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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

AD HOC GROUP ON THE BERLIN MANDATE

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Agenda item 3

**RESPONSE FROM PARTIES ON ISSUES
RELATED TO SINKS**

Comments from Parties

Note by the secretariat

1. At the first part of its eighth session, the Ad Hoc Group on the Berlin Mandate (AGBM) considered the issue of greenhouse gas sinks in the context of quantified emission limitation and reduction objectives (QELROs) (FCCC/AGBM/1997/8).
2. At the same part of the session, Parties were invited to submit views on this topic by 12 November 1997. The secretariat was requested to compile these submissions into a miscellaneous document.
3. The secretariat has received eight submissions* which have already been issued as document FCCC/AGBM/1997/MISC.4. The secretariat has received five further submissions between 13 and 20 November 1997 from Australia, Canada, Iceland, Kenya and the United Kingdom of Great Britain and Northern Ireland on behalf of the European Community and its member States. In accordance with the procedure for miscellaneous documents, these submissions are attached and are reproduced in the language in which they were received and without formal editing.

FCCC/AGBM/1997/MISC.4/Add.1
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* In order to make these submissions available on electronic systems, including the World Wide Web, these contributions have been electronically scanned and/or retyped. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

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PAPER NO. 1: AUSTRALIA

PROPOSED QUESTIONS FOR PARTIES REGARDING SINKS (r2)

1. Should anthropogenic sinks be included or excluded in a QELRO?

Why or why not? (In responding you may wish to consider which budget period or target year.)

The inclusion of anthropogenic sinks in national programs to mitigate climate change is specifically provided for in the Climate Change Convention and in the Berlin Mandate. Articles 4.1 and 4.2 of the Convention relating to the commitments by Parties specifically uses the phrase “anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol” when dealing with inventories and mitigation action. Drawing on the wording in these articles, the Berlin Mandate also specifically states (article II 2 (a)) “This process will, inter alia, (a) aim for developed country Parties included in Annex 1 to set qualified limitation and reduction objectives for their anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol ...”. Omitting sinks from QELROs would therefore be inconsistent with both the Convention and the Berlin Mandate.

Australia believes anthropogenic sinks should be included in a QELROs as part of a comprehensive approach, that is, one that covers all greenhouse gases, all emissions, sources and sinks. The objective of the Convention (Article 2) implies that greenhouse mitigation action should cover areas that impact on the greenhouse gas concentrations in the atmosphere. Enhancing removals of greenhouse gases from the atmosphere is as important to this as is reducing emissions by sources.

According to IPCC WG1 (Technical summary, Table 2) the land use change and forestry sector accounts for around 25% of net anthropogenic emissions, Therefore, LUCF cannot be omitted if effective mitigation action is to be pursued.

Australia is therefore concerned that excluding sinks from a QELROs;

- removes any incentive to implement sink enhancement strategies even though they can make a major contribution to reducing net global and national emissions;
- prevents countries from receiving credit for any reductions in the level of net emissions achieved through sequestration activities;
- is to the advantages of countries whose national emissions profile does not include a major contribution from sinks.

Australia further believes adoption of the comprehensive approach for the first budget year is necessary because;

- it ensures that explicit consideration of the environmental impact of each greenhouse gas is taken into account by countries in responding to the climate change challenge;
- recognises different national emission profiles;
- enhances the cost effectiveness of national and global response;

- maximises the national response flexibility, as anything less than a fully comprehensive approach would unfairly limit flexibility and unfairly constrain the opportunities for cost effective action for some parties.

2. What would be the impact of including or excluding sinks on the QELRO levels, national plans or policies of your country? (Please try to provide a qualitative answer.)

Individual country's emission profiles differ and in this respect Australia's profile is individual among Annex 1 countries, with the energy sector accounting for only about half of our emissions compared to an average of 80% for OECD countries. Land use change and forestry account for around 20% of Australia's emissions, whereas these sectors are a next sink for the majority of other Annex 1 countries. Sinks are therefore important in Australia to sustainable land management.

In recognition of our situation, Australia's national greenhouse response strategy, while addressing emissions from the energy sector, also has a strong focus on LUCF sectors. This comprehensive approach ensures our climate change mitigation action is appropriately targeted to achieve maximum effectiveness.

Key programs that have a direct impact on human action include the National Vegetation Initiative, a program which includes extensive replanting of Australia's native vegetation cover, and the 2020 Vision, which aims to treble the plantation estate by 2020.

3. What criteria governed your answer to question number 1?

The criteria that governed Australia's response is its firm support for the comprehensive approach, based on the fact that around 25% of world greenhouse emissions are from LUCF, that is, non-energy sources. Such an approach maximises the cost effectiveness of mitigation action through allowing individual countries to tailor their approach to their own emissions profile. Australia sees the principles surrounding the inclusion of sinks as a separate issue to accounting mechanisms pertaining to sinks used in meeting QELROs.

