Food and Agriculture Organization of the United Nations

BRIEFING PAPER

ENHANCING ADAPTATION IN AGRICULTURE IN SOUTHEAST ASIA:

Support for livestock management systems through the Koronivia Joint Work on Agriculture

OVERVIEW

Southeast Asia is one of the world's most vulnerable regions to climate change. Climate hazards such as heat waves and long-term temperature increase, erratic rainfall patterns, and other extreme climatic events, including strong typhoons and severe droughts, have significant adverse effects and impacts on ecosystems, farmer livelihoods and many other aspects of society.

Climate change presents a threat to agricultural production and, by extension, to livelihoods and food security, ecological stability, and sustainable development. It is already impacting the productivity of key staple crops in Southeast Asia, namely rice, maize and cassava. Future climate change will exacerbates hazards and create further risks to the productivity of these staples and broader agricultural systems in the region. This is made especially clear by the fact that the Nationally Determined Contributions (NDCs) of all Association of Southeast Asian Nations (ASEAN) Member States (AMS)[1] identify food security and resilience of the agricultural sector as key adaptation priorities (UNFCCC, 2018).

Key messages

Asia is the world's largest producer of pork, comprising **56 percent of global pork production.**

Pig farming is the most important livestock related livelihood activity in the region contributing to about **20–30 percent of household income.**

With the largest share of market in terms of livestock production and relatively high emission intensities for beef and pork, **Southeast Asia is also the second highest emitter of greenhouse gases (GHG) in the world.**

The ASEAN Strategic Plan of Action for Cooperation on Livestock (2016–2020) provides key signals and strategic direction for 'sustainable livestock production and trade to contribute to growth, poverty alleviation, food security, and improved nutrition'.

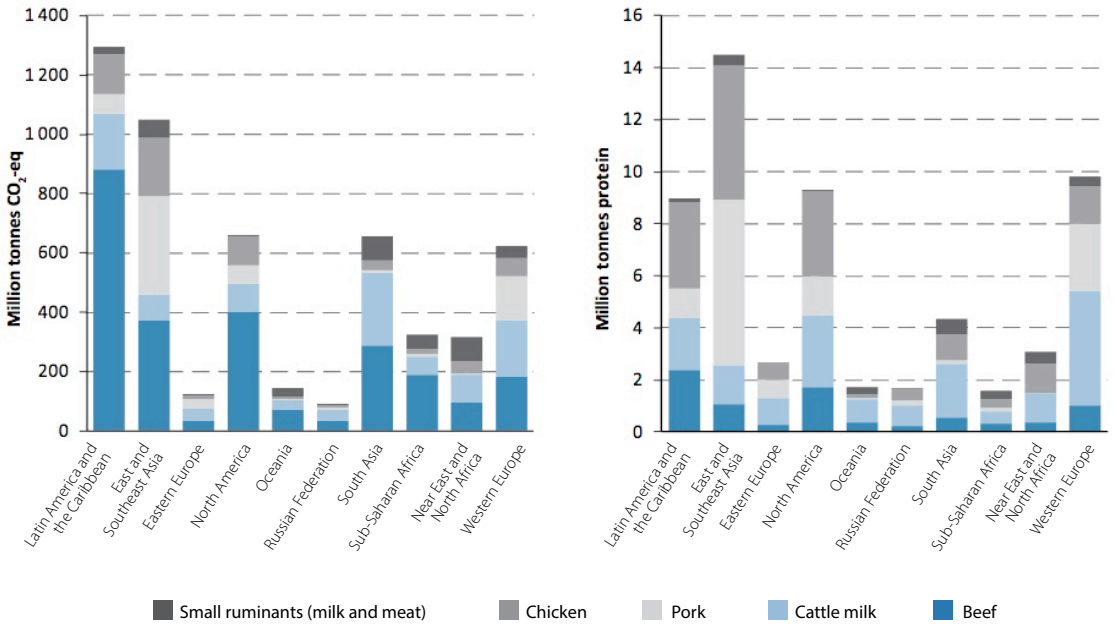
The **ASEAN Negotiators Group on Agriculture (ANGA) developed a common position related to "improved livestock management systems, including agro pastoral production systems and others"** (UNFCCC, 2020) and submitted to the Koronivia Joint Work on Agriculture (KJWA).

The AMS identified several key priority actions for the livestock sector and emphasized the **need for scaling up financial support, technology transfer and capacity building needs.**

[1] Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam.

