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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

Subsidiary Body for Scientific and Technological Advice
Thirty-eighth session
Bonn, 3–14 June 2013

Item X of the provisional agenda

Views on possible items for consideration as part of the research dialogue; and information on technical and scientific aspects of emissions and removals of all greenhouse gases from terrestrial ecosystems

Submissions from Parties

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its thirty-seventh session, welcomed the continuation of the research dialogue during SBSTA 36.[1] It invited Parties to submit to the secretariat, by 25 March 2013, their views on possible items for consideration as part of the research dialogue during SBSTA 38 and requested the secretariat to compile these submissions into a miscellaneous document.[2]

2. The SBSTA further invited Parties and regional and international research programmes and organizations active in climate change research to provide information on the technical and scientific aspects of emissions by sources, removals by sinks and reservoirs of all greenhouse gases, including emissions and removals from terrestrial ecosystems such as steppe, savannah, tundra and peatlands, with a view to identifying and quantifying the impact of human activities. This information would be considered as a theme for the next research dialogue, also taking into account the submissions received in accordance with paragraph 1 above.[3]

[1] FCCC/SBSTA/2012/5, paragraph 47.
[2] FCCC/SBSTA/2012/5, paragraph 48.
[3] FCCC/SBSTA/2012/5, paragraph 52.

3. The secretariat has received seven such submissions. In accordance with the procedure for miscellaneous documents, these submissions are attached and reproduced* in the languages in which they were received and without formal editing.[4]

* These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

[4] Also available at <http://unfccc.int/5901.php>.

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* This submission is supported by Albania, Croatia, Bosnia and Herzegovina, Iceland, Serbia and the former Yugoslav Republic of Macedonia.

Paper no. 1: Australia

Submission under FCCC/SBSTA/2012/L.25, paragraph 13 | March 2013

Views from Parties on possible items for consideration as part of the research dialogue during SBSTA38 | SBSTA

I. Overview

This submission contains the views of the Australian Government on the research dialogue and possible items for consideration as part of the research dialogue at SBSTA38, as requested under FCCC/SBSTA/2012/L.25, paragraph 13.

Australia welcomes the opportunity to submit its views on the research dialogue. In summary, Australia considers that:

- the research dialogue to be a valuable adjunct to the Research and Systematic Observation agenda item of SBSTA and the pattern of holding a research dialogue in conjunction with every second SBSTA session (at the Bonn mid-year meeting where research is the primary focus);

- that the themes of any one research dialogue should not be too narrowly focussed, but allow the relevant regional and international climate change research programmes and organizations to bring to the attention of the SBSTA any developments in research activities relevant to the needs of the Convention, as well as taking account of the views of Parties on research needs and priorities; and

- given the planned delivery of the Fifth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) beginning from September this year, that if not covered elsewhere in the SBSTA agenda, the IPCC be specifically invited to present at the research dialogue to outline its progress and plans.

II. General views on the research dialogue

Australia supports the underlying objectives of the research dialogue. It is important that the discussions and deliberations of the Parties to the UNFCCC be informed by the best available and most current science in relation to climate change, and also that the research agenda of the climate change science community is informed by the information needs of policy makers.

In so far as it achieves these objectives, Australia supports the continuation and enhancement of the research dialogue. Importantly, the research dialogue should inform, but should not seek to prescribe, policy responses and the research agenda.

III. General views on the research dialogue

To ensure relevance to all Parties, it is Australia's position that the research dialogue should not focus narrowly on a single theme or topic but continue to address more broadly those research activities relevant to the needs of the Convention, such as those listed in FCCC/SBSTA/2007/4, paragraphs 47 (a-f):

(a) Emerging scientific findings;

(b) Research planning activities (including in response to key uncertainties and research needs identified by the IPCC or raised by Parties);

(c) Research priorities, and gaps in the implementation of these priorities;

(d) Research capacity-building activities, particularly in developing countries;

(e) Regional climate change research networks; and

(f) Relevant communication issues.

Given the importance of the work of the IPCC in informing work under the UNFCCC, Australia suggests that, if not covered elsewhere in the SBSTA agenda, the IPCC be invited to present at the research dialogue to outline its progress and plans in the lead up to the planned delivery of the Fifth Assessment Report beginning from September this year.

Paper no. 2: Bangladesh, Cameroon, Congo, Costa Rica, Côte d'Ivoire, Democratic Republic of the Congo, Dominica, Dominican Republic, Fiji, Gabon, Guyana, Honduras, Kenya, Nigeria, Papua New Guinea and Uganda

Submission of Views by

Bangladesh, Cameroon, Costa Rica, Cote d'Ivoire, Democratic Republic of Congo, Dominica, Dominican Republic, Fiji, Gabon, Guyana, Honduras, Kenya, Nigeria, Papua New Guinea, Republic of Congo, and Uganda

on

Coastal marine ecosystems under Research and Systematic Observation

25 March 2013

Draft

1. The SBSTA at its 37th session invited Parties to submit, by 25 March 2013, their views on:

- possible items for consideration as part of the research dialogue during SBSTA 38[1];
- (see Decision)
- the content of the workshop on technical and scientific aspects of ecosystems with high-carbon reservoirs not covered by other agenda items under the Convention, such as coastal marine ecosystems, in the context of wider mitigation and adaptation efforts[2].

2. For this purpose the Coalition for Rainforest Nations considered issues related to the above and drafted this submission of views. This submission has been prepared to reflect those discussions and views from many other developing country Parties on ways to enhance the research dialogue with the aim to provide opportunities for engaging with the coastal marine scientific community to present ongoing scientific findings relevant to the needs of the Convention in particular for conservation and enhancement of coastal marine ecosystems sinks and reservoirs as well.

