

A close-up photograph of a branch with several large, yellowish-brown, elongated fruits or vegetables hanging from it. The background is blurred, showing green foliage and a bright sky.

# Agriculture in Climate Change Policy Negotiations

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## Abstract

Agriculture is a sector which gets heavily impacted by climate variability while it also significantly contributes to climate change. Agriculture production contributes about 14% to the total GHG emissions worldwide. This does not include the emissions during agri-food chain, for example, during the production of agricultural inputs and fixed capital equipments, processing and trade of agricultural products. In GHG inventory reports; these emissions are included separately under energy supply, industries and transport. When land use change, land degradation and deforestation due to agriculture are included, the GHG share of agriculture rises to approximately 30–32 %.

Within the agriculture the highest emitter sector is enteric fermentation of farm animals which releases ~40% of the GHG's in the atmosphere. According to FAO data, on an average between 2001-2010 manure left on pasture released 16%, synthetic fertilizers 13%, paddy rice 10%, manure management 7%, and burning of savannah about 5% to the total agriculture emissions.<sup>[1]</sup> While in 2010 the global emissions by sources from agriculture, forestry and other land use changes were 10 billion tones CO<sub>2</sub> equivalent, emissions from energy use in agriculture added another 785 million tones CO<sub>2</sub> equivalent in 2010.<sup>[2]</sup> This suggests that reduction in energy use in agriculture offers a potential mitigation opportunity particularly in developed countries where agriculture is largely practiced as a business activity and it is energy intensive. In developed countries energy consumption per unit food produced is about 3 times more as compared to developing countries. In developing countries, on the other hand, agriculture is the main activity supporting livelihood and area under cultivation is large. This makes their agriculture responsible for more than 75% of the agri-emissions. Developed countries suggest developing and poor countries to mitigate their agricultural emissions by adopting industrialized agri-practices.

1 FAO, "Greenhouse Gas Emissions from Agriculture, Forestry and other Land Use," no. March, p. 2014, 2014.

2 Ibid

The breakup of GHG emission sources from different components of the agri-food chain in the developed and developing countries highlights the difference between the agriculture practiced by different set of countries. For example, as compared to Sweden where the share of GHG emissions during agriculture production is 15-19%, in India is it 87%.<sup>[3]</sup> The large agriculture production area along with many times more livestock headcounts is responsible for the high agri-emissions from India. In New Zealand, Australia, Canada, Sweden and the United States 8, 4, 2, 2 and 2% population is engaged in agriculture activities. While, agriculture provides livelihood to more than 55% population.<sup>[4]</sup>

In Sweden processing, distribution & Retail and consumption contributes 17-20%, 20-29% and 38-45% emissions respectively. As compared to this, in India processing, distribution & retail and consumption contribute only 2, 1 and 10% respectively largely due to the consumption of locally produced fresh food. In developed countries the consumption of processed food is more in vogue. This reflects in carbon emission data of transportation and processing of agri- food chain.<sup>[5]</sup>

So far little stress has been given to mitigate emissions coming from food chains in developed countries. Instead developed countries endorse developing and poor countries to adopt climate smart agricultural practices to mitigate agricultural production emissions. More than 46% agriculture emissions are in the form of nitrous oxide. The main source of nitrous oxide is nitrogen fertilizers. Its excessive use has polluted land and water channels. The climate smart agriculture system relies on nitrogen fertilizers. In addition, this system of agriculture is energy intensive. The concept of reducing emissions through adopting climate smart agriculture practices is dubious. Details about the climate smart agriculture initiatives are given in the later part of the present paper.

There is no doubt that the mitigation in agriculture is required. But how developing world should go about it, should be decided based on the sustainable, scientific and the vast base of traditional knowledge available with their farmers and farming societies. On the other hand, huge GHG reduction opportunities are offered by the

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3 U. Hoffmann, "Assuring food security in developing countries under the challenges of climate change: key trade and development issues of a fundamental transformation of agriculture," no. 201, 2011.

4 "FAO Stats," 2010. [Online]. Available: <http://www.fao.org/docrep/015/am081m/PDF/am081m00a.pdf>.

5 Ibid 3

mitigation on the supply side in the developed world. For example, a shift towards less meat diet and/or more consumption of local food may prove successful in reducing agri-emissions. Further, steps to reduce food wastage –which account about 24% of all the calories being produced for human consumption at present as per WRI data-also offers mitigation opportunities to quickly act onto.<sup>[6]</sup>

## **Agriculture in the UNFCCC Negotiation**

From the starting of the discussions on climate change action plans in early 1990's, developed countries where agriculture is highly mechanized pushed for the inclusion of agriculture in the climate change mitigation sector. Overestimation of methane emissions from the decaying vegetable matter in flooded rice fields especially of the third world countries initially paved the way for it. This led to the discourse on agriculture in UNFCCC to remain inclined towards the mitigation part and placing it alongside sectors such as transport, energy, industry, forestry and waste management for which the parties of the convention have obligations to develop mitigation plans and measures [UNFCCC Article 4.1 (c)].

In the same line Article 10 of the Kyoto Protocol reiterated the commitment for all parties to adopt sectoral mitigation policies and measures. This has reference to the agriculture sector as well.

In the climate change negotiations 'adaptation' which is a requirement of the majority of the farmers, mostly poor and marginal from the developing and poor countries, has remained a difficult subject. There has been a continuing push from the developed world to bring agriculture into the ambit of mitigation, either directly or through the linkages between mitigation and adaptation.

