

Welcome from the network co-leads
Şeyda Özkan & Nick Wheelhouse

GLOBAL
RESEARCH
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES



8th International
Greenhouse Gas &
Animal Agriculture
Conference
June 5-9, 2022

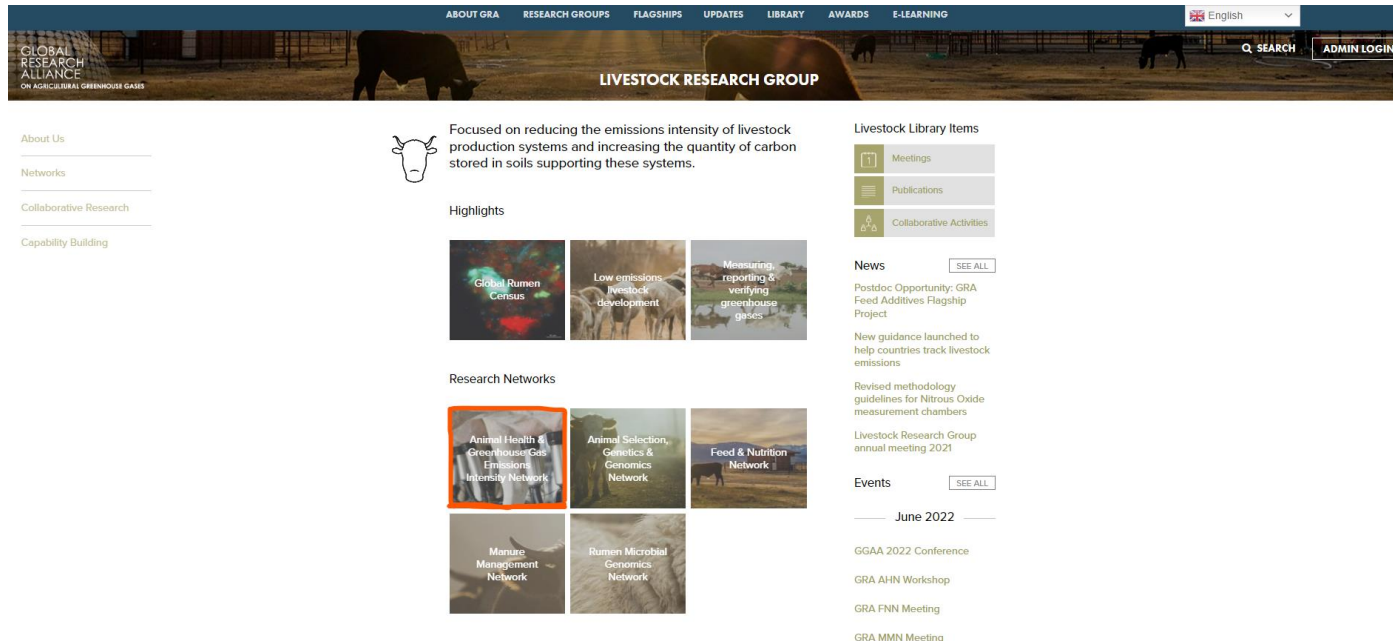
Overview of the network &
Future plans

Side event June 5, 2022

Animal health and GHG emissions intensity network (AHN)

GLOBAL
RESEARCH
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES



Proposed: “GHG emissions intensity can be reduced through efficiency and production gains resulting from livestock health”

Funded earlier by UK DEFRA

First annual workshop in Ireland 2014
Regional meeting in Ethiopia 2014
Second annual meeting in France 2015
MACSUR/AHN joint workshop in the UK 2015
Third annual workshop in Denmark 2016
Webinar 2017
Online workshop 2021
GGAA side event in the USA 2022

<https://globalresearchalliance.org/research/livestock/>

<https://globalresearchalliance.org/research/livestock/networks/animal-health-network/>