3. The submission of views to SBSTA35 made on 19 September 2011 by *Belize, Cameroon, Central African Republic, Costa Rica, Cote d'Ivoire, Democratic Republic of Congo, Dominican Republic, Ecuador, Gabon, Ghana, Guatemala, Guyana, Honduras, Kenya, Panama, Papua New Guinea, Republic of Congo, Solomon Islands, Togo, and Uganda* on views on the research dialogue, including ongoing activities, associated modalities and ways to enhance the dialogue on Coastal Marine Ecosystems included in document FCCC/SBSTA/2011/MISC.8/Add.1 should be recalled.

4. The submission of views to SBSTA36 made on 29 February 2012 by Bangladesh, Cameroon, Central African Republic, Congo (Republic), Costa Rica, Cote d'Ivoire, Democratic Republic of Congo, Dominica, Dominican Republic, Fiji, Gabon, Ghana, Guyana, Honduras, Kenya, Pakistan, Panama, Papua New Guinea, Sierra, Leone, Solomon Islands, Suriname and Uganda on the research dialogue, including ongoing

[1] FCCC/SBSTA/2012/L.25, paragraph 13.
[2] FCCC/SBSTA/2012/L.25, paragraph 16.

activities, associated modalities and ways to enhance the dialogue on Coastal Marine Ecosystems included in document FCCC/SBSTA/2012/MISC.2/Add.1 should be recalled.

Background

5. Status of research and science on coastal marine ecosystems (CME):

Recent research has made great inroads into describing the valuable role that coastal and marine ecosystems (CMEs) play in sequestering carbon dioxide (CO_2) and storing vast amounts of carbon. The carbon stocks and emissions of these ecosystems are also commonly referred to as "Blue Carbon". Relatively unappreciated, however, is that conversion of these coastal ecosystems also impacts the very large pools of previously-sequestered carbon. Residing mostly in soils, this "blue carbon" can be released to the atmosphere when these ecosystems are converted or degraded. Despite the value of mangrove forests, seagrass beds, and salt marshes in sequestering C, and the other goods and services they provide, these systems are being lost at critical rates and action is urgently needed to prevent further degradation and loss. Recent assessments suggest that about one-third CMEs have already been lost over the past decades as a result of reclamation, deforestation, coastal development, and transformation to aquaculture or agriculture. Combining the best available data on global area, land-use conversion rates, and near-surface carbon stocks in each of the three ecosystems, using an uncertainty-propagation approach, recent studies have estimated that 0.15 - 1.02 Pg (billion tons) of carbon dioxide are being released annually, several times higher than previous estimates that only accounted for lost sequestration. These emissions are equivalent to 3 - 19% of those from deforestation globally, and result in economic damages of $US 6 - 42 billion annually. The largest sources of uncertainty in these estimates stems from limited certitude in global area cover and rates of land-use conversion. Additional research is also needed on the fate of ecosystem carbon upon conversion. Recognition of the C sequestration and storage value of coastal and marine ecosystems provides a strong argument for their protection and restoration; however for this to occur, it is necessary to disseminate the scientific progress to policy and decision makers in order to allow opportunities to address this emission source.

6. Status of discussions on coastal marine ecosystems in the UNFCCC:

The Coalition for Rainforest Nations (CfRN) introduced the issue of Coastal Marine Ecosystems and their contribution to mitigation of climate change in 2011, within the agenda item Research and Systematic Observation, at the 34th Session of the Subsidiary Body on Scientific and Technological Advice (SBSTA). Over the ensuing six months, CfRN argued and convinced Parties that because of their carbon sequestration capacity, coastal marine ecosystems deserved more rigorous scientific examination and future policy review within the UNFCCC.

In Durban, SBSTA 35, much progress was made. Parties agreed to devote a dedicated amount of time to begin focused and concrete discussions on CME at SBSTA 36 in June 2012. SBSTA 35 conclusion on Research and Systematic Observation invites scientists and others to provide data to quantify the human impact on these ecosystems. Parties also discussed staging a workshop on the matter in the latter half of 2012.

At SBSTA 36 CfRN entered the negotiations on CME with the objective of finalizing an international technical workshop which would declare the maturity of the issue from a scientific point of view and the need to start shifting discussions toward policy issues. Parties eventually agreed to a draft decision,

completely bracketed, and to discuss the future organization of a workshop. The presentation by CfRN's expert Dr. Boone Kauffman at a scientific workshop held during SBSTA 36 was very well received. The unfinished business of SBSTA36 was attended to by SBSTA 37 where CfRN was instrumental in mobilizing support for the issue of CME. In Doha, Parties agreed to request the SBSTA to organize a workshop on CME to be held before SBSTA 39, as a fundamental step to advance the discussion about CME.

Furthermore, the IPCC Task Force on National Greenhouse Gas Inventories (TFI) is currently developing additional national-level inventory methodological guidance on wetlands, including default emission factor values, with the aim to fill gaps in the coverage of wetlands and organic soils in the 2006 IPCC Guidelines. This effort will be published asThe 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands. This document ,which includes one chapter on coastal wetlands (Chapter 4) and others of direct relevance, is expected to be adopted in October 2013.

CME for consideration as part of the research dialogue during SBSTA 38

Given the significant role of CME in adaptation and mitigation, the significant carbon stocks and numerous co-benefits, the upcoming research dialogue meeting to be held in conjunction with the thirty-eighth session of the SBSTA, should allocate sufficient time to discuss the technical and scientific aspects of emissions by sources, removals by sinks, and reservoirs of all greenhouse gases, from coastal and marine ecosystems such as mangroves, tidal salt marshes, and seagrass meadows, with a view to identifying and quantifying the impact of human activities.

