TABLE FOR COMMENTS

Name of submitter: __Robert Parkhurst_____

Affiliated organization of the submitter (if any): _Environmental Defense Fund_

Contact email of submitter: __rparkhurst@edf.org_____

Environmental Defense Fund (EDF), a one million-member non-profit, non-governmental, non-partisan, accredited observer organization that has participated in the climate treaty talks since their inception, respectfully presents this submission on the concept note on "Exploration of methodological options for developing 'agriculture CDM.'" EDF experts work with small and large scale farmers in India, Vietnam, China and the United States to address issues such as fertilizer pollution, wildlife habitat on working lands, irrigation efficiency and water management, clean cookstoves, and renewable energy on farms.

We would like to frame this submission in the context of the Paris Agreement, which recognizes two different voluntary market pathways in Article 6—bottom-up "cooperative approaches" (Art 6.1 & 6.2) and a newly established "mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development" (Art 6.4). Lessons from existing market mechanisms can help inform the content of any guidance needed to implement these pathways.

The Paris Agreement's new mechanism must foster sustainable development and "deliver an overall mitigation in global emissions," signaling a move away from a simple offset approach as embodied in the CDM. In addition, great care should be made to ensure that emissions reductions are not "double-counted." Crediting approaches and climate financing measures should include agriculture, which will be critical for achieving sustainable development goals, and reward synergistic action and leverage investment for upscaling in order to accelerate climate smart agriculture.

We agree with and support the further work proposed in paragraph 28 in this Concept Note. We think the evaluation should be expanded to explore the use of models as to measure emission reductions from agriculture, and to encourage additional research to expand practices which could be included in biogeochemical models. The Board should also consider landscape-based approaches that would aggregate emission reductions from multiple land owners, allow for staking of emissions reductions from multiple activities, improve baseline assessments, and motivate broader adoption while decreasing project development and transaction costs.

Finally, the Board should investigate pathways that allow for inclusion of non AFOLU sector activities (e.g. decrease in emissions from industrial sector due to decreased use of fertilizers or use of renewable energy for pumping water or tilling) into the traditional AFOLU sector activities. Incorporation of all climate smart activities in farming communities supports the integrated approach to "Low Carbon Rural Development" and reduces project development and transaction costs. Such pathways will need to include flexibility in the definition of project boundaries (e.g. landscapes that include communities, manufacturing, farms and forests) such that emission reductions from agriculture related non-AFOLU activities occurring off the farm but within the agricultural landscape (e.g. use of biogas generated from domestic livestock for household cooking or the avoided use of energy from the decrease in the production of fertilizer) can be integrated into a single methodology.

We thank the CDM Executive Board for this opportunity to offer comments.

Date: 26/01/2016	Document: CDM-EB87-AA-A10 Concept Note: Exploration of methodological options for developing 'agriculture CDM'

0	1	2	3	4	5	6
#	Para No./ Annex/ Figure/ Table	Line Number	Type ge = general te = technical ed = editorial	Comment (including justification for change)	Proposed change (including proposed text in red)	Assessment of comment (*to be completed by UNFCCC secretariat*)
1	Overall		ge	We would like to frame this submission in the context of the Paris Agreement, which recognizes two different voluntary market pathways in Article 6—bottom-up "cooperative approaches" (Art 6.1 & 6.2) and a newly established "mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development" (Art 6.4). Lessons from existing market mechanisms can help inform the content of any guidance needed to implement these pathways. The Paris Agreement's new mechanism must foster sustainable development and "deliver an overall mitigation in global emissions," signaling a move away from a simple offset approach as embodied in the CDM. In addition, great care should be made to ensure that emissions reductions are not "double-counted." Crediting approaches and climate financing measures should include agriculture, which will be critical for achieving sustainable development goals, and reward synergistic action and leverage investment for upscaling in order to accelerate climate smart agriculture.	None	

