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METHODOLOGICAL ISSUES

ISSUES RELATING TO ARTICLES 5, 7 AND 8 OF THE KYOTO PROTOCOL

Draft technical guidance on methodologies for adjustments under Article 5, paragraph 2, of the Kyoto Protocol, taking into account the results of the case studies for simulating the calculations of adjustments

Submissions from Parties

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its seventeenth session, requested the secretariat to undertake case studies for simulating the calculation of adjustments under Article 5, paragraph 2, of the Kyoto Protocol, described in document FCCC/SBSTA/2002/INF.19. The results of these case studies were to be published by 15 February 2003 and used as inputs to a workshop on adjustments to be organized in 2003. The case studies are available on the secretariat web site (http://unfccc.int/sessions/workshop/070403/reldocs.html).

2. The SBSTA, at its sixteenth session, invited Parties to submit, by 15 March 2003, views on the draft technical guidance on methodologies for adjustments under Article 5, paragraph 2, of the Kyoto Protocol, taking into account the results of the case studies (FCCC/SBSTA/2002/6, para. 24 (h)).

3. The secretariat has received five submissions. 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.

* 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.

CONTENTS

PAPER NO. 1: CHINA

DRAFT TECHNICAL GUIDANCE ON METHODOLOGIES FOR ADJUSTMENTS UNDER PARAGRAPH 2, ARTICLE 5, OF THE KYOTO PROTOCOL

China welcomes opportunity to send views on the Draft Technical Guidance on Methodologies for Adjustments under Article 5, paragraph 2, of the Kyoto Protocol (hereinafter referred to as the draft technical guidance) contained in document FCCC/SBSTA/2002/INF.5, in consideration of results of Case Studies for Simulating the Calculation of Adjustments under Article 5, Paragraph 2, of the Kyoto Protocol (hereinafter referred to as the case studies) contained in Working Paper No.1 of UNFCCC Secretariat, in accordance with Paragraph 24 (h) of document FCCC/SBSTA/2002/6.

1. The conditions that adjustment shall be applied

Regarding the issue of the conditions that adjustment shall be applied, China has three proposals:

1) Delete the second sentence of paragraph 4 of the Draft Technical Guidance

Paragraph 3 of Draft Decision -/CMP.1 (Article 5.2) states: "Decides that adjustments referred to in Article 5, paragraph 2, of the Kyoto Protocol shall be applied only when inventory data submitted by Parties included in Annex I are found to be incomplete and/or are prepared in a way that is not consistent with the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* as elaborated by the IPCC good practice guidance and any good practice guidance adopted by the Conference of Parties serving as the meeting of the Parties to the Kyoto Protocol.

Differently, the second sentence of paragraph 4 of the Draft Technical Guidance says: "If the expert review team finds that an estimate is not prepared in accordance with the Intergovernment Panel on Climate Chang (IPCC) Guidelines as elaborated by the IPCC good practice guidance, but evidently does not lead to an overestimation of emissions in the base year or an underestimation in a year of the commitment period, the estimate does not have to be adjusted."

China, therefore, proposes that the second sentence of paragraph 4 of the Draft Technical Guidance mentioned above shall be deleted for two reasons. First, the relevant substantial contexts shall be maintained consistently between the Draft Decision and the Draft Technical Guidance. Second, the current statement of Paragraph 4 of the Draft Technical Guidance would possibly leave out some cases that adjustments should be applied.

For example, the case where adjustment shall be applied but would not be done so in accordance with the current statement of paragraph 4 of the Draft Technical Guidance could occur, if a Party chooses higher constant emission factors when the relevant activities data of the Party decrease. In this case, the estimation in any year of the commitment period would be underestimated as compared to the estimation of the base year, in view of the entire timing series from the base year to the years of commitment period.