Objective of the workshop

7. Scientific and technical considerations

Currently, carbon emissions from the conversion of coastal ecosystems are not fully included in emissions accounting or carbon market perspectives, but recent studies suggests they may be disproportionally important to both. The science describing the unequivocal importance of these ecosystems is now at a mature enough stage to warrant a workshop for policy and decision makers and to start assessing the potential contribution of coastal and marine carbon mitigation efforts to the global emission reduction targets as well as to the related co-benefits in terms of adaptation, building resilience and creating new socio-economic opportunities for local communities. The objective of the workshop will be to provide opportunities for Parties to engage with the coastal marine scientific community who will be presenting ongoing scientific findings relevant to the needs of the Convention; in particular for conservation and enhancement of coastal marine ecosystems sinks and reservoirs. Participants will be provided with a platform to discuss the role of Coastal Marine Ecosystems as greenhouse gas sources and sinks, and the potential strategies for their inclusion in mitigation and adaptation approaches, if appropriate.

8. Input to policy

The workshop should catalyze improved knowledge and acceptance of existing scientific findings while facilitating improved policy approaches. The workshop should highlight the relevance and potential of CME with respect to mitigation and adaptation to climate change. The workshop should serve to stimulate technical and scientific considerations around CME with the view to enhance the ongoing policy discussion on incentive mechanisms supporting management of CME.

Contents and structure of the workshop

9. Time, duration and organization of the workshop: the workshop should last 2 days and be based on a series of presentations, general and concurrent breakout discussions and conclusions. Indicatively, the workshop should take place on [XX], in Honduras.

10. Workshop sessions (based on the agenda): the workshop should open with a session on the scientific update and status on coastal marine ecosystems and Stocktaking on the most recent IPCC developments on it. The second and third sessions should cover respectively issues around descriptions, ecology and values of CME and values, threats, and state of our knowledge of CME in the world, considering representation from different regions of the world. The workshop will be then divided into breakout sessions focusing on mitigation and adaptation strategies, MRV, compliance and voluntary market and regionally need assessments. The final part of the workshop will focus on recommendations to SBSTA, input to the IPCC and other policy–related actions and activities. The implications for National Communications and needs for additional capacity building should also be addressed.

Results of the workshop and follow-up

11. Input to the IPCC:

The IPCC is currently calling for expert review of the '2013 Supplement to 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands', which contains a chapter on coastal wetlands. At the workshop Parties should further identify activities that the IPCC can undertake to adequately include CMEs into IPCC reviews and subsequent accounting practices.

The science related to quantifying values of CME (also commonly referred to as Blue Carbon) for climate change mitigation and adaptation is evolving and progressing at a rapid rate. Further, investigations on GHG emissions arising from land cover change in these ecosystems are underway. Ongoing studies on every continent should be highlighted at this workshop given that new information may come to light. This new science will be of great value to the IPCC as they integrate the CMEs into other climate change mitigation and adaptation programs.

12. Recommendations to SBSTA

While underfunded, there is a dedicated body of scientists focusing on the interactions of CME and climate change. The largest sources of uncertainty in estimates of the roles of CME in global carbon cycles stems from limited certitude in global area coverage and rates of land-use conversion, but additional research is also needed on the fate of ecosystem carbon upon conversion. Although the relevant science supporting the initial estimates of C sequestration and emissions from CMEs will be refined in the coming years, it is clear that policies encouraging the sustainable management of coastal ecosystems could significantly reduce carbon emissions from the land-use sector, in addition to sustaining the well-recognized ecosystem services and other socio-economic and environmental co-benefits of coastal habitats.

On the basis of the technical and scientific analysis emerged from the workshop and ongoing policy makers should be invited to determine how to further design and implement mechanisms that will deliver verifiable and additional reductions of greenhouse gas emissions. The SBSTA should therefore recognize the role and the significance of CME and dedicate further work on:

- Establishing comprehensive global and national approaches to coastal and marine natural carbon management for climate change mitigation including all relevant natural systems
- Provide a scientific knowledge base and technical methods

13. Roadmap to define next steps for CME in the UNFCCC process until 2015

Policy advocacy and implementation should move respectively to the ADP and SBI when appropriate. The goal is to ensure that coastal marine ecosystems activities are further incorporated into the policy and financing process of the UNFCCC. To this aim a phased approach should be applied so that developing countries may develop demonstration projects opened to public sources. To encourage implementation of coastal ecosystem conservation, sustainable use and restoration activities as a mechanism for climate change mitigation, the workshop will explore the details of how CME activities could be included in the nationally appropriate mitigation actions (NAMAs) of developing countries seeking international support or as part of current REDD efforts according to national legal frameworks and conditions. In this regard, we need to take on board and elaborate on the role of CME mitigation potential in the new legally binding framework to be finalized by 2015.

Annex

Workshop on Coastal Marine Ecosystems
2013 Honduras, 2 days

Draft agenda

Welcome – Country Host Leadership

Opening Science Address: The scientific basis/rationale for inclusion of Coastal Marine Ecosystems in mitigation and adaptation strategies
Science of Coastal Marine Ecosystems

Overview: Ecosystem Services of Coastal Marine Ecosystems
Descriptions, Ecology and Ecosystem Service Values (including Carbon) of Coastal Marine Ecosystems.