Australia is concerned that excluding sinks from a QELROs;

- removes any incentive to implement sink enhancement strategies even though they can make a major contribution to reducing net global and national emissions;
- prevents countries from receiving credit for any reductions in the level of net emissions achieved through sequestration activities;
- is to the advantages of countries whose national emissions profile does not include a major contribution from sinks.

As stated in Q1, Australia believes adoption of the comprehensive approach for the first budget year is necessary because it;

- ensures that explicit consideration of the environmental impact of each greenhouse gas is taken into account by countries in responding to the climate change challenge;
- recognises different national emission profiles;
- enhances the cost effectiveness of national and global response;

- maximises the national response flexibility, as anything less than a fully comprehensive approach would unfairly limit flexibility and unfairly constrain the opportunities for cost effective action for some parties.

4. How would you define “anthropogenic” sinks in the context of a QELRO?

Australia notes that the IPCC Guidelines for the National Greenhouse Gas Inventory Reporting instructions refers to ‘anthropogenic’ as follows: “In general terms (it) refers to greenhouse gas emissions and removals that are a direct result of human activities or are the result of natural processes that have been affected by human activities. Users may include any human-induced emissions and removals in their inventory as long as they can be clearly documented and quantified.”

Australia has accepted the IPCC Guidelines, and has included LUCF sectors in its national inventory. However, in deriving data for the inventory, and in participation at workshops on LUC, Australia has noted that the issue of the interpretation of the Guidelines has been of concern to Parties. Australia would therefore suggest that work on developing clearer Guidelines on how 'anthropogenic' is to be interpreted be undertaken by SBSTA.

5. Do you agree or disagree with the following proposition; if so why or why not? “Any QELRO that would include sinks should be based on the 1996 IPCC Guidelines. Any new IPCC methods would only apply to a second budget period or subsequent target.”

Australia agrees with the statement, and considers the current IPCC Guidelines to be workable, while acknowledging that, of course, they will continually be refined. Australia believes that the 1996 Guidelines should be applied for the full budget period, with any new Guidelines being applied for the next period. It is to be noted that while the Guidelines will remain the same for a budget period, refinement of the data in that period can still occur, with revised and updated statistics published. In this respect, Australia notes that its inventory figure for 1990 has been revised three times.

6. a) Which IPCC LUCF categories should be included or excluded in a QELRO? Why? Examples: all land use change and forestry/changes in forest and other woody biomass stocks/other.

Australia believes that all terrestrial land areas should be included to ensure a comprehensive coverage and assessment (of all greenhouse gases, all emissions, sources and sinks), in accordance with our response to Q1 and Q3.

b) If some categories are excluded, how should they be dealt with?

Australia believes all categories agreed to be anthropogenic should be included.

7. What reference year should be used as the basis for any QELRO that would include sinks? 1990/2000/none/other.

The base year for measuring emissions needs to be the same for both sources and sinks. Australia has used 1990 as its base year (and has refined the data for that year) as it is used in Article 4.2 of the Climate Change Convention and is featured in most QELROs proposals.

Australia would oppose the option of not having a base year (option 'none') as this would not provide any means of measuring and including in QELROs improvements in sinks. It would, in fact, undermine positive action to protect and enhance sinks.

8. a) How much uncertainty do you associate with the GHG inventories provided by your country for the specific IPCC reporting categories?

Australia notes the collection of greenhouse data as presented in greenhouse gas inventory is a relatively new science, and that for some categories of emissions (eg biological sources) estimations have much refinement before they can match the precision of the energy sectors. The IPCC Guidelines for national inventories recognise varying levels of uncertainty, and seek to improve the quality of inventory data and the surrounding uncertainty of the estimates through checks for completeness and accuracy of inventories. The guidelines ask that an uncertainty assessment be conducted and summarised as far as possible for each major part of the inventory. This is part of the transparent and open (unbiased) approach to a country presenting its national inventory.

Uncertainty is inherent in estimations of GHG emissions and sinks from all sectors. Given that varying levels of uncertainty will exist, Australia believes that use of the same methodology over an accounting period (uniformity of approach) should provide a 'consistent' measure acceptable for QELROs. In the biological sectors, the levels of uncertainties may be higher than for other sectors. Nevertheless, there are methodologies to enable estimates of emissions to be made on a standardised basis. That is, greater confidence can be held in the difference (trend line or net emissions) between two periods (eg 1990 to 2000) where methodology provides a standardised estimate, and errors in estimation are systematic (e.g. an inaccurate emission factor applied to good estimates of activity). In this context, Australia does not believe it is necessary that the same methodology apply between countries; indeed, it may not be appropriate to conditions in other countries, only that it is applied consistently within one country and in one period. Each country should be able to develop methodologies suitable to itself in accordance with the IPCC guidelines.

The criteria used in Australia's inventory to define "high" "medium" and "low" levels of confidence in the different sectors reflects the quality of the activity data generally available in that sector, and the confidence with which the relationships between activity and emissions have been established. For example the quality of activity data in energy use is high, and the relationships between activity and emissions are comparatively simple, the confidence criteria are more stringent than in other sectors.