Impact of animal health

Impacts at animal and herd level

Reduced voluntary feed intake	Suppressed immune system
Compromised digestion, absorption and utilization of nutrients	Reduced reproductive performance e.g. prolonged calving interval
Reduced availability of nutrients for maintenance	Diminished animal welfare and condition
Increased maintenance requirement for protein	Slowed growth rate and reduced live weight and slaughter weight
Increased number of replacement animals and culling	Reduced product quantity and quality
Shorter productive life	Increased mortality

Environmental, economic and social impacts

Increased or unchanged daily enteric CH ₄ production	Increased CH ₄ and N ₂ O emissions from manure per unit of dry matter intake and per unit of digestible organic matter intake
Increased enteric CH ₄ emissions per kg digestible organic matter intake	Increased emissions per unit of product
Increased CH ₄ yield per unit of dry matter intake	Increased feed- and other variable costs
Unchanged daily CH ₄ and N ₂ O emissions from manure	Reduced profit and livelihoods
Reduced market power and resilience	

Animal health integrative

GLOBAL
RESEARCH
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

FEEDING and NUTRITION

[Link to FNN](#)

BREEDING

[Link to ASGGN](#)

ANIMAL WELFARE

IMMUNE RESPONSE

POLICY

[Link to INDC network](#)

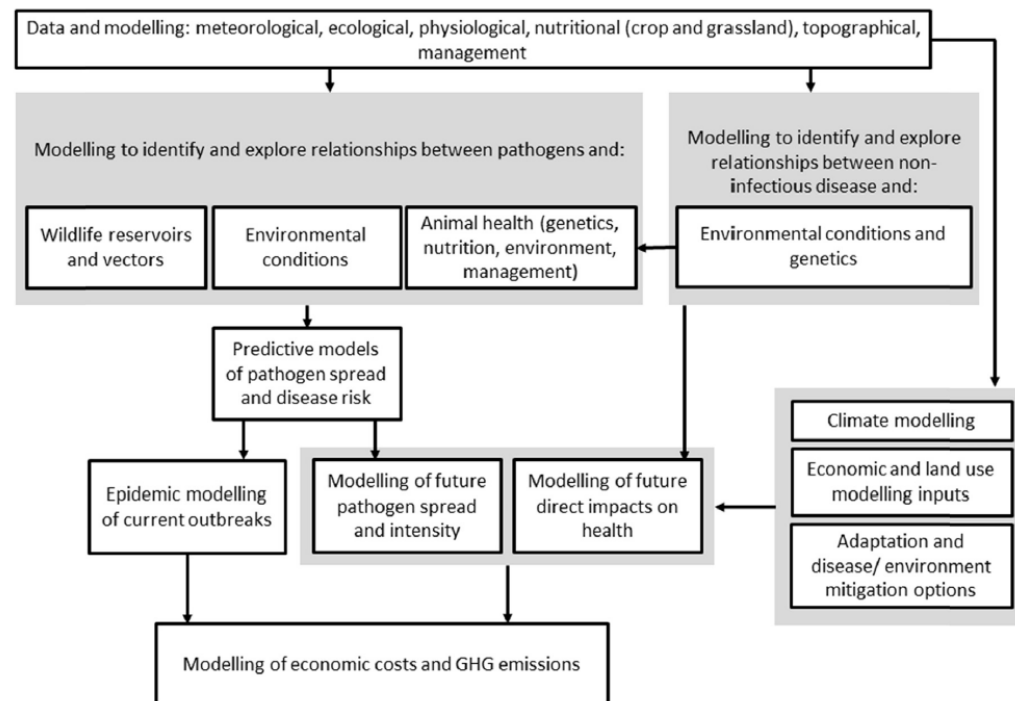
Methane and LCA
emissions, trade-offs

Tools and methods

Species and
production systems,
regions

Over time

MACSUR's task on animal health and GHG emissions



Source: Özkan et al. (2016), Environmental Research



Environmental Research

Volume 151, November 2016, Pages 130-144



Review article

Challenges and priorities for modelling livestock health and pathogens in the context of climate change

