator of collective action on behalf of these groups [17]. Even though the Animal Welfare Strategy (AAWS) had a good start, it was placed on hold in late 2013 when the Coalition Government was elected in Australia. They said that the AAWS "was able to bring animal advocates, veterinarians, government welfare professionals, and livestock sector leaders around the table to have progressive discussions," and were therefore dissatisfied with the outcome.

Sadly, as time went on, enthusiasm for the initiative dwindled. As of right now, there is yet another set of talks happening to figure out what the stakeholder network can do in the long run [47].

Institutions that focus their research on animal welfare The stakeholder network is responsible for many things, including the followingConflicts of interest must be reported in writing by Platform members in accordance with the rules. Members of the Platform and its working groups have their names publicly listed on a database of such groups in the interest of transparency. There have been some preliminary results after only two years of the Platform's existence. The Platform is developing a digital communication tool, he added.

Various studies of stakeholder networks, from which three key takeaways can be drawn. As a first step, it's important to have a diverse group of people involved in improving animal welfare. This includes representatives from government, industry, NGOs, and academic and governmental research institutions. Animal welfare standards could be negotiated, but this scenario is not ideal because it could take years or even decades. So, it's suggested that future animal welfare stakeholder networks think about member-based contributions or crowdfunding as alternatives to traditional funding models.

When it comes to animal welfare, we believe that decision-makers should prioritise demonstrating that the problems and progress being made are the result of the collaborative efforts of stakeholders across the whole value chain. The authors Heimans and Timms argue in their book New Power that the growing tension between "old power" and "new power" is driving the complex transformation society is undergoing right now [42]. Involving people must be more than just a publicity stunt.

Conclusion

In view of increasing public concern for the treatment of animals and the consequent revocation of their "social licence" to profit from their usage, we propose that collaborative stakeholder networks in animal welfare adopt "new power" models with greater transparency and robust governance. Future studies and policies should focus on increasing public involvement in animal welfare through methods like concept co-production and co-ownership.

References

[1] X. P. Song, P. Y. Tan, P. Edwards, and D. Richards, "The economic benefits and costs of trees in urban forest stewardship: A systematic review," Urban For. Urban Green., vol. 29, pp. 162–170, Jan. 2018, doi: 10.1016/J.UFUG.2017.11.017.

[2] S. Roy, J. Byrne, and C. Pickering, "A systematic quantitative review of urban tree

benefits, costs, and assessment methods across cities in different climatic zones," Urban For. Urban Green., vol. 11, no. 4, pp. 351–363, Jan. 2012, doi: 10.1016/J.UFUG.2012.06.006.

[3] E. Ostrom, "Polycentric systems for coping with collective action and global environmental change," Glob. Justice, pp. 423–430, May 2017, doi: 10.4324/9781315254210-18/POLYCENTRIC-SYSTEMS-COPING-COLLECTIVE-ACTION-GLOBAL-ENVIRONMENTAL-CHANGE-ELINOR-OSTROM.

[4] A. Kylili, P. A. Fokaides, P. Christou, and S. A. Kalogirou, "Infrared thermography (IRT) applications for building diagnostics: A review," Appl. Energy, vol. 134, pp. 531–549, Dec. 2014, doi: 10.1016/J.APENERGY.2014.08.005.

[5] W. N. Xiang, "Working with wicked problems in socio-ecological systems: Awareness, acceptance, and adaptation," Landsc. Urban Plan., vol. 110, no. 1, pp. 1–4, Feb. 2013, doi: 10.1016/J.LANDURBPLAN.2012.11.006.

[6] H. Keefe, "Old dilemmas in new robes: the dynamics of influence in the digital age," https://doi.org/10.1080/23753234.2020.1826334, vol. 5, no. 3, pp. 505–507, Sep. 2020, doi: 10.1080/23753234.2020.1826334.

[7] B. Douthwaite and E. Hoffecker, "Towards a complexity-aware theory of change for participatory research programs working within agricultural innovation systems," Agric. Syst., vol. 155, pp. 88–102, Jul. 2017, doi: 10.1016/J.AGSY.2017.04.002.

[8] M. Frederiksen, "Dimensions of trust: An empirical revisit to Simmel's formal sociology of intersubjective trust," http://dx.doi.org/10.1177/0011392112461800, vol. 60, no. 6, pp. 733–750, Oct. 2012, doi: 10.1177/0011392112461800.

[9] B. W. Head, "Forty years of wicked problems literature: forging closer links to policy studies," Policy Soc., vol. 38, no. 2, pp. 180–197, Apr. 2019, doi: 10.1080/14494035.2018.1488797.

[10] A. Catena, "THERMOGRAPHY REVEALS HIDDEN TREE DECAY," http://dx.doi.org/10.1080/03071375.2003.9747360, vol. 27, no. 1, pp. 27–42, Jun. 2012, doi: 10.1080/03071375.2003.9747360.