2) Establish "threshold of insignificance"

China understands that adjustment would possibly be a high workload and may reduce the time available for the review team to identify inventory problems under the guidelines of Article 8, if the adjustment is applied to all identified problems, given adjustments to be time-and-resource-intensive based on experiences from the Case Studies. At the same time, China also recognizes that the sum of several mini problems—insignificant sources may go beyond an insignificant share of the total national GHG emissions of a given Party, and constitute a substantial problem for the given Party's fulfilling commitment to the Kyoto Protocol, if adjustment would not be applied to these several mini problems

that occur simultaneously in one inventory submitted. To address the problem, China proposes that the "thresholds of insignificance for importance of the sources and the emission trend" should be necessarily established in the Technical Guidance. In other words, adjustment shall be applied: (1) To all mini problems if the aggregation of emissions caused by these several mini problems exceeds a certain percentage of the total national GHG emissions of a given Party; (2) To the specific source if the emission increase rate exceeds a certain percentage even though the aggregation of emissions caused by these several mini problems don't exceed the certain percentage--insignificant.

3) Establish the rules and criteria to determine a potential problem departure from the IPCC Guidelines

Experiences from the Case Studies suggest that without objective and unified rules and criteria, it is difficult for review experts to determine whether a potential inventory problem is really a departure from the IPCC Guidelines, in particular in the case where a Party estimates GHG emissions by using its own national methodologies. Accordingly the rules and criteria should be set up for determination of potential inventory problems departure from the IPCC Guidelines. And also the adjustment shall be applied, If a Party could not provide detailed description of its national methodologies.

2. Selection of adjustment methods

From the Case Studies, China noted the fact that a large number of methods applicable to each sector and different possibilities for combining them, as well as different approaches for ensuring that estimates are conservative gives expert review teams numerous options for calculating and adjustment, which thereby affects the principle of consistency in the application of adjustments. China, therefore, proposes that a decision tree for selection of methods should be established in the Technical Guidance, so as to meet its objective mandated by the draft decision -/CMP.1 (Article 5.2), which requires the technical guidance to ensure consistency and comparability and that similar methods be used for similar problems as far as possible across all inventories reviewed under Article 8. In a decision tree, the IPCC Tier1 and IPCC default values should be considered with a high priority.

3. Conservative estimates

The 25/75 rules should be applied to the factor that leads to adjustment rather than only applied to the final adjusted estimate. In this sense, Paragraph 20(a), 20(b), 20(c), and 21 of the Draft Technical Guidance needs to be changed to as:

(a) The range of emission factors available from the Annex I Parties or provided by IPCC Good Practice Guidance;
(b) The range of input parameters; in particular those provided by the IPCC Good Practice Guidance;
(c) The range of uncertainty around a point estimate from uncertainty data available provide by IPCC Good Practice Guidance;

In addition, in accordance with experiences from the Case Studies, the Draft Technical Guidance needs add the statement that the increase rate for the adjusted estimate should be higher than the original increase rate when the emission trend is increasing, or the decrease rate for the adjusted estimate should be lower than the original decrease rate when the emission trend is decreasing.

4. Improvement of the Technical Guidance

Owing to the very much complexities of adjustment methodologies and the good but limited experiences from the case studies, the Technical Guidance should be periodically revised based on experiences from the real adjustment practices.

PAPER NO. 2: GREECE ON BEHALF OF
THE EUROPEAN COMMUNITY AND ITS MEMBER STATES

SUBMISSION ON CASE STUDIES FOR SIMULATION OF ADJUSTMENTS UNDER ARTICLE 5, PARAGRAPH 2, OF THE KYOTO PROTOCOL

1. Greece, on behalf of the European Union and its Member States, welcomes the case studies on adjustments as well as working paper No.1 with proposals for further work which considerably help to improve the draft technical guidance on adjustments.

2. The EU is looking forward to participating in the further process that aims to refine methodologies for adjustments to achieve approaches that are:

- consistent with the Kyoto Protocol and the Marrakech Accords,
- consistent across Parties, expert review teams and time,
- practicable and feasible within the time frames provided by guidelines under Article 8 for the inventory review.

3. The EU is also looking forward to a proposal from the UNFCCC secretariat for a revised version of draft technical guidance for adjustments which will support the discussion at the workshop in Lisbon.