0	1	2	3	4	5	6
#	Para No./ Annex/ Figure/ Table	Line Number	Type ge = general te = technical ed = editorial	Comment (including justification for change)	Proposed change (including proposed text in red)	Assessment of comment (*to be completed by UNFCCC secretariat*)
2	Section 3, Para 6	6	ge	Agricultural practices and measures discussed in this note can have multiple benefits for climate change mitigation, adaptation, sustainable development and food security. Studies have recommended that climate financing mechanisms need to target agriculture, reward synergistic action and leverage investment for upscaling in order to accelerate mitigation and adaptation action (FAO, 2009).	"Agricultural practices and measures discussed in this note can have multiple benefits for climate change mitigation, adaptation, sustainable development and food security. Studies have recommended that climate financing mechanisms need to target agriculture, reward synergistic action and leverage investment for upscaling in order to accelerate ~~mitigation and adaptation action~~ climate smart agriculture (FAO, 2009)."	
3	Section 3, Para 7	(a)	ge	It is very true that to generate GHG emission reductions from agriculture requires "large numbers of land holders." Priority should be placed on opportunities to aggregate reductions from multiple land owners into a single project to motivate broader adoption while decreasing project development and transaction costs.	None	

EDF ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

Date: 26/01/2016	Document: CDM-EB87-AA-A10 Concept Note: Exploration of methodological options for developing 'agriculture CDM'

0	1	2	3	4	5	6
#	Para No./ Annex/ Figure/ Table	Line Number	Type ge = general te = technical ed = editorial	Comment (including justification for change)	Proposed change (including proposed text in red)	Assessment of comment (*to be completed by UNFCCC secretariat*)
4	Section 3, Para 7	(b)	te	We would recommend acknowledgement of the work that is being undertaken in the space by a large number of organizations in civil society which are referenced throughout these comments.	"While [a]gricultural GHG mitigation options ~~often~~ have historically had higher abatement and transaction costs than mitigation options in other sectors with significant GHG emissions, this is starting to change as multiple organizations are investigating and piloting ways to reduce transaction costs and streamline quantification and monitoring processes. In addition, the options to stack emission reductions through multiple associated activities on a landscape may offer one way to reduce transaction costs." These efforts and their outcomes/learnings should be taken into account as any work program is developed.	
5	Section 3, Para 7	(c)	ge	"There are only limited mitigation options currently eligible under the CDM." This is an excellent opportunity for the CDM EB to further investigate and adopt many of the methodologies identified in section 3.4.5.	None	

0	1	2	3	4	5	6
#	Para No./ Annex/ Figure/ Table	Line Number	Type ge = general te = technical ed = editorial	Comment (including justification for change)	Proposed change (including proposed text in red)	Assessment of comment (*to be completed by UNFCCC secretariat*)
6	Section 3, Para 7	(d)	te	While there are "difficulties in measurement" and "high uncertainties" with the measurement of emissions in agricultural settings, these difficulties and uncertainties can and have been addressed through a number of standards. This is highlighted later in the document (paragraph 13).	Add as second sentence. "Several biogeochemical models (e.g. Denitrification-Decomposition) or regression based models (e.g., Bouwman et al, 2002[1]) have been developed and are being used to predict GHG emissions. However, there are few existing local/regional studies about GHG emissions levels in the agricultural field which prevents further simplification and standardization of emission factors;"	
7	Section 3, Para 7	(e)	te	"Stringent measurement/monitoring requirements in CDM methodologies have also been cited in the literature as a main reason for limited development of agricultural carbon finance projects" This highlights and underscores the need for the CDM to put additional effort, as this Concept note recommends, into the development of methodologies that can meet the stringent measurement/monitoring requirements of the CDM while reducing the overall transaction costs. Significant work is being done in this area, particularly with the work undertaken by ACR, CAR, and the California Air Resources Board, which should be reviewed as a part of exploration of the "possibility of developing new methodologies and/or revision of existing methodologies."	Add paragraph under Section 3.3, Paragraph 8: "Significant work has been done over the past six years to develop agricultural GHG mitigation options, stringent measurement/monitoring requirements, and an awareness of opportunities to develop projects."	

[1] Bouwman, A. F., Boumans, L. J. M., Batjes. N. H. (2002) Modeling global annual N2O and NO emissions from fertilized fields. Retrieved 26, January, 2016 from http://onlinelibrary.wiley.com/doi/10.1029/2001GB001812/full.