CLIMATE CHANGE IMPACTS ON LIVESTOCK IN THE REGION

Global livestock production and greenhouse gases emissions from livestock, by commodity and regions



Source: Gerber, P.J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Falcucci, A. & Tempio, G. 2013. Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities. Food and Agriculture Organization of the United Nations (FAO), Rome *www.fao.org/3/i3437e/i3437e.pdf*

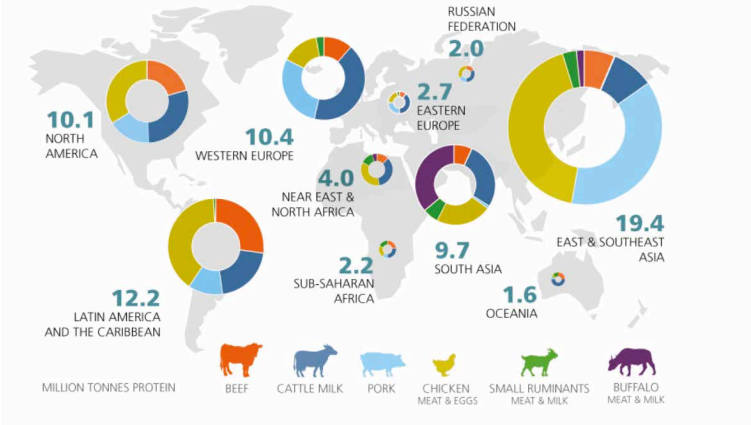
Livestock plays a very important role in Asia, not only as a major source of protein and crop nutrients, but also as an additional source of income.[2] Asia is the world's largest producer of pork, comprising 56 percent of global pork production, which is much higher than Europe and America, that account for about 25 percent and 17 percent respectively. Rearing pig is the most important livestock related livelihood activity in the region contributing to about 20–30 percent of household income. Due to its importance in the region and global demand, it is expected that pig production systems will further continue to expand and intensify in the future. Other than pork, rearing poultry and cattle is also very popular in the region. With the largest share of market in terms of livestock production and relatively high emission intensities for beef and pork, Southeast Asia is also the second highest emitter of GHG in the world. The main sources of emissions, among several, are feed production, manure application, and on–farm energy usage and post–farm activities.

Changes in climate patterns, resulting in the erratic pattern of floods and droughts, are seriously affecting livestock and its management in the region. Climate change is expected to decrease animal production unless adaptation actions are consistently undertaken and implemented. Therefore, designing strategies and measures to enhance the resilience of agricultural systems, including livestock management, to climate variability and change are imperative for achieving food security and are key priorities for countries in Southeast Asia. Technical potential for mitigation in the livestock sector in the region is high and with improvements in manure management and through the adoption of energy saving technologies, emissions from industrial pig production systems can be reduced by 16–25 percent of the baseline scenarios. High mitigation potential also exists in improving feed quality and animal performances. While best practices exist, there are significant challenges for countries too.

[2] The region is home to 2.6 billion chickens, 225 million ducks, 15 million head of buffalo, 47 million head of cattle, 71 million head of pigs, 26 million head of sheep and 12 million head of goats to feed over 620 million ASEAN inhabitants. Source: www.fao.org/3/i3166e/i3166e00.pdf

Regional total emissions and their profile by commodity

(emissions allocated to non-edible products and other services not included)



Source: *www.fao.org/gleam/results/en/*

REGIONAL COOPERATION ON LIVESTOCK

AMS recognize the need for close coordination and collaboration among ASEAN communities to address the transboundary elements of the impacts of climate change. Several guiding documents and institutional arrangements already exist within the ASEAN framework to support regional cooperation on climate change in agriculture, *inter–alia:*

- ASEAN Socio–Cultural Community Blueprint (ASCC), Section D10 (Responding to Climate Change and Addressing Its Impacts);
- ASEAN Climate Change Initiative (ACCI);
- ASEAN Multi–Sectoral Framework on Climate Change: Agriculture, Fisheries and Forestry towards Food Security (AFCC);
- Guidance Note on Mainstreaming Climate Change in the Sectoral Working Groups of the AFCC;
- Vision and Strategic Plan for ASEAN Cooperation on Food, Agriculture and Forestry (FAF) 2015–2025;
- ASEAN Integrated Food Security Framework (AIFS);
- ASEAN Technical Working Group on Agricultural Research and Development (ATWGARD);
- ASEAN Climate Resilience Network (ASEAN–CRN);
- ASEAN Negotiating Group on Agriculture (ANGA).