4. The EU supports the idea of testing the methods and approaches and training review experts on the calculation of adjustments during the inventory review under the Convention.

I. General comments

5. In general the suggestions of working paper No. 1 are based on individual case studies as previously agreed; therefore they may not reflect fully that the general point of departure in reviews is to solve problems in cooperation with the Party. Only in cases where problems were not corrected by the Party or where a Party did not accept corrections proposed by the ERT during the review procedure, the adjustment procedure is needed.

6. The consideration of the suggestions of working paper No. 1 should also take into account that adjustments may not be calculated by a single expert but will be proposed by an entire ERT. Thus the estimation of adjustments has to pass a methodological and a procedural part. In the view of the EU, some of the differences in the case studies would not have occurred since the results would have been discussed in an entire ERT. Such a discussion would have revealed different interpretations of methodologies and would likely balance out part of the differences in the approach. The review process should generally use internal procedures that further ensure consistency.

7. The first step in the procedure for the calculation of adjustments is for the ERT to identify problems to which the criteria in the guidance for adjustments under Article 5, paragraph 2 apply. Further guidance may be needed to clearly establish what exactly is a departure from good practice and to provide the precise basis on which the ERT would notify a Party of the need for an adjustment. This area is currently not covered by the methodological guidance. Therefore the EU proposes that besides the refinement of the methodological guidance, the workshop should also discuss ways to clarify the identification of problems.

II. Methodological guidance

1. Prioritization of methods

8. The EU believes that the draft guidance should be clarified with regard to the application of methods as summarized in Table 1 and section B of document FCCC/SBSTA/2002/INF.5 with the

objective to ensure transparency and consistency of adjustments and ensure comparability between parties. Therefore the EU welcomes that the workshop tries to elaborate some general rules to aid in the selection of adjustment methods and considers that decision trees may be an adequate tool. The workshop may try to develop such decision trees, analogously to the decision trees in the Good Practice Guidance. The workshop should also consider the limitations of such tools and consider whether and what methodological options should be kept open to cover all possible types of problems. In this context, the list of methods in the draft guidance should be more precisely defined, further guidance should be provided for the use and combination of methods and the sectoral guidance should be simplified and restructured.

9. Comparability and consistency can also be ensured during the review process by comparison with similar previous cases. For this reason, it is also essential that adjustment cases are stored in a database that is quickly accessible for ERTs in order to see how similar cases have been treated in the past.

10. The workshop should identify cases where the terminology could be improved to enhance comparability and consistency.

2. Appropriate level of aggregation

11. Working paper No. 1 suggests to define an appropriate level of aggregation for the adjustments and seems to propose to adjust the entire source category at once. If this proposal implies that adjustments would not be calculated for sub-source categories, such a definition would be disadvantageous for those Parties where a problem occurred within a sub-source category where the adjustment is likely to have a smaller impact on total emissions than for a source category at a higher level. The choice of the level of aggregation seems to depend on the level of aggregation where the problem that leads to adjustment occurred. Adjustments should not be estimated at a higher aggregated level than necessary because this means that also data which do not qualify for adjustments would be adjusted.

3. Clustering of countries

12. The EU agrees that it may be useful to establish some further rules for the clustering of countries. However, at the moment, very specific guidance – such as predefined clusters - seems to be difficult as frequently only few Parties provided sufficient detailed information to form appropriate clusters. Appropriate country clusters will depend on data availability as well as on the problem to be resolved. Very specific guidance may also be difficult politically and because national circumstances may differ between source categories. General guidance could include

- the minimum number of countries that should be included in a cluster,
- the check that data included from countries was seen as accurate by the review process,
- that countries included in a cluster should have similar national circumstances in relation to the source category concerned,
- for recurring problems, the ERT should take into account clusters defined in previous review activities for the same source category,
- the documentation of parameters that have been used to form the cluster (why are the countries included comparable).

Countries that are likely to have similar national circumstances related to the problem but where data and methodological descriptions show clear differences to the case investigated, should be excluded from the cluster.