These countries have conceived the focus on mitigation in relation to agriculture in climate change agreement as an additional burden on their small producers. Nations have different vulnerabilities and hence different adaptation requirement- this along with the provision of financial, technical, and capacity-building support for underdeveloped nations have remained major concerns for the developing and poor nations.

6 S. Russell, "Everything You Need to Know About Agricultural Emissions," World Resource Institute, 2014. [Online]. Available: <http://www.wri.org/blog/2014/05/everything-you-need-know-about-agricultural-emissions>.

## Who is Promoting What?

Industrialized countries (Annex I countries of UNFCCC) emit 26% of the global N<sub>2</sub>O from soils, 30% of CH<sub>4</sub> from enteric fermentation and 52% of CH<sub>2</sub> and N<sub>2</sub>O emissions from manure management while they house 17% of the world's population.<sup>[7]</sup> The emissions from manure management are particularly very high because of the use of lagoons for manure management in large-scale confinement operations.<sup>[8]</sup> Annex 1 countries consume largest per capita fertilizers which is the main source of nitrous oxide emissions. As per the FAO data of 2008, per capita fertilizer consumption of New Zealand (0.18431 ton), Australia (0.07072 ton), Canada (0.07721 ton) and the United States (0.05639 ton) are above the world average per capita fertilizer consumption (0.02397 ton). Per capita fertilizer consumption of India is 0.01911 ton which is below the world average.<sup>[9]</sup> No surprise that in 2005 globally New Zealand and Australia are ranked among the top emitters per capita agriculture production.<sup>[10]</sup>

The views of the Annex 1 countries of the UNFCCC have been alike. New Zealand and Japan led the proposals to take a sectoral approach to address agriculture in the climate change discussions in 2009 while EU, Switzerland and the USA supported their views when a new climate change agreement was being expected (UN Doc. FCCC/AWGLCA/2008/16/Rev.1).<sup>[11]</sup>

These countries have been fierce advocates of the inclusion of agriculture mitigation in the carbon trading system despite its poor track record. So far no considerable reductions in GHG emissions could be achieved by existing U.S. carbon markets in California and in the northeastern states. In fact it turned out to be harmful for rural, low-income communities and communities of color. European Union's Emissions Trading Scheme (EU ETS) proved no better and suffered from serious frauds.<sup>[12]</sup>

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7 et al. Smith, P., Martino, D., Cai, Z., Gwary, D., "Policy and technological constraints to implementation of greenhouse gas mitigation options in agriculture," *Agric. Ecosyst. Environ.*, vol. 118, pp. 6–28, 2007.

8 "Submission of the Institute for Agriculture and Trade Policy to the UNFCCC on issues related to agriculture for consideration by the SBSTA in the context of Article 4.1(c) on cooperative sectoral approaches and sector-specific actions," 2012.

9 Ibid 4

10 "Australia's Emissions in the Global Context." [Online]. Available: [http://www.garnautreview.org.au/pdf/Garnaut\\_Chapter7.pdf](http://www.garnautreview.org.au/pdf/Garnaut_Chapter7.pdf).

11 A. Kalfagianni, "The evolving role of agriculture in climate change negotiations : Progress and players," no. Ivm, pp. 1–40.

12 W. Bierbower, "A Brief History of Fraudulent Activity on the EU-ETS," 2011.

In addition, there is no scientifically proven way to accurately measure soil carbon sequestration. Furthermore it offers a non permanent solution that strongly suggests keeping it out of CO2 mitigation programs. The concern is also that carbon offset schemes engages large number of consultants in for carbon accounting and result in wasting of financial resources. This happens at the cost of delaying the chances of direct investment in mitigation of the highest emitters.<sup>[13]</sup>

Based on their national interests Non-Annex I countries have adopted a different position. Large exporter of agriculture goods such as Argentina and Brazil have shown reluctance to have a sectoral approach for agriculture in UN negotiations based on their concerns about the potential trade and competitiveness implications of such proposals.<sup>[14]</sup> The highly vulnerable agriculture system and struggle to provide food to its people led India chose to oppose the inclusion of agriculture in mitigation sector. As an estimate in 2007, India's agriculture sector emitted 334.41 million tons of CO2 equivalent, of which 13.76 million tons was CH4 and 0.15 million tons was N2O. Out of total agri-emissions, 63% was due to enteric fermentation, the source of 21% of emissions were rice cultivation while crop soils emitted 13% of the total CO2 equivalent emission. Livestock manure management and burning of crop residues were responsible for rest of the 2.7% of the emissions. High emissions from enteric fermentation can be attributed to the presence of approx--300 million cattle and buffalo - in the country where livestock rearing is an integral part of the agriculture system. Cattle and buffalo constitute 61% of the total livestock population in India and are source of 60% of the total methane emission in this category.<sup>[15]</sup> The average milk produced by dairy cattle in India is although low (~2.1 kg/day) they provide economic stability to the farmers in distress especially in the face of increasing risk agriculture is exposed to due to climate change. It makes little sense to view them only as a source of methane emissions without considering their overall contribution.

India has maintained the view that the role of agriculture sector is to provide food and this sector should not be seen as one to

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13 "Q&A: Why an agriculture work program at the UNFCCC is the wrong approach for farmers, animal welfare and development," 2012.