Level of Confidence	Energy, Transport, Fugitive emissions	Agriculture, Forestry, Land use	Industry Waste
High	Uncertainty<5%	Uncertainty<20%	Uncertainty<10%
Medium	Uncertainty 5-20%	Uncertainty 20-80%	Uncertainty 10-50%
Low	Uncertainty>20%	Uncertainty>80%	Uncertainty>50%

Uncertainty in the emission estimates for each sector in Australia's National Greenhouse Gas Inventory can be summarised as follows:

- . <5% for CO₂ from fuel combustion and >20% for all other gases from fuel combustion
- . <10% for CO₂ and PFCs from industrial processes
- . >20% for fugitive fuel emissions
- . 20-80% for emissions from agriculture
- . >80% for emissions from land use change and forestry
- . >50% for emissions from waste.

Note that Australia expects the size of these uncertainties to reduce as refinements in data occur over time.

b) What uncertainty levels would be appropriate for sinks in a QELRO, bearing in mind the uncertainties associated with sources?

Australia believes that while there are uncertainties associated with the definition and measurement of sinks, there are adequate methods available if rigorously applied to enable sinks to be included in a QELRO.

c) How should uncertainty be dealt with?

See response to Q8 a) above. The IPCC Guidelines for national inventories recognise varying levels of uncertainty, and seek to improve the quality of inventory data and the surrounding uncertainty of the estimates through checks for completeness and accuracy of inventories. It asks that an uncertainty assessment be conducted and summarised as far as possible for each major part of the inventory. This is part of the transparent and open (unbiased) approach to a country presenting its national inventory.

Australia believes that these accepted IPCC Guidelines provide a reasonable standardised approach for dealing with uncertainties. Restricting QELRO to those sectors that have inventory data with high confidence levels assumes that no further improvement to estimation techniques are possible.

9. Should there be a limit on the amount of sinks in a QELRO; if so how should it be determined?

Australia believes that all national sinks relevant to a country's emissions profile should be included. With a comprehensive approach to QELROs, countries will select sink activity most appropriate to their emission profile and to achieving QELROs. Inclusion of sinks in a QELRO naturally implies inclusion in both the reference year and in the budget period.

10. Is the data provided in national communications adequate/inadequate for assessing compliance with a QELRO? Why or why not?

See response to Q8 a). The current guidelines for national communication requires data on all sectors and on both sources and sinks. Australia believes that the accepted IPCC Guidelines provide a reasonable standardised approach for dealing with uncertainties in inventory data as presented in national communications. This is part of the transparent and open (unbiased) approach to a country presenting its national inventory.

Countries will be required to justify their results as reported in their national communication to the Review Team from the FCCC, and while countries should report on all sink activity, only those sinks reported on in the national communication should be claimed against a QELROs. Australia therefore views this review mechanism as very important, and believes this should prove adequate for assessing compliance with QELROs. Australia's forthcoming national communication and its inventory for 1995 have substantially reduced uncertainties from the first national communication, due to the ongoing work in the LUCF sectors.

11. Should any "national system" established under Article 4 [Article 5 in the latest draft] give special consideration to sinks?

Australia views sinks as an integral part of Article 5. Article 5 of the Chairman's text states "Each Party included in Annex 1 shall have in place a national system for the estimation of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol". This text reflects that also found in the Climate Change Convention and the Berlin Mandate. The handling of sources and sinks should reflect the relative weight between these two in a country's greenhouse profile.

12. In order to achieve compliance with a QELRO (with/without sinks), what activities should be credited or not credited and what base year should be used?

Australia believes in a comprehensive approach, covering all greenhouse gases, all emissions, sources and sinks (see Q1 and Q3), and, therefore, all activities relating to sink enhancement, in line with IPCC Guidelines, should be credited, provided they are reported, with measurement, in a country's national communication and are subject to the review mechanism (see Q10). Refer to Q7 re base year.

13. What definitions should be included; in which article of the protocol?

Australia notes that the IPCC Guidelines provides a working reference to the term 'anthropogenic' (refer to Q4). The wording in the Convention (Article 4.1) "emission by sources and removals by sinks" gives a working interpretation of "net emissions".

14. Do you have any other approach to propose?

No comment.

15. Do you have specific protocol language?

No comment.