In addition procedures should ensure that all team members of the ERT agree with the cluster formed.

III. Use of data sources during the adjustment process

13. The case studies show that it may be difficult and time-consuming for the review experts to obtain data from international data sources for the calculation of adjustments. The EU strongly supports that the UNFCCC secretariat should develop and keep a database of international data sources that can be used by review experts for the estimation of adjustments. It would be important that, in order to ensure correct use of the data, sufficient meta data are available on the type of information included (definitions used, ways how data was aggregated and compiled etc.). If access to a database is judged difficult for inexperienced users, short explanations with regard to their management should be provided to the experts. This will also assist the general inventory review process because possibilities for comparisons of data would be generally enhanced.

14. However international data sources should not be used to the exclusion of national ones where better national data exist and can be accessed in reasonable time. Access time might be much shorter during actual review than the case studies suggest, because of communication between the Party and the ERT. This communication would also increase understanding of what the national data set contained.

15. The case studies also show that a quick access to previous review results of the same or other Parties is essential for an efficient review process. At the moment review reports have to be searched, as the number of reports available for each Party will soon increase considerably, this will be a time consuming task. The EU suggests that the UNFCCC secretariat assists this need by storing review results in a database where review experts can easily and quickly access results for specific source categories across countries and across time.

IV. Conservative estimates

16. The workshop should look at possibilities to prioritise the methodological options on conservativeness in paragraph 20 of the Annex of the draft technical guidance on methodologies for adjustments in order to ensure equitable and fair treatment of Parties. This could be linked with the discussion on prioritisation of methods and the development of decision trees.

17. The uncertainty ranges provided in the IPCC Good Practice Guidance should preferably be used, unless the ERT is convinced that some other sources of uncertainty data is more appropriate. If uncertainty ranges of other Annex I parties are used, the countries should be clustered in a similar manner as when using average parameters. If uncertainty ranges are estimated with the Tier 1 method, uncertainties cannot exceed 100% (because probability density functions have to be symmetrical). The Tier 2 method allows the use of asymmetrical distributions, and therefore uncertainty ranges >+100% are possible. This leads to lower uncertainty estimates of parties using Tier 1, which should be taken into account when using the uncertainty estimates of different countries as a basis for conservativeness.

18. In the Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (Chapter 6), the use of 95% confidence interval is suggested to describe uncertainties. The uncertainties are reported as half of the 95% confidence interval expressed as percentages relative to mean value. Throughout the Chapter 6, uncertainties are assumed normally distributed, when using Tier 1 method to calculate uncertainties. In the sectoral Good Practice Guidance, the probability density functions are not specified, but the uncertainties are presented as percentages. Based on these facts, one assumes, that an uncertainty of, e.g. ±30%, means a normal distribution with 0.7*mean as 2.5%-tile and 1.3*mean as 97.5%-tile. However, in the calculation of adjustments, uncertainty ranges seem to be assumed uniformly distributed with +/- percentages as minimum and maximum values, which leads to a clear difference in uncertainty estimates (see example in the Annex). Therefore it seems essential to further clarify the calculation of percentiles during the workshop.

19. The EU believes that simple approaches for the determination of conservative adjustments should be used as far as possible. In some cases statistical approaches may be an appropriate means to calculate adjustments and to apply percentile rules and they should not be generally excluded as suggested in

working paper No.1. IPCC guidelines include the application of Monte Carlo simulation for the estimation of uncertainties which assumes considerable knowledge with regard to statistical approaches or distribution types. Therefore a number of experts may be available that are able to deal with such approaches. In addition simple software tools may be made available to assist the experts. Case studies show that simple as well as more complicated approaches exist. The workshop may further consider this issue and discuss if simple estimation approaches should be tried first and define more clearly for which situations more complicated statistical approaches may be useful.

V. Adjustments, time series and trends

20. According to agreed guidelines under the Kyoto Protocol, adjustments are only applied to base year and commitment period inventory estimates. However, for analytical purposes, the ERT should consider the entire time series in the development of the appropriate adjustment method and estimate for a single year. It seems to be important for the experts and the Party that implications of adjustments on the emission trend are assessed and presented. For example suppose the base year was adjusted using international data sources. If estimates during the commitment period were adjusted on the same basis, it would be necessary to ensure that the data had been used consistently. If only base year and commitment period years are estimated, this situation may not become evident.