ASEAN–CRN was formally established in 2015 at the 37th Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry (SOM–AMAF), through Vol. I of the ASEAN Regional Guidelines for Promoting Climate Smart Agriculture (CSA) Practices ("CSA Guidelines"). The Network serves as a platform for regional exchange, particularly for sharing information, experiences and expertise on CSA. It contributes to enhancing AMS efforts in adaptation in the agriculture sector, including in relation to livestock management.[3]

At the same session, the SOM–AMAF endorsed the **ASEAN Strategic Plan of Action for Cooperation on Livestock (2016–2020)**. The Plan recognizes that the livestock sector makes an important contribution to national economic output, employment, and food security in the ASEAN region, although its relative importance varies across the AMS. The share of intensive livestock management in more developed AMS is increasing, while smallholder livestock continues to dominate in other AMS. In the latter, smallholder livestock plays key roles in poverty alleviation, food security and nutrition, and gender equality.

Livestock is projected to remain a crucial sector in the region because of its contribution ensuring availability of high–value food and nutrition, "the demand for which will continue to grow with economic growth and urbanization", even as smallholder livestock systems continue to play a key role. The Plan of Action is therefore designed as a "living document" which could be updated periodically to adjust to AMS needs.

In addition, the ASEAN Sectoral Working Group on Livestock (ASWGL) has been established to

[3] See https://asean–crn.org

develop and implement activities in the livestock sector, such as the ASEAN Standards in Livestock for Vaccines and Good Animal Husbandry Practices.

The Plan of Action provides key signals and strategic direction for livestock management systems as a whole, and the role these play in climate change adaptation in agriculture. Its **overarching goal** is for "sustainable livestock production and trade to contribute to growth, poverty alleviation, food security, and improved nutrition" in the ASEAN region. Its **specific objectives** include:

- promotion of cooperation in research, technology transfer and institution-building, and introduction of regulatory measures for reducing production risks and instability, and for sustainable productivity improvement and natural resource management including **livestock impact on the environment and climate change**; and
- promotion of greater smallholder participation in market for poverty alleviation, **food security, nutrition and gender equality**.

Vol. II of the CSA Guidelines (ASEAN, 2017), endorsed by the 39th SOM–AMAF in 2017, provides a concrete picture of the role of livestock management systems in improving climate resilience in agriculture, in the ASEAN region and in specific AMS. Among Integrated Farming Practices, for example, livestock management is shown to provide benefits related to ecology, economics, and health (2017).

The document also points out challenges in implementing these systems while including the "no one-size-fits-all model" because each system depends on the given landscape and micro-climate. There are also technical planning requirements which require high levels of knowledge and expertise, as well as data challenges related to socio-economic and agricultural production information – including data on livestock production – which are crucial to the delivery of climate-related services in the agricultural sector (2017). The document re-emphasizes the importance of regional cooperation in addressing challenges in, and improving delivery of, climate services in the agricultural sector.

RESPONDING TO CHALLENGES BEYOND THE ASSOCIATION OF SOUTHEAST ASIAN NATIONS

The various arrangements and guiding documents within the ASEAN framework provide a solid foundation for identifying and sharing best practices and technology, capacity-building, and other kinds of support between and among AMS on livestock management systems. These have in fact been harnessed by countries through regular bilateral and multilateral exchanges, the latest of which involved the formulation of views on improved livestock management in the context of the United Nations Framework Convention on Climate Change (UNFCCC).

Coordinating through the ASEAN Negotiators Group on Agriculture (ANGA), ASEAN developed a common position related to "improved livestock management systems, including agropastoral production systems and others, (UNFCCC, 2020)" submitted to the Koronivia Joint Work on Agriculture under the Subsidiary Body for Scientific and Technological Advice (SBSTA) and Subsidiary Body for Implementation (SBI) of the UNFCCC.

The Koronivia Joint Work on Agriculture[4] was established in 2017 at the 23rd Conference of the Parties (COP) to the UNFCCC. The decision officially recognizes the unique role that agriculture plays in tackling climate change while considering the vulnerability of the sector to climate change and approaches to achieve food security. The Koronivia roadmap adopted in 2018 operationalized the work by providing a timeline of workshops on six key topics organized by the UNFCCC secretariat. Between each session, Parties and observers are invited submit their views[5] on how this work should take shape.