PAPER NO. 2: CANADA

PROPOSED QUESTIONS And Canada's Answers

FOR PARTIES REGARDING SINKS

1. Should anthropogenic sinks be included or excluded in a QELRO? Why or why not? (In responding you may wish to consider which budget period or target year.) *Yes, further explanation is given in paragraphs 1, 2,3 and 4*
2. What would be the impact of including or excluding sinks on the QELRO levels, national plans or policies of your country? (Please try to provide a qualitative answer.) *Please see paragraphs 4 & 5.*
3. What criteria governed your answer to question number 1? *Criteria are outlined in paragraphs 1,2,3,4 and 5.*
4. How would you define "anthropogenic" sinks in the context of a QELRO? *Please refer to paragraph 3 and note that sinks should be considered in the context of land-use change & forestry and not in isolation of sources.*
5. Do you agree or disagree with the following proposition; if so why or why not? "Any QELRO that would include sinks should be based on the 1996 IPCC guidelines. Any new IPCC methods would only apply to a second budget period or subsequent target." *Not entirely, please see paragraphs 7,10,and 11.*
6.
 - a) Which IPCC LUCF categories should be included or excluded in a QELRO? Why? Examples: all land use change and forestry/Changes in forest and other woody biomass stocks/other.
 - b) If some categories are excluded, how should they be dealt with? *None, please see paragraph 3.*
7. What reference year should be used as the basis for any QELRO that would include sinks? 1990/2000/none/other *Please see paragraphs 4, 5 and 6 - answer is 1990.*
8.
 - a) How much uncertainty do you associate with the GHG inventories provided by your country for the specific IPCC reporting categories?
 - b) What uncertainty levels would be appropriate for sinks in a QELRO, bearing in mind the uncertainties associated with sources?
 - c) How should uncertainty be dealt with? *Please see paragraphs 8 - 14 inclusive.*
9. Should there be a limit on the amount of sinks in a QELRO; if so how should it be determined? *No, for explanation see paragraph 6.*

10. Is the data provided in national communications adequate/inadequate for assessing compliance with a QELRO? Why or why not? Historical national communications should not be used as the basis for measuring compliance. This issue has not been adequately dealt with. *Please see paragraphs 10 and 11, as well as 8,9,12,13 and 14.*

11. Should any "national system" established under Article 4 give special consideration to sinks?

12. In order to achieve compliance with a QELRO (with/without sinks), what activities should be credited or not credited and what base year should be used? *Please see paragraphs 3 and 4.*

13. What definitions should be included; in which article of the protocol? *Definition as per paragraph 3.*

14. Do you have any other approach to propose? *Please see paragraphs 3,7 and 9.*

15. Do you have specific protocol language? *Please see paragraphs 11 and 12.*

Canada's Response to Questions on Sinks

1/

The Framework Convention on Climate Change is unclear on how to treat emissions and carbon sequestration from land use change and forestry both in terms of a country's national inventory and any legally binding commitment. It states that "*Each Party shall... limit its anthropogenic emissions of greenhouse gases and protect and enhance its greenhouse gas sinks and reservoirs*". While there are different interpretations of this statement's meaning, it is clear that sinks are to be included under the Convention.

2/

The Framework Convention also defines a sink as "*any process, activity or mechanism which removes a greenhouse gas, an aerosol, or a precursor of a greenhouse gas from the atmosphere*". Currently undefined is the term anthropogenic. While the term *human induced* has been used as a substitute for anthropogenic and has found widespread acceptance for emissions from industrial processes and fossil fuel combustion, it is not so easily applied to forestry and sinks, which are essentially natural processes. Because of the cyclical nature of forest systems, and because of the dominating influence of natural forests in certain countries, such as Canada, any legally binding instrument should treat forests in a unique manner.

3/

Any approach that fosters the enhancement of sinks, and reduces the incentives to de-forest should be endorsed. As such, a more precise definition for anthropogenic sinks is needed and the following is proposed: "*Direct human activities undertaken after [1990]¹ aimed at enhancing sink capacity, (specifically reforestation and afforestation) and that affect carbon stocks and that can be verified*". For clarity, all further references in this response to sources and sinks refer to anthropogenic sources and sinks, and are made in the context of the definition of anthropogenic sinks as stated above.

4/

Anthropogenic

Anthropogenic sinks, as defined above, should be included in a QELRO. It is vital that a protocol to the Convention provide incentives that encourage activities aimed at protecting carbon stocks and enhancing sinks. The exclusion of sinks from a QELRO removes much of the incentive to undertake these types of activities. Furthermore, by narrowing the definition of anthropogenic to direct activities that change carbon stocks after the target year, many of the uncertainties associated with the land-use change and forestry methodologies are reduced. Any approach that is restricted to *new* activities is not only easier to verify because of an increase in precision afforded by real and measurable data, but is also more equitable by providing a level starting point.

5/

Suggestions have been made that to do otherwise would grandfather the 1990 rates of deforestation and would, therefore, be in conflict with Article 4.2(a) which commits parties to protect and enhance sinks and reservoirs. Parties either commit to an annual rate of carbon

¹ This assumes that 1990 is the agreed base year upon which QELROs are based.

removal or emissions from land use practices. These commitments are unsustainable. In countries that are currently sequestering carbon, as forests reach maturity, net removals become zero. On the other hand, countries with net losses from sinks eventually reach limits to further deforest, and as a result their emissions reach zero. The result of this is to reward deforesters, ie. their target is based on a current rate of deforestation so they are free to continue deforesting, while it penalizes afforesters, countries that are currently sequestering carbon, but may not be able to maintain their current sequestration rates.

