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## **Demand-side Interventions Necessary to Curtail Food and Agriculture Emissions**

Brighter Green\* welcomes this opportunity to submit recommendations on elements to be included in the Koronivia Joint Work on Agriculture (KJWA), in response to Decision 4/CP.23.

It is abundantly clear—now more than ever—that agriculture is a key component of international climate change policy. Agriculture is not only strongly impacted by climate change, it is also one of the most significant contributors to anthropogenic emissions. Given the complexity of food security and socioeconomic realities surrounding agricultural policy and practice, Parties must carefully and holistically consider all actual and potential actions in the sector. We applaud the Parties for elevating this important issue through the KJWA and proposed workshops, expert meetings, or other means to ensure positive and permanent change.

### *Summary of Recommendations*

- **The KJWA must set clear goals for permanent agricultural climate change mitigation in line with UNFCCC Article 2 and the Paris Agreement**, while ensuring that any actions on agriculture meet key development criteria to ensure a more sustainable future.
- Thus, **the KJWA must create safeguards**—a set of social and environmental standards—to ensure that food security, livelihoods, and many other socioeconomic dimensions in agriculture are protected, and in no way harmed, by decisions taken under the UNFCCC on agriculture.
- **Parties must consider demand-side solutions.** The science shows that it is virtually impossible to reach global climate goals without addressing food demand, and that demand-side solutions may offer greater mitigation opportunities with fewer tradeoffs than attempts to improve supply-side efficiencies. Such opportunities include dietary change as well as addressing food waste.
- In line with the Paris Agreement recommendations for "Enhanced Action Prior to 2020," **the KJWA should recognize the social, economic, and environmental value of mitigation actions, including the co-benefits for health and sustainable development.** A prime example is the promotion of sustainable and healthy dietary patterns.
- To realize its goals, the KJWA must not be limited to the black-letter outline of Decision 4/CP.23. Instead, **Parties must plan for inclusive expert workshops and submissions on each topic of importance**, which will help SBSTA and SBI fulfill the goals of the KJWA.
- **The KJWA must evaluate and implement modes of action that will ensure the goals of the process are realized**, including recommendations for further work or opportunities outside of SBSTA and SBI where necessary.

\* This text was prepared by Brighter Green, the Johns Hopkins Center for a Livable Future, and faculty from the Environmental Science Program at Loyola Marymount University as a collaborative submission on the Koronivia Joint Work on Agriculture.

## **Background**

The Agriculture, Forestry, and Other Land-Use sector (AFOLU) contributes 24%<sup>1</sup> of global anthropogenic GHGs. Yet, the livestock sector alone accounts for at least 14.5%<sup>2</sup> of global GHG emissions. At the same time, with population growth, urbanization, and increasing per-capita consumption of animal products (associated with rising incomes), it is projected that demand for livestock products will increase 70% by 2050.<sup>3</sup> Several studies suggest that we cannot meet the ultimate Paris Agreement goal of keeping warming to 2° Celsius, much less to 1.5°, unless we reign in agricultural emissions.<sup>4,5</sup> Reducing consumption of food from animal sources, compared to current global trends, is crucial for meeting this goal while also allowing for emissions from other sectors.<sup>6</sup>

In addition, one third of the food produced globally is wasted.<sup>7</sup> Without accounting for GHG emissions from land-use change, the carbon footprint of food produced and not eaten is estimated to be 3.3 tonnes of CO<sub>2</sub> equivalent.<sup>8</sup> As such, food wastage (i.e. food waste and loss) ranks as the third top GHG emitter after the U.S. and China.<sup>9</sup>

Although improving farm animal management systems and agriculture intensification could potentially reduce some of the food and emissions gaps expected in the future and reduce per unit emissions,<sup>10</sup> such strategies will not be sufficient to reduce *net* livestock emissions. Additionally, intensive animal production is often paired with negative tradeoffs for public health, ecosystems, animal welfare, and other socioeconomic factors.<sup>11,12</sup>