[11] V. Nolan, T. Reader, F. Gilbert, and N. Atkinson, "The Ancient Tree Inventory: a summary of the results of a 15 year citizen science project recording ancient, veteran and notable trees across the UK," Biodivers. Conserv., vol. 29, no. 11–12, pp. 3103–3129, Oct. 2020, doi: 10.1007/S10531-020-02033-2/TABLES/4.

[12] N. Fraser, "Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy," Soc. Text, no. 25/26, p. 56, 1990, doi: 10.2307/466240.

[13] P. Bishop and G. Davis, "Mapping Public Participation in Policy Choices," Aust. J. Public Adm., vol. 61, no. 1, pp. 14–29, Mar. 2002, doi: 10.1111/1467-8500.00255.

[14] M. E. Ferreira, A. C. André, and R. Pitarma, "Potentialities of Thermography in Ecocentric Education of Children: An Experience on Training of Future Primary Teachers," Sustain. 2019, Vol. 11, Page 2668, vol. 11, no. 9, p. 2668, May 2019, doi: 10.3390/SU11092668.

[15] F. Berthe et al., "The role of EFSA in assessing and promoting animal health and welfare," EFSA J., vol. 10, no. 10, p. s1002, Oct. 2012, doi:

10.2903/J.EFSA.2012.S1002.

[16] D. M. Broom, "International Animal Welfare Perspectives, Including Whaling and Inhumane Seal Killing as a W.T.O. Public Morality Issue," Ius Gentium, vol. 53, pp. 45–61, 2016, doi: 10.1007/978-3-319-26818-7_3/COVER.

[17] F. Allievi, M. Vinnari, and J. Luukkanen, "Meat consumption and production – analysis of efficiency, sufficiency and consistency of global trends," J. Clean. Prod., vol. 92, pp. 142–151, Apr. 2015, doi: 10.1016/J.JCLEPRO.2014.12.075.

[18] H. Proctor, "Animal Sentience: Where Are We and Where Are We Heading?," Anim. 2012, Vol. 2, Pages 628-639, vol. 2, no. 4, pp. 628–639, Nov. 2012, doi: 10.3390/ANI2040628.

[19] D. Tilman, K. G. Cassman, P. A. Matson, R. Naylor, and S. Polasky, "Agricultural sustainability and intensive production practices," Nat. 2002 4186898, vol. 418, no. 6898, pp. 671–677, Aug. 2002, doi: 10.1038/nature01014.

[20] C. Degeling and J. Johnson, "Citizens, Consumers and Animals: What Role do Experts Assign to Public Values in Establishing Animal Welfare Standards?," J. Agric. Environ. Ethics, vol. 28, no. 5, pp. 961–976, Oct. 2015, doi: 10.1007/S10806-015-9571-X/METRICS.

[21] B. G. Peters, "What is so wicked about wicked problems? A conceptual analysis and a research program," Policy Soc., vol. 36, no. 3, pp. 385–396, Jul. 2017, doi: 10.1080/14494035.2017.1361633.

[22] L. Bonafos, D. Simonin, and A. Gavinelli, "Animal Welfare: European Legislation and Future Perspectives," https://doi.org/10.3138/jvme.37.1.26, vol. 37, no. 1, pp. 26–29, Apr. 2010, doi: 10.3138/JVME.37.1.26.

[23] C. Ansell and A. Gash, "Collaborative Governance in Theory and Practice," J. Public Adm. Res. Theory, vol. 18, no. 4, pp. 543–571, Oct. 2008, doi: 10.1093/JOPART/MUM032.

[24] R. Pitarma, J. Crisóstomo, and M. E. Ferreira, "LEARNING ABOUT TREES IN PRIMARY EDUCATION: POTENTIALITY OF IRT TECHNOLOGY IN SCIENCE TEACHING," EDULEARN18 Proc., vol. 1, pp. 208–213, Jul. 2018, doi: 10.21125/EDULEARN.2018.0109.

[25] G. Möllering, "The Nature of Trust: From Georg Simmel to a Theory of Expectation, Interpretation and Suspension," https://doi.org/10.1177/S0038038501000190, vol. 35, no. 2, pp. 403–420, Jul. 2016, doi: 10.1177/S0038038501000190.

[26] J. K. Kirkwood, "UK Farm Animal Welfare Council Report on policy instruments for protecting and improving farm animal welfare (in the UK)," Anim. Welf., vol. 18, no. 1, pp. 101–102, Feb. 2009, doi: 10.1017/S096272860000018X.

[27] A. Cornish, D. Raubenheimer, and P. McGreevy, "What We Know about the Public's Level of Concern for Farm Animal Welfare in Food Production in Developed Countries," Anim. 2016, Vol. 6, Page 74, vol. 6, no. 11, p. 74, Nov. 2016, doi: 10.3390/ANI6110074.

[28] M. Schut et al., "INNOVATION PLATFORMS: EXPERIENCES WITH THEIR INSTITUTIONAL EMBEDDING IN AGRICULTURAL RESEARCH FOR DEVELOPMENT," Exp. Agric., vol. 52, no. 4, pp. 537–561, Oct. 2016, doi:

10.1017/S001447971500023X.