6/

QELRO & Net Approach

A legally binding target would be defined with reference to 1990 gross anthropogenic emissions from fossil fuels and industrial processes for all gases and all sources, excluding carbon dioxide emissions from biomass. Compliance would be measured as the net of gross anthropogenic emissions and subsequent anthropogenic emissions and removals from land-use change and forestry (LUCF) activities after 1990. To postpone the date from which actions would be measured would only serve to postpone action. At this time Canada believes that no limit should be placed on anthropogenic sinks in a QELRO since the goal of the Convention is to reduce atmospheric concentrations and how that is achieved should not be predetermined.

7/

The current 1996 IPCC Guidelines should be used as the basis upon which to develop emission and removal estimates and uncertainties should be examined in the context of all anthropogenic sources and sinks, not just within the LUCF sector. Any new methodologies, particularly those that deal with the issue of uncertainties, that are developed and agreed to at a Meeting of the Parties, and available within an appropriate time frame prior to the first budget period, would apply to the first and subsequent budget periods, notwithstanding any future agreements by the Parties. Parties are expected to improve their data for all sources and sectors as they develop their emission inventories and the requirement to undertake more extensive data collection systems is **not** an acceptable argument for not including a particular source or removal.

8/

Uncertainties

The issue of uncertainty² should be examined in the broader context of all gases and all anthropogenic sources and sinks. Suggestions have been made that the issue of uncertain emission estimates can more easily be addressed by narrowing the focus of the binding quantified emission limitation and reduction objectives (QELROs) to the few sources most easily estimated. For reasons of flexibility, lack of a clear point at which to make a distinction between certainty and uncertainty, and the inherent uncertainties even within the most certain categories, this position is not endorsed by Canada.

² Defined as "A statement of a range of values of the quantity in question, usually expressed as a number to be added to or subtracted from the basic value, or simply as a pair of numbers expressing the limits of the range." In either case, the range so described expresses the set of values in which the true value of the estimated quantity is felt to be fairly sure to fall, which can be at a probability level of 95%, but not necessarily so.

9/

If we were to eliminate some sources from an inventory, or a QELRO, solely because of the uncertainty in the emission estimates, we might also be eliminating an area in which large and measurable gains could be made in reducing emissions, or in enhancing the removal of carbon dioxide from the atmosphere. By excluding forestry and hence afforestation, reforestation and deforestation from a QELRO, we fail to foster the sustainability of existing forests and are therefore in conflict with the aims of the Convention.

10/

Determinations of compliance will be based on each Party's emissions inventory, which should be prepared using methods designed specifically for this purpose; i.e., 1996 Revised IPCC Guidelines. Nevertheless, given the variety of methods currently available for preparing inventories for each anthropogenic source and sink, and the different uncertainties associated with each method, the issue of uncertainties needs to be addressed prior to the start of the first budget period.

11/

Verification

Canada, along with many other Parties, strongly believe that future changes in the Guidelines are necessary. In this regard, Canada would like to propose that improved methods for inventorying all anthropogenic sources and sinks of greenhouse gases be developed based on the work of the IPCC and other expert groups and that the Parties adopt revised guidelines on the use of these methods at a Meeting of the Parties to the Kyoto agreement prior to the first budget period.

12/

Canada would also like to propose that Parties provide a quantitative estimate of the uncertainties associated with their greenhouse gas inventories using appropriate methodologies to be developed based on the work of the IPCC and other expert Groups and that the Parties adopt these methodologies at a Meeting of the Parties to the Kyoto agreement prior to the first budget period.

13/

These revised methodologies and guidelines would establish an approach in which all Parties could be assured that those anthropogenic sources and sinks for which a measure of certainty is less precise are, in fact, in compliance³. Ideally, it is hoped that a table of scaling factors by source, gas and methodology would be developed by the IPCC, or other expert group along with appropriate uncertainty values for each of the methods.

³ Canada is currently in the process of examining a statistically valid method to ensure that a comprehensive and equitable methodology is developed so that all sources are treated appropriately and reflect their inherent uncertainties.

14/

These scaling factors would then be applied against country emission estimates in much the same way GWPs are used now. In effect, the weighting or scaling of emissions would not only recognize and deal with the significant differences in the accuracy of estimates and the measurement/verification of emissions and reductions, it would also provide an equitable way in which to offset emission increases from well defined sources with reductions made in less well defined areas, as well as ensure that a country is meeting its stated commitment. An additional benefit is that the weighting system could also be used for point or project level sources and in a trading system.

PAPER NO. 3: ICELAND

Questions from the chair of informal contact group on sinks.

Response from the Icelandic delegation.

1. Should anthropogenic sinks be included or excluded in a QELRO? Why or why not?

Yes, anthropogenic sinks should be included in a QELRO. It is vital that a protocol to the Convention provides strong incentive for activities aimed at protecting carbon stocks and the enhancement of sinks. This can only be done through including sinks in QELROs.

2. What would be the impact of including or excluding sinks on the QELRO levels, national plans or policies of your country?