VI. Limitations in triggering adjustments

21. The EU shares the concern expressed in working paper No.1 that there should be a clear common understanding which problems would need to be adjusted and that further guidance is needed to ensure such a common understanding. There are two perspectives that could lead to limitations in triggering adjustments: a) looking at the reasons that lead to adjustments, minor deviations from IPCC guidelines could be defined that would not be adjusted immediately. b) looking at the quantitative impact of the adjusted source category. With regard to a) limitations could be based on general rules for the identification of problems. Examples could be

- that only estimates for gases and source categories need to be adjusted where 1996 IPCC guidelines and IPCC Good Practice Guidance provide estimation methodologies and default factors or

- that the use of tier 1 methods for key sources may not imply the need for adjustments in specific cases, for example in situations where tier 1 methods provide rather accurate estimates compared to higher tier methods (e.g. cement, lime industry).

The workshop could consider general rules, which would of course need to be consistent with the Marrakech Accords.

22. Working paper No. 1 also discusses the establishment of a threshold of insignificance in order to limit the triggering of adjustments that do not really matter for the accounting of emission inventories and assigned amounts. There are several problems involved with such a threshold:

- Either the source category was estimated and estimate as well as documentation show that the source category is insignificant. In such a case it is hard to imagine why the ERT would propose to adjust such a source category, even if e.g. IEF deviates somewhat from IPCC default. It is also hard to imagine why a Party would not accept a proposed correction from the ERT during the review process in such a situation.

- A source is judged as insignificant on a qualitative basis and is reported as "not estimated". In this case the suggested approach in working paper No. 1 does not work because it is based on the contribution of the insignificant source to the total which is not known in this situation.

- The ERT thinks that there is evidence that real emissions are much higher than those reported. In this case, also an insignificant source should be adjusted if this evidence is really valid. Such a case should not be screened out by a quantitative threshold.

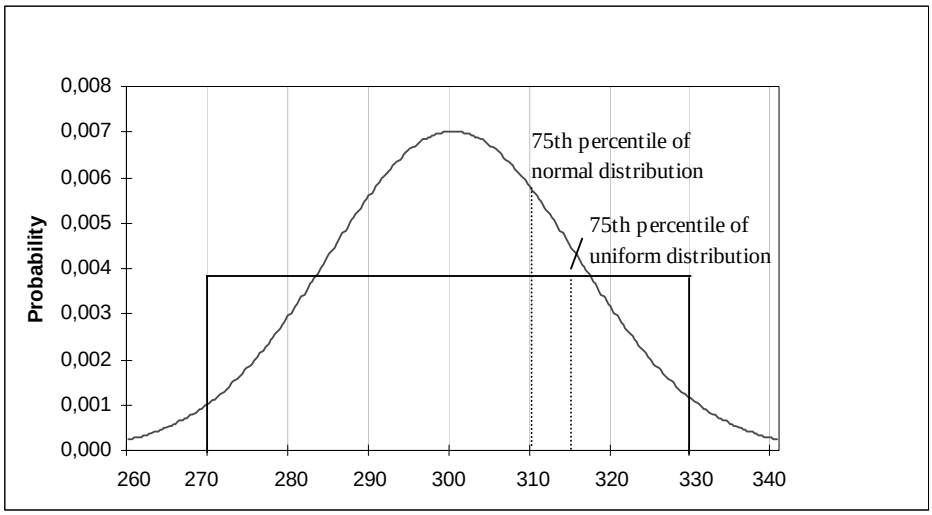
If the establishment of thresholds of insignificance is considered at the workshop, experts should also carefully look at the situations in which such thresholds should be applied.