14 Ibid 11

15 "Indian Network for Climate Change Assessment (INCCA) India," 2012.

contribute to emissions reductions. The country opposed taking the mitigation aspects in SBSTA and excluded emissions from agriculture from its emissions intensity target communicated in the country's NAMA (UN Doc. FCCC/SBI/2013/INF.12/Rev.3, para 113). In the same line India's INDC discussed agriculture exclusively in the context of adaptation. Its INDC's again made it clear that India does not want to offer sector wise targets including in agriculture.<sup>[16]</sup>

African countries' high priority is their food security. The group has actively advocated development of sector-specific adaptation measures. Many African parties also believe in potential mitigation co-benefits of actions focused on adaptation. Similarly Costa Rica, Uruguay and several other AILAC countries have supported addressing adaptation and food security while also considering mitigation co-benefits of measures adopted in the agriculture sector. [UN Doc. (FCCC/SBSTA/2013/MISC.17/Add.1)]

Against the need of adaptation in agriculture felt by the developing countries, in the climate change negotiations mitigation dominated. In 2007 Bali Action Plan called for consideration of cooperative sectoral approaches and sector specific actions related to mitigation in agriculture. Bali Action Plan was followed for several years and a sectoral approach towards agriculture was taken under the Ad Hoc Working Group on Long-term Cooperative Action (LCA) for long. The part related to agriculture in the draft decision prepared in Copenhagen conference (2009) stated that all parties would take further action and cooperate to agriculture in mitigation as well as establish a work programme on agriculture under SBSTA.<sup>[17]</sup> However, as negotiations at Copenhagen collapsed the decisions could not be finalized.

At COP17 at Durban when the continuous consultations on the issue of sectoral approaches could not solve the deadlock, parties agreed on moving agriculture from sectoral LCA discussions to make agriculture an agenda item in the Subsidiary Body for Scientific and Technical Advice (SBSTA) to focus on scientific and technical aspects of the sector in relation to climate change and understand agricultural issues in politically neutral environment.<sup>[18]</sup>

16 T. Jayaraman, "In Focus Agriculture, Climate Negotiations, and the Paris Summit," vol. 5, no. 2, pp. 2-6, 2015.

17 "CP.15: 'Cooperative sectoral approaches and sector-specific actions in agriculture' contained in the report of the AWG-LCA on its eighth session, held in Copenhagen from 7 to 15 December 2009 FCCC/AW-GLCA/2009/17, Annex J."

18 S. Bickersteth, "OPINION: The current climate of agriculture in the UNFCCC."

In the SBSTA discussions, again, developing countries insisted on their priority for adaptation in climate change particularly for agriculture. They argued that the work under UNFCCC should not be reduced to limiting agri- emissions in developing countries and creation of emission offset credits for sale to developed countries. Instead technical and financial support should be provided by developed countries for assessing vulnerabilities and risks that could lead to adaptation in agriculture which is the focus area for more than 90% countries' National Adaptation Plans of Action (NAPAs). They advocated that the focus should be on agroecological techniques for rebuilding the depleted soil, strengthening farmer networks, sharing of traditional knowledge practices & conservation of agricultural biodiversity and development of local markets to reduce dependence.

A new Climate change agreement could not be reached at Copenhagen because of the top down approach where many countries saw it as an intrusion in their policy formulation. To reach an agreement, before Paris climate conference parties were suggested to submit their national pledges of what they plan to achieve based on their priorities with regard to mitigation and adaptation during a time frame. These voluntary pledges, now known as 'Nationally Determined Contributors (NDC's), further made the priority climate change action areas of countries clear. While '80% of the INDCs submitted by countries in the run up to the COP-21 committed to actions on agricultural mitigation, 90% of INDCs that included adaptation selected agriculture as a priority sector for action.<sup>[19]</sup> Although explicit reference is made within the preamble of the Paris agreement to food security and production, the details about action plans to reach to the climate pledges are rarely there. For example it is only Rwanda that included plans to address food wastes which emit about 8% of global greenhouse gases worldwide.<sup>[20]</sup>

The agreement reaffirms continued and enhanced international support for adaptation to developing countries. This included financial support through mobilization of USD 100 billion per year until 2025 for adaptation and mitigation in developing regions. The amount would be increased from 2025 onwards. It talks about the efforts to avert, minimize and address loss and damage associated with the adverse effects of climate change, such as

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19 C. Core, "Ccafs core w1\_w2 only," 2016.

20 "AGRICULTURE'S ROLE IN CLIMATE CHANGE," 2017. [Online]. Available: <https://jpratt27.wordpress.com/2017/01/05/agricultures-role-in-climate-change-auspol/>.

increased cooperation in early warning systems, risk insurance and emergency preparedness.<sup>[21]</sup>

The results from the Paris Agreement on the issue of adaptation finance will also have impacts on agriculture and allied activities indirectly. Although the references to agriculture in the agreement are rare, it is possible that agriculture may become one of the potential recipients of the funds available under the UNFCCC. The question is that if this happens the funding may be made available to promote the kind of agricultural approaches practiced by the developed countries- now named as Climate Smart Agriculture' that are resource intensive and basically eyes agriculture as business opportunity.