Şeyda Özkan ^{a, 1}, Andrea Vitali ^b, Nicola Lacetera ^b, Barbara Amon ^c, André Bannink ^d, Dave J. Bartley ^e, Isabel Blanco-Penedo ^f, Yvette de Haas ^d, Isabelle Dufrasne ^g, John Elliott ^h, Vera Eory ⁱ, Naomi J. Fox ^j, Phil C. Garnsworthy ^k, Nicolas Gengler ^l, Hedi Hammami ^l, Ilias Kyriazakis ^m, David Leclère ⁿ, Françoise Lessire ^g, Michael Macleod ^l, Timothy P. Robinson ^o, Alejandro Ruete ^p, Daniel L. Sandars ^q, Shailesh Shrestha ⁱ, Alistair W. Stott ⁱ, Stanislaw Twardy ^r, Marie-Laure Vanrobays ^l, Bouda Vosough Ahmadi ^{i, 2}, Isabelle Weindl ^{s, s}, Nick Wheelhouse ^e, Adrian G. Williams ^q, Hefin W. Williams ^t, Anthony J. Wilson ^u, Søren Østergaard ^v, Richard P. Kipling ^t ✉

Over time

GLOBAL
RESEARCH
ALLIANCE

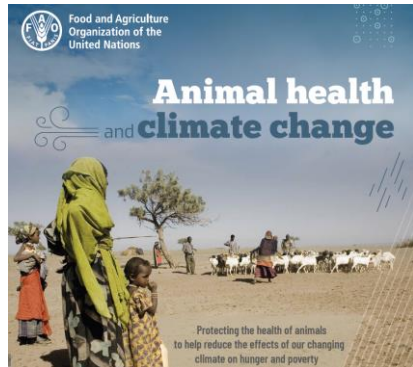
ON AGRICULTURAL GREENHOUSE GASES



Article

Assessing the Greenhouse Gas Mitigation Effect of Removing Bovine Trypanosomiasis in Eastern Africa

Michael MacLeod^{1,*}, Vera Eory¹, William Wint², Alexandra Shaw³, Pierre J. Gerber^{4,5}, Giuliano Cecchi⁶, Raffaele Mattioli⁷, Alasdair Sykes¹ and Timothy Robinson⁷



Review

Dairy Cow Health and Greenhouse Gas Emission Intensity

Dirk von Soosten¹, Ulrich Meyer², Gerhard Flachowsky and Sven Dänicke



The impact of diseases in dairy cows on greenhouse gas emissions and economic performance



Pim Mostert

Study to Model the Impact of Controlling Endemic Cattle Diseases and Conditions on National Cattle Productivity, Agricultural Performance and Greenhouse Gas Emissions

Final Report

Rev. Sci. Tech. Off. Int. Epiz., 2017, 36 (1), 000-000

Integrating livestock health measures into marginal abatement cost curves

M. MacLeod¹ & D. Moran

Quantifying the contribution of livestock health issues to the environmental impact of their production systems

Stephen G. Mackenzie, Trinity College Dublin, Ireland; and Ilias Kyriazakis, Queen's University of Belfast, UK



Animal 15 (2021) 100023



OCTOBER 2020



Dairy Cattle Health and Greenhouse Gas Emissions Pilot Study: Chile, Kenya and the UK

Jonathan Statham, Harriet Scott, Sian Statham and Judith Acton - RAFT Solutions Ltd,
Adrian Williams and Daniel Sandars - Cranfield University



Contents lists available at ScienceDirect

Preventive Veterinary Medicine

journal homepage: www.elsevier.com/locate/prevetmed



Impact of subclinical mastitis on greenhouse gas emissions intensity and profitability of dairy cows in Norway