Anthropogenic enhancement of removals by sinks of atmospheric carbon dioxide is an important component of the current Icelandic National Climate Change Action Programme. If sinks are not included in a protocol this would limit Iceland's ability to set ambitious QELROs.

3. What criteria governed your answer to question number 1?

The fundamental criteria is the fact that the biosphere has significant impact on the atmospheric concentration of carbon dioxide. It has been estimated that terrestrial sinks have removed carbon dioxide equal to 38% of annual emissions from fossil fuel combustion. There are strong indications that this enhancement of uptake by terrestrial ecosystems and the resulting delay in carbon dioxide build-up in the atmosphere will prove to be short lived. It is vital that a protocol to the Convention provides strong incentive for enhancement of carbon dioxide removal by sinks in the future.

According to 1/CP.1, the Berlin Mandate shall be guided, inter alia, by the coverage of all greenhouse gases, their emissions by sources and removals by sinks and all relevant sectors. It is therefore in full accordance with the Berlin Mandate to include sinks in QELROs.

Additional criteria is the fact that sinks provide added flexibility to Parties to select actions with the lowest cost and highest environmental benefit.

4. How would you define "anthropogenic" sinks in the context of a QELRO?

The sinks themselves are generally natural (growing forest, accumulation of organic matter (carbon) in soils). Man can enhance the carbon dioxide uptake of these sinks through direct actions, however. Such enhancement of removals by sinks is anthropogenic. In the context of QELROs, anthropogenic enhancement of sinks should be defined rather narrowly to include only direct actions such as the planting of forests, application of fertilizers to forests, exclusion of grazing or revegetation activities.

The IPCC should be asked to provide criteria for the determination of which actions can be considered anthropogenic enhancement of sinks. Applying such criteria Parties should, on a case by case basis, justify why their actions qualify as removal through anthropogenic enhancement of sinks. The burden of proof rests with the Party.

5. Do you agree or disagree with the following proposition; if so why or why not? "Any QELRO that would include sinks should be based on the 1996 IPCC guidelines. Any new IPCC methods would only apply to a second budget period or subsequent target."

The 1996 IPCC guidelines should be used for the quantification of the carbon dioxide removal resulting from individual projects or actions. It should be remembered, however, that the IPCC guidelines encourage the use of more detailed national methods when available. This approach is sound and should be maintained.

It takes time for revised IPCC guidelines to be implemented and their use is not mandatory for a few years after their adoption. The best available methods should always be used. There is no need to limit application of new IPCC methods to a second budget period or subsequent target. Such a limitation could further delay the incorporation of improved science into the quantification of sinks and could delay the process of reducing uncertainty in this area.

6. a) Which IPCC LUCF categories should be included or excluded in a QELRO? Why?

Examples: all land use change and forestry/Changes in forest and other woody biomass stocks/other.

b) If some categories are excluded, how should they be dealt with?

a) There is no need to limit the LUCF categories to be included. This only limits the flexibility of Parties to select the most practical means to achieve their QELRO. Applying the criteria to be provided by the IPCC (see response to question 4 above), Parties should through their national reporting include all relevant categories.

b) The exclusion of certain categories could provide perverse incentive resulting in the continuation of land use practices leading to significant increase in emissions from LUCF categories not covered by a protocol. If LUCF categories are excluded, credits for categories included in a protocol should be conditional on appropriate management of LUCF categories not covered by a protocol.

7. What reference year should be used as the basis for any QELRO that would include sinks? 1990/2000/none/other.

1990, the same year as for QELRO.

8. a) How much uncertainty do you associate with the GHG inventories provided by your country for the specific IPCC reporting categories? b) What uncertainty levels would be appropriate for sinks in a QELRO, bearing in mind the uncertainties associated with sources? c) How should uncertainty be dealt with?

Iceland has so far only reported GHG inventories for direct actions taken to sequester carbon through afforestation and revegetation. The uncertainty associated with this approach is significantly lower than the uncertainty associated with establishing carbon budgets for all land cover types.

9. Should there be a limit on the amount of sinks in a QELRO; if so how should it be determined?

There is no need for a limit on the amount of sinks in a QELRO. At the same time all Parties must recognise that the enhancement of sinks can only be supplementary to other policies and measures for addressing the climate change issue. If limits are imposed, however, care should be taken to ensure that they do not remove the incentive for action to enhance sinks.

10. Is the data provided in national communications adequate/inadequate for assessing compliance with a QELRO. Why or why not?

If the national communications are based on the 1996 IPCC guidelines for the quantification of sink uptake, they would be adequate for assessing compliance with a QELRO. The review process has to be comprehensive, however, to ensure consistency and comparability.

11. Should any "national system" established under Article 4 give special consideration of sinks?

Yes, it is vital to have good national accounting systems for anthropogenic enhancement of sinks.

12. In order to achieve compliance with a QELRO (with/without sinks), what activities should be credited or not credited and what base year should be used?

See response to questions 4, 6 and 7.