Demand-side changes, on the other hand, offer potentially larger mitigation benefits, may avoid negative tradeoffs,<sup>13</sup> and are necessary<sup>14</sup> to meet climate goals. For example, shifting diets in populations with high consumption of animal products towards more plant-centric meals has great potential for climate mitigation. Substantially reducing *global average* meat intake by 2050 could reduce global agriculture emissions by an estimated 55-72%.<sup>15</sup> Cutting global food waste in half by 2050 could yield additional emissions reductions of 4.5Gt, a 22% decrease from projected food production-related emissions by mid-century.<sup>16</sup> Combined efforts that shift diets and reduce food waste have even further climate mitigation potential.<sup>17</sup>

## **Recommendations**

- 1. The KJWA must set clear goals for permanent agricultural climate change mitigation in line with UNFCCC Article 2 and the Paris Agreement.**

Without an effective vision for both the thresholds for human development on a planet with diminishing resources (the concept of planetary boundaries<sup>18</sup>), and what the UNFCCC process can offer through the KJWA or other means, the potential for the KJWA to lead to real, on-the-ground change in climate change mitigation and adaptation will be questionable. Parties should discuss science-based emissions goals for the agriculture sector. Further, as it has been emphasized in prior UNFCCC discussions on agriculture, this sector holds special importance due to its impacts on food security, livelihoods, and other socioeconomic dimensions. Such factors should be considered when setting goals under the KJWA. The SBSTA, by its nature, offers a great opportunity to evaluate the science for what is needed to meet climate goals in this sector.

- 2. The KJWA must create safeguards.**

Based on the special importance of the agricultural sector in development, a set of social and environmental standards that ensure food security, livelihoods, and many other socioeconomic

dimensions in agriculture, including gender equality and equity, are protected, and in no way harmed, by decisions taken under the UNFCCC on agriculture is essential. SBSTA could evaluate what safeguards could help guide Parties' actions, particularly *ex ante*, while the SBI could help guide modes of action to ensure such safeguards are effectively implemented.

### 3. The KJWA must address demand-side interventions.

It is no longer appropriate or sufficient for Parties to ignore demand-side interventions in agriculture and food systems: a growing body of research demonstrates that climate goals *cannot* be met without them. Potential exists for such interventions to dovetail with beneficial impacts on public health and environmental sustainability and protection, while also avoiding negative tradeoffs. Because this area is relatively new, even outside of the UNFCCC process, it offers an opportunity for Parties to explore creative new strategies for bringing about demand-side food and agricultural changes, while acknowledging the work that has been done so far.

Many countries, cities, and civil society groups have already begun recognizing demand-side solutions as critical for climate change. To address high consumption of animal-based foods:

- At the national level, several countries recommended reducing meat consumption for health and sustainability in their most recent dietary guidelines.<sup>19</sup>
- Cities are implementing new methods for measuring emissions. The C40 group recently estimated the consumption-based emissions of 79 cities.<sup>20</sup> Food was a top source of those emissions. Such accounting is an important step towards taking demand-side action, and developing the tools and information needed to track progress from such interventions.
- Partnerships between NGOs and food service providers have resulted in procurement standards that emphasize purchasing (and serving) more plant-based food (e.g. the world's largest contract food service company<sup>21</sup> and the world's largest food and beverage company<sup>22</sup>).

To address wasted food:

- The United Nations and many individual countries have committed to halving wasted food and reducing food loss by 2030. Food waste prevention is an integral part of the E.U.'s transition towards a circular economy and should be part of the emerging circular economy at the global level.
- Solutions should be tailored to fit different contexts. For example, in developed countries such as the U.S., where most waste occurs at the consumer and retail level, campaigns to clarify expiration dates labels on food and programs that educate consumers about food waste are underway. In less developed countries where most waste occurs before ever reaching consumers, improvements in infrastructure, roads, safe storage, and improved market access have the potential to more efficiently and safely bring food to consumers while reducing waste.

Despite the growing body of evidence and interventions to support dietary shifts and reduce wasted food, much more knowledge of proven pilot initiatives, policies, and scaled-up solutions is needed. New ideas and ways of thinking are crucial, as existing initiatives are promising, but early-stage and for the most part, small-scale in scope. By drawing from existing efforts and soliciting participation from experts and practitioners who are working on these issues, SBSTA, SBI, and other forums,

where appropriate, can take the steps needed to expand demand-side, agricultural mitigation strategies that are critical for meeting international climate goals.