Date: 26/01/2016	Document: CDM-EB87-AA-A10 Concept Note: Exploration of methodological options for developing 'agriculture CDM'

0	1	2	3	4	5	6
#	Para No./ Annex/ Figure/ Table	Line Number	Type ge = general te = technical ed = editorial	Comment (including justification for change)	Proposed change (including proposed text in red)	Assessment of comment (*to be completed by UNFCCC secretariat*)
8	Section 3, Para 7	(g)	te	We agree that developing countries currently have "high technical mitigation potential, but those countries tend to have low capacity for participation in the CDM." There is, however, an excellent opportunity to use climate smart agriculture that delivers three-fold win (increased crop yields, better farm level profit through resource use efficiency and climate adaptation) as capacity and revenue building initiatives in developing countries, particularly considering that "a substantial portion of gross domestic product" comes from agriculture and climate change is already affecting food security in many parts of the world by adversely affecting crop yields, water availability and livelihoods of farming communities. Several organizations (including EDF) are already working to deliver agricultural mitigation through practices that achieve threefold goals of climate smart agriculture. We have added several additions to section 28 that will facilitate large scale implementation of such low carbon rural development projects.	Add the following line: "This high technical mitigation potential can be met with well-designed local capacity building projects that identify, monitor, implement and scale up agricultural activities that provide economic, developmental and climate adaptation co-benefits along with climate mitigation. These climate smart agriculture projects can benefit from their integration with other low carbon rural development activities in the agricultural landscape (e.g., use of renewable energy for pumping water or use of biogas for cooking)."	
9	Section 3, Para 7	7	te	One of the reasons not included in the list is that current approaches have not taken advantage of the flexibility to use landscape based approaches that would not only improve baseline emissions assessments but would also offer the possibility of reducing project related transaction costs.	Add paragraph (h): "Current approaches have not historically taken advantage of the flexibility to use landscape based approaches which have the opportunity to both improve baseline emissions assessments for agriculture and offer the opportunity of reducing project related transaction costs."	

0	1	2	3	4	5	6
#	Para No./ Annex/ Figure/ Table	Line Number	Type ge = general te = technical ed = editorial	Comment (including justification for change)	Proposed change (including proposed text in red)	Assessment of comment (*to be completed by UNFCCC secretariat*)
10	Section 3.1, Para 9	9	te	While about 89% of the technical mitigation potential comes from soil carbon sequestration, the permanence and uncertainty requirements to adopt these practices in agriculture should be thoroughly considered. The CDM should continue to expand its work on the abatement of methane and nitrous oxide which has far less potential for reversal.	Add to the end of the paragraph: "While soil carbon sequestration offers the largest technical mitigation potential, challenges remain with the permanence of these practices."	
11	Section 3.1, Figure 1	Figure 1	te	Global technical mitigation potential for rice management seems high and livestock seems low. It would be helpful to clarify what practices are included in each.	Clarify what practices are included in the data for rice management and livestock.	
12	Section 3.3, Table 2	15 NS-71 (Rational grazing)	te and ed	Care should be taken in rotational grazing practices. There currently is not sufficient science to demonstrate how much carbon can be sequestered in the soil through rotational grazing	Spelling of rotational is wrong in the text.	
13	Section 3.3, Table 2	15 NS-71 (Improved fertilization plans)	te	Slow-release fertilizers is an area of rapidly expanding research (Millar, 2010a)[2]. At the moment, however, most slow release fertilizers are considered to be quite expensive and not conducive for large scale adoption by farmers. In addition to optimizing fertilizer use through changes in fertilizer rate, timing, placement, and form, the CDM should consider support of pilots on the use of slow release fertilizer and identify opportunities to drive down its cost. All of the above practices - fertilizer rate, timing, placement, and form, have proven to be quite effective in different geographies.	None.	

[2] Millar, N., Robertson, G. P., Grace, P. R., Gehl, R. J., & Hoben, J. P. (2010). Nitrogen fertilizer management for nitrous oxide (N2O) mitigation in intensive corn (Maize) production: an emissions reduction protocol for US Midwest agriculture. *Mitigation and Adaptation Strategies for Global Change*,*15*(2), 185-204. Retrieved from https://scholar.google.com/scholar?hl=en&q=Millar%2C+2010+slow+release+fertilizer&btnG=&as_sdt=1%2C33&as_sdtp=

EDF ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

Date: 26/01/2016	Document: CDM-EB87-AA-A10 Concept Note: Exploration of methodological options for developing 'agriculture CDM'