- Seagrass
- Marshes
- Mangroves
- Comparisons, similarities and differences of Coastal Marine ecosystems and fresh wetlands

IPCC update on the wetland revision with emphasis on the chapter on Coastal Marine Ecosystems (IPCC)

Economic values of Coastal Marine Ecosystems
Coastal Marine Ecosystems of the World: Values, Threats, and state of our knowledge
Coastal Marine Ecosystems – Africa
Coastal Marine Ecosystems – Asia/Australia
Coastal Marine Ecosystems – South America Latin America Coastal Marine Ecosystems – North America/Europe
Climate change Mitigation and Coastal Marine Ecosystems - opportunities within the UNFCCC

Breakout Sessions/Open Discussions:

Coastal Marine Ecosystems and:
• Mitigation Strategies
• Adaptation strategies
• Monitoring, Reporting and verification
o Remote sensing strategies
o Ground based inventories
• Compliance markets
• Regional Need Assessments (per region): Latin America, Asia, Africa, Europe/North America

Final Discussion on next steps
• Recommendations to SBSTA/COP
• Input to the IPCC
• Other policy–related actions and activities

Paper no. 3: Ireland and the European Commission on behalf of the European Union and its member States

SUBMISSION BY IRELAND AND THE EUROPEAN COMMISSION ON BEHALF OF THE EUROPEAN UNION AND ITS MEMBER STATES

This submission is supported by Albania, Croatia, Bosnia and Herzegovina, Iceland, the Former Yugoslav Republic of Macedonia and Serbia.

Dublin, 19 March 2013

Subject: Research and Systematic Observation

1. Introduction and General Comments

The European Union and its 27 Member States (EU) consider that the Research Dialogue has been a highly effective vehicle for facilitating dialogue between research programmes and policy makers. Successful dialogue sessions since SBSTA 28 have allowed research organisations to update policy makers on developments, and for policy makers to communicate their views on Research priorities to those organisations. Research workshops provide an opportunity for more in-depth consideration of these issues. The EU appreciated the active participation of regional and international climate change research programmes and organisations in the Dialogue and thanks these organisations for their useful contributions to date.

2. The Research Dialogue at SBSTA 38

The EU welcomes the conclusions of SBSTA at its thirty-seventh sessions and the view that "the technical and scientific aspects of emissions by sources, removals by sinks, and reservoirs of all greenhouse gases, including emissions and removals from terrestrial ecosystems such as steppe, savannah, tundra and peatlands, with a view to identifying and quantifying the impact of human activities" would be a useful theme of the next dialogue.

The SBSTA also invited Parties to submit their views on the research dialogue. In this context the EU wishes to note the importance of terrestrial ecosystems and the importance of understanding and quantifying human impacts on these. The EU considers that the potential roles of such ecosystems

in achieving the shared goal of insuring the global temperature increase is kept below 2 degree Celsius, relative to pre-industrial temperatures (the 2C objective), needs to be better understood. It also recognises that considerable uncertainties and gaps exist in this area of research and that significant further effort is required including to prioritise actions to reduce relevant uncertainties and bridge gaps in knowledge. This includes increased efforts for the deployment of required systematic observation systems.

The EU considers that analyses of terrestrial ecosystems is essential to analysis of future emissions pathways consistent with the 2C objective, as well as analysis of future climate change impacts on major carbon pools in biomass and soils. This requires

- Assessment of major terrestrial ecosystems including the size, nature and climate vulnerability of their associated carbon pools
- Knowledge of the dynamics of the cycles and processes, including management systems, that maintain their vitality and the factors which regulate their stability
- Solutions in relation to management of ecosystems to maintain or enhance their mitigation contributions or to reduce their vulnerability to climate change impacts via adaptation as well as synergies/co-benefits between these activities

The EU would therefore welcome updates on

- Current research on quantification of carbon pools in terrestrial ecosystems, on-going changes in these pools, as well as research on the carbon, and other, cycles that impact on ecosystem-based GHG emissions and removals
- The development and deployment of systems used to monitor and assess changes in ecosystem at various resolutions and levels
- Approaches to inclusion of data and analysis of carbon in terrestrial ecosystems into Earth system models and appreciation of climate-carbon feedback in emission pathways
- Approaches to assess the challenges faced by these systems under future climate conditions and implications to the mitigation challenges, and on how vulnerabilities may be identified and addressed
- Information on adaptation measures for terrestrial ecosystems and the limitations of these as well as their potential co-benefits for mitigation

- Ways to reduce key uncertainties and bridge knowledge gaps in relation to vulnerability of terrestrial ecosystems and potential feedbacks e.g. those associated with permafrost dynamics and consequential potentials for GHG releases.

The EU also recognised that the dynamic of carbon exchanges between terrestrial, ocean and atmospheric reservoirs is determined by a range of factors and that decreased efficiency and potential saturation of ocean or terrestrial sinks would have significant consequences for atmospheric concentrations of carbon dioxide and therefore for future climate. Aspects of these for ocean regions may be further explored in a future Research Workshop. Thus the EU would also welcome updates of analysis of projections of future capacity of major reservoirs and saturation issues for terrestrial ecosystems.

Conclusion

The EU looks forward to an active Dialogue process on this theme during SBSTA 38. It considers that the Dialogue should allow Parties to gain a greater understanding of the extent and nature of carbon stocks in terrestrial ecosystems; their contributions as sinks for GHG and the vulnerability of their carbon stocks. These are key issues for achievement of the 2C objective. In this context it is important that work and systems to provide more accurate quantification of such sources and sinks and their variability at various timescales are outlined, and that the dialogue should aim to identify mitigation and adaptation solutions and the synergies between these.