## Climate Smart Agriculture (CSA)

In 2010 FAO coined the term Climate Smart Agriculture. The purpose was to attract climate finance to its agricultural programs in Africa. After the second Global Conference on Agriculture, Food Security and Climate Change, organized in Hanoi by the World Bank and FAO and hosted by the Government of Vietnam CSA gained significance. A year later -at the Global Conference in South Africa plans for a Global Alliance for Climate Smart Agriculture (GACSA) were made. At the UN Climate Summit of 2014 GACSA was formally presented as the international communities' main response towards combating the climate change impact on agriculture.<sup>[22]</sup>

According to the World Bank and FAO, 'Climate-Smart agriculture' is a system that provides developing country farmers "triple win"; helping them to 1) adapt to climate change, 2) increase yields, and 3) mitigate climate change by reducing emissions or sequestering carbon.<sup>[23]</sup>

Although definition includes adaptation, mitigation and stresses on increasing yield, CSA does not clearly highlight what is and what is not climate smart agriculture. This drawback makes one skeptical about CSA as the room has been widely kept open for

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21 A. Durand, V. Hoffmeister, J. T. Roberts, J. Gewirtzman, R. Weikmans, and S. Huq, "Financing Options for Loss and Damage: A Review and Roadmap," pp. 1–22, 2016.

22 "The Exxons of agriculture," Grain, no. September, 2015.

23 "What is climate-smart agriculture?" [Online]. Available: <https://csa.guide/csa/what-is-climate-smart-agriculture>.

inclusion of everything from GM varieties of seeds to chemically laden fertilizers to be labeled as climate smart.

### **What is 'climate smart' for corporations?**

In the absence of clear guidelines after the launch of GACSA, within no time corporations such as Monsanto, Syngenta, the world's largest fertilizer company - Yara, McDonald's, Walmart, DuPont, Dow, Olam, Tyson Foods, PepsiCo, Diageo, Starbucks, Kellogg's, Coca-Cola and Unilever etc. rebranded themselves as "Climate Smart (*Box 1*). Their being onboard on climate smart initiatives and alliances proves that CSA is an effort to earn profit rather than promoting sustainability and equity. They refer climate smart as the

- Use of genetically modified drought and heat tolerant seeds and genetically engineered livestock and fish
- Large scale industrial monocultures and biofuel plantations
- Use of herbicide-tolerant crops, toxic insecticides and fungicides
- Adoption of precision agriculture which is nothing but more efficient use of inputs like fertilizers and pesticides and
- Use of proprietary technologies and patents on seeds
- Energy intensive confined animal feeding operations 'factory farming' to enhance the efficiency of the livestock
- Finance and investments through market-based approaches to adaptation and mitigation. Funding of CSA projects by carbon-offset schemes

Since its launch, many programs have been initiated under the umbrella of climate smart agriculture and are working as platform for agribusinesses, policy makers and CSA service providers to expand their businesses. Agrichemical corporations and their lobby groups have strong presence in the alliances and initiatives promoting CSA. Their extensive involvement and promotion of their technologies and products through CSA programs has put a question mark over the credentials of such efforts.

## European Union's Climate-Smart Agriculture Booster (CSA Booster)

SA Booster is a flagship programme of Climate-Knowledge and Innovation Communities (Climate-KIC) which is European Union's largest public private partnership funded by EU indirectly through one of its body - European Institute of Innovation and Technology. Launched in 2015, CSA Booster ostensibly aims to reduce and sequester 10 million metric tonnes of CO<sub>2</sub> equivalent annually by 2020 through speeding up adoption & scaling up of low carbon – climate smart technologies in the European agriculture sector and beyond.<sup>[24]</sup>

Among the partners of the “CSA booster” are world's largest cocoa producers and grinders- Barry Callebaut, Cool Farm Alliance, Danone- a French multinational food-products corporation, Olam-leading agri-business, Unilever- consumer goods company, Carbon Delta- which analyzes the climate change risk exposure of companies, thereby factoring climate change into investment decisions by default, World Business Council for Sustainable Development etc. Operational in five test regions: the Netherlands, the UK, Italy, France and Switzerland, it has identified more than 20 technologies and approaches ready to go to market”.

The climate smart projects under CSA Booster include -a project by South Pole Group to explore how new technologies and interventions could be used to reduce emissions within the dairy supply chain of a major chocolate producer; project by Carbon Delta and the Potsdam Institute investigating climate change risks to the sugar and coconut supply chain of a major chocolate producer. CSA booster is GACSA member, its brochure says -

“CSA Booster's ambition is to develop into an independent and leading network organization in climate smart agriculture in Europe by 2018, functioning as a broker between the agro-food industry, the policy forming community and CSA technology providers. Such an organization is currently missing at the European level.”<sup>[25]</sup>

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24 J. Whitelegg, “Sustainable Land Use,” *Environment*, vol. 44, no. November, pp. 1–23, 2006.

25 Ibid

## North American Climate Smart Agriculture Alliance (NACSAA)

Another alliance to promote ‘climate smart agriculture’ - North American Climate Smart Agriculture Alliance - consisting of farm industry leaders and academics was launched in 2015. American Farm Bureau Federation that denies the scientific consensus on climate change also became its member.<sup>[26]</sup> Along with sustainably intensify production systems and providing tools that can build production resiliency towards changing climate, NACSAA aims GHG mitigation through methane capture, soil carbon sequestration and biofuels, efficient use of resources like applied nutrients, adoption of new production and conservation practices and implementation of risk management strategies to improve resilience.