In the ASEAN submission, AMS have called on the SBSTA and SBI, in close cooperation with the financial mechanism of the Convention, to consider the following priorities.

- AMS have identified the need to facilitate and promote adaptation actions to improve the resilience of livestock production systems. At the same time, the existing characteristics of these systems, which may differ from site to site, should be considered. In ASEAN, these

[4] See www.fao.org/climate-change/our-work/what-we-do/koronivia/en/

[5] See https://www4.unfccc.int/sites/submissionsstaging/Pages/Home.aspx

include the dominance of smallholders in certain communities, the need for gender -balanced approaches, and the lack of information on collection/distribution systems.

- Exchange of information is considered an important component of the KJWA, especially to facilitate the sharing of best practices. AMS have already identified some elements and practices that could contribute to livestock resilience, such as improved feed quality, the use of feed concentrate, and improved grass and legume species in forage systems. Fodder quality improvement also provides a co-benefit in terms of reducing methane-emission intensity from enteric fermentation. AMS agree that the constituted bodies of the UNFCCC and the financial mechanism of the Convention could play an important role in research to improve fodder quality, and help in identify and facilite the development of improved feed and fodder systems in the region.

The identified elements and practices should be further developed and advanced to the level of proven technologies which could be scaled out to a greater population of livestock farmers, to allow them to adapt to the changing climate. The lack of financial resources is a substantial barrier, such that further support is necessary to enable progress in this area. At the same time, there is a need for efficient capacity building among farmers, especially in remote areas, to prepare them to adapt to the coming changes.

NEED FOR SUPPORT TO ADVANCE WORK UNDER THE KORONIVIA JOINT WORK ON AGRICULTURE

The AMS emphasize the importance of financial support from various climate change-related sources, as well as technology transfer and capacity building for, but not limited to:

- development of analytical tools; and support for enhanced utilization of available tools. For example, Livestock Sector Investment and Policy Toolkit (LSIPT) and Livestock Policy Simulation Model (LPSM) can be used to develop livestock policy in Southeast Asia while Global Livestock Environmental Assessment Model (GLEAM-i) can be used for data analysis;
- improving livestock production and a more sustainable supply of safe livestock and livestock product in Southeast Asia, requires that numerous production, health and welfare constraints be addressed, including: prevalence of important infectious and parasitic diseases, undeveloped trading, meat processing and marketing systems, limited veterinary and extension service capacity;
- establishment of a knowledge and information sharing platform or mechanism;
- expertise and experience sharing and training;
- support for the development or improvement of relevant legislation and guidelines, including for strengthening coordination, as well as policy developments that recognize and adapt to changes in land use, animal health and production, transboundary disease management, animal movement control and traceability of agricultural products from farm to plate; and
- support for development in livestock production via improving processing and marketing to enable smallholder farmers to participate in emerging livestock markets and expand other agricultural enterprises, improving rural livelihoods, with potential reductions in rural poverty and increased food security.

Scaling up financing to support actions within the sector has been identified as an immediate priority. AMS recommend that the Standing Committee on Finance be requested,

- to identify ways to accelerate and expand climate finance for agriculture under the Convention's finance mechanism; and
- to develop mechanisms to leverage additional sources of financing for climate action in agriculture, including through multilateral financial institutions and from the private sector.

With respect to livestock management technologies, the Technology Mechanism under the Convention should play an important role in facilitating wider adoption of technological innovations, by helping to find ways to identify and remove technical, economic, and institutional barriers to the uptake

of technologies, including for climate-informed fodder production and livestock management, animal movement control (livestock registration and identification system) and traceability and food safety (antimicrobial usage and antimicrobial resistance). Access to these and other technological innovations could be improved by requesting the Technology Executive Committee,

- to prioritize agriculture-related technology transfer efforts under the Climate Technology Center and Network (CTCN); and
- to facilitate support from relevant technical agencies for the context-specific application of sector technologies.

Support from the UNFCCC, including its constituted bodies and financial mechanisms, will strengthen ASEAN's regional framework and approaches to adaptation and resilience in the agriculture sector. This will enable AMS to build on their existing initiatives both in-country and at regional level, to undertake more effective contributions to achieving global goals in adaptation and their mitigation co-benefits.