0	1	2	3	4	5	6
#	Para No./ Annex/ Figure/ Table	Line Number	Type ge = general te = technical ed = editorial	Comment (including justification for change)	Proposed change (including proposed text in red)	Assessment of comment (*to be completed by UNFCCC secretariat*)
14	Section 3.3, Table 2	15 NS-206	te	While not specific, "improved and sustainable agricultural fertilizer applications" is an area which should be encouraged.	None.	
15	Section 3.4.1, Para 20	20	te	Our organization's ongoing research in India and Vietnam shows that the central "triple win" concept of CSA can be easily applied to GHG mitigation of nitrous oxide and methane through fertilizer and water management techniques[3].	Change the sentence "However, under CSA, emission reductions tend to be concentrated in the sequestration sector – through afforestation (agroforestry) and soil carbon improvement" "~~However~~, ~~t~~Under CSA, emission reductions to date have been concentrated in the sequestration sector – through afforestation (agroforestry) and soil carbon improvement. However, additional opportunities are emerging for the reduction of nitrous oxide and methane."	
16	Section 3.4.4, Para 24	24	te	"there are a number of GHG calculators that have been developed by other international organizations, some of which are summarized in table 3 below." The table should include the USDA's COMET-Farm tool which has broad application to crops and should be assessed for its applicability outside of the United States.	Description of COMET-Farm tool "USDA's COMET-FARM™, enables agricultural producers in the United States to calculate how much carbon their conservation actions can remove from the atmosphere. The tool estimates carbon sequestration and greenhouse gas emission reductions associated with conservation practices for cropland, pasture, rangeland, livestock operations and energy."	

[3] Tiwari et al. (2015) Sampling guidelines and analytical optimization for direct greenhouse gas emissions from tropical rice and upland cropping systems. Carbon Management. Volume 6, Issue 3-4. Retrieved from: http://www.tandfonline.com/doi/abs/10.1080/17583004.2015.1082233?journalCode=tcmt20
Kritee, et al (2015). Groundnut cultivation in semi-arid peninsular India for yield scaled nitrous oxide emission reduction. Nutrient Cycling in Agroecosystems. Volume 103, Issue 1, pp 115-129. Retrieved from: http://link.springer.com/article/10.1007%2Fs10705-015-9725-2

0	1	2	3	4	5	6
#	Para No./ Annex/ Figure/ Table	Line Number	Type ge = general te = technical ed = editorial	Comment (including justification for change)	Proposed change (including proposed text in red)	Assessment of comment (*to be completed by UNFCCC secretariat*)
17	Section 3.4.5, Para 25 and Table 4	Para 25 and Table 4	te	Under Paragraph 25 and in the "Croplands – rice management" row, the California Air Resources Board and its Rice Cultivation Compliance Offset Protocol should be included.	Add 25 (g) "California Air Resources Board" and under "Croplands — rice management" add "CARB: Rice Cultivation Compliance Offset Protocol"	
18	Section 3.4.5, Table 4	Table 4	te	The title "Organic soils — restoration" should be changed to say "Organic soils — restoration and preservation." The ACR and CAR protocols do not include provisions for the restoration of grasslands, but their preservation from the conversion to croplands. This is one of the places where soil carbon can reliably be included in protocols, particularly because both protocols require a permanent conservation easement to be placed on the land.	"Organic soils — restoration and preservation."	
19	Section 3.4.5, Para 28	(a)	te	Include mention of the preservation of soil carbon through the avoided conversion of grasslands to croplands.	Add: "(a)(iv) New methodologies for the avoiding the conversion of grasslands to croplands (i.e. maintaining the carbon in the soil);"	
20	Section 3.4.5, Para 28	(b)	te	While not specifically stated in this Concept Note, the Crop nutrition management methodologies should, at a minimum, include practices for changes in rate, timing, placement, and form of fertilizer. In addition, there is evidence in global scientific literature to suggest that emission factors for baseline practices based on synthetic fertilizers are different from emission factors for new crop management practices that include integrated nutrient management with the use of cover crops or organic inputs.	Add:"(i) New methodologies for nutrition management (e.g. the use of improved fertilizer such as coated fertilizers) that allow for various agronomic changes including rate, timing, placement, and form of fertilizer as well as integrated nutrient management that includes use of cover crops or organic inputs."	