North American Climate Smart Agriculture Alliance Statement at COP21 shows that the alliance views agriculture only as the most potential sector to mitigate emissions and earn profit.<sup>[27]</sup>

It says -

“But no similar effort has been undertaken to exploit the benefits that could be provided by agriculture, which the International Panel on Climate Change has estimated could potentially sequester more than 4 billion metric tons of carbon dioxide equivalent by the year 2030..... The reality is that agriculture offers big weapons in the fight against climate change and it’s time to harness these solutions. For these benefits to be realized there have to be similar incentives for both developing and developed countries to implement systems that reduce GHG emissions from agriculture..... These incentives should also require the development and harmonization of measuring, reporting and verification (MRV) standards. Towards this end NACSAA is calling on the COP to direct its science advisory body to establish agricultural sequestration protocols similar to the UN-REDD+ program. .... NACSAA believes there is a wide array of opportunities for additional solutions from agriculture through collaboration between major companies, growers, and their partners in government and civil society. Now is the time to exploit them.”

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<sup>26</sup> “Agriculture has big role to play in curbing greenhouse gas emissions,” FAO, 2016.

<sup>27</sup> “North American Climate Smart Agriculture Alliance Statement at COP21.”

## Box 1

The news in the Monsanto's website published on Tuesday December 1, 2015 titled Monsanto Takes Action to Fight Climate Change with Carbon Neutral Crop Production Program shows how it intends to march forward towards its commitment to Carbon Neutral Footprint Across its operations by 2021.<sup>[28]</sup>

“At the center of achieving and verifying carbon neutral crop production is the advancement of data science in agriculture. Innovations from The Climate Corporation, a division of Monsanto, and other data scientists have allowed farmers to plant and harvest crops more precisely than ever. Examples include the use of satellite imagery to precisely target emerging pest problems or the development of sophisticated algorithms that model the exact fertilizer needs of each field. The continued integration of this data allows farmers to make more precise decisions, and when used in conjunction with agronomic best practices, can lead to carbon neutral crop production.”

It is clear that the emphasis is only towards more precise use of fertilizers and more precision for targeting pest problem through the use of sophisticated and advanced technology.

### Who gets the maximum benefit of GACSA?

Under the banner of ‘climate smart agriculture’, fertilizer companies such as Yara, Mosaic and TNC have extensively lobbied for voluntary, company-led programmes that promote the use of their products.

Multinational agribusiness Yara is one of the first to step into the ‘climate-smart’ business. Yara is the world’s biggest chemical fertilizer company and a leading force in the expansion of industrial agriculture worldwide. Yara makes around £9bn a year by producing expensive & emissions-intensive chemical products that degrade soils. Yet Yara claims it promotes ‘climate smart’ farming by increasing productivity of farming land, therefore, by reducing the need for deforestation. GHCSA is a clear opportunity for Yara to rebuild its image as green and climate smart. Climate-smart corporate farming.<sup>[29]</sup> It was ‘Yara’ which received the responsibility to oversee the World Economic Forum’s first climate smart agriculture pilot project developed with Vietnamese government in public-private partnership. It was given exclusive responsibility over the value chains of coffee and vegetables and was involved in discussions later on.<sup>[30]</sup>

28 “Monsanto Takes Action to Fight Climate Change with Carbon Neutral Crop Production Program.” [Online]. Available: <http://news.monsanto.com/press-release/climate/monsanto-takes-action-fight-climate-change-carbon-neutral-crop-production-prog>.

29 Chris Walker, “Climate-smart corporate farming. What’s not to like?” <https://www.globaljustice.org.uk/blog/2014/sep/23/climate-smart-corporate-farming-what’s-not>,” 2014.

30 Ibid 22

A similar alliance to boost industrial agriculture is Africa Climate-Smart Agriculture Alliance- It's been set up by the African Union, the New Partnership for Africa's Development (NEPAD) and five non-governmental organizations (World Vision, Oxfam, CARE International, Concern Worldwide and Catholic Relief Services). No different from other similar alliances, it aims to help about 25 million farming households practice climate-smart agriculture by 2025.<sup>[31]</sup>

## **What is 'Climate Smart' for community based organizations and farmers groups of developing and poor countries?**

In connection with the threats climate change is posing for agriculture in developing and poor countries 'Climate Smart agriculture' means knowledge based efforts for building resilience while prioritizing farmers' voices, knowledge & rights. Community & civil society organizations and farmers groups in this part of the world have been stressing for localized, low-input, agro ecological food systems.

The term 'Agroecology' was coined by Bensing in 1928. It is based on the concept that the agro-ecosystems should maintain the biodiversity levels and function as that of natural ecosystems.<sup>[32]</sup> Agroecology combines the science of ecology with experiential knowledge of farmers and indigenous peoples. Its focus is on community ownership, food sovereignty and food justice. As against the linear pattern of globalized agriculture system of the industrial businesses that makes farmers dependent on agrichemical industry for external inputs and global markets for the sale of the produce, agro ecological system is circular. It is focused on use and recycling natural resources and creates linkages with farmer organizations, consumer-citizen groups and social movements as against the CSA system which is highly dependent on fossil fuels for production, transport processing, storage and retailing. Agroecological model of agriculture focuses on

- Encouraging local food production by small farmers to protect local economies and ecologies and is explicitly linked with food sovereignty

31 UN, "Climate Summit Launches Efforts Toward Food Security for 9 Billion People by 2050. Climate-Smart Agriculture Builds Resilience for Farmers and Reduces Emissions," pp. 1–3, 2014.

32 Michel Pimbert, "PERSPECTIVES: AGROECOLOGY AS AN ALTERNATIVE VISION TO CLIMATE-SMART AGRICULTURE," 2017. [Online]. Available: <https://www.ileia.org/2017/06/26/agroecology-alternative-vision-agriculture>.