**4. The KJWA should recognize the social, economic, and environmental value of mitigation actions, including the co-benefits for health and sustainable development.**

The IPCC has highlighted the opportunities to achieve co-benefits from actions that reduce emissions and also improve health, such as shifting consumption away from animal products in high meat-consuming societies, especially of ruminant origin, towards less emissions-intensive and healthy diets.<sup>23</sup> The Paris Agreement recommendations for "Enhanced Action Prior to 2020" also recognizes the dual value of such mitigation efforts.

Food-based dietary guidelines that include sustainability criteria are key to shifting dietary patterns. A general transition to more plant-based diets—in line with WHO and other international dietary guidelines—could lead to lower GHG emissions as well as likely reductions in diet-related non-communicable diseases, and associated healthcare costs.<sup>24</sup>

**5. Parties must plan for inclusive expert workshops and submissions on each topic of importance.**

In the past, discussions on agriculture have not been as inclusive or transparent as they should have been. Instead, to fully and holistically meet KJWA goals, the process should include consultation and engagement with NGO experts; those with knowledge of traditional agricultural practices; and those who may be most affected by climate change and climate-change strategies. Additionally, in this vein, efforts should be made to ensure transparency and avoid conflicts of interest, particularly for KJWA participants with significant economic stakes in the outcomes of the process. This will help ensure the process includes the most effective and positive outcomes, as well as lend validity to those outcomes.

**6. The KJWA must evaluate and implement modes of action that will ensure the goals of the process are realized.**

It is essential that steps are taken to ensure that the workshops and meetings organized by the KJWA lead to mechanisms and strategies for effectively addressing agriculture's role in climate change, including outside of SBSTA and SBI where necessary.

The work of the KJWA also must evolve, as needed, to meet its goals. While Decision 4/CP.23 offers a useful guideline to start the work of the KJWA, Parties should view the timeline and topics flexibly to ensure adequate time and input to meet the goals of the work program. Of course, trying to have significant progress prior to the next NDC deadline is important. But long-term strategies need to be carefully considered in agriculture, which may require work to be expanded in certain areas or timelines. Parties should be cognizant of this as they proceed through the process and associated meetings.

### ***Conclusion***

In conclusion, we stress the importance of implementing demand-side agricultural solutions, including shifting diets and addressing food waste, to meet climate goals. As this submission has demonstrated, such actions also have an array of crucial co-benefits for human societies and the ecosystems on which we all depend.

**Brighter Green** is a public policy action tank that works to raise awareness of and encourage policy action on issues that span the environment, animals, and sustainability. Based in New York, Brighter Green works in the U.S. and internationally with a focus on the countries of the global South and a strong commitment to ensuring and expanding equity and rights. On its own and in partnership with other organizations and individuals, Brighter Green generates and incubates research and project initiatives that are both visionary and practical. It produces publications, websites, documentary films, and programs to illuminate public debate among policy-makers, activists, communities, influential leaders, and the media, with the goal of social transformation at local and international levels.  
<http://www.brightergreen.org>

**The Johns Hopkins Center for a Livable Future** is an interdisciplinary academic center at the Johns Hopkins Bloomberg School of Public Health dedicated to building a healthier, more equitable, and resilient food system. A leader in food system and public health research, education, policy, and advocacy, the center serves as an important resource for advocates, policymakers, educators, and communities. CLF expertise is applied to several aspects of the food system, including: food production and consumption, food environments, food system policy, resilience and wasted food. The opinions expressed herein are our own and do not necessarily reflect the views of The Johns Hopkins University.  
<http://www.jhsph.edu/clf>

**The Loyola Marymount University (LMU) Environmental Science Program** is committed to academic excellence on environmental and climate sciences and to education on climate change, food, health and sustainability. The Program houses faculty who contribute to the WGI and WGII of the Intergovernmental Panel on Climate Change. An important mission for LMU faculty is the promotion of justice for all.  
<https://cse.lmu.edu/department/environmentalscienceprogram>

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<sup>1</sup> Smith, P., et al. (2014). [Agriculture, Forestry and Other Land-Use \(AFOLU\)](#). In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

<sup>2</sup> Smith, P., et al. (2014), *ibid*.