Acknowledgements

FAO acknowledges the technical inputs and valuable contributions of Parabukas and the ASEAN Climate Resilience Network in preparing the draft of this brief.

References

ASEAN. 2015. *ASEAN Regional Guidelines for Promoting Climate Smart Agriculture (CSA) Practices Vol. I.* Thirty Seventh Meeting of The ASEAN Ministers on Agriculture and Forestry (AMAF). Makati City, Philippines, 10 September 2015. [Cited 19 May 2020]. www.asean.org/storage/images/2015/October/ASEAN-Regional-Guidelines-on-Promoting-CSA-Practices/ASEAN%20Regional%20Guidelines%20on%20Promoting%20CSA%20Practices-endorsed%2037th%20AMAF.pdf

ASEAN. 2016–2020. *Strategic Plan of Action for Cooperation on Livestock (2016-2020)* [online] https://asean.org/wp-content/uploads/2016/10/Strategic-Plan-of-Action-for-the-ASEAN-Cooperation-in-Livestock-2016-2020.pdf

ASEAN. 2017. *ASEAN Regional Guidelines for Promoting Climate Smart Agriculture (CSA) Practices Vol. II.* Thirty Ninth Meeting of The ASEAN Ministers on Agriculture and Forestry (AMAF). Chiang Mai, Thailand, 28 September 2017. [Cited 19 May 2020]. [online] https://asean.org/wp-content/uploads/2012/05/19.-CSA-Guidelines-Vol-2-for-ASEAN-Website.pdf

Crumpler, K., Dasgupta, S., Federici, S., Meybeck, M., Bloise, M., Slivinska,V., Salvatore, M., Damen, B., Von Loeben, S., Wolf, J. and Bernoux, M. 2020. *Regional analysis of the nationally determined contributions in Asia – Gaps and opportunities in the agriculture and land use sectors.* Environment and Natural Resources Management Working Paper No. 78. Rome, FAO. [online] www.fao.org/3/ca7264en/CA7264EN.pdf

Deka, R.P., Grace, D., Lapar, M.L. and Lindahl, J. 2014. *Sharing lessons of smallholders' pig system in South Asia and Southeast Asia: A review.* Presented at the National Conference on Opportunities and Strategies for Sustainable Pig Production, Guwahati, India, 20-21 December 2014. Nairobi, Kenya: ILRI

FAO. 2011b. *Global livestock production systems*, by T.P. Robinson, P.K. Thornton, G. Franceschini, R.L. Kruska, F. Chiozza, A. Notenbaert, G. Cecchi, M. Herrero, M. Epprecht, S. Fritz, L. You, G. Conchedda & L. See. Rome. As cited in Gerber, P.J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Falcucci, A. & Tempio, G. 2013. Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities. Food and Agriculture Organization of the United Nations (FAO), Rome.

Gerber, P.J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Falcucci, A. & Tempio, G. 2013. *Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities.* Food and Agriculture Organization of the United Nations (FAO), Rome

Lemke U., Kaufmann B.,They L.T, Emrich K. & Valle Zarate A. 2007. *Evaluation of Biological & Economic Efficiency of Small Holder Pig Production Systems in North Vietnam, Trop Animal Health Prod 39: 237-254.* As cited in Deka, R.P., Grace, D., Lapar, M.L. and Lindahl, J. 2014. Sharing lessons of smallholders' pig system in South Asia and Southeast Asia: A review. Presented at the National Conference on Opportunities and Strategies for Sustainable Pig Production, Guwahati, India, 20-21 December 2014. Nairobi, Kenya: ILRI

UNFCCC. 2018. *ASEAN Submission to the Koronivia Joint Work on Agriculture (SBSTA 49)* [online]. [Cited May 19 2020]. [online] www4.unfccc.int/sites/SubmissionsStaging/Documents/201810291449---ASEAN%20Submission%20to%20UNFCCC%20Modalities-19Oct2018.doc.pdf

UNFCCC. 2020. *ASEAN Submission to the Koronivia Joint Work on Agriculture (SBSTA 52)* [online]. [Cited 19 May 2020]. [online] www4.unfccc.int/sites/SubmissionsStaging/Documents/202004181609---Submission%20by%20ASEAN%20on%20KJWA%202(e)%20and%202(f).pdf

FOR FURTHER INFORMATION, CONTACT:
Beau.Damen@fao.org
Srijita.Dasgupta@fao.org