Paper no. 4: Japan

Japan's submission regarding its views on the content of research dialogue and on relevant information relating to technical and scientific activity in climate change research

Japan welcomes the opportunity to submit the following information as requested in paragraphs 13 and 17 of the conclusion reached at SBSTA 37 (FCCC/SBSTA/2012/L.25):

(1) Its views on possible items for consideration as part of the research dialogue during SBSTA38;
(2) Information on the technical and scientific aspects of emissions by sources, removals by sinks, and reservoirs of all greenhouse gases, including emissions and removals from terrestrial ecosystems such as steppe, savannah, tundra and peatlands, with a view to identifying and quantifying the impact of human activities.

- In the forthcoming research dialogue of SBSTA 38, Japan would like to present the results of its research on climate change projection. These include, for example, its development and improvement of the 20-km-mesh super-high-resolution global atmospheric model called MRI-GCM, which is able to simulate global distribution of observed tropical cyclones and extremely strong tropical cyclones (a task not possible with conventional models). A further example of Japan's research results is seen in near-term climate prediction using the high-resolution coupled atmosphere-ocean climate model named MIROC. Researchers found that effective prediction covering a period of about five years (or more depending on location) is possible with initialization based on observational data in regard to decadal-scale natural climate variability in the Atlantic and the Pacific.

- Additionally, afore-mentioned research program has also produced a number of outcomes contributing to (2) in the introduction above, which are detailed here. The research team has incorporated ecosystem dynamics, chemical processes and other variables into the MIROC to produce a new model called MIROC-ESM, which incorporates carbon cycle processes. The model estimated that CO_2 emissions from fossil fuels must be negative (thus, pointed out that artificial absorption of carbon is necessary) by the latter half of the 21st century in order to realize RCP 2.6 (to stabilize CO_2 concentration at 410 ppm or the CO_2 equivalent of 450 ppm with methane, etc. added). It should be noted that such research outcomes are inevitably accompanied by uncertainties, and it is essential to closely monitor IPCC AR5 assessments and also new research that address such predictions. In light of the importance of considering ways to deal with such uncertainties and to utilize the knowledge for decision-making, Japan has leveraged its Environment Research and Technology Development Fund to begin a research program called Integrated Climate Assessment – Risks, Uncertainties and Society (ICA-RUS) with the aim of developing and proposing strategies for the global-scale management of climate change risk. Specifically, the program will involve

consideration of constraints, uncertainties, risk management options and societal value judgments. It is expected to contribute to international consensus building, support domestic policy development, and raise general awareness of climate change issues.

- If (2) in the introduction above is accepted as a theme of the next research dialogue, the Japan- Indonesia joint research project (under SATREPS program) called Wild Fire and Carbon Management in Peat-Forest in Indonesia can provide innovative information on ecological carbon estimation as follows: (i) estimation of peat amounts at carbon flux from peatland degradation in Indonesia. The current rough estimation of carbon sequestration in the world's tropical peatlands is 80 GtC (as carbon). As Indonesia is home to two thirds of the world's tropical peatland, even carbon emissions (0.5 GtC) from a 1% loss of such peatland in the nation would exceed Japan's total annual carbon emissions; (ii) elucidation of the precise mechanisms behind the workings of large-scale greenhouse gas (GHG) emissions induced by the degradation of tropical peatland ecosystems; (iii) technological innovation in the estimation of carbon sequestration and flux in tropical peatland areas, for which an integrated monitoring, reporting and verification (MRV) system has been developed in combination with remote sensing data from satellites and long-term ground monitoring data. This modeling and simulation is being used to develop a real-time water level map of tropical peatland in Indonesia, which will enable the creation of spatial maps showing CO_2 emissions from the microbial decomposition process and wildfires in tropical peatland areas.

- Japan operates a number of satellites that collect information to contribute to (2). As part of the above research project with Indonesia, Japan is developing a multi sensor called hyper-spectral imager suite (HISUI) and a liquid crystal tunable filter camera. Another prime example is the Greenhouse-gases Observing Satellite (GOSAT) as it is used to calculate GHG global distribution, which is affected by anthropogenic emissions. GOSAT can now also be used to estimate monthly net fluxes (the difference between sources and sinks) by region*. As a result, it has become possible to estimate the net flux of Siberia's substantial forestland, which could not previously be measured. The Global Change Observation Mission – Climate (GCOM-C) satellite scheduled for launch in 2015 is expected to help clarify and quantify forestland's carbon fixation capacity by measuring amounts of photosynthesis and the biomass of vegetation on such land.

* The world is divided into 42 land regions (each covering 2,000 km^2) and 22 ocean regions.

Paper no. 5: Russian Federation

Предложения Российской Федерации по соображениям для диалога об исследованиях, включая информацию по техническим и научным аспектам эмиссий и стоков всех парниковых газов в наземных экосистемах (исследования и систематические наблюдения – ВОКНТА)

Российская Федерация приветствует заключение ВОКНТА, принятое на 37-й сессии (FCCC/SBSTA/2012/L.25) и приглашение представить информацию технических и научных аспектах выбросов из источников, абсорбции поглотителями и накопителями всех парниковых газов, включая выбросы и абсорбцию экосистемами суши, такими как степи, саванны, тундры и торфяники, с целью выявления и количественного измерения влияния антропогенной деятельности. Российская Федерация с удовлетворением отмечает, что ВОКНТА в указанном заключении принимает во внимание взгляды Сторон о важности наземных экосистем, представляющих собой значительные резервуары углерода, в том числе таких как степи, тундры и торфяники. Антропогенная деятельность в значительной степени модифицирует выбросы и абсорбцию парниковых газов в наземных экосистемах, что создает потенциал для осуществления деятельности по смягчению климатических изменений и проведения адаптационных мероприятий.