Annex I

Example referring to paragraph 18 of this submission and paragraph 20 (c) of document FCCC/SBSTA/2002/INF.5:

Uncertainty of N2O emissions from adipic acid production emission factor (300 g N2O/kg) is ±10%. According to the calculations in the example, the 75th percentile is 315 g/kg (which is obtained, if the uncertainty is assumed uniformly distributed).

If this probability range is assumed normally distributed around the mean with ±10% as 95% confidence interval, the real 75th percentile is 310 g/kg (i.e. the probability that the real value is below 310 g/kg is 75%). The differences between normal and uniform distributions in the above-mentioned case are presented in the figure below.



The uncertainty range in this example is low; in many cases, the uncertainties can be of an order of magnitude (or several orders). In these cases, using the uncertainty range as if it was uniformly distributed doesn't reflect reality.

PAPER NO. 3: MYANMAR

METHODOLOGIES FOR ADJUSTMENTS UNDER ARTICLE 5, PARAGRAPH 2, OF THE KYOTO PROTOCOL

The draft technical guidance is relevant for the time being.
Amendment may be considered in future there is any appropriate proposal.

PAPER NO. 4: NEW ZEALAND

DRAFT TECHNICAL GUIDANCE ON METHODOLOGIES FOR ADJUSTMENTS UNDER ARTICLE 5.2 OF THE KYOTO PROTOCOL

Overview

This submission responds to the invitation to Parties in paragraph 18(g)(i) of the report of SBSTA 17 (UNFCCC/SBSTA/2002/13) to provide initial views on the draft technical guidance on methodologies for adjustments under Article 5.2 of the Kyoto Protocol, taking into account results of the case studies for simulating the calculation of adjustments.

New Zealand would like to thank the experts who worked through the case studies, and the secretariat for the discussion paper. The case studies have proven extremely valuable in illustrating the strengths and weaknesses of the draft technical guidance prepared at the first workshop on methodologies for adjustments in April 2002. In New Zealand's view, the results of the case studies are very useful in assisting Parties to further develop and refine the draft technical guidance in time for a decision to be taken by COP9 later this year (as mandated by Decision 21/CP.7).

The Annex to Decision 21/CP.7 (the draft CMP.1 decision) states that "technical guidance shall ensure consistency and comparability and that similar methods are used for similar problems as far as possible across all inventories reviewed under Article 8". The case studies illustrate, that in order to meet this requirement, there is a need to streamline, simplify and rationalise the draft technical guidance

The experience from the case studies shows that in some cases a considerable amount of time was needed by the experts to follow the draft technical guidance and carry out an adjustment calculation. Although with experience it could be expected that this amount of time would be reduced, there is a need for the technical guidance to be more specific in many respects. It should also be noted that in a real review setting there would be interaction with the Party concerned, and this may also cut down on the time spent applying the adjustment procedures.

Specific comments

Working Paper No.1 (2003) prepared by the secretariat on the results from the case studies provides a very good summary of the issues that have arisen from this exercise. The following comments respond to matters raised in Working Paper No.1.

On *methods* we agree that:

- the sectoral guidance could be streamlined in a more rule-based manner;
- better specification should be given to data sources, and that it would be useful for the secretariat to maintain a pre-defined set (selected on the basis of agreed criteria), together with guidance for their use;
- the guidance should clearly state that an expert review team will not spend time searching for national data;
- consideration should be given to a simple approach of adjusting an entire source category at once when several problems have been identified within one source category;
- the choice of countries to be included in a cluster should not be left to the expert review team, but should follow pre-defined rules.

On *conservative estimates* we consider that it is absolutely essential for this to be clearly defined. Different expert review teams must apply the "conservative" rule in a consistent manner. We agree that:

- statistical approaches should not be used, but guidance should be given on the level of detail required in the calculation process;

- the guidance should be explicit in its requirements, eliminating opportunities for different interpretations;
- the uncertainty ranges should be those in the IPCC good practice guidance as it is inappropriate to use uncertainty ranges from Parties;
- the guidance should clearly state that an adjustment of a base year estimate should never result in an increase in the submitted estimate and that an adjustment of a commitment period estimate should never result in a decrease to the submitted estimate (with the possible exception in the case of a missing source in the base year).

