CLIMATE ACTION NETWORK

Submission: Koronivia Joint Work on Agriculture workshop 2(e) on improved livestock management systems, including agropastoral production systems

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Climate Action Network (CAN) is the world's largest network of civil society organizations working together to promote government action to address the climate crisis, with more than 1300 members in over 120 countries.
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The scale of livestock production, facilitated by the global shift towards industrialisation, is a major contributor to climate change. This model of production causes significant harm to biodiversity, air, soil, and water pollution which in turn demonstrably contribute to and are worsened by climate change. Moreover, industrial animal farming contributes to increased zoonoses and other public health impacts and negatively affects farmers' and workers' rights and animal welfare. However, livestock can be a beneficial part of agricultural landscapes, improving soil fertility, biodiversity and agricultural diversification. It is integral to many farming systems, playing an important economic and socio-cultural role in rural households. Depending on its management and relation to global value chains, livestock rearing can have a dramatically different environmental, climatic, social and animal welfare impact. Well-managed pasture-based systems can contribute to climate resilience and adaptation.

Limiting global warming to 1.5°C with equity necessitates a transformation of both unsustainable practices and a drastic decrease in industrial animal farming. Current science shows that even if fossil fuel emissions were eliminated immediately, emissions from the global food system alone would make it impossible to limit warming to 1.5°C and difficult even to realise the 2°C target[1]. Transforming livestock systems is therefore vital to meet the goals of the Paris Agreement.

The Koronivia Joint Work on Agriculture (KJWA) must explore ways to facilitate a shift towards less and better meat production that benefits people, nature and the climate in an equitable manner.

Not all countries have equal historical responsibility in causing livestock-related greenhouse gas emissions (GHGs). There are a handful of countries that contribute to surplus production and consumption. The U.S., Canada, EU, Brazil, Argentina, Australia and New Zealand account for 43% of total global emissions from meat and dairy production, even as they are home to only 15% of the world's population, over 60% if China is included.[2] The same countries (excluding China) have per capita consumption rates that are more

[1] Clark et al., 2020. Global food system emissions could preclude achieving the 1.5° and 2°C climate change targets. *Science, Vol. 370* (6517), 705-708. Available: https://science.sciencemag.org/content/370/6517/705

[2] GRAIN & Institute for Agriculture and Trade Policy (IATP), 2018. Emissions impossible, How big meat and dairy are heating up the planet. Available: https://www.iatp.org/blog/emissions-impossible

than double the global average[3]. In contrast, in the West Africa region, up to 90% of livestock is based on extensive production, and is a source of biodiversity, environmental sustainability and quality for the production of meat and milk. It is therefore critical to recognise the contribution that different types and scale of livestock production and consumption have on the climate, wider planetary boundaries and social justice.

Approach to livestock's contribution to climate change must be holistic and integrate equity, human rights and larger planetary boundaries: Livestock systems are part of larger social, cultural and political landscapes and require a holistic vision for their management. Managing livestock's climate impact must therefore not be limited to greenhouse gas emissions alone, but to the overall impact on equity, human rights, biodiversity and other planetary boundaries.

Absolute emissions are the right metric to address livestock emissions: Livestock's huge contribution to climate change has been exacerbated by a shift to an industrial model of production. Around the world, traditional systems of livestock rearing by smallholder farmers and pastoralists have been steadily replaced and outnumbered by more industrialised, intensive and consolidated livestock production systems, with longer supply chains. Advocates of the industrial model claim that "emissions intensity" reductions per kilo of meat or milk can help the livestock sector mitigate climate change. However, emissions intensity reductions with rising numbers of animals in production lead to increasing absolute emissions from the livestock sector. It is critical that absolute emissions and not emissions intensity reduction be the metric for livestock related emissions reductions.