13. What definitions should be included; in which article of the protocol?

In Article 1: "Anthropogenic enhancement of sinks" is the result of direct actions taken by Parties to enhance the removal of carbon dioxide from the atmosphere by natural or anthropogenic sinks.

14. Do you have any other approach to propose?

As reflected in the response to the questions above we suggest that the inclusion of sinks in a protocol be limited to the anthropogenic enhancement of carbon uptake which results from direct action taken after 1990. The uptake resulting from such action should be quantified using IPCC guidelines. Before crediting the result of such actions to the Party's QELROs, the Party should provide an analysis of the impact changes in land use have on emissions from LUCF. Increased emissions from land use change would be subtracted from the estimated uptake from projects aimed at enhancing sinks.

15. Do you have specific protocol language?

No

PAPER NO. 4: KENYA

KENYA' ANSWERS TO THE QUESTIONS FOR PARTIES REGARDING SINKS

1. Should anthropogenic sinks be included or excluded in aQELRO?
Why or why not (In responding you may wish to consider which budget period or target year).
A: *Any other than forest and land use change*
2. What would be the impact of including or excluding sinks on the QELRO levels, national plans or policies of your country? (Please try to provide a qualitative answer).
A: *Including sinks would interfere with management and utilisation of land resources including forest*
3. What criteria governed your answer to question number 1?
A: *Land resources and forest are crucial to national economic development in Kenya.*
4. How would you define “anthropogenic” sinks in the context of QELRO?
A: *Any system/process created/developed for the sole purpose of absorbing greenhouse gases.*
5. Do you agree or disagree with the following proposition; if so why or why not?
“Any QELRO that would include sinks should be based on the 1996 IPCC Guidelines. Any new IPCC methods would only apply to a second budget period or subsequent target.”
A: *Disagree because the question of sinks is highly complex and should not subject to time frame of assessment.*
6. (a) Which IPCC LUCF categories should be included or excluded in a QELRO?
Why? Examples: all land use change and forestry/changes in forest and other woody biomass stocks/other
(b) if some categories are excluded, how should they be dealt with:
A: (a) *None*
(b) *None*

7. What reference year should be used as the basis for any QELRO that would include sinks? 1990/2000/none/other.

A: *Question difficult to answer*

8. (a) How much uncertainty do you associate with GHG inventories provided by your country for the specific IPCC reporting categories?
(b) QELRO, bearing in mind the uncertainties associated with sources?
(c) How should uncertainty be dealt with?

A: (a) *≈ 100%*

(b) *equal to that of sources*

(c) *difficult to answer*

9. Should there be a limit on the amount of sinks in a QELRO; if so how should it be determined?

A: *No and if there should be, it should be equal to or greater than emission in a country.*

10. Is the data provided in national communications adequate/inadequate for assessing compliance with a QELRO? Why or why not?

A: *No because of most of the information is too subjective.*

11. Should any “national system” established under Article 4 give special consideration to sinks

A: *Yes*

12. In order to achieve compliance with a QELRO (with/without sinks), what activities should be credited or not credited and what base year should be used?

A: *Emissions reduction 1990*

13. What definitions should be included; in which article of the protocol?

A: *Difficult*

14. Do you have any other approach to propose?

A: *Amount of sinks in each country should be equal or greater than the total amount of emissions of that country per year.*

PAPER NO. 5: UNITED KINGDOM OF GREAT BRITAIN
AND NORTHERN IRELAND
(On behalf of the European Community and its member States)

1. Should anthropogenic sinks be included or excluded in a QELRO? Why or why not? (In responding you may wish to consider a budget period or year)

Parties included in Annex I shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions by sources of the greenhouse gases listed in Annex A do not exceed their commitments, expressed in terms of emissions budgets, inscribed in Attachment 1.

Subject to relevant modalities, rules and guidelines, to be decided by the first MOP, Parties that apply the methodologies referred to under Article 4 may count their enhancement of removals by sinks against their aggregate anthropogenic CO₂ equivalent emissions by sources under Article 3.1.

2. What would be the impact of including or excluding sinks on the QELRO levels, national plans or policies of your country? (Please try to provide a qualitative answer).

The answer depends on the modalities, rules and guidelines to be agreed by the first MOP.

3. What criteria governed your answer to question number 1?

The answer is governed by the agreed position of the EU, which recognises the desirability of eventually taking into account sinks in QELROs, once the modalities for doing so can be agreed.

4. How would you define 'anthropogenic' sinks in the context of a QELRO?

Anthropogenic sinks are processes which remove greenhouse gases from the atmosphere and are influenced (positively or negatively) by human activity. In practical terms anthropogenic sinks are sinks included in the IPCC Guidelines for National Greenhouse Gas Inventories. The inclusivity of source and these sink categories is kept under review by IPCC as part of its inventory programme. Technical issues to be addressed include the status of additional carbon sequestration due to C and N fertilization from anthropogenic emissions.