- Replenish old forgotten resources and avoid use of external inputs in agriculture in the form of seeds, fertilizers, pesticides, growth hormones, credit, etc.
- Relies on farmers' participation in ensuring food and nutrition security, building and conservation of healthy soils and water based on their traditional knowledge and practices for food production
- Maintains close associations with farmer organizations, consumer-citizen groups and social movements.
- Diversifying outputs and market outlets to increase farmers' incomes and resilience
- All the efforts to realize the human right to adequate food and nutrition

CSA also talks about incorporating some agroecological practices e.g. agroforestry and intercropping practices to become more acceptable and sound sustainable. However, agroecological approach of agriculture is completely different than that of CSA approach or more precisely the industrial agriculture approach. This is because as mentioned under the section 'What is Climate Smart for corporate' the practices called 'climate smart' by agro-industries not only undermine agroecology but are completely incompatible with it. Agroecology in association with food sovereignty' is completely different and requires transformation of the existing business as usual agriculture.

## **Box 2**

The decentralized circular agroecological model of agriculture is based on two ecological principles

- Maintenance of the natural cycles e.g., of carbon, nitrogen, phosphorus and water
- Conversion of waste from one species to something useful for other species through natural processes and cycles

As described by Michel Pimbert "Well-designed circular systems based on cooperative, communal and collective tenure over land, water, seeds, knowledge and other means of livelihood can: reduce fossil fuel use and

emissions; increase food, water and energy security; create jobs; boost incomes; and, promote resilient and self-reliant communities that are inclusive of gender, race, class, disability, ethnicity and difference”.<sup>[33]</sup>

As against these the industrial approach of agriculture is behind the soil health degradation and the problem of water retention. It pollutes water systems and makes farmers dependent on external inputs. To put the biodiversity and ecosystems in danger is not only harmful but also deeply misguided approach to face climate change threats.

## **Why the impact of Climate Smart Model of agriculture proposed in GACSA is doubtful?**

- GACSA is made up of governments, formal institutions, civil societies and the business sector which includes many large chemical fertilizer companies, fertilizer front groups and NGOs working directly with them. They want to influence climate decision-making and consequential policies. They have allegedly come together to lobby international institutions, like the UNFCCC, to support agricultural production systems and projects deemed “climate smart. The members of GACSA voluntarily report on their ‘climate-smart’ activities, hence there is very little accountability in membership.<sup>[34]</sup>
- It appears that the resource intensive chemical laden model of Industrial agriculture is being rebranded as climate smart. The system has proved to be a threat to food sovereignty, local food systems, integral agrarian reform and to the human right to adequate food and nutrition.
- The whole concept of Climate-Smart Agriculture was developed around the possibility of linking it with international carbon market REDD, REDD+ and soil carbon market. The proposal offered opening a new window through which developed

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<sup>33</sup> Ibid 32

<sup>34</sup> “GLOBAL ALLIANCE FOR CLIMATE-SMART AGRICULTURE <http://www.fao.org/3/a-au980e.pdf>,” 2015.

countries can offset their carbon in developing countries. This means that a corporation engaged in any sector can pay others to reduce their emissions and thereby damage to theoretically ‘offset’ its climate impact. This process can lead to increasing the price on ‘carbon sinks’ like forests in developing and poor countries and also encourages land grabs. As such, so far the carbon trading has failed to maintain or reduce emissions worldwide.<sup>[35]</sup>

- There is a real risk that the wealthier countries will use GACSA to meet their financial commitments towards UNFCCC obligations to fund programs that direct resources towards the unhealthy and false solutions in countries where they have vested interests.
- In addition, it is extremely difficult to assess the effectiveness of the projects submitted as ‘climate-smart’. In majority of the cases these projects are only loosely related to the climate and are not in line with all the three pillars outlined by the Alliance.

## Twisted Case of Agribusinesses

In majority of the cases food companies report only their direct emissions. The huge amount of indirect emissions originates from their supply chains remain hidid from public knowledge. This drastically reduces the reported emissions.

One such case is of US animal feed manufacturer Cargill. The company declared its annual emissions as 15m tonnes. According to Global Justice Now’s estimations, if the emissions originated from growing feed crops and their use by livestock are included; Cargill’s total climate impact becomes around 145m tonnes which is comparable to the combined national emissions of Denmark, Bulgaria and Sweden.<sup>[36]</sup>

According to the reports, the total emissions from Cargill, Yara and Tyson combined have a bigger climate footprint than the Netherlands, Vietnam or Colombia.<sup>[37]</sup>

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35 “CLIMATE-SMART’ AGRICULTURE AND SOIL-CARBON CREDITS,<https://cdmscannotdeliver.wordpress.com/chapters/box-5-climate-smart-agriculture-and-soil-carbon-credits/>.”

36 “Silent but Deadly Estimating the real climate impact, Global Justice Now, <http://www.globaljustice.org.uk/resources/silent-deadly-estimating-real-climate-impact-agribusiness-corporations>,” 2015.

37 Ibid

## **The African Accelerated Agribusiness and Agro-Industries Development Initiative (3ADI)**

3ADI is collaboration between the United Nations Industrial Development Organization (UNIDO), UN Food and Agricultural Organization (FAO), and the International Fund for Agricultural Development (IFAD).