The role of diet: An equitable approach to reducing meat consumption within planetary boundaries could make a significant contribution to reducing global GHGs from livestock while ensuring food security and nutrition. The Intergovernmental Panel on Climate Change (IPCC) Special Report on Land and Climate (referred to henceforth as IPCC SR Land) found that increasing amounts of plant-based protein sources (such as pulses, nuts and seeds) in diets could help to address food security needs, while reducing pressure on land, ecosystems and the climate from meat production. The amount of land required to produce 100 g of animal protein is up to 100 times the amount of land required to produce the same amount in plant-based protein.[4] Several studies suggest that an average per capita diet of 300g of meat a week would meet nutritional needs, while reducing the climate contribution of the meat sector by about half.[5]

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[3] Data from FAOSTAT as Tirado et al., 2018. Less is More: Reducing Meat and Dairy for a Healthier Life and Planet Scientific Background. Greenpeace. Available: https://www.greenpeace.org/international/publication/15093/less-is-more/

[4] Note: Examples for different land use requirements: 164 m^2 for beef vs 1.4 m^2 for wheat bread, 40m^2 for cheese vs 3.4 m^2 for peas, or 11 m^2 for pork vs 2.2 m^2 for tofu. see: Poore & Nemecek, 2018). Reducing food's environmental impacts through producers and consumers. Science. Vol. 360(6392), 987-992. Available: https://science.sciencemag.org/content/360/6392/987

[5] Dooley et al. 2018. Missing Pathways to 1.5°C: The role of the land sector in ambitious climate action. Climate, Land, Ambition and Rights Alliance (CLARA). Available: https://www.climatelandambitionrightsalliance.org/report; Tirado et al., 2018. Less is More: Reducing Meat and Dairy for a Healthier Life and Planet Scientific Background. Greenpeace. Available: https://www.greenpeace.org/international/publication/15093/less-is-more/;
Springmann et al., 2016. Analysis and valuation of the health and climate change cobenefits of dietary change. Proceedings of the National Academy of Science of the United States of America. Vol. 113(15). 4146–4151. Available: https://www.researchgate.net/publication/299342863_Analysis_and_valuation_of_the_health_and_climate_change_cobenefits_of_dietary_change

Problems associated with the livestock sector

Livestock sector impacts on climate and biodiversity: Livestock account for 14.5% of all anthropogenic greenhouse gas (GHGs) emissions[6] and around 60% of all agricultural GHGs including land use change, deforestation, feed production, enteric fermentation and post-production energy use.[7] 45% of these emissions come from feed production and processing alone, including land use change.[8] Forage and feed production use around 70% of global agricultural land.[9] Large-scale livestock production continues to expand pasture, overgrazing and feed monocultures of soy and corn in large tracts of land and critical ecosystems such as the Amazon and the Gran Chaco. Meat production has continued to accelerate at a steady pace, with a pronounced acceleration in the last two decades.[10] The IPCC SR Land makes clear that protecting and restoring the planet's ecosystems is an urgent priority in order to limit warming to 1.5°C.[11] The dominant model and scale of livestock production are therefore incompatible with a stable climate.

Biodiversity loss and Zoonoses: Impact of COVID-19: The coronavirus pandemic is the latest example of how human degradation of wildlife habitats is linked to the spread of infectious zoonotic diseases. Deforestation, a catalyst to biodiversity loss and ecosystem imbalance, has been clearly linked to increased chances of zoonotic (animal to human) virus transmission.[12] 60% of infectious disease outbreaks which occurred between 1940 and 2004 have been zoonotic.[13] Livestock often serve as intermediate or "amplifier" hosts, particularly when industrial operations enable large numbers of animals of low genetic diversity in confined spaces.[14] During COVID-19 lockdowns, enforcement efforts to reduce deforestation, illegal mining and land encroachment were significantly hampered, with negative consequences for the health and safety of indigenous peoples and climate change. COVID-19 has directly impacted human health with over 1.2 million deaths worldwide[15] taking an outsized toll on women and people of colour