On *issues relating to time series consistency* we agree that

- even though adjustments will be applied to individual inventory years, emission estimates, emission factors and other relevant variables must be assessed in the context of time-series information (as this is the normal procedure for inventory review) and that this approach may help avoid unnecessary adjustments;
- the same methodology be applied in cases where the same problem was identified in an earlier year;
- consideration needs to be given in the technical guidance on how to handle cases where after the initial review to fix a Party's assigned amount, new information identifies an existing source that was not reported in the base year. The solution provided by the secretariat in paragraph 54 seems straight forward, and we note that there will be further elaboration of this proposal at the workshop.

On *rational limitations in triggering adjustments* we agree that

- to make the adjustments procedure efficient and workable within the time available for review, excluding sources that are considered insignificant would be a useful tool to limit the number of adjustment cases, and that a threshold of insignificance (or a threshold of significance) should be investigated;
- specifying non-adjustable cases in the technical guidance would provide clarity to expert review teams.

Other issues

We note the secretariat's intention to provide at the workshop in April 2003 further information on some of the issues raised in Working Paper No.1, and that this may include information on suitable international datasets, on approaches for clustering countries for different source categories, on a way to establish a level of insignificance at which no adjustment would be required, together with an approach to address the issues arising when new information becomes available that was not considered in the base year. New Zealand believes that if clarity in these areas is reflected in the technical guidance, this will assist the achievement of an adjustment process that is more streamlined and more consistently applied across different reviews.

One of the more difficult issues for expert review teams to deal with is the question of what constitutes a departure from *good practice.* For this reason alone, New Zealand would support exploring a process that would lead to the provision of practical recommendations on how to apply the technical guidance, based on the testing of methods and approaches with real inventory data.

This issue of the practical application of the technical guidance is also connected with other items on SBSTA's work programme for this year including:

- the criteria for selecting lead reviewers; and,
- the training of expert reviewers.

PAPER NO. 5: NORWAY

DRAFT TECHNICAL GUIDANCE ON METHODOLOGIES FOR ADJUSTMENTS UNDER ARTICLE 5, PARAGRAPH 2 OF THE KYOTO PROTOCOL

The SBSTA at its sixteenth session invited Parties to submit their views on the draft technical guidance on methodologies for adjustments under Article 5, paragraph 2 of the Kyoto Protocol, taking into account the result of the case studies for simulating the calculation of adjustments based on the draft guidelines (Working Paper no. 1 and 2 (2003)). Norway appreciates the effort of the UNFCCC secretariat in facilitating the case studies and in preparing the discussion paper based on the results from the case studies. We believe these papers give very useful input to the discussions at the coming workshop on methodologies for adjustments in Lisbon 7-9 April. Norway welcomes the opportunity to provide views on these issues.

General views

Norway believes it is necessary to have good technical guidance for adjustments under Article 5.2 of the Kyoto Protocol. In practice, we are confident that adjustments will be applied by the review teams exceptionally. It is, however, important that adjustments are triggered and applied consistently among inventories. Therefore, the guidance on adjustment methodologies should give the review teams a clear technical guidance. Consequently, the adjustment methodology should be simple and predictable.

Guidance on adjustment methodologies

The guidance on adjustment methodologies should be streamlined by limiting the number of options and by adapting a simple hierarchal structure, as proposed by the UNFCCC Secretariat in Working Paper 1 (see paragraph 28-33). This is necessary to reduce the time the expert review teams spend on making adjustments and to ensure comparability. We also agree with the Secretariat's proposal to avoid introducing statistical and complex approaches. Furthermore, we believe the review teams should avoid using *emission estimates* from international databases, perhaps with an exception for the CO_2 from energy estimated by IEA using the Reference Approach. International databases will, however, normally provide the review teams with relevant *activity data* for their possible adjustments.