Площадь **тундр** России составляет 280 млн. га (16% от территории страны). Запасы углерода в гумусе и торфе почвенного слоя для разных вариантов тундр варьируют в пределах 100-200 т С / га, суммарный запас углерода в почвах тундр России равен 28.6 Гт С. Большая часть тундр мира располагается в пределах распространения многолетнемерзлых пород. Деградация многолетнемерзлых пород, инструментально наблюдаемая на сегодняшний день во многих регионах тундр, выражается в повышении температуры мерзлых пород, в увеличении глубины сезонного оттаивания и проявлении деструктивных процессов. Многолетняя мерзлота является резервуаром, сохраняющим парниковые газы, органическое вещество – субстрат продукции парниковых газов, и микробное сообщество от момента замерзания на протяжении тысячелетий. Деградация мерзлоты при потеплении климата приводит к высвобождению этих агентов, что чаще всего ведет к увеличению выбросов парниковых газов экосистемами суши, такими как тундры. Антропогенная модификация мерзлотных экосистем в источники парниковых газов происходит быстрее естественной. Главными причинами этого являются нарушение теплоизолирующих покровов и термического режима мерзлоты при строительстве, а также тепловой контакт между сооружениями и многолетнемерзлыми породами в процессе эксплуатации. Антропогенное воздействие на мерзлотные экосистемы может быть сокращено путем управления мерзлотной обстановкой – применения направленных мер по сокращению теплового эффекта от сооружений.

Торфяные болота являются наиболее значимым на суше долговременным накопителем атмосферного углерода. Они влияют на потоки метана и закиси азота. Изменение климата существенно изменяет эти функции, что дополнительно усиливается воздействием человека. Деградация торфяных болот – постоянно растущий фактор усиления выбросов парниковых газов в атмосферу. Разработка мер, направленных на рациональное использование болот и их восстановление, имеет важное значение как для адаптации, так и для смягчения изменения климата. Занимая первое место по площади болот на планете (более 140, а вместе с заболоченными мелкооторфованными землями более 370 млн. га) и обеспечивая от ¼ до ½ запаса углерода в торфе, Россия за последние 10 лет внесла

существенный вклад в усиление внимания к болотам со стороны Конвенции по биоразнообразию, Рамсарской конвенции и РКИК. В части адаптации приоритетны вопросы, связанные с наиболее уязвимыми болотами, находящимися в критических условиях (мерзлые, засушливые регионы, торфяные пожары), а также подверженные влиянию хозяйственной деятельности. В части смягчения усилия должны быть направлены на разработку методики оценки и выработки мер по снижению выбросов ПГ в результате их охраны, оптимизации использования, их обводнения и восстановления.

Степи, луга и их антропогенные модификации на черноземных почвах, включая залежи и пастбища, занимают в России более 220 млн. га. Это самые продуктивные экосистемы в умеренном поясе – до 7-10 т С / га в год, а суммарная чистая продукция превышает таковую, например в зоне северной и южной тайги. Природные степи консервируют огромные запасы углерода в черноземных почвах в виде гумуса и органоминеральных соединений. Запас углерода в почвах степных экосистем России (около 13% от общей территории страны) оценивается в 130 Гт С, что составляет около 30% от общих запасов углерода почв России.

Практически полная распашка европейских степей еще в конце 19 в. и масштабное освоение целинных степей Заволжья, южного Урала, юга Западной Сибири, северного Казахстана и Алтая в середине 20 в. – два крупномасштабных проекта, которые привели к высвобождению огромных объемов углерода из черноземов, резкому изменению альбедо, уровня транспирации и стока степных рек. Все это привело к поступлению в атмосферу значительных объемов парниковых газов. Другое важнейшее нарушение степных экосистем, приводящее к эмиссии углерода, – пожары. Степные и сельскохозяйственные палы – существенный источник «черного углерода» в атмосфере.

Российская Федерация уделяет серьезное внимание развитию исследований климаторегулирующих функций наземных экосистем. Российской академией наук (Институт географии, Институт лесоведения, Центр по проблемам и экологии лесов и др.), Росгидрометом (Институт глобального климата и экологии), администрациями особо охраняемых природных территорий, негосударственных организаций и др. организациями реализуются различные программы и проекты, направленные на решение задач по тундрам, болотам и степям в связи с изменениями климата. Результаты этих исследований выявили первоочередные вопросы, требующие дополнительного изучения и анализа. Тем не менее, степень координации международных научных усилий следует признать недостаточной для сохранения и эффективного управления климаторегулирующими функциями этих экосистем в условиях климатических изменений.

По мнению Российской Федерации, приоритетное внимание в рамках диалога по исследованиям должно быть уделено:

- совершенствование системы оценки площадей, занимаемых экосистемами тундр, болот и степей и их антропогенными модификациями;

- детальный количественный анализ биогенных (фитомасса, первичная продукция, мортмасса) и почвенных (гумус, торф, органоминеральные соединения) компонентов цикла углерода в тундрах, степях и на болотах;

- синтез данных по балансу углерода в экосистемах тундр, степей и болот с учетом его модификаций в условиях разной степени антропогенной трансформации (для тундр – механическое повреждение и загрязнение; для болот – осушение, изменения водного

режима, пожары; для степей – распашка, выпас, залежные сукцессии, инвазии чужеродных видов);

- разработка схем и механизмов экономического стимулирования сохранения и восстановления степей, тундр и торфяников для целей депонирования углерода и снижения выброса парниковых газов;

- разработка технологий мониторинга эмиссий парниковых газов в результате палов и пожаров на степных залежах и осушенных торфяниках;

- оценка вклада усилий по сохранению экосистем тундр, степей и торфяников на особо охраняемых природных территориях, в заповедниках и национальных парках, в национальную деятельность по сокращению и предотвращению выбросов парниковых газов.