<sup>3</sup> Food and Agriculture Organization of the United Nations. (2013). [Tackling Climate Change through Livestock – A Global Assessment of Emissions and Mitigation Opportunities](#).

<sup>4</sup> Bajželj, B., et al. (2014). Importance of Food-demand Management for Climate Mitigation. *Nature Climate Change*. DOI: [10.1038/nclimate2353](#).

<sup>5</sup> Popp, A., et al. (2010). Food Consumption, Diet Shifts and Associated Non-CO<sub>2</sub> Greenhouse Gases from Agricultural Production. *Global Environmental Change*. DOI: [10.1016/j.gloenvcha.2010.02.001](#).

<sup>6</sup> Hedenus, F., et al. (2014). The Importance of Reduced Meat and Dairy Consumption for Meeting Stringent Climate Change Targets. *Climatic Change*. DOI: [10.1007/s10584-014-1104-5](#).

<sup>7</sup> Gustavsson, J., et al. (2011). [Global Food Losses and Food Waste: Extent, Causes and Prevention](#). Food and Agriculture Organization of the United Nations.

<sup>8</sup> Food and Agriculture Organization of the United Nations. (2013). [Food Wastage Footprint: Impacts on Natural Resources Summary Report](#).

<sup>9</sup> Food and Agriculture Organization of the United Nations. (2013). *Food Wastage Footprint*, *ibid*.

<sup>10</sup> Capper, J. L. (2012). Is the Grass Always Greener? Comparing the Environmental Impact of Conventional, Natural and Grass-Fed Beef Production Systems. *Animals*. DOI: [10.3390/ani2020127](#).

<sup>11</sup> Casey, J.A., et al. (2015). Industrial Food Animal Production and Community Health. *Current Environmental Health Reports*. DOI: [10.1007/s40572-015-0061-0](#).

<sup>12</sup> Pew Commission on Industrial Animal Farm Production. (2008). [Putting Meat on the Table: Industrial Farm Animal Production in America](#). Baltimore, MD: Johns Hopkins Bloomberg School of Public Health.

<sup>13</sup> Smith, P., et al. (2013). How Much Land-based Greenhouse Gas Mitigation Can Be Achieved without Compromising Food Security and Environmental Goals?. *Global Change Biology*. DOI: [10.1111/gcb.12160](#).

<sup>14</sup> Springmann, M., et al. (2016). Analysis and Valuation of the Health and Climate Change Cobenefits of Dietary Change. *Proceedings of the National Academy of Sciences*. DOI: [10.1073/pnas.1523119113](#).

<sup>15</sup> Kim, B., et al. (2015). [The Importance of Reducing Animal Product Consumption and Wasted Food in Mitigating Catastrophic Climate Change](#). Baltimore, MD: Johns Hopkins Center for a Livable Future.

<sup>16</sup> Bajželj, B., et al. (2014), *ibid*.

<sup>17</sup> Bajželj, B., et al. (2014), *ibid*.

<sup>18</sup> Steffen, W., et al. (2015). Planetary Boundaries: Guiding Human Development on a Changing Planet. *Science*. DOI: [10.1126/science.1259855](#).

<sup>19</sup> Fischer, C. G., and Garnett, T. (2016). [Plates, Pyramids and Planets: Developments in National Healthy and Sustainable Dietary Guidelines](#). Food and Agriculture Organization of the United Nations and Food Climate Research Network.

<sup>20</sup> C40 Cities Climate Leadership Group. (2018). [Consumption-based GHG Emissions of C40 Cities](#).

<sup>21</sup> <http://www.compass-usa.com/school-hospital-menus-add-plant-based-options-meet-growing-demand/>

<sup>22</sup> Footprint Intelligence and Nestlé Professional. (2018). [Action on Sustainable Diets](#).

<sup>23</sup> Smith, K.R., et al. (2014). [Human Health: Impacts, Adaptation, and Co-benefits](#). In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

<sup>24</sup> Springmann, M., et al. (2016), *ibid*.