[29] L. Fulponi, "Private voluntary standards in the food system: The perspective of major food retailers in OECD countries," Food Policy, vol. 31, no. 1, pp. 1–13, Feb. 2006, doi: 10.1016/J.FOODPOL.2005.06.006.

[30] L. U. Sneddon et al., "Fish sentience denial: Muddying the waters," Anim. Sentience, vol. 3, no. 21, p. 1, Jan. 2018, doi: 10.51291/2377-7478.1317.

[31] K. P. Chandroo, I. J. H. Duncan, and R. D. Moccia, "Can fish suffer?: perspectives on sentience, pain, fear and stress," Appl. Anim. Behav. Sci., vol. 86, no. 3–4, pp. 225–250, Jun. 2004, doi: 10.1016/J.APPLANIM.2004.02.004.

[32] D. H. Cole, "Advantages of a polycentric approach to climate change policy," Nat. Clim. Chang. 2015 52, vol. 5, no. 2, pp. 114–118, Jan. 2015, doi: 10.1038/nclimate2490.

[33] R. E. Matland, "Synthesizing the Implementation Literature: The Ambiguity-Conflict Model of Policy Implementation," J. Public Adm. Res. Theory, vol. 5, no. 2, pp. 145–174, Apr. 1995, doi: 10.1093/OXFORDJOURNALS.JPART.A037242.

[34] T. C. Green and D. J. Mellor, "Extending ideas about animal welfare assessment to include 'quality of life' and related concepts," http://dx.doi.org/10.1080/00480169.2011.610283, vol. 59, no. 6, pp. 263–271, Nov. 2011, doi: 10.1080/00480169.2011.610283.

[35] B. Clark, G. B. Stewart, L. A. Panzone, I. Kyriazakis, and L. J. Frewer, "Citizens, consumers and farm animal welfare: A meta-analysis of willingness-to-pay studies," Food Policy, vol. 68, pp. 112–127, Apr. 2017, doi: 10.1016/J.FOODPOL.2017.01.006.

[36] B. W. Head, "Assessing network-based collaborations," https://doi.org/10.1080/14719030802423087, vol. 10, no. 6, pp. 733–749, 2008, doi: 10.1080/14719030802423087.

[37] D. M. Broom, "Cognitive ability and sentience: Which aquatic animals should be protected?," Dis. Aquat. Organ., vol. 75, no. 2, pp. 99–108, May 2007, doi: 10.3354/DAO075099.

[38] M. Ferreira, J. Crisóstomo, and R. Pitarma, "INFRARED THERMOGRAPHY TECHNOLOGY TO SUPPORT SCIENCE TEACHING - MEANINGFUL LEARNING ABOUT TREES WITH UNIVERSITY STUDENTS," INTED2019 Proc., vol. 1, pp. 1712–1716, Apr. 2019, doi: 10.21125/INTED.2019.0498.

[39] F. E. Kuo and W. C. Sullivan, "Environment and crime in the inner city does vegetation reduce crime?," Environ. Behav., vol. 33, no. 3, pp. 343–367, 2001, doi: 10.1177/00139160121973025.

[40] L. E. Drake and W. A. Donohue, "Communicative Framing Theory in Conflict Resolution," http://dx.doi.org/10.1177/009365096023003003, vol. 23, no. 3, pp. 297–322, Jun. 2016, doi: 10.1177/009365096023003003.

[41] U. N. D. of E. and S. Affairs, "World Urbanization Prospects: The 2018 Revision," World Urban. Prospect. 2018 Revis., Aug. 2019, doi: 10.18356/B9E995FE-EN.

[42] C. Salisbury, "Implementation of the Australian Animal Welfare Strategy," Anim. Welf., vol. 15, no. 1, pp. 74–75, Feb. 2006, doi: 10.1017/S0962728600030037.

[43] R. D. Lasker et al., "Broadening participation in community problem solving: A

multidisciplinary model to support collaborative practice and research," J. Urban Heal. 2003 801, vol. 80, no. 1, pp. 14–47, 2003, doi: 10.1093/JURBAN/JTG014.

[44] G. Bentrup, "Evaluation of a collaborative model: A case study analysis of watershed planning in the Intermountain West," Environ. Manage., vol. 27, no. 5, pp. 739–748, 2001, doi: 10.1007/S002670010184/METRICS.

[45] H. W. J. Rittel and M. M. Webber, "Dilemmas in a general theory of planning," Policy Sci., vol. 4, no. 2, pp. 155–169, Jun. 1973, doi: 10.1007/BF01405730/METRICS.

[46] K. Currey and S. G. Clark, "Roger A. Pielke, Jr., The honest broker: making sense of science in policy and politics," Policy Sci. 2009 431, vol. 43, no. 1, pp. 95–98, Jun. 2009, doi: 10.1007/S11077-009-9096-0.

[47] H. Greathead, "Plants and plant extracts for improving animal productivity," Proc. Nutr. Soc., vol. 62, no. 2, pp. 279–290, May 2003, doi: 10.1079/PNS2002197.