В соответствии с пунктом 17 Проекта выводов, предложенный Председателем по пункту 7 повестки дня 37-й сессии ВОКНТА (Доха, 26 ноября − 1 декабря 2012 года) «Исследования и систематическое наблюдение» (документ FCCC/SBSTA/2012/L.25) Российская Федерация готова предоставить детальную информацию по перечисленным выше техническим и научным аспектам в рамках следующего диалога по исследованиям, который планируется провести на 38-й сессии ВОКНТА (Германия, Бонн, 3-24 июня 2013 года).

[Translation as submitted]

Submission of the Russian Federation on suggestions for the research dialogue, including information on the technical and scientific aspects of emissions and removals of all greenhouse gases in terrestrial ecosystems (Research and systematic observations – SBSTA)

The Russian Federation welcomes conclusion of SBSTA, accepted at the 37th session (FCCC/SBSTA/2012/L.25) and invitation to provide information on the technical and scientific aspects of emissions by sources, removals by sinks, and reservoirs of all greenhouse gases including emissions and removals from terrestrial ecosystems such as steppe, savannah, tundra and peatlands with a view to identifying and quantifying the impact of human activities. The Russian Federation notes with appreciation that SBSTA in the abovementioned conclusion takes into account the views of the Parties concerning the significance of terrestrial ecosystems representing considerable reservoirs of carbon, including such as steppe, tundra and peatlands. The impact of human activities to a great extent modifies emissions and removals of all greenhouse gases by terrestrial ecosystems that offer the potential of activities on mitigation of climate change and adaptation measures to be undertaken.

Area of tundra in Russia is 280 million hectares (16% of the land in the country). Carbon stocks of humus and peat of the soil vary from 100 to 200 tons of Carbon per hectare for different types of tundra, total carbon storages in soils of tundra in Russia is 28.6 Gigatons. The major part of the tundras of the world is located within the limits of permafrost distribution. Degradation of permafrost, instrumentally observed by currently in many tundra regions, is reflected in the increase of the permafrost temperature, the increase of seasonal thawing depth and activation of the destructive processes. Permafrost is the reservoir, preserving the greenhouse gases, organic matter which is the substrate for greenhouse gases production and microbial community since the time of freezing for millennia. Permafrost degradation under climate warming causes the release of these agents, which most often leads to increase in the greenhouse gases emissions by terrestrial ecosystems such as tundra. The human modification of ecosystems on permafrost into the sources of greenhouse gases occurs more rapidly than natural. The main reasons for this are the disturbance of the thermoinsulating covers and thermal regime of permafrost during construction operations, and thermal contact of constructions and permafrost during the exploitation. The impact of human on the ecosystems on permafrost could be reduced by permafrost environment management, which is the application of measures aimed to reduce the thermal effect from constructions.

Peatlands are the most significant terrestrial long-term removals of atmospheric carbon. They affect the fluxes of methane and nitrous oxide. Climate change substantially alters these functions, which further enhanced by the impact of human. Degradation of peatlands is a constantly growing factor enhancing the emissions of the greenhouse gases to the atmosphere. Development of measures aimed to management and restoration of peatlands is essential for both adaptation and mitigation of climate change. Ranking first on the planet by area of peatlands (more than 140 millions of hectares, and more than 370 millions of hectares when taking into account waterlogged shallow peaty lands) and providing ¼ to ½ of carbon storages in peatlands, Russia substantially contributed to increased attention to peatlands from the CBD, the Ramsar Convention, and FCCC Parties during the last 10 years. Concerning the adaptation the issues associated with the most vulnerable peatlands, located in critical conditions (permafrost, arid regions, peat fires), or subject to the impact from human activities are urgent. Concerning the mitigation efforts should be aimed at development of methodology of estimation and elaboration of measures to reduce emissions of the

greenhouse gases resulting from protection, optimizing the use, irrigation and restoration of peatlands.

Steppe, grassland, and its anthropogenic modification on chernozems, including fallow and grazing occupy 220 millions of hectares in Russia. These are the most productive ecosystems in temperate latitudes, with 7-10 tons of Carbon per hectare per year, and total net production exceeding that in northern and southern taiga belt. Natural steppe stores huge stocks of carbon in chernozems as humus and organic compounds. Carbon stocks in soils of steppe ecosystem in Russia (about 13% of the territory of the country) estimates 130 Gigatons of Carbon, which is 30% of carbon stocks in soils of Russia.

Almost complete plowing of European steppes by the end of 19th century and large-scale exploration of virgin steppes in Volga, Southern Urals, south of Western Siberia, Northern Kazakhstan and Altay in the middle of 20th century were the two crisis, which led to release of huge volumes of carbon from chernozems, drastic change of albedo, transpiration and flow of steppe rivers. All of these factors resulted in emission of significant volumes of the greenhouse gases. The other important disturbance or the steppe ecosystem, resulting in emission of carbon is wildfires. Steppe and agricultural fires are substantial source of black carbon in the atmosphere.

The Russian Federation pays serious attention to studies of climate regulative functions of terrestrial ecosystems. Russian Academy of Science (Institute of Geography, Institute of Forest Science, Center of Ecology and Productivity of Forests, etc.), Russian Hydrometeorology Agency, administrations of protected areas, non-governmental organizations, and other organizations perform different programs and projects aimed at finding effective solutions in tundra, peatland, and steppe management under climate change. The results of these studies identified high priority challenges necessary for further research and analysis. Nevertheless the coordination of international research efforts is unsuccessful to preserve and effectively manage climate regulating functions of these ecosystems under climate change.