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[6] Gerber& Food and Agriculture Organization of the United Nations (eds.), 2013. Tackling climate change through livestock: a global assessment of emissions and mitigation opportunities. Rome: Food and Agriculture Organization of the United Nations, Rome. Available: http://www.fao.org/3/a-i3437e.pdf

[7] Van Zanten et al., 2018. Defining a land boundary for sustainable livestock consumption. Global Change Biology. Vol 24(9). 1-10. Available: https://www.researchgate.net/publication/325308954_Defining_a_land_boundary_for_sustainable_livestock_consumption

[8] Gerber& Food and Agriculture Organization of the United Nations (eds.), 2013. Tackling climate change through livestock: a global assessment of emissions and mitigation opportunities. Rome: Food and Agriculture Organization of the United Nations, Rome. Available: http://www.fao.org/3/a-i3437e.pdf

[9] Van Zanten et al., 2018. Defining a land boundary for sustainable livestock consumption. Global Change Biology. Vol 24(9). 1-10. Available: https://www.researchgate.net/publication/325308954_Defining_a_land_boundary_for_sustainable_livestock_consumption

[10] Ritchie, 2017. Meat and Dairy Production. OurWorldInData.org. Available: https://ourworldindata.org/meat-production

[11] Intergovernmental Panel on Climate Change (IPCC), 2019. Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. Available: https://www.ipcc.ch/srccl/

[12] Bloomfield et al., 2020. Habitat fragmentation, livelihood behaviors, and contact between people and nonhuman primates in Africa. Landscape Ecology. Vol. 35. 985–1000. Available: https://link.springer.com/article/10.1007/s10980-020-00995-w

[13] Baudron & Liégeois, 2020. Fixing our global agricultural system to prevent the next COVID-19. Sage Journals. Vol. 49 (2). 111-118. Available: https://journals.sagepub.com/doi/full/10.1177/0030727020931122

[14] Ibid. & Jones et al., 2013. Zoonosis emergence linked to agricultural intensification and environmental change. Proceedings of the National Academy of Science of the United States of America, Special Feature. Vol. 110 (21). 8399-8404. Available: https://doi.org/10.1073/pnas.1208059110

[15] Johns Hopkins University. Corona Virus Resource Center. Available: https://coronavirus.jhu.edu/ (as of November 6th, 2020)

but the social and economic fallout from COVID-19, including high food prices and trade disruptions, could indirectly thrust over 130 million people into food insecurity[16] and half a billion pushed into poverty before the end of the year.[17]

Genetic robustness of livestock breeds increases climate adaptation: Bred explicitly for fast growth, a handful of livestock breeds are propagated by the global livestock industry due to their large sizes and high productivity. However, such breeds are more vulnerable to climate variability, less able to withstand high temperatures and reduced water availability. Intensification using these breeds creates additional risks and costs for livestock producers. In contrast, indigenous breeds are more resistant to climatic changes. In West Africa, the promotion of exotic breeds is eroding critically needed climate adaptability of existing indigenous Sahelian breeds. These industrial breeds' exorbitant costs and vulnerability to local conditions creates rising risks for livestock producers in the region at a time when climate adaptation is of paramount importance.[18]

Confined operations, high stocking densities and public health impacts: The production of livestock in confined spaces is often referred to as "Concentrated Animal Feeding Operations" (CAFOs) (also referred to as "factory farms"). CAFOs produce large numbers – sometimes tens or even hundreds of thousands – of animals (particularly cows, pigs and chickens) in small cramped spaces where they cannot exhibit most natural behaviours. Animals living in such close living quarters heighten the risk of disease transmission, leading most operators to administer antibiotics in feed, with a dual purpose of boosting animal growth. As a result, they are a major cause of antibiotic resistant microbes which pose significant risks to humans due to antimicrobial resistance (AMR). Seven hundred thousand people die yearly of antibiotic resistant diseases, a figure that is expected to increase to 10 million by 2050 according to U.N. experts.[19] CAFOs and other systems with high stocking densities also pose significant threats to air, soil, and water systems endangering the environment, worker safety, and health of communities. High-density animal operations produce mass volumes of manure, which is pooled into liquid 'lagoons' and sprayed onto agricultural fields, contributing to E.coli and Salmonella outbreaks despite regulatory provisions. As liquid manure is sprayed onto crop fields as fertilizer, it contributes to the formulation of particulate matter, which has been linked to increased cases of asthma, bronchitis, and chronic respiratory problems in neighbouring communities, especially in children.[20] CAFO workers are also at risk due to poor ventilation, where a build-up of ammonia gas – released from manure – can cause lung scarring and chronic lung disease.

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[16] Oxfam, 2020. The Hunger Virus: How Covid-19 is fuelling hunger in a hungry world. Media Briefing. Available: https://oxfamilibrary.openrepository.com/bitstream/handle/10546/621023/mb-the-hunger-virus-090720-en.pdf

[17] Oxfam, 2020. Dignity not Destitution. An 'Economic Rescue Plan For All' to tackle the Coronavirus crisis and rebuild a more equal world. Media Briefing. Available: https://www.oxfam.org.nz/wp-content/uploads/2020/04/Oxfam-Report-Dignity-not-Destitution.pdf

[18] Mahugnon Adido & Gitau Gicheha, 2018. The Status of Cattle Genetic Resources in West Africa: A Review. Advances in Animal and Veterinarian Science. Vol. 7(2). 112-121. Available: www.researchgate.net/publication/329714476_The_Status_of_Cattle_Genetic_Resources_in_West_Africa_A_Review

[19] Interagency Coordination Group on Antimicrobial Resistance (IACG), 2019. No Time to Wait: Securing the future from drug-resistant infections. Available: https://www.who.int/antimicrobial-resistance/interagency-coordination-group/IACG_final_report_EN.pdf?ua=1

[20] Schultz et al., 2019. Residential proximity to concentrated animal feeding operations and allergic and respiratory disease. Environment International. Vol. 130. 1-9. Available: https://www.sciencedirect.com/science/article/pii/S0160412018320750

Way Forward

Agropastoral and agroecological systems are key to livestock's adaptation and resilience to climate: Agroecology aims to build integrated and diversified systems at various scales. This can occur in many forms such as integrated crop-livestock or agropastoral systems; integrated forestry-livestock or agrosilvipastoral systems or different combination of these. Adding polycultures of fish, mixed herds (species diversity) and intercrops, creates further resilience of livestock systems that are both adaptive and beneficial to the climate and wider planetary boundaries. They also play a critical role in protecting livelihoods and food security for over 500 million poor people in rural areas.[21] When adequately supported by good public policy and adequate financial support, these systems can benefit both people and the environment rather than lead to deforestation and land use change.

In such systems, livestock can be essential to completing biological and environmental cycles and ensure ecosystem fertility through closing nutrient cycles. Moreover, grazing livestock systems, including pastoralism, are critical for agroecosystems in permanent pasture or meadows, a large share of which are unsuitable for crops due to terrain, soil or climate.[22] In these ecosystems, when well-managed, grazing provides a vital source of livelihoods, soil carbon conservation and other ecological benefits.

Moving away from 'specialised' single commodity production systems to diversified multi-functional livestock rearing systems (manure, milk, meat, transportation, etc.), changing feeding regimes from intensive concentrate feeds to local fodder and crop-residues, and selling produce to local and regional markets rather than distant ones can also contribute to the best animal welfare outcomes based on reciprocity, benefitting from the animals' natural behaviours. In a world where livestock production and consumption are heavily reduced, livestock can play a key role in achieving Food Security and Nutrition that supports biodiversity and limits climate change. As industrial livestock systems are a direct threat to the survival of such models and approaches, it is more important than ever to shift policy and financial support from a dangerous model of production towards agroecology.

Principles and Objectives for Change in the Livestock Sector: As the KJWA considers how to reduce the impacts of the livestock sector on the climate, it must be guided by the following principles and objectives.

a. **Food security, the right to food and nutrition, and farmers' rights.** Ensuring food security must be a key objective, and mitigation strategies must not threaten food security and nutrition.

b. **Absolute and equitable emission reductions.** Parties must be guided by the objective of equitable absolute (total) emission reductions. This means that reduced "intensity" or increased "efficiency" per kilo of food is not an acceptable objective, as this can create perverse incentives to increase production, thereby increasing total emissions. Work under the KJWA must pursue

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[21] Food and Agricultural Organization of the U.N. (FAO), 2018. More Fuel for the Food/Feed Debate, Available: http://www.fao.org/ag/againfo/home/en/news_archive/2017_More_Fuel_for_the_Food_Feed.html

[22] Food and Agricultural Organization of the U.N. (FAO), 2018. Livestock and Agroecology, How they can support the transition towards sustainable food and agriculture. Available: http://www.fao.org/3/I8926EN/i8926en.pdf

efforts to equitably reduce absolute emissions, with countries with the highest per capita emissions in livestock production taking the lead. Countries with low historical per capita emissions in livestock production and consumption should not bear the burden of leading these reduction efforts.

c. **Farmers' rights, workers' rights and land rights.** Actions must protect farmers' rights including land rights and workers' rights. For example, mitigation efforts in the livestock sector should not result in consolidation and expansion of industrial agribusinesses that create low-paid and hazardous working conditions in slaughterhouses or push smallholder farmers off their lands and oblige them to become poorly paid labourers.

d. **Just transition.** Governments should apply just transition principles to their efforts to transform their livestock sectors in efforts to transform the food system to work for people, nature and the climate. The term "just transition" does not only describe *what* the sector is changing towards, but *how* the change is carried out. This means that existing inequalities must be addressed rather than exacerbated. A just transition must be inclusive and participatory, identifying and including key actors and communities that are marginalised, including women farmers, pastoralists and indigenous peoples. Farmers, workers and communities must be given a seat at the table and opportunities to shape their own future. Comprehensive policy frameworks must provide joined-up solutions, positive opportunities for change for farmers and workers, and support to make the required shifts in practice or economic diversification, including through investment, training, and social protection.[23]

Recommendations: The KJWA should provide guidance and input to the development of NDCs, NAPs and GCF policies or proposals, that address GHGs from the livestock sector by shifting to less and better livestock production, based on the principles outlined above. These can include:

1. Ensuring livestock production contributes to ecosystem restoration through for instance, low stocking densities and well-managed pasture.
2. Supporting measures to eliminate deforestation, ecosystem destruction and land degradation from the livestock sector, including feed.
3. Suggesting financial and policy incentives that shift government support away from factory farming and environmentally damaging production practices towards measures that support farmers transitioning to agroecological practices.
4. Elevating public policies and interventions that help reduce the total numbers of livestock in production and consumption in over-producing and consuming regions.
5. Support governmental efforts to regulate agribusiness' livestock emissions and ensure that producers are paid their cost of production plus a reasonable profit, taking into account investments they must make to transition to environment and climate friendly production methods.

[23] Anderson, 2019. Principles for a Just Transition in Agriculture. ActionAid International. Available: https://actionaid.org/publications/2019/principles-just-transition-agriculture

6. Recommend training and support for farmers and regions to move away from industrial meat production. This can either be used to help small and medium-size farmers to take up agroecological (or organic) livestock farming practices; building integrated and diversified farming systems where livestock plays a role; shifting to production of vegetable protein and legumes; and individual and regional economic diversification to reduce national economic dependence on livestock production and export.
7. Elevate measures to shift diets towards greater consumption of vegetable protein and less meat, while also taking into account regional and national circumstances.
8. Support recommendations for changes towards planetary healthy diets as part of climate action plans.
9. Learn lessons from COVID-19 measures to strengthen local food systems in meat and animal produce. Reverse consolidation of land, feed, milk, eggs and abattoirs into larger and larger conglomerates. Support systems that revive local direct sales and avoid waste.