EDF ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

Date: 26/01/2016	Document: CDM-EB87-AA-A10 Concept Note: Exploration of methodological options for developing 'agriculture CDM'

0	1	2	3	4	5	6
#	Para No./ Annex/ Figure/ Table	Line Number	Type ge = general te = technical ed = editorial	Comment (including justification for change)	Proposed change (including proposed text in red)	Assessment of comment (*to be completed by UNFCCC secretariat*)
21	Section 3.4.5, Para 28	(c)	te	The existing CDM methodology AMS-III.A (Methane emission reduction by adjusted water management practice in rice cultivation) does not take into account the possibility of increase in nitrous oxide emissions when water management changes. It is critical that all new and existing methodologies focus on net global warming potential of rice paddies by including the effect of water management on nitrous oxide and soil carbon before emission reductions are calculated. Our organization's work in India and the United States shows that nitrous oxide emissions from rice paddies can be as high as rice paddy methane in terms of carbon dioxide equivalents. It is well established in literature that water and fertilizer or manure management interact with each other and influence the net global warming potential of rice paddies. To expand the scope of these practices, the review of existing, non-CDM methodologies should be evaluated. Several geographies have calibrated and validated regression or biogeochemical models. In particular, the DNDC biogeochemical model has been calibrated for India, Viet Nam, Japan, and China and the Daycent biogeochemical model has been calibrated for China.	Change: "(i) Development of standardized baselines using AMS-III.AU which includes evaluation of changes in net global warming potential resulting from nitrous oxide emissions and soil carbon stock changes in addition to changes in methane emissions due to water management practices" Add: "(ii) Evaluation and addition of geographies in new and existing methodologies where biogeochemical models like DNDC or Daycent have been calibrated and validated for rice cultivation;"	

0	1	2	3	4	5	6
#	Para No./ Annex/ Figure/ Table	Line Number	Type ge = general te = technical ed = editorial	Comment (including justification for change)	Proposed change (including proposed text in red)	Assessment of comment (*to be completed by UNFCCC secretariat*)
22	Section 3.5, Para 29	(a) & (b)	te	We agree with and support the further work proposed by this Concept Note. We encourage the expansion of the evaluation to include: 1. Inclusion of non AFOLU sector activities into agriculture based methodologies to allow integration of all climate smart activities in farming communities which will also reduce project development and transaction costs as has been already approved by VCS ; 2. Opportunities to aggregate emission reductions from multiple large land owners (or thousands small-holder farmers in developing countries); and 3. Additional research to determine regional emission factors, especially in developing countries such that the data could be included in regression and biogeochemical models.	Change: "(a) To explore the possibility of developing new standardized methodologies and/or revision of existing methodologies to include specific technologies/measures for which existing CDM methodologies have ~~only~~ no or a partial coverage**, as listed in paragraph 28**; (b) To explore areas of further simplification and streamlining to facilitate development of standardized baselines that allow aggregation of emission reductions at many large-holder farms (or thousands of small-holder farms) **as listed in paragraph 28.**" Add: "(c) To encourage regional research that can determine the total impact of new agricultural practices on greenhouse gas emissions as well as ecosystem resilience to climate change (e.g., drought resilience of crops), economic benefits to the community by promoting resource use efficiency and input cost reduction per unit of yield, especially in developing countries."	

EDF ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

Date: 26/01/2016	Document: CDM-EB87-AA-A10 Concept Note: Exploration of methodological options for developing 'agriculture CDM'

0	1	2	3	4	5	6
#	Para No./ Annex/ Figure/ Table	Line Number	Type ge = general te = technical ed = editorial	Comment (including justification for change)	Proposed change (including proposed text in red)	Assessment of comment (*to be completed by UNFCCC secretariat*)
23	Section 3.5, Para 29	(a) & (b)	te	(Proposed changes continued from above)	Add: "(d) To create pathways that allow for inclusion of non AFOLU sector activities (e.g. decrease in emissions from industrial sector due to decreased use of fertilizers or use of renewable energy for pumping water or tilling) into the traditional AFOLU sector activities. Incorporation of all climate smart activities in farming communities supports the integrated approach to "Low Carbon Rural Development" and reduces project development and transaction costs. Such pathways will need to include flexibility in the definition of project boundaries (e.g. landscapes that include communities, manufacturing, farms and forests) such that emission reductions from agriculture related non-AFOLU activities occurring off the farm but within the agricultural landscape (e.g. use of biogas generated from domestic livestock for household cooking or the avoided use of energy from the decrease in the production of fertilizer) can be integrated into a single methodology."	