Below are the several science and technical issues, significant in the framework of the dialogue on research, from the point of view of the Russian Federation:

- improvement of the system of areal evaluation of tundra, peatlands, and steppe ecosystems and the respective anthropogenic modifications;

- detailed quantitative analysis of biogenic (phytomass, primary production, mortmass) and soil (humus, peat, organic compounds) components of carbon cycle in tundra, steppe, and peatlands;

- synthesis of the data on carbon balance in tundra, steppe and peatlands taking into account modifications from various extent of human impact (mechanical disturbance and pollution of tundra; draining, alteration of the water regime for peatlands; plowing, grazing, fallow successions, invasive species for steppe);

- development of the schemes and mechanisms of economical stimulation of preservation and restoration of steppe, tundra, and peatlands for sequestration of carbon and decrease of the greenhouse gases emission;

- development of techniques of monitoring of the greenhouse gases emission resulting from natural and anthropogenic fires at the steppe fallows and drained peatlands;

- evaluation of contribution of the efforts to preservation of tundra, steppe and peatlands at protected areas, natural reserves and national parks to national activity on reduction and prevention of the greenhouse gases emission.

In accordance with paragraph 17 of the Draft conclusions proposed by the Chair concerning agenda item 7 of the Thirty-seventh session SBSTA (Doha, 26 November to 1 December 2012) «Research and systematic observation» (FCCC/SBSTA/2012/L.25) the Russian Federation is ready to provide detailed information on abovementioned technical and scientific aspects in the framework of the next Research dialogue planned for the Thirty-eighths session of SBSTA (Germany, Bonn, 3-24 June 2013).

Paper no. 6: South Africa

Submission by South Africa

Views from Parties on possible items for consideration as part of the research dialogue during SBSTA 38

25 March 2013

South Africa welcomes the opportunity to provide views on topics to be discussed at the research dialogue. The research dialogues have provided a valuable and productive opportunity for parties to engage directly in the scientific and technical aspects relating to important agenda items, and to explore these in open discussion amongst themselves and with the immediate involvement of scientific experts.

With this in mind, South Africa suggests that the research dialogue during SBSTA 38 should emphasize the following topics:

- Emerging research outcomes including from developing countries on emissions from sources and removal by sinks in both terrestrial and marine ecosystems, and particularly the role of vegetation cover change and wildfire, and how these, and their broader implications, might be better observed, quantified, modelled and projected.
- Information on the latest Special Report of the Intergovernmental Panel on Climate Change (IPCC) on Managing the Risks of Extreme Events and Disasters to advance Climate Change Adaptation.
- Updated climate information such as that on future climate scenarios from Coupled Model Intercomparison Project Phase 5 (CMIP5) and Coordinated Regional Climate Downscaling Experiment (CORDEX). In particular, we are keen to be informed about how these new efforts are contributing to reducing uncertainties relative to the IPCC Fourth Assessment Report (AR4) , especially for Africa, and about the known limitations of these approaches and how these relate to potentially underestimating future climate risk.

Other aspects may include

- Climate change model projections downscaled to regional and where possible higher resolution, and the appropriateness of using downscaled climate projection information to

support decision making at finer scale, especially given the relationship between finer scale of projections and increasing uncertainty.

- Relating to the above point, information on how best to quantify and represent uncertainties in climate model projections, to represent these in impacts projections, and to manage the implications
- Improving quantifying the implications of drought, land use, land degradation and land management for land-based carbon sources and sinks
- Management of risks associated with emission from sources and removal by sinks in consideration of vulnerability to impacts by sources and assimilative capacity of sinks respectively
- Relevant research aspects under the Global Framework for Climate Services and Global Ocean Observing System

Paper no. 7: Uzbekistan

Opinion of Republic of Uzbekistan
on possible items for consideration as part of the research dialogue during SBSTA 38
and
information of Republic of Uzbekistan on the technical and scientific aspects of emissions by sources, removals by sinks and reservoirs of all greenhouse gases including emissions and removals fro, terrestrial ecosystems such as steppe, savannah, tundra and peatlands with a view to identifying and quantifying the impact of human activities, for consideration as a theme for the next research dialogue during SBSTA 38

Assessment of emissions and absorption of GHG by the surface ecosystems and qualitative assessment of anthropogenic effect on ecosystems is one of the timely directions of studies for Uzbekistan. Steppes are one of the ecosystems very extensively spread on the territory of Uzbekistan. Depending on the degree of watering of territory the steppes are widely used in irrigated land farming mainly for growing of cotton. The major part of steppes is occupied by the desert-and-steppe vegetation. Territories of steppes are also used as pastures – mainly, for grazing of astrakhan ships.

Such institutions in the Republic of Uzbekistan as Institute of Soil studies and Institute of general and non-organic chemistry conduct studies of definition of organic carbon content. These studies are performed on irregular basis in the framework of Government science-and-technological program of applied and fundamental studies planned for 3 or 5 years.

Uzbekistan as developing country with the economy in transition and Non-Annex I Party to UN FCCC considers that it is necessary to develop studies in the field of scientific studies in the context of item 2 of SBSTA (FCCC/SBSTA/2012/L.25, paragraph 17) and gives the priority to the following objectives:

1) To work out and approve the government Program for making up the carbon balance for the whole territory of the country.
2) To define the priority reservoirs of CO_2 sinks, sources of CO_2 emissions on the whole territory including also the ecosystems of steppes typical for the country.
3) To calculate the carbon reserves in the soils of Uzbekistan on the base of international classification of soils and corrected surface areas.
4) To reveal the main types of anthropogenic impact (including the erosion processes) on the steppe ecosystems causing the losses of the soil carbon. To develop alleviation measures.
5) To develop and improve system of monitoring of changing carbon reserves regarding the present demands.
6) To continue the measures on greening the steppe territories in the framework of government programs on permanent basis.