When the expert review teams need to *adjust emission factors* preference should be given to default emission factors given in the Revised 1996 IPCC Guidelines, including the IPCC Good Practice Guidance. When *adjusting activity data* preference should be given to international databases. If these approaches are not feasible, or do not give conservative results as required, average parameters from a cluster of countries could be used. Based on the case studies it can be assessed whether further options are needed in particular circumstances for a given source sector.

Adjustment of the entire emission estimates for source categories can be made by combining the approaches above with a preference to using a Tier 1 method (IPCC default emission factor combined with activity data from e.g. international databases). If this is not feasible, an average emission rate from a cluster of countries can be applied in certain (but not all) circumstances (using appropriate drivers).

The case studies have shown the need for guidance on *clustering of countries* to identify representative parameter emission factors, activity data or emission estimates. We believe there should be a simple general rule for such clustering, by for example grouping countries according to their economic development and, for some sources according to their climatic conditions. For single source categories there may be good reasons to deviate from these clustering parameters. For example, the volume of aviation and differences in technology will probably not vary according to a clustering based on economic development. Furthermore, temperature differences represent an important variable for stationary energy consumption and greenhouse gas emissions from the agricultural sector, while it is not relevant for most other emission sources. This should be further elaborated in the source specific guidance.

Using *drivers or surrogate data* could be a very useful approach when adjustments are based on estimates or parameters for a cluster of countries or to extrapolate emission estimates if inventory data are omitted for a base year and/or most recent year of the time series. We believe drivers have to be easily accessible and comparable for all countries within a given cluster. This implies that drivers have to be available from international databases. Many of the preferred drivers in the draft technical guidance for adjustments (FCCC/SBSTA/2002/INF.5) are too specific to be applicable in practice. Use of GDP or population as a driver can most likely be appropriate for the purpose for many source categories, taking into account the need to have a simple approach. However, for the sectors energy production (fugitive fuels), industrial processes (except HFCs/SF_6) and partly the agricultural sector, it will not be appropriate to use GDP or population as a driver. For these sectors production data and animal population, respectively, would be more suitable for the purpose.

Ensuring conservativeness

We agree with the UNFCCC Secretariat's conclusion in Working Paper no. 1 that the methods to assure conservativeness need to be narrowed and simplified, to shorten the time needed for adjustments and to ensure consistency among adjustments made to different inventories.

In the case of adjusting emission factors conservativeness can normally be assured by selecting an emission factor from the IPCC Guidelines and Good Practice Guidelines within the $25^{th}/75^{th}$ percentile range as appropriate or, by making conservative assumptions about technology, as elaborated in the source specific guidance. If this does not lead to a conservative result, the expert review team can base the estimation on a standard set of "conservativeness factors". These conservativeness factors can be derived from uncertainty estimates and experience from the case studies. Special considerations are probably needed where uncertainties are extremely high (for example for N_2O from agricultural sectors) where the application of the $25^{th}/75^{th}$ percentage rule on uncertainties can give unreasonably large or low adjustment values.

We agree with the proposal in Working Paper no. 1 that the use of uncertainty ranges should be limited to the range found in IPCC Guidelines and Good Practice Guidelines. Uncertainty ranges from the Party concerned or, other Annex 1 Parties, should not be used.

Level of aggregation of adjustments

Normally it is easier to apply an adjustment at a more aggregated level than for sub-categories. Hence, a clear guidance on this issue should be developed. In principle we believe that adjustments should be applied at the level where the problem was identified. However, the expert review team can apply adjustments at a more aggregated level when lack of transparency in reporting hampers the application of adjustments at a disaggregated level. Anyhow, it is important that the level of aggregation of application of adjustments is clearly documented by the expert review team.

Adjustment of base year and time series consistency

In Working Paper no. 1 the UNFCCC Secretariat questions the need for extrapolations and interpolations as part of the technical guidance for adjustments. We agree that it is difficult to imagine situations where interpolations will be used in practice. Adjustments of emission factors in the commitment period, however, can be based on extrapolations from the base year (assuring conservativeness) using simple drivers (for example GDP growth) in cases where i) the base year has been reviewed, ii) adjustments have not been made on the estimate and iii) there is no major technological change

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