With focus on Africa, 3ADI claims to be helping farmers to take the jump from subsistence agriculture to a profit generating business. The objective of 3ADI is to “transform the rural world to turn it into an attractive career proposition for youth. In this way, farming becomes “...no longer a subsistence occupation carried out from generation to generation as a matter of tradition: it is a complex business with its technological, scientific, human resource, marketing, and accounting demands.

The mechanism adopted by 3ADI for this transformation includes the training events, farmers’ associations, access to credit, and the creation of linkages between smallholder plots with larger “nucleus” farms.<sup>[38]</sup>

### **Why the native population of Africa is suspicious of such programs?**

The flooding of programs and initiatives ostensibly focused to revolutionize the way farming has been practiced in Africa and thereby increasing farmer’s income, have made the environmentalist and locals wary. The simple reason is that all such arrangements such as 3ADI encourage standardized agricultural practices. The approach is again top down to shift the focus of agricultural production to certain commodities.

There are many reports saying that such ‘sustainable agribusiness’ projects in Africa have become a way for land grabs. In the name of climate change many biotech companies have entered into the African market claiming that biofuel crops can help tackle it.

The Rights and Resources Initiative estimated that 500 million people in sub-Saharan Africa depend on 3.46 billion acres of farmland. The foreign investors are targeting this land to produce

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38 J. A. Ignatova, “Seeds of contestation: Genetically modified crops and the politics of agricultural modernization in Ghana,” ProQuest Diss. Theses, p. 222, 2015.

product for populations outside of Africa. Examples are present throughout the continent where instead of growing food crops to feed local populations crops like sugarcane, palm oil, and Jatropha are being cultivated on huge tracts of land.<sup>[39]</sup>

According to Human Rights Watch, to grow crops for export, China has leased out 8.8 million acres of Ethiopia's most arable land and displaced at least 70,000 people in the process of growing crops for export.<sup>[40]</sup>

Similarly in Congo-Brazzaville 10 million hectares of fertile land was given to South-African farmers to grow staple food crops for export without any portion of it to remain in Congo. Alongside 70,000 hectares of land was granted to the Italian oil company ENI to plant oil palm monoculture plantations for agrofuel production, threatening Africa's last precious tropical primary forest.<sup>[41]</sup>

However, with the growing foreign agro-investment, the unrest among the natives has also increased. An interesting case has been the 28,000-hectare proposed biofuel project in Tana River Delta in Kenya by British firm G4 Industries Limited's. The project would have destroyed one of the most important wetland wildlife sites in Africa. But before its launch the company pulled out due to increasing pressure from local Kenyans and environmentalists accusing it for boosting non sustainable biofuel crop in the arable land by compromising agriculture.<sup>[42]</sup>

There is no denying to the fact that mitigation in the agriculture sector is required. But instead of replacing harmful practices with the same slightly tweaked harmful practices coming up with a new name, the systemic changes in the areas of agriculture where there is highest potential to decrease the emissions are required to be targeted.

The biggest possibility of emission reduction within the agriculture sector is offered by meat and dairy subsector. But ironically those who support mitigation in agriculture, does not talk about meat industry.

39 B. Amisi and K. Sharife, "CHAPTER 8 : JATROPHA AND 'CLIMATE-SMART' AGRICULTURE IN KENYA AND MOZAMBIQUE, <https://cdmscannotdeliver.wordpress.com/chapters/chapter-8-jatropha-and-climate-smart-agriculture-in-kenya-and-mozambique/>."

40 "Ethiopia forces thousands off land - Human Rights Watch,<http://www.bbc.com/news/world-africa-16590416>."

41 R. Cernansky, "From Fracking to Water Rights: How Foreign Interests Are Cleaning Out Africa,<https://www.treehugger.com/corporate-responsibility/fracking-water-rights-how-foreign-interests-are-cleaning-out-africa.html>," 2012.

42 Rachel Cernansky, "UK Company Pulls Out of Controversial Kenya Biofuel Project,<https://www.treehugger.com/renewable-energy/uk-company-pulls-out-controversial-kenya-biofuel-project.html>," 2011.

# Where the Real Opportunity for Mitigation lies?

## Meat and dairy production

The total emissions from global livestock's are 7.1 Gigatonnes of CO<sub>2</sub>-equiv per year, representing 14.5 % of all anthropogenic GHG emissions. About 44% of livestock emissions are in the form of methane while 29% and 27% are Nitrous Dioxide and Carbon Dioxide respectively. Cattle raised for beef & milk, manure and draft power are responsible for the about 65% of the livestock sector's emissions.<sup>[43]</sup> The present way of industrial meat and dairy production and consumption is producing more GHG's than the emissions coming from the transportation sector<sup>[44]</sup>.

Meat and dairy requires huge amounts of grains (source of GHG's) grown with chemical fertilizers (another source of greenhouse gas) to be fed to cattle's. In 2010 alone, one-third of all the cereals produced worldwide were used for production of feeds. According to FAO, when all subsectors are counted and all species are considered – it turns out that about 20 percent of the livestock sector's emissions come from the consumption of fossil fuels along the supply chains.<sup>[45]</sup> This opens the huge opportunity for mitigation in this subsector.

Both states and agribusinesses have been key drivers for unprecedented increase in meat production and industrial farming. The vast grain surpluses produced by US farmers and thereafter the search for a market has been behind this upswing.

## Which part of the world offers scope for GHG emission reduction?

The scope for improvement in the environmental performance of this sector is immense. If the consumption of meat is maintained as per the WHO recommended dietary guidelines, the world would reduce GHG emissions by 40%.

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43 "FAO-Key facts and Findings-By the numbers: GHG emissions by livestock,<http://www.fao.org/news/story/en/item/197623/icode/>."

44 GRAIN, "Grabbing the bull by the horns. It's time to cut industrial meat and dairy to save the climate,<https://www.grain.org/article/entries/5639-grabbing-the-bull-by-the-horns-it-s-time-to-cut-industrial-meat-and-dairy-to-save-the-climate>," no. January, 2017.

45 Ibid 43

There is huge difference in consumption pattern of meat across the globe and the part of the world where it is above the critical limit set by WHO can conveniently cut down its intake. The USA and Australia are the biggest consumers of the industrial meat where per person per year consumption is around 90kg as against the 3kg per year per capita consumption of meat in India.<sup>[46][47]</sup>

Despite this, meat consumption in the most meat consuming countries is increasing continuously. For example in early 1990s, one-tenth of dairy farms in the US used to keep around 1000 cows. But by 2007, the proportion of such farms became one-third of total farms. As a consequence the huge amount of manure deposited by animal's having become a draconian problem.<sup>[48]</sup>

## **What Meat Industry lobbyists say? The argument around Emissions Intensity**

In the US, Europe, Brazil, New Zealand and many other developed countries, Industrial meat and dairy production is based on the highly concentrated production of cheap meat and powdered milk surpluses which are traded as global commodities. The animals are intensively raised on high protein feed, antibiotics, growth promoters and hormones for maximum output. This reduces the per unit emission intensity of the meat production. This surplus production is the reason behind the unsustainable growth of global consumption.<sup>[49]</sup>

Meat industry lobbyists of the developed countries argue that they have a lower 'emissions intensity' per unit meat produced than the poor farmers of the developing world and hence it is the small herders and farmers of the developing nations who should adopt their technologies and opt mitigation path. The fact that around 200 million herders of global south practice diversified crop and animal production and often uses barren lands to let their cattle graze is ignored. In addition, food system of a network of 630 million small farmers in the region creates positive synergies between crops and

46 "OECD Data 2015- Meat Consumption, <https://data.oecd.org/agroutput/meat-consumption.htm>."

47 SKYE GOULD and L. F. FRIEDMAN, "These are the countries where people eat the most meat, <http://www.businessinsider.in/These-are-the-countries-where-people-eat-the-most-meat/articleshow/54296789.cms>."

48 Jitendra, "Industry lobbyists deny GHG emission from meat production, blame small herders, [https://www.grain.org/bulletin\\_board/entries/5653-industry-lobbyists-deny-ghg-emission-from-meat-production-blame-small-herders](https://www.grain.org/bulletin_board/entries/5653-industry-lobbyists-deny-ghg-emission-from-meat-production-blame-small-herders)," 2017.

49 Ibid 44

livestock such as recycling animal waste and crop residues are also not taken into account.<sup>[50]</sup>

Meat industry strong voices are not only forcing the farmers of the developing and poor countries into trouble but also putting question mark over the health of their own population. Since long, USA, Europe and other wealthy countries have subsidized industrial meat and dairy production. Their policies have one hand have generated huge profits for corporations while on the other eroded the health of their citizens while worsening the climate. The condition is such that any effort to reduce consumption and curb factory farming faces aggressive resistance from meat and dairy companies, who have the most to lose from such actions.

In the name of emission intensity gap the farmers of the developing world are being forced to suffer' and pushed into what is termed as 'sustainable intensification' or, more precisely, 'climate smart agriculture'. Therefore, the larger issue is the emissions intensity model of calculations which is just a technical tweak to put the burden of emission reduction on small-scale livestock holders unfairly.

## End Note

As per the statistics of Ministry of Statistics and Programme Implementation, Central Statistics Office, 17.5% of world's population lives in India while India accounts for 2.4% of the world surface area. It houses 30% global poor, 24% of the global population without access to electricity, 30% of the global population relying on solid biomass for cooking and 92 million without access to safe drinking water.<sup>[51]</sup> Major part of the poor population is engaged in agriculture and related activities.

Keeping this in mind we oppose any attempt that put additional pressure of mitigation on the poor and marginal farmers of developing countries such as Indian. We are against the attempts to monopolize agriculture by promoting practices with no

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50 "Sustainable agricultural development for food security and nutrition: what roles for livestock?' Committee on World Food Security, 2016, Table 2 on page 81, <http://www.fao.org/cfs/cfs-hlpe/reports/report-10-elaboration-process/en/>."

51 "Statistics Related to Climate Change - India, 2015, [http://www.mospi.gov.in/sites/default/files/publication\\_reports/climateChangeStat2015.pdf](http://www.mospi.gov.in/sites/default/files/publication_reports/climateChangeStat2015.pdf)," Gov. India, Minist. Stat. Program. Implement., p. 280, 2013.

credentials on sustainability in the name of mitigation. The climate negotiations must take into account the traditional agriculture system of developing countries which is in harmony with the nature and promotes food sovereignty. The focus at international climate change policy negotiations should be on adaptation in agriculture as per the requirement expressed by developing and poor countries for capacity building and technology transfer in this regards. Considering the presence of attainable mitigation options, mitigation efforts should be initiated in developed countries with high per capita emissions from agriculture as well as very high total per capita emissions in the relevant sectors such as meat and dairy industry.