5. Do you agree or disagree with the following proposition; if so why or why not? 'Any QELRO that would include sinks should be based on the 1996 IPCC Inventory Guidelines. Any new IPCC methods would only apply to a second budget period or subsequent target.'

The modalities, rules and guidelines for assessing QELROS which include sinks should be based on the IPCC 1996 Guidelines, and any relevant material which emerges subsequently and leads to revision of the IPCC Guidelines. The relevant modalities, rules and guidelines will be decided by MOP1. The EU does not consider that these should be changed during a budget period.

*6a) Which IPCC LUCF categories should be included or excluded in a QELRO? Why?
Examples: all land use change and forestry/changes in forest and other woody biomass stocks/other.*

All quantifiable anthropogenic sinks should be included, subject to the decisions of MOP1. If in practice MOP1 decided to omit some sinks from early budget periods (eg because of data availability or incompleteness of the IPCC methodology), inclusivity would still need to be sufficient to avoid the perverse incentive of planting trees on soil types which then become sources.

6b) If some categories are excluded, how should they be dealt with?

Parties should report separately inventory data for any sink categories excluded from the QELRO. The general commitment under the Convention, to protect and enhance sinks, would still apply, and legally binding Policies and Measures should be applicable to any categories that were excluded.

*7) What reference year should be used as the basis for any QELRO that would include sinks?
1990/2000/none/other?*

The EU has always proposed 1990 as the base year for any QELRO.

8a) How much uncertainty do you associate with the GHG inventories provided by your country for the specific IPCC reporting categories?

The systematic uncertainty in energy related to CO₂ may be about 5%. For methane the overall uncertainty is estimated to be about 20% to 30%. Nitrous oxide from industrial processes is known as accurately as energy related CO₂, although nitrous oxide from soils may be uncertain to an order of magnitude. For some fluorocarbons there is an additional element of uncertainty depending on how delayed releases are taken into account. These systematic uncertainties do not necessarily imply similar levels of uncertainties in measuring changes over time, as with standardised and comparable methodologies such errors tend to cancel out. The overall uncertainty in the percentage difference in GWP weighted emissions between two years may be of the order 1%.

8b) What uncertainty levels would be appropriate for sinks in a QELRO, bearing in mind the uncertainties associated with sources?

This would, in the EU's view, be an issue for MOP1 to consider. Present technical evidence is that the uncertainty in the forest sink is around 10 to 15%, and soil sink around 50%. These levels of uncertainty are within the range of uncertainties for emissions categories in national inventories, although under the gross/net approach the sink uncertainties would have greater implications for compliance than would be the case for uncertainty in an emissions category. The larger uncertainty is because the adjustment would depend on the absolute uptake by sinks over the budget period, not emissions in the budget period relative to the base year. Therefore the usual cancellation of systematic errors does not occur, and under a gross/net approach any allowances would have the same uncertainty as the sink category itself (ie 15% or 50% (or more) for the

forest and soil sink respectively). This is a larger uncertainty than usually occurs on an emissions trend.

8c) How should uncertainty be dealt with?

By the MOP agreeing the modalities to be used for sinks estimation and the allowable level of uncertainties.

9) Should there be a limit on the amount of sinks in a QELRO; if so, how should it be determined?

The EU considers that any application of limits would be a matter for the first MOP to consider. If limits were applied, there could be a cap or discount on the adjustment, to maintain incentives for action on gross emissions mitigation (since sinks cannot be increased indefinitely), or allow for the effect of uncertainties on compliance as discussed under 8b.

10) Is the data provided in national communications adequate/inadequate for assessing compliance with a QELRO? Why or why not?

Adequacy on the nature of the QELRO agreed. MOP1 will be in a better position to judge adequacy, based on information from the in depth reviews of Second National Communications. So far we can judge at present, Second National Communications appear in most (but not all) cases to have data on uptake by forests. Soils data are much more sparse.

11) Should any 'national system' established under Article 4 give special consideration to sinks?

All national systems meeting the requirements of Article 4 should give consideration to sinks adequate for the purpose of inventory reporting. This would require the development of institutional mechanisms for data gathering on sinks if these are missing at present.

12) In order to achieve compliance with a QELRO (with/without sinks), what activities should be credited or not credited, and what base year should be used?

The definition of the QELRO should be in terms of all aggregate anthropogenic emissions by sources identified in the IPCC Methodology as referred to under Article 4. Subject to relevant modalities, rules and guidelines, to be decided by the first MOP, Parties that apply the methodologies referred to under Article 4 may count their enhancement of removals by sinks against their aggregate anthropogenic CO₂ equivalent emissions by sources. In particular, the MOP will need to decide the extent to which activities and/or sink categories should be credited, and from which year. Sink reversal (negative adjustment) will also be relevant, because sink categories can change from sinks to sources.

13) What definitions should be included, in which article of the Protocol?

The definitions requires would depend on the nature of the agreed QELRO

14) Do you have any other approach to propose?

See response to 15 below

15) Do you have specific protocol language?

Yes. See response to question 1 above