Şeyda Özkan Gülzari^{a,b,*}, Bouda Vosough Ahmadi^{c,d}, Alistair W. Stott^e



Contents lists available at ScienceDirect

Animal The international journal of animal biosciences



Short communication: Identifying key parameters for modelling the impacts of livestock health conditions on greenhouse gas emissions

R.P. Kipling^a, A. Bannink^b, D.J. Bartley^c, I. Blanco-Penedo^d, P. Faverdin^e, A.-I. Graux^e, N.J. Hutchings^f, I. Kyriazakis^g, M. Macleod^h, S. Østergaardⁱ, T.P. Robinson^j, A. Vitali^k, B. Vosough Ahmadi^j, Ş. Özkan^{b,l,*}



New publication

GLOBAL
RESEARCH
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

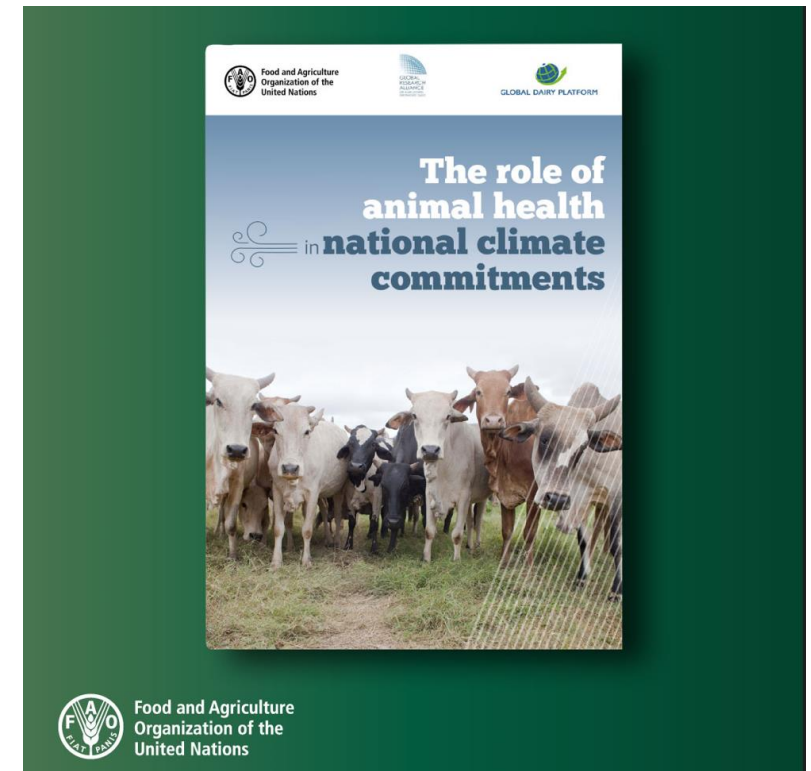
Nationally Determined Contributions (NDC) are backbone to achieving the goals of Paris Agreement

BUT

Role of improved animal health measures in NDCs as an option for mitigation and adaptation is limited:

4 countries out of 148 submitting new or updated NDCs refer to animal health in the context of adaptation and/or adaptation with mitigation co-benefits

Methodological challenges e.g Tier 2/3 approach
Challenges at enabling environment level
Research and innovation gaps



Required citation:

Özkan, Ş., Teillard, F., Lindsay, B., Montgomery, H., Rota, A., Gerber P., Dhingra M. and Mottet, A. 2022. *The role of animal health in national climate commitments*. Rome, FAO. <https://doi.org/10.4060/cc0431en>

<https://www.fao.org/documents/card/en/c/cc0431en>

In the AHN now

GLOBAL
RESEARCH
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

Further reading material – check out website

<https://globalresearchalliance.org/research/livestock/networks/animal-health-network/>

Newsletter – send new publications and announcements related to network to Yenny at yennyruiz2211@gmail.com

Webinar 2022 – nominations welcome

COST proposal 2022

Review paper

Agenda today

GLOBAL
RESEARCH
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

Three presentations

Panel discussion

COST proposal objectives